

Crying



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A red square with a white border containing the text "What is Crying?".

What is
Crying?

Crying

- Shedding of tears in response to emotion or irritation of the eye
- Complex secretomotor phenomenon



<https://clutchpoints.com/raptors-fans-wear-photos-crying-lebron-meme-faces/>



(Newman, 2007; Gracanin, Bylsma & Vingerhoets, 2014)

Functions of Crying

Intra-individual functions

- Ex. Stress reduction, mood enhancement



<https://positivepsychologyprogram.com/mindfulness-based-stress-reduction-mbsr/>

Inter-individual functions

- Ex. Signals distress, promotes empathy, facilitates social bonding



<https://www.merriam-webster.com/dictionary/empathy>

(Gracanin, Bylsma & Vingerhoets, 2014)



Non-human Animals and Crying

- Humans are the only species to produce emotional tears
- Other mammals can produce separation or distress calls
 - Young offspring
 - No production of tears



<http://www.wideopenspaces.com/4-coyote-calls-need-know/>

(Gracanin, Bylsma & Vingerhoets, 2014)



Distress Calls in Animals

- Mammals respond to distress calls of infants, regardless of species

Ex. Deer study by Lingle & Riede



<http://www.dailymail.co.uk/sciencetech/article-2760764/Mammals-respond-distress-calls-newborns-regardless-species.html>

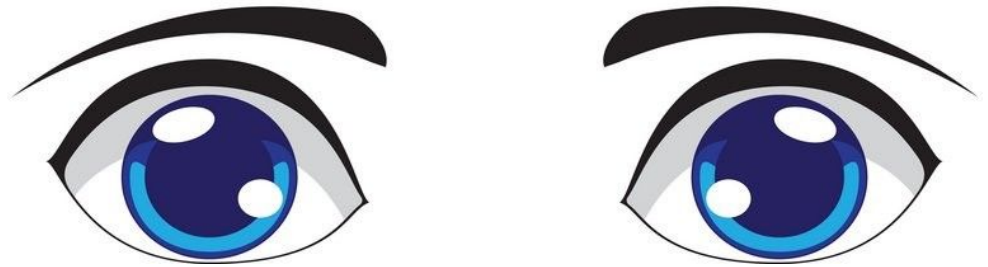
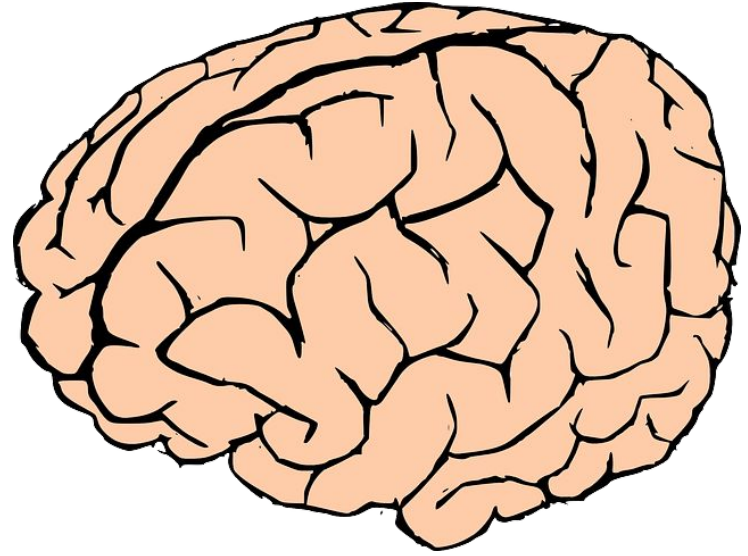
(Lingle & Riede, 2014)



Mechanism of Crying

Two components:

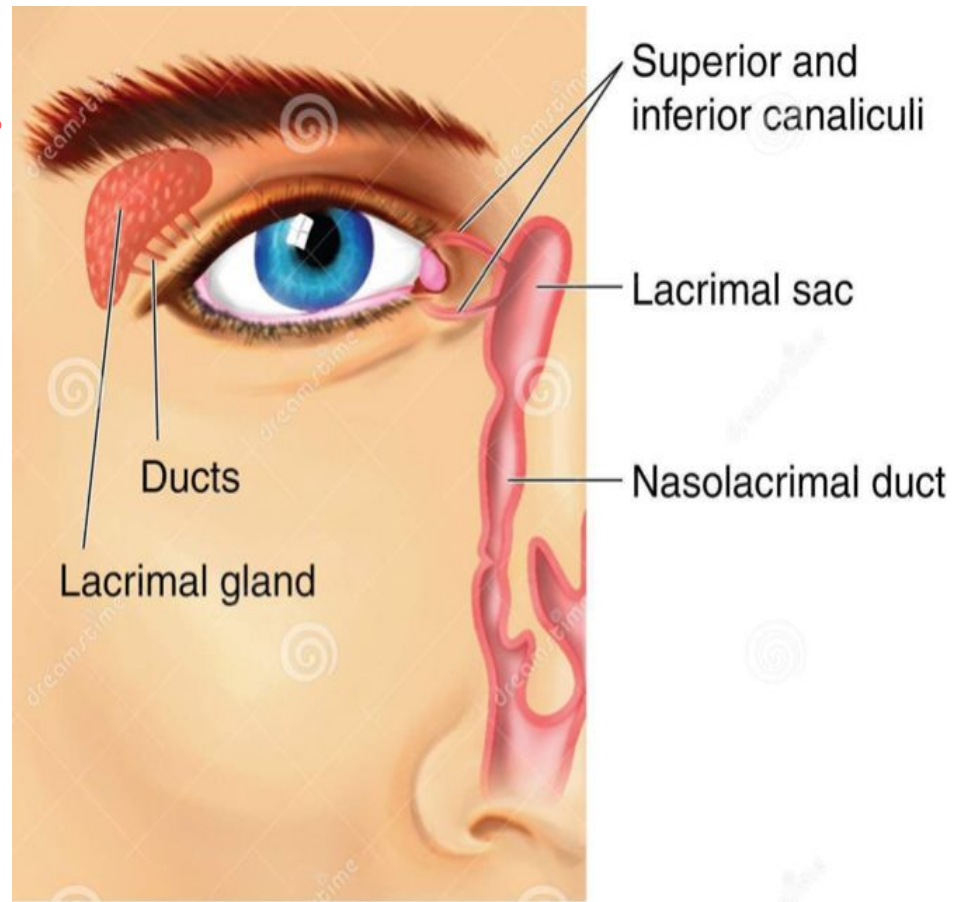
1. Lacrimal System
2. Neurological System



Mechanism of Crying

Lacrimal System

- Lacrimal gland = tear duct
- Produces tears and drains tears
- Some tears drain through nose



<https://www.dreamstime.com/royalty-free-stock-photo-lacrimal-apparatus-image9845505>

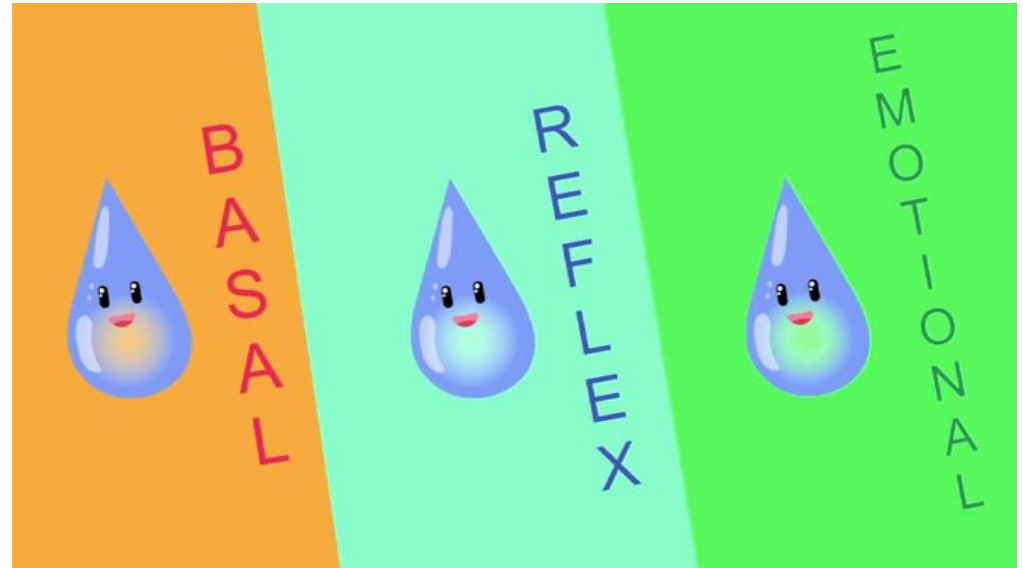
(Botelho, 1964),(Lutz, 1999)



Mechanism of Crying

Types of Tears

- Basal
- Reflexive
- Psychic/Emotional



<https://steemit.com/news/@jonathanxvi/why-do-we-cry-the-three-types-of-tears>

The lacrimal gland mainly produces reflexive and emotional tears.

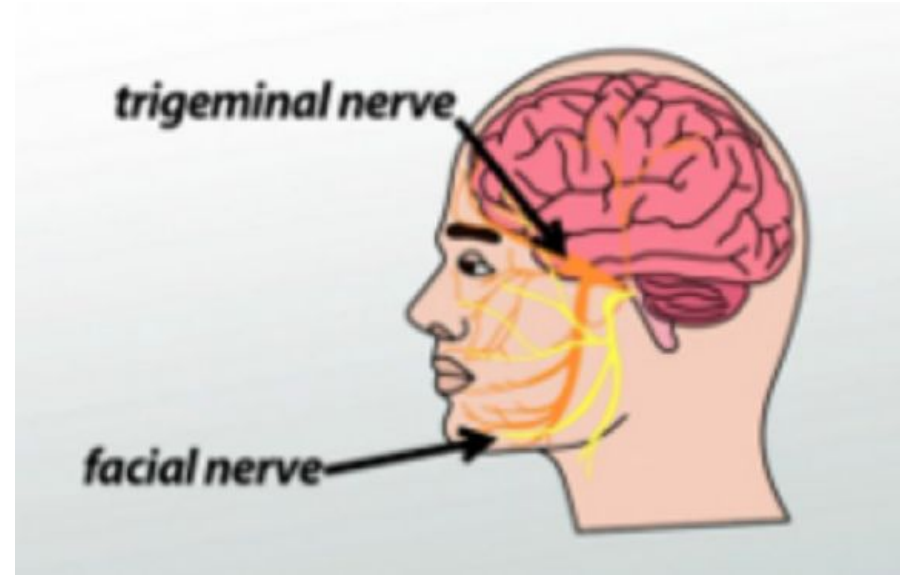
(Botelho, 1964),(Lutz, 1999)



Mechanism of Crying

Neurological System

- Trigeminal nerve (Cranial Nerve #5)
- Facial nerve (Cranial Nerve #7)
- Autonomic nervous system



<https://study.com/academy/lesson/cranial-nerves-of-the-face-and-mouth-motion-and-sensation-functionality.html>

(‘Tears’, 2018), (Dartt, 2009)



Mechanism of Crying

Neurotransmitters

Sympathetic

- Norepinephrine
- Neuropeptide Y

Parasympathetic

- Acetylcholine
- Vasoactive intestinal peptide



Humans and Crying



<https://eurekakansas.com/events/high-school-graduation/>



<http://www.updatepedia.com/two-line-sad-shayari/>

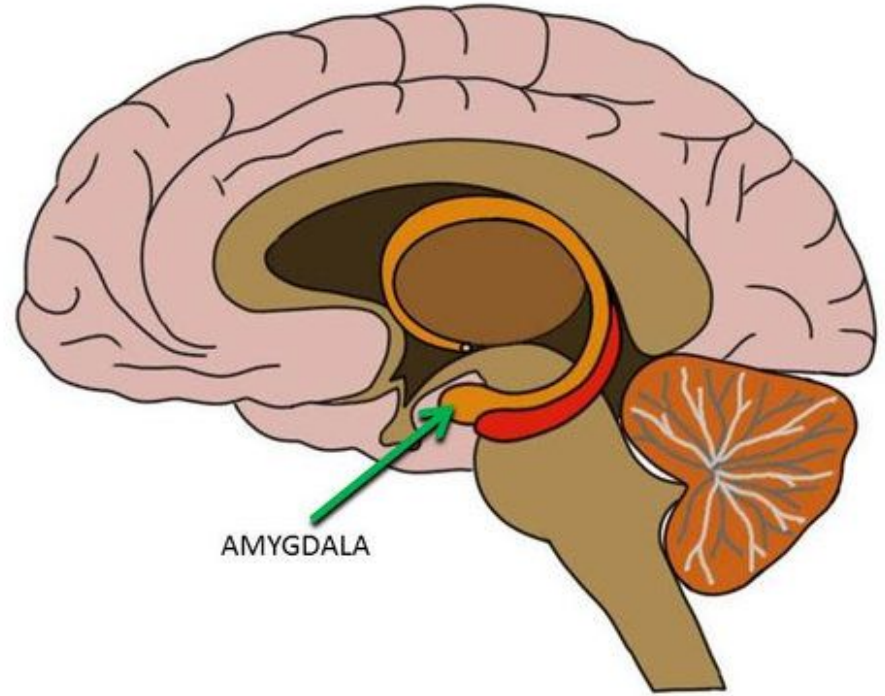
- Humans can cry in response to a positive and negative emotions



(Oaklander, 2016)

The Amygdala

- Integrative center for emotions, behaviour and motivation
- Cannot distinguish different emotional signals
- Sends the same signal to the hypothalamus

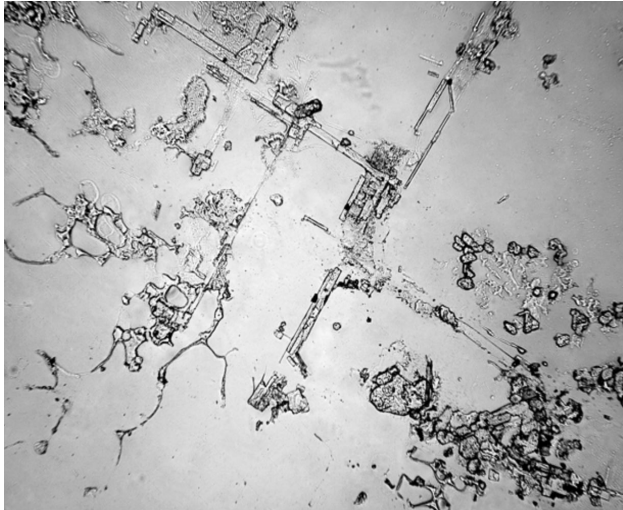


<https://www.neuroscientificallychallenged.com/blog/know-your-brain-amygdala>

(Lewis, L.G, 2016)

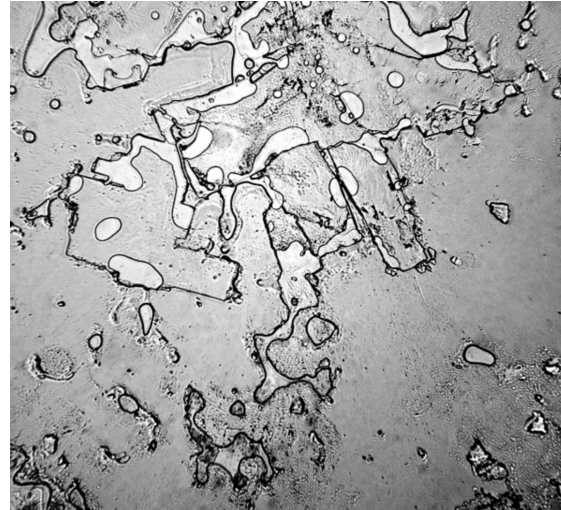


Tear Composition



Tears of grief, photo © Rose-Lynn Fisher, courtesy of the artist and Craig Krull Gallery, Santa Monica, CA

<http://rose-lynnfisher.com/tears.html>



Laughing tears, photo © Rose-Lynn Fisher, courtesy of the artist and Craig Krull Gallery, Santa Monica, CA

Tear composition was examined in response to variations in emotion.



Emotional Tears & Hormones

- Higher concentration:
 - ACTH -> Produced under stress
 - Prolactin -> Controls neurotransmitter receptors in the lacrimal glands
- Flushing out the increased concentration in hormones?
 - Unlikely because lacrimal glands not large enough



Can Psychopaths Cry?

- Psychopaths make up about 1% of the population
- Lack emotional responses

Table 1

Items in the Hare Psychopathy Checklist—Revised

Item	Factor loading
Glibness/superficial charm	1
Grandiose sense of self-worth	1
Need for stimulation/proneness to boredom	2
Pathological lying	1
Conning/manipulative	1
Lack of remorse or guilt	1
Shallow affect	1
Callous/lack of empathy	1
Parasitic lifestyle	2
Poor behavioral controls	2
Promiscuous sexual behavior	—
Early behavior problems	2
Lack of realistic, long-term goals	2
Impulsivity	2
Irresponsibility	2
Failure to accept responsibility for own actions	1
Many short-term marital relationships	—
Juvenile delinquency	2
Revocation of conditional release	2
Criminal versatility	—

Note. Factor 1 = Selfish, Callous, and Remorseless Use of Others; Factor 2 = Chronically Unstable and Antisocial Lifestyle. A dash indicates the item does not load on either factor.



Rice et al., 1992

- Examined likelihood that first time offenders would reoffend
- Psychopaths with emotional therapy were more likely to reoffend

Table 2. Recidivism Rates of Treated and Untreated Psychopaths and Nonpsychopaths

	Treated	Untreated	χ^2 (1)
Psychopaths			
Any failure	87 (53)	90 (29)	<1
Violent failure	77 (52)	55 (29)	4.12*
Nonpsychopaths			
Any failure	44 (116)	58 (90)	3.87*
Violent failure	22 (114)	39 (90)	6.97*

Note. For each cell, rates are expressed as percentages and total n appears in parentheses.

* $p < .05$.



Dr. David P. Bernstein seems to think they can...



**What do you think? Can Psychopaths
genuinely cry?**



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Thank You!

Questions?