

Fear conditioning to subliminal fear relevant and non fear relevant stimuli

[Science](#), [Biology](#)



Evidence suggests that human evolution resulted in a 'fear module', a sub-cortical that is, conversely, activated by stimuli that seem to be fear relevant in evolutionary context. Images of snakes, spider, and other fearful animals are what would activate this 'fear module' suggested by researchers. This activation is centered in the amygdala. Studies of an fMRI have shown that the amygdala reacts when shown fearful faces, but is unresponsive to happy faces. In typical human fear conditioning experiment, a conditioned stimulus is paired with an electro cutaneous shock, intensity set by the participant, and a second conditional stimulus is presented alone. However, data from previous studies fail to include a condition where fear is conditioned to a non-fear relevant stimulus. Lipp and his partners (2014) seek to find whether subliminal fear conditioning is limited to fear-relevant stimuli.

Method

The experiment received ethical approval by the University of Queensland Ethics Committee, and all the participants were given informed consent and told that they could withdraw at any time without penalty. There was a total of 32 participants (21 were female) with a mean age of 20.52 years, but two of the participants results were unusable because they did not show electrodermal responses. The resulting 30 participants were then divided in half between a Wallaby Group and a Snake Group. The conditioning training used four blocks of eight trials, in each block were four images of snakes and four of wallabies. Researchers used a method known as binocular switch suppression, in masked trials a colored noise Masking image and a Test image alternated in being presented to either eye for a duration of 250 ms.

The Test images heightened from black to brightness over the first three seconds of each presentation of stimulus.

The fifteen participants in the Snake group received a US shock after the images of snakes were presented and the images of wallabies were presented alone, and the Wallaby group received a US shock after the images of wallabies were presented and the images of snakes were presented alone. The intensity of the US shock was determined by each participant. After the conditioning training, participants were asked if they saw the animal images during the masked trial blocks. The experiment ended with a signal detection experiment, to determine accurately determine the sensitivity, of 40 masked trials with five presentations of the 8 animal images.

Results

Researchers used a Biopac MP150 to record the electrodermal responses. The recorded data showed that the electrodermal responses were larger to the US shock than to no shock in both snake and wallaby groups. This showed that the differential fear conditioning did not differ between masked and unmasked trials and did not differ between the groups. Data from post conditioning training, the signal detection experiment, indicated that some participants could classify content of masked images reliably. Evidence confirmed that many the participants showed no subjective sensitivity to content of masked images, as recorded by guessing if the masked image was a snake or wallaby.

Discussion

The researchers were seeking to find whether subliminal fear conditioning is limited to fear relevant stimuli. They found no difference in the extent of conditioning when the participants were trained with a shock for a snake image or a shock for a wallaby image.

Researches had the participants in a post conditioning training, the signal detection experiment, after the masked and unmasked trials. However, the data from the post conditioning training showed no significant difference, it cannot state the conditioning observed in the two groups was similar.

CONCLUSION

Lipp and his colleagues (2014) concluded that while fear conditioning can be caused by stimuli to which participants display no subjective sensitivity, this is not unforeseen on the subliminal stimuli being fear relevant. The difference between the masked and unmasked trials in both groups was insignificant and cannot conclude that the conditioning between the groups was similar. Although there was no correlation, the results suggested that fear conditioning to subliminal inputs was not contingent on those inputs being relevant. Future research needs to implement a better analysis to remove other options of the findings in this experiment.