

Fear-Potentiated Startle Paradigm in Mice

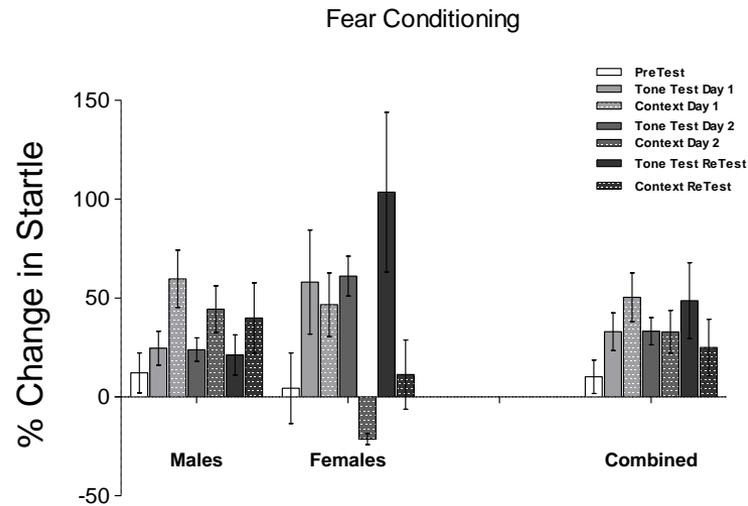
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Introduction

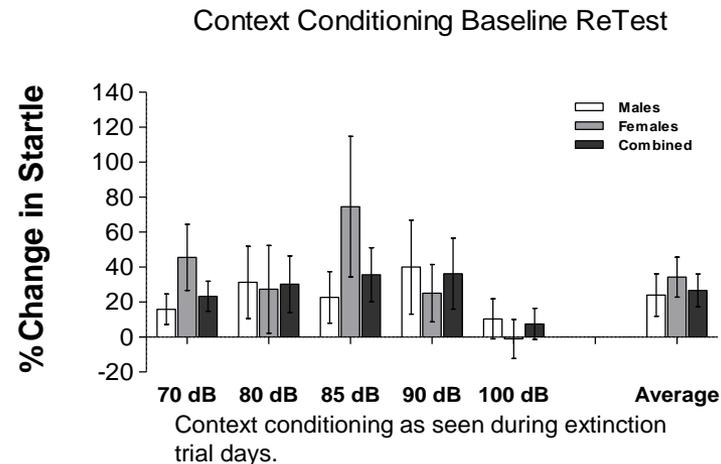
TUF1 is a novel neuropeptide highly concentrated in the amygdala, hippocampus, hypothalamus, and the endocrine tissue. Due to the high concentration in these regions, it is believed that TUF1 may play a role in stress regulation and fear-learning. Fear-learning is a form of Classical Conditioning. Fear is measured by Fear-Potentiated Startle (FPS). FPS is a valid and reliable method of measuring fear in rats. This study was conducted in the attempt to create a working FPS paradigm for mice in the Gewirtz Lab. After establishing this paradigm, we should be able to study the effects of TUF1 more efficiently using TUF1 knock-out mice.

Methods

7 days of testing
Baseline: 3 days; 40 startle trials, 70-100 dB.
Pretest: 1 day; 20 leader startle trials, 10 tone + startle, 10 startle alone.
Training: 3 days; 16 tone + shock pairings. 30s tone with 3s rise. Startle stimulus 90 dB. Shock: 0.25s at 0.4 mA
1 or 2 days extinction, same as baseline
Test day: Same as pretest.



Fear conditioning to a tone after 0, 1, and 2 days of extinction.



Context conditioning as seen during extinction trial days.

Conclusion

- Gender differences exist
- Females extinguished to context
- Thus they showed a significant increase in startle to tone.
- Males did not show this increase in startle to the tone
- Male mice showed persistent fear to the context

Discussion

By creating a successful paradigm of FPS for mice, we will be able to conduct future studies with knock-out gene mice. In particular, we can study FPS with TUF1 knock-out mice currently being bred in Laboratory of Dr. Phu Tran.

By studying the TUF1 peptide we may further understand its role in learning, memory, and potentially anxiety.

References

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