

Amygdala volume and emotion regulation in aging



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Introduction

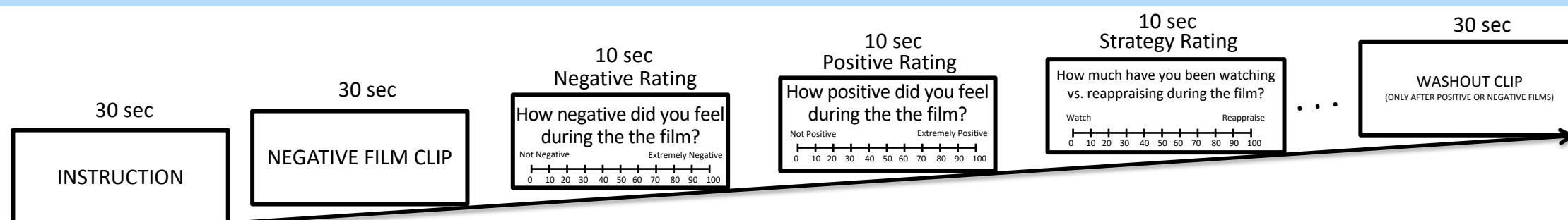
- General cognitive ability declines in older adulthood¹. However, older adults show higher levels of emotional well-being²
- Emotional regulation is one determining factor for understanding affective change with age³
- The Amygdala plays a key role in emotion³ and its volume decreases with age^{4,5}

Do emotional reactivity and regulation change over adulthood and do such change relate to amygdala volume?

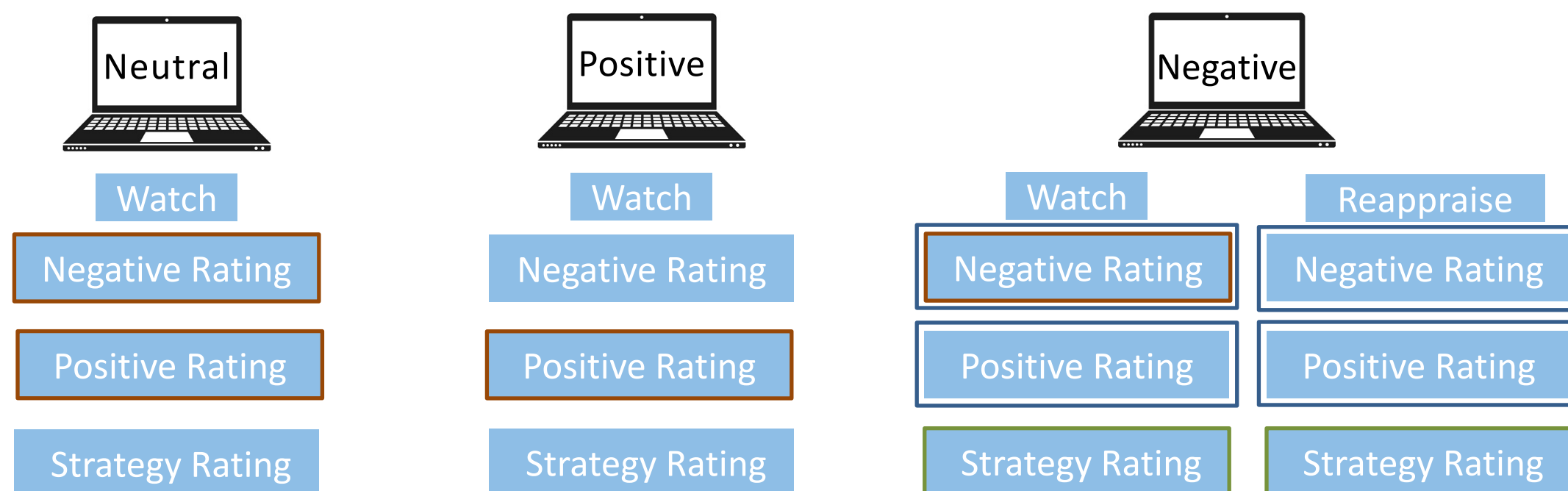
Hypotheses

- Older adults regulate negative emotion more effectively
- Older adults are less sensitive to negative emotional content and more sensitive to positive emotions
- Amygdala volume is associated with emotional sensitivity and regulation

Methods



- Resting state & anatomy from Cam-CAN repository⁶: 3T Siemens TIM Trio, 32 channel head coil.
- Age 18-88. Young group: 18-30 (N = 31); middle group: 31-59 (N = 116); older group: 60-88 (N = 112).



Positive Emotion Reactivity: positive rating for positive clips minus neutral clips

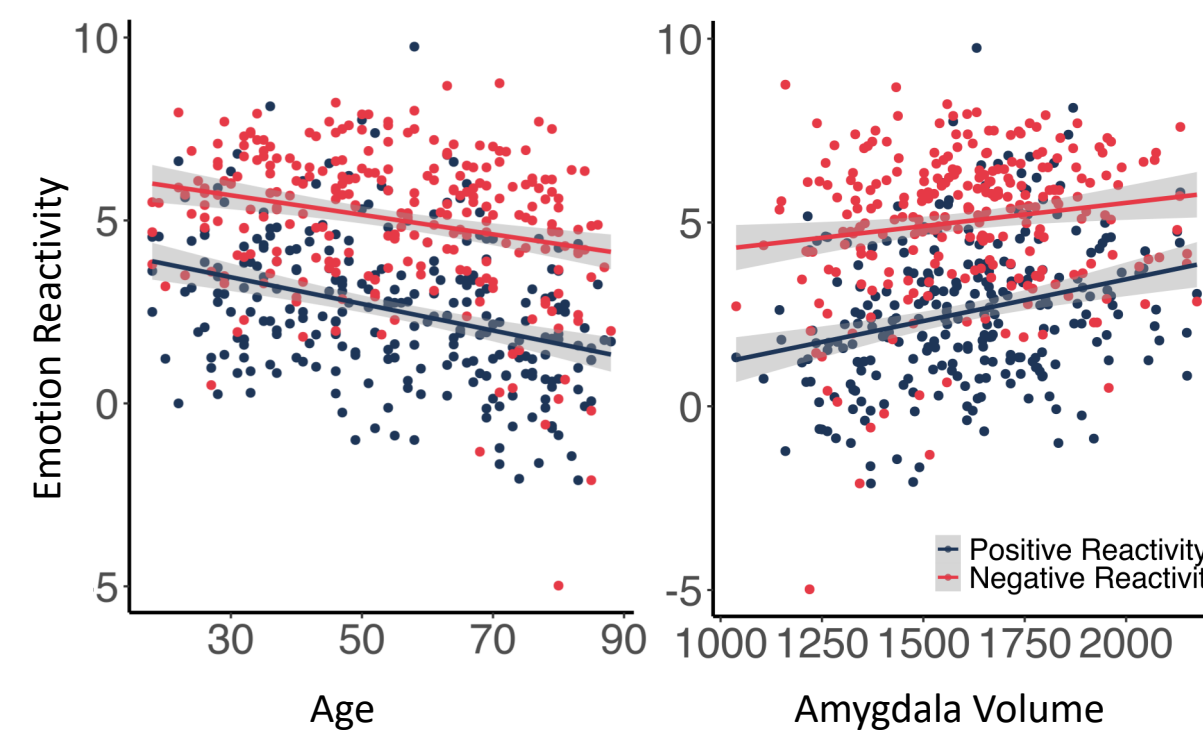
Negative Emotion Reactivity: negative rating for negative clips minus neutral clips

Subjective Emotion Regulation: strategy rating after "reappraise" minus "watch" instruction (negative films only)

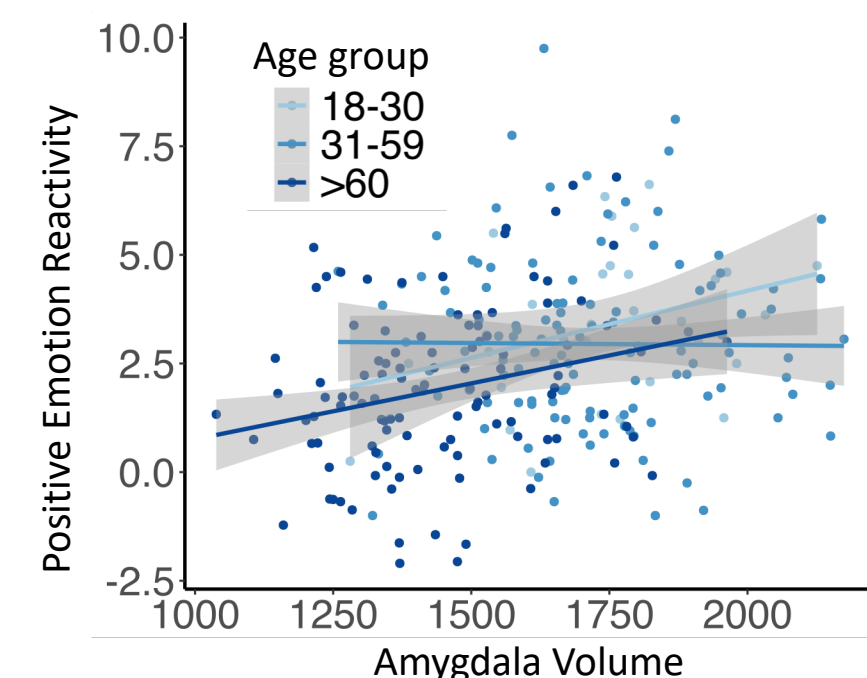
Emotion Regulation success: positive and negative ratings in reappraise minus watch (no effects, data not shown)

Results: Emotion Reactivity

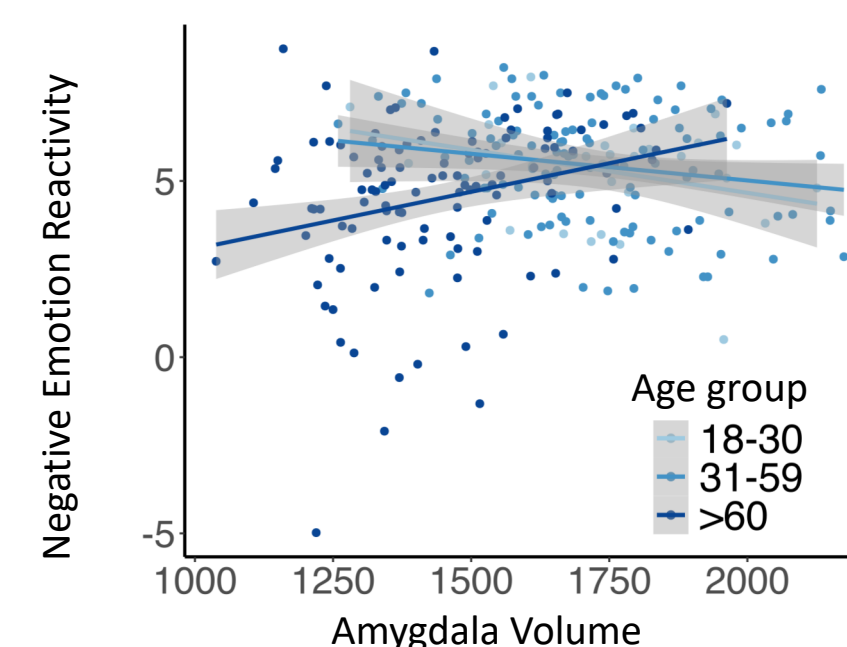
Emotion Reactivity decreased with Age and increased with Amygdala Volume



Positive Reactivity increased with Amygdala Volume irrespective of Age

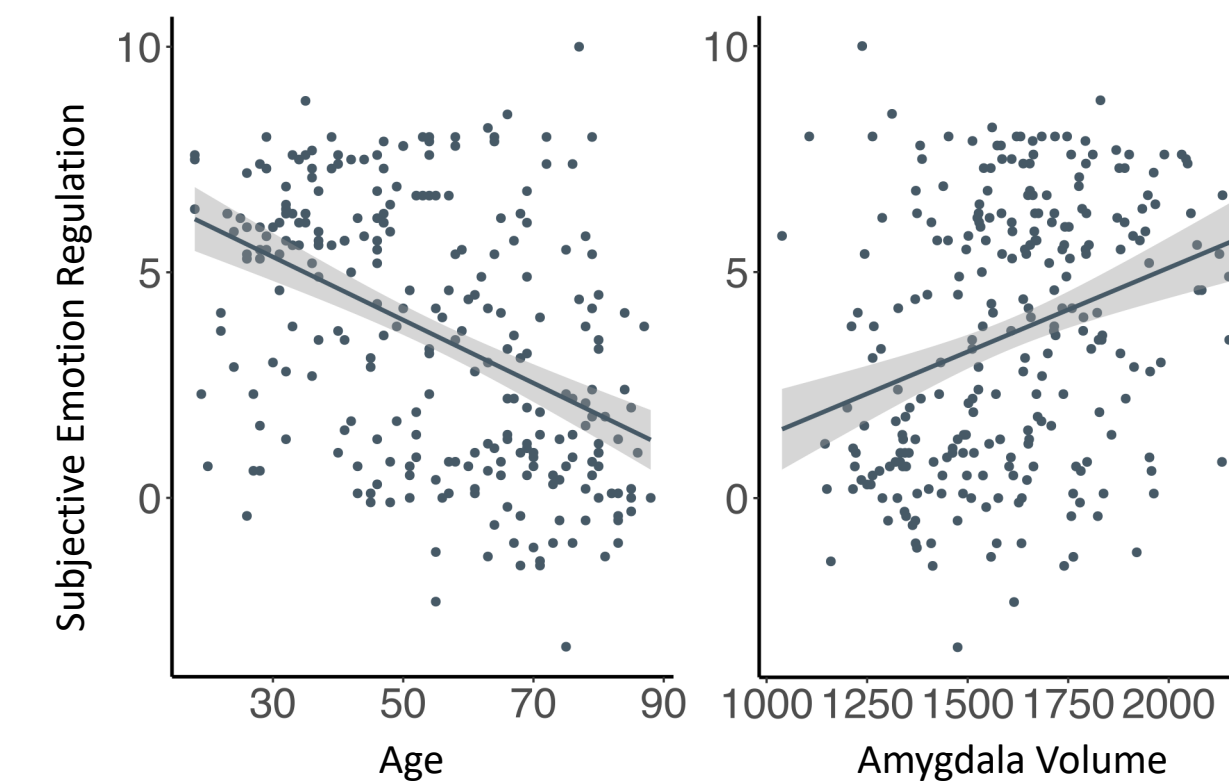


Negative Reactivity increased with Amygdala Volume in older adults but decreased with Amygdala Volume in young and middle age

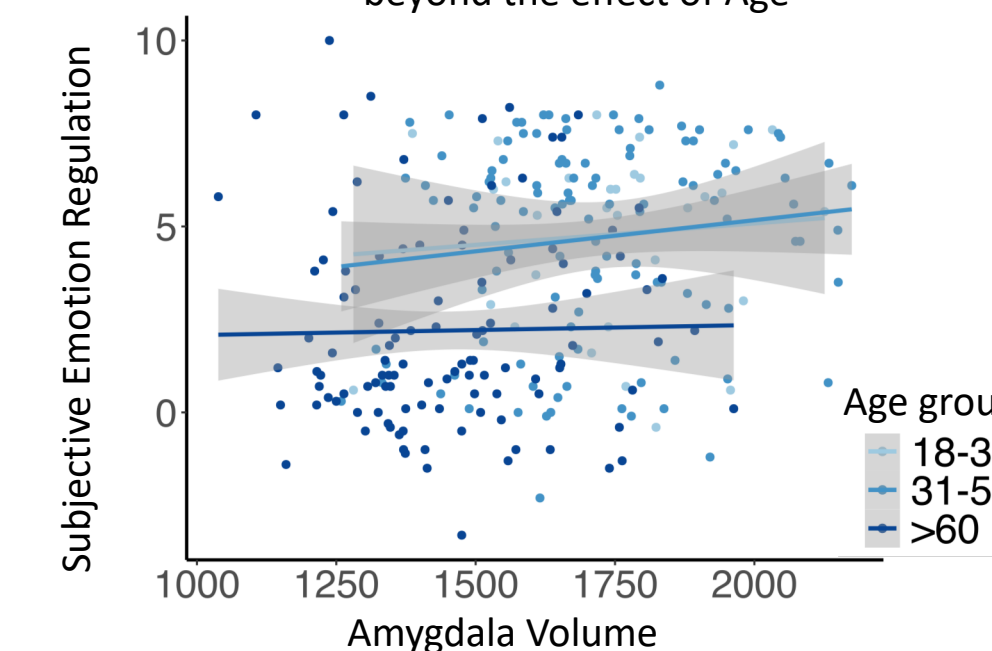


Results: Subjective Emotion Regulation

Subjective Emotion Regulation decreased with Age and increased with Amygdala Volume



Amygdala Volume does not predict Subjective Emotion Regulation beyond the effect of Age



Summary

- Subjective emotion regulation declined with age, but this effect was not explained by decline in amygdala volume.
- Emotional reactivity also declined with age.
- The relation between negative emotional reactivity and amygdala volume differed among age groups.
 - Young adults: negative reactivity decreased with increased amygdala volume, suggesting better regulation.
 - Older adults: negative reactivity increased with increased amygdala volume, suggesting preserved function.

References

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