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Title: Beyond conditioned fear: encoding of stimulus properties and behaviors by amygdala neurons

Much data indicates that the amygdala occupies a central position in the acquisition and expression of fear responses. Most of it was obtained using the Pavlovian fear conditioning paradigm. This approach fostered the view that the amygdala generates emotional behaviors in an automatic, stimulus-driven manner. However, this paradigm suffers from severe limitations, which are still unappreciated in the field. First, it usually allows for only one conditioned behavior (CR; behavioral freezing). As a result, it looks as if the conditioned stimulus (CS) automatically triggers the CR when in fact that's all this paradigm allows. Second, because conditioning changes the likelihood that the CS will elicit the CR, it is difficult to determine whether training-induced alterations in activity are related to the valence or identity of CSs, to the behaviors they elicit, or a mixture thereof. With the support of this grant, we will re-examine how amygdala neurons control defensive and reward-seeking behaviors using a novel task that allows one to compare, in the same rats and neurons, activity related to multiple conditioned behaviors. Only through such experiments can we really ascertain the role of the amygdala.