

# 'Just can't hide it': A behavioral and lesion study on emotional response modulation after right prefrontal damage

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**Introduction:** Historically, emotion regulation problems have been reported as a common consequence of right prefrontal cortex (rPFC) damage. It has been proposed that the rPFC, particularly the rIFG, has a key role inhibiting prepotent reflexive actions, thus contributing to emotion regulation and self-regulation. This study is the first to directly explore this hypothesis, by testing whether damage to the rIFG compromises the voluntary modulation of emotional responses, and whether performance on inhibition tasks is associated with emotion regulation. **Method:** 10 individuals with unilateral right prefrontal damage and 15 matched healthy controls were compared on a well-known response modulation task. During the task participants had to amplify and suppress their facial emotional expressions, while watching film clips eliciting amusement. Measures of executive control, emotion regulation strategies usage and symptomatology were also collected.

**Results:** As a group, individuals with rPFC damage presented a significantly reduced range of response modulation compared with controls. In addition, performance in the suppression task was associated with measures of cognitive inhibition and suppression usage. Interestingly, these effects were driven primarily by a subgroup of individuals with rPFC damage, all of whom also had damage to the right posterior insula, and who presented a marked impairment in suppressing facial emotional expressions © The Author (2016). Published by Oxford University Press.

Brain injury

Emotion

Emotion regulation

Insula

Prefrontal cortex

Response modulation

Suppression

aged

emotion

facial expression

female

human

inhibition (psychology)

male

middle aged

nuclear magnetic resonance imaging

pathophysiology

physiology

prefrontal cortex

self control

Aged

Emotions

Facial Expression

Female

Humans

Inhibition (Psychology)

Magnetic Resonance Imaging

Male

Middle Aged

Prefrontal Cortex

Self-Control