**Highlights**

Flexibly adjusting reward learning to changing environmental conditions is crucial for an organism.

Acute stress can have beneficial as well as detrimental effects on reward learning.

Specifically, we investigated probabilistic reversal learning in n = 28 healthy male participants.

We found an increase of correct responses under acute psychosocial stress in our participants.

Correspondingly, we observed altered choice stochasticity and neural effect of stress in win trials.