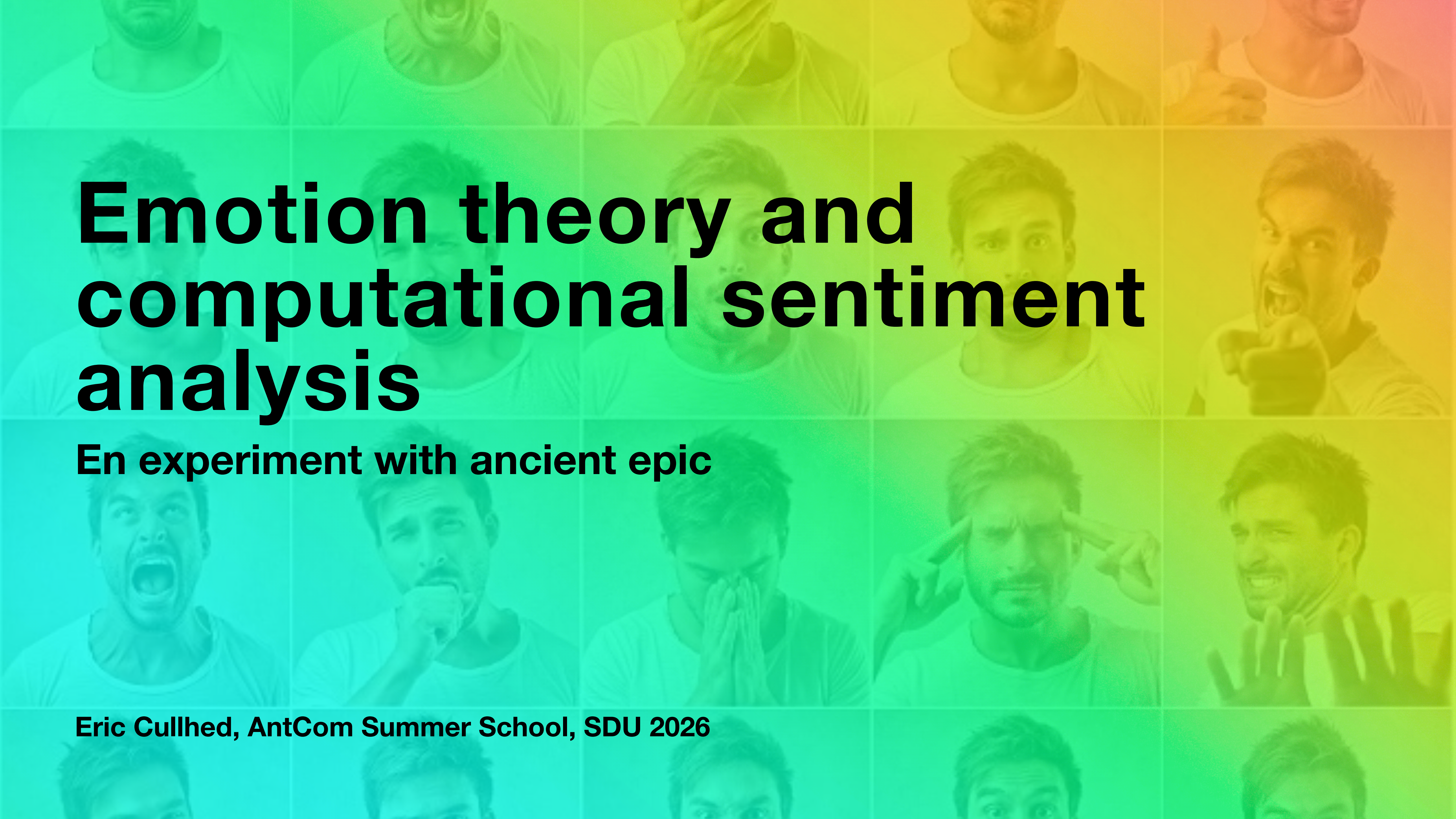




Emotion theory and computational sentiment analysis

En experiment with ancient epic

Eric Cullhed, AntCom Summer School, SDU 2026



I
What is emotion analysis?



Burger Mania



“Terrible experience. They tried to give us some unrequested cold food, which had stood free on a plate for all the time we waited for, to get a table and the time we spent choosing and ordering food, etc. They also forgot part of the order.”

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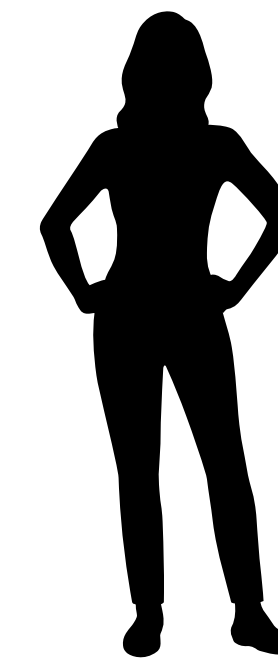


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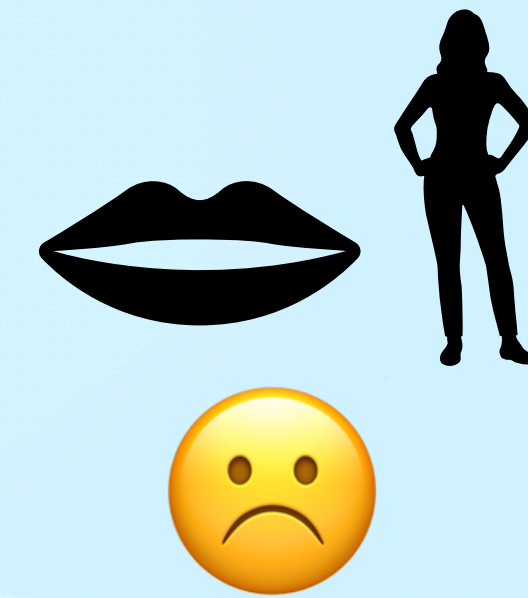


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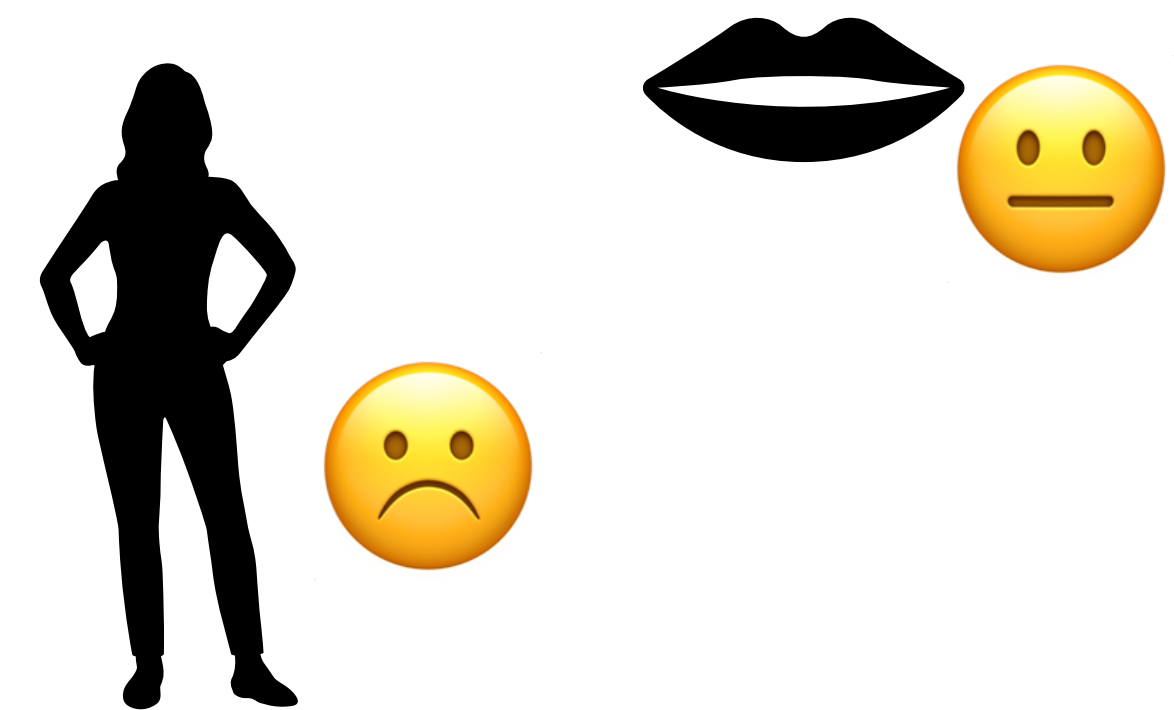


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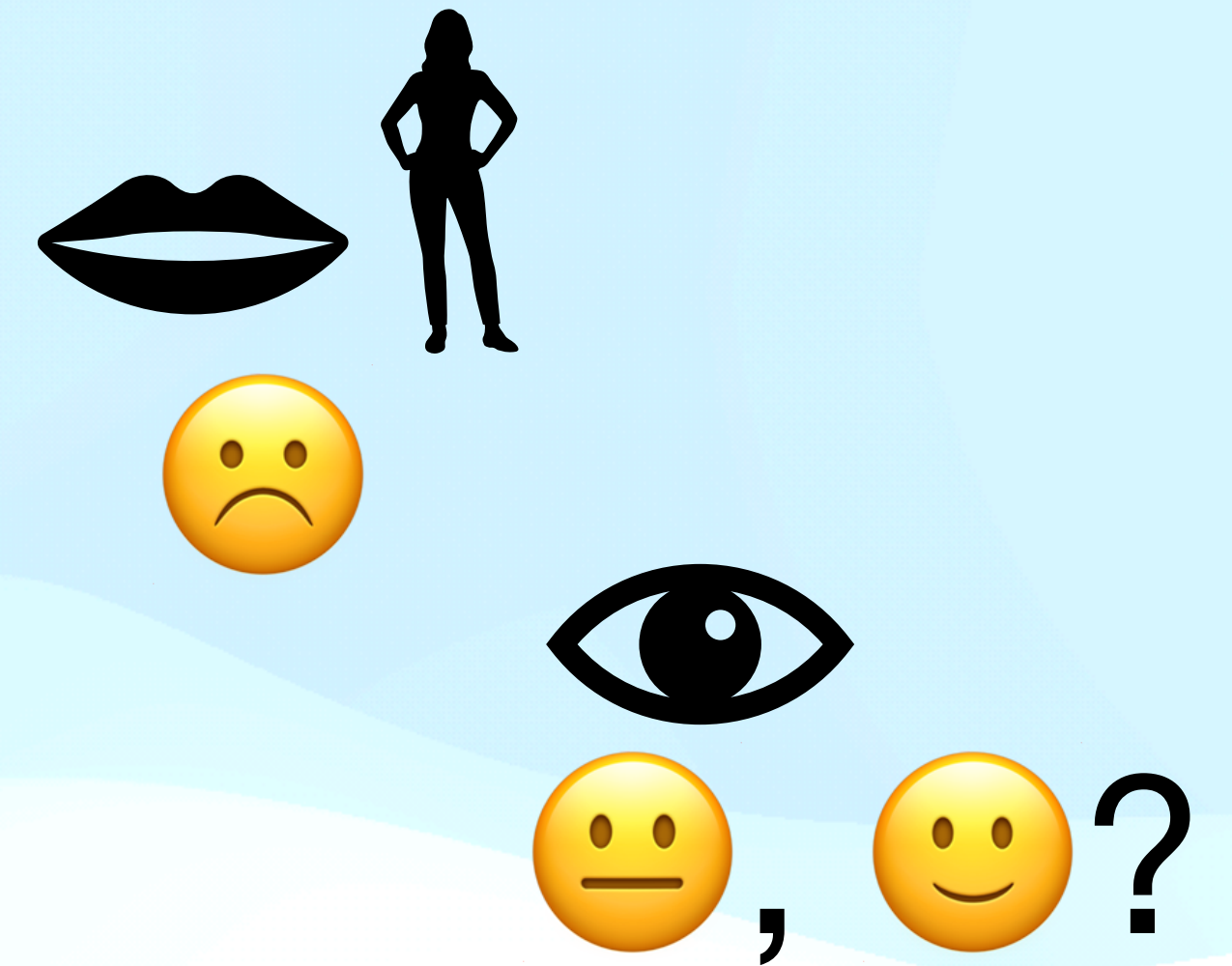


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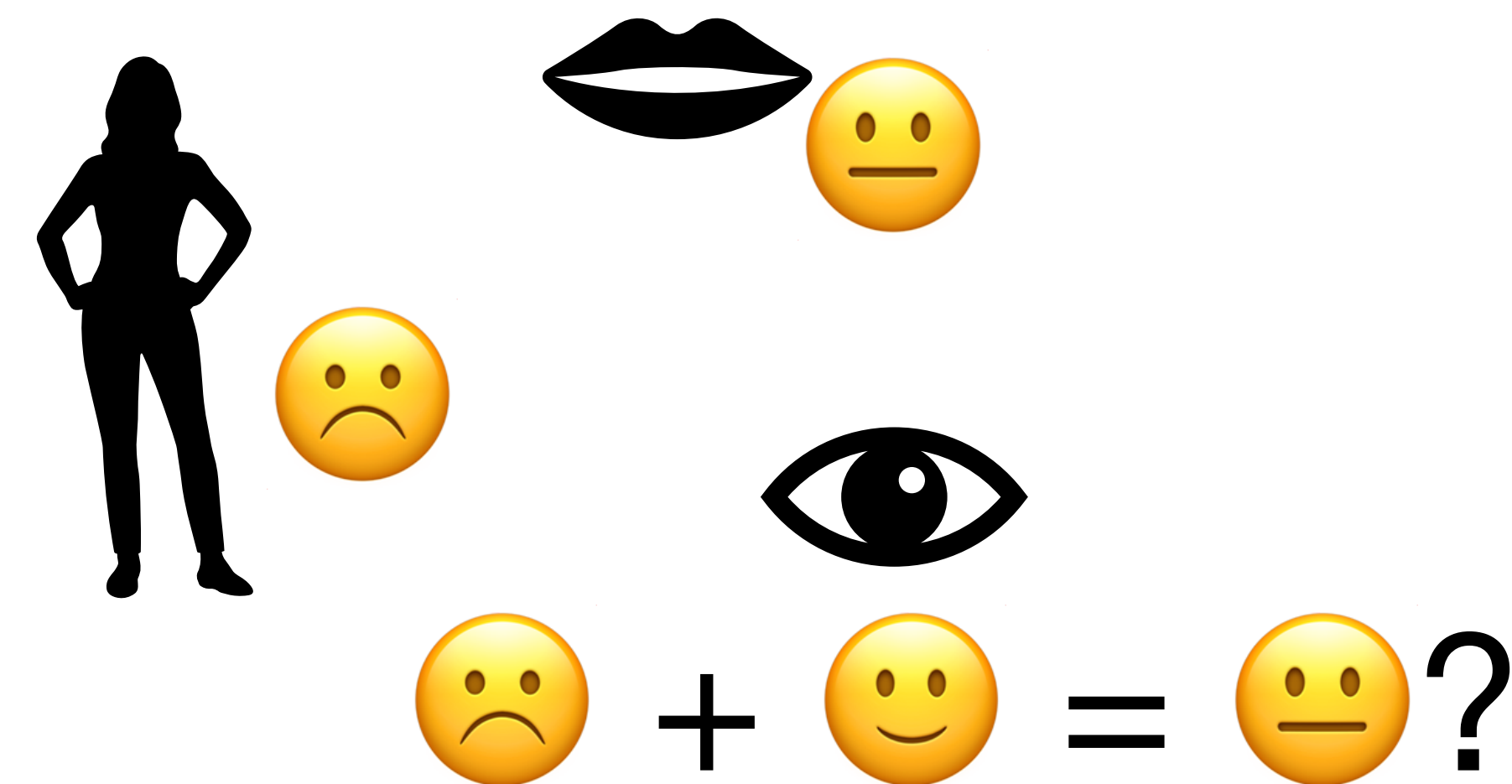


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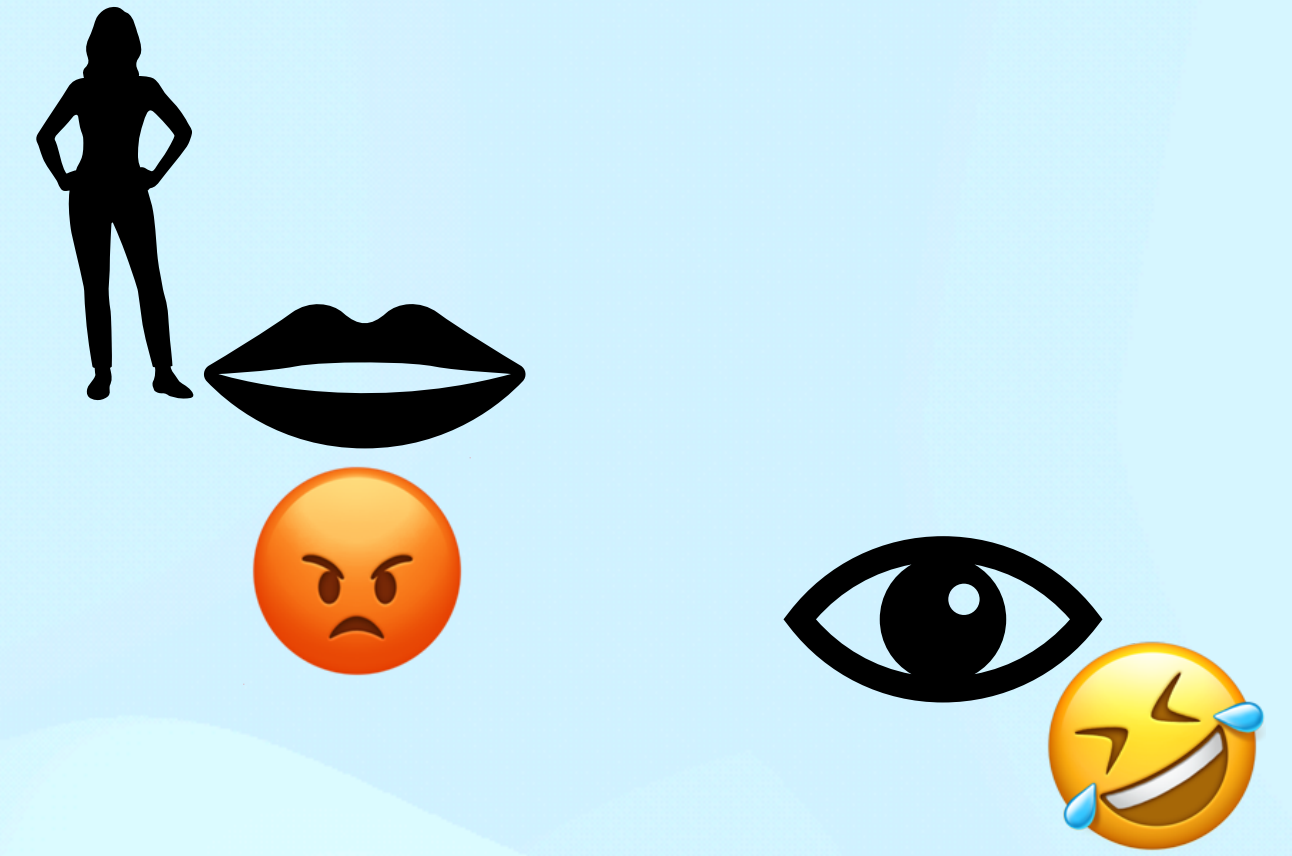


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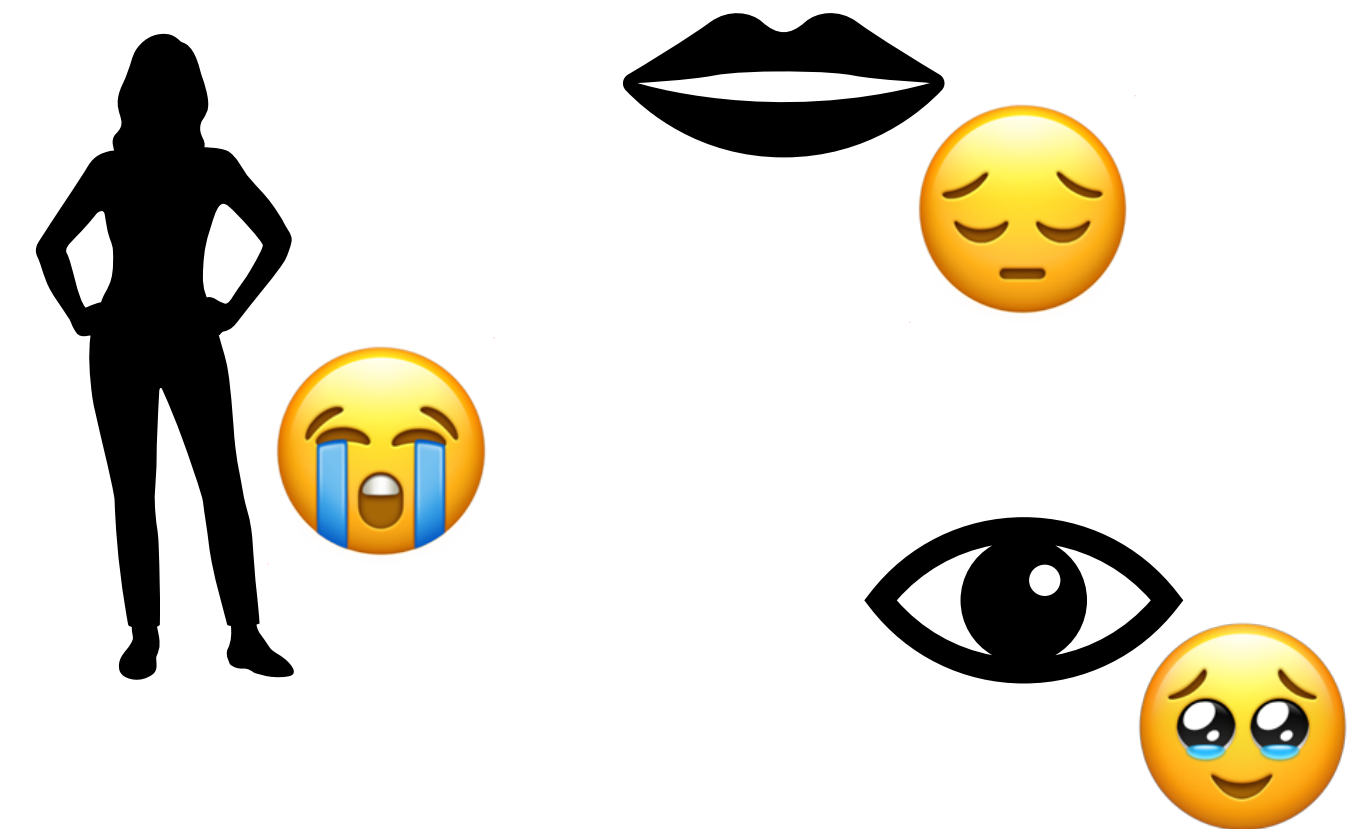


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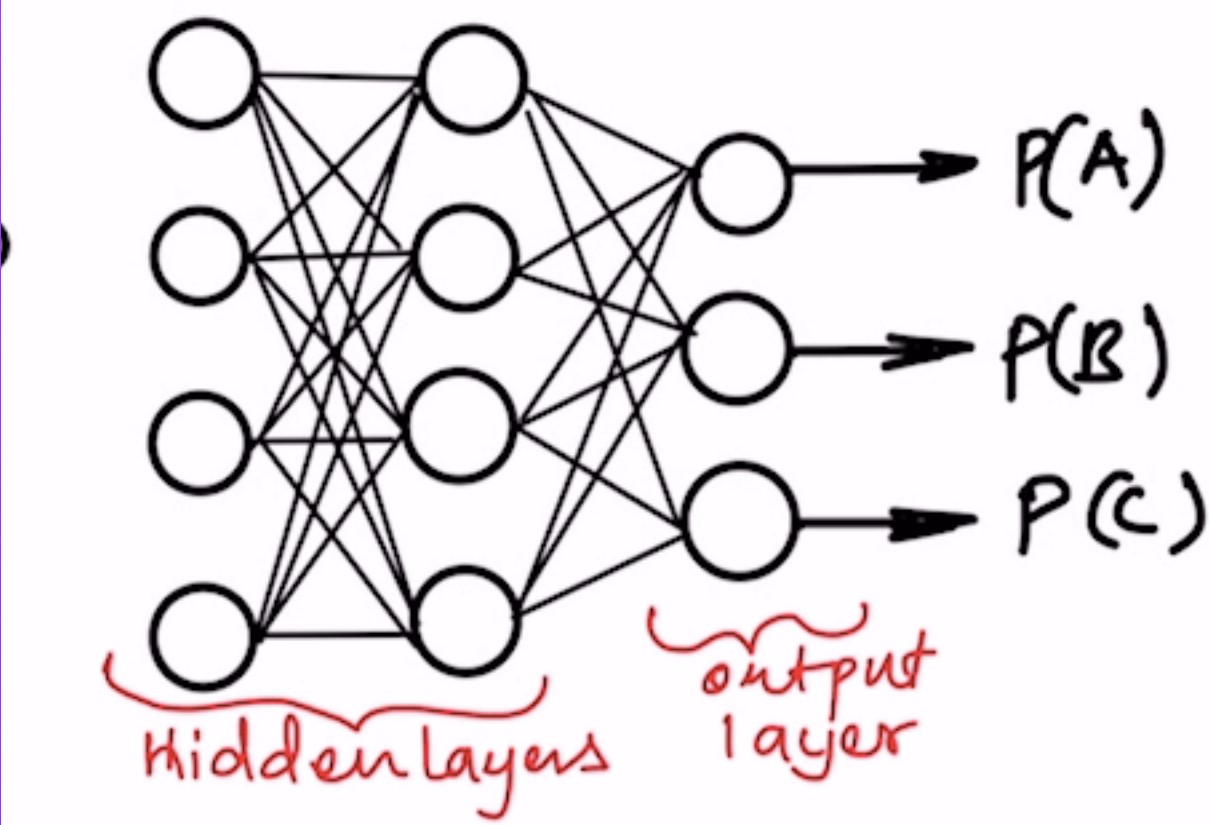


textID	text	label	label_text
string · lengths	string · lengths	int64	string · classes
10100%	759011%	028.3%	negative28.3%
cb774db0d1	I'd have responded, if I were going	1	neutral
549e992a42	Sooo SAD I will miss you here in San Diego!!!	0	negative
088c60f138	my boss is bullying me...	0	negative
9642c003ef	what interview! leave me alone	0	negative
358bd9e861	Sons of ****, why couldn't they put them on the releases we already bought	0	negative
28b57f3990	http://www.dothebouncy.com/smf - some shameless plugging for the best Rangers forum on earth	1	neutral
6e0c6d75b1	2am feedings for the baby are fun when he is all smiles and coos	2	positive



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Multi-class classification




```
from transformers import pipeline

classifier = pipeline(
    "sentiment-analysis",
    model="cardiffnlp/twitter-roberta-base-sentiment-latest",
)

texts = [
    ("Restaurant review",
     "Terrible experience. They tried to give us some unrequested cold food, "
     "which had stood free on a plate for all the time we waited for, to get "
     "a table and the time we spent choosing and ordering food, etc. They "
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    ("Iliad 1.413–414 (tr.)",
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for label, text in texts:
    result = classifier(text)[0]
    print(f"{label:>22}: {result['label']:<8} (score {result['score']:.3f})")
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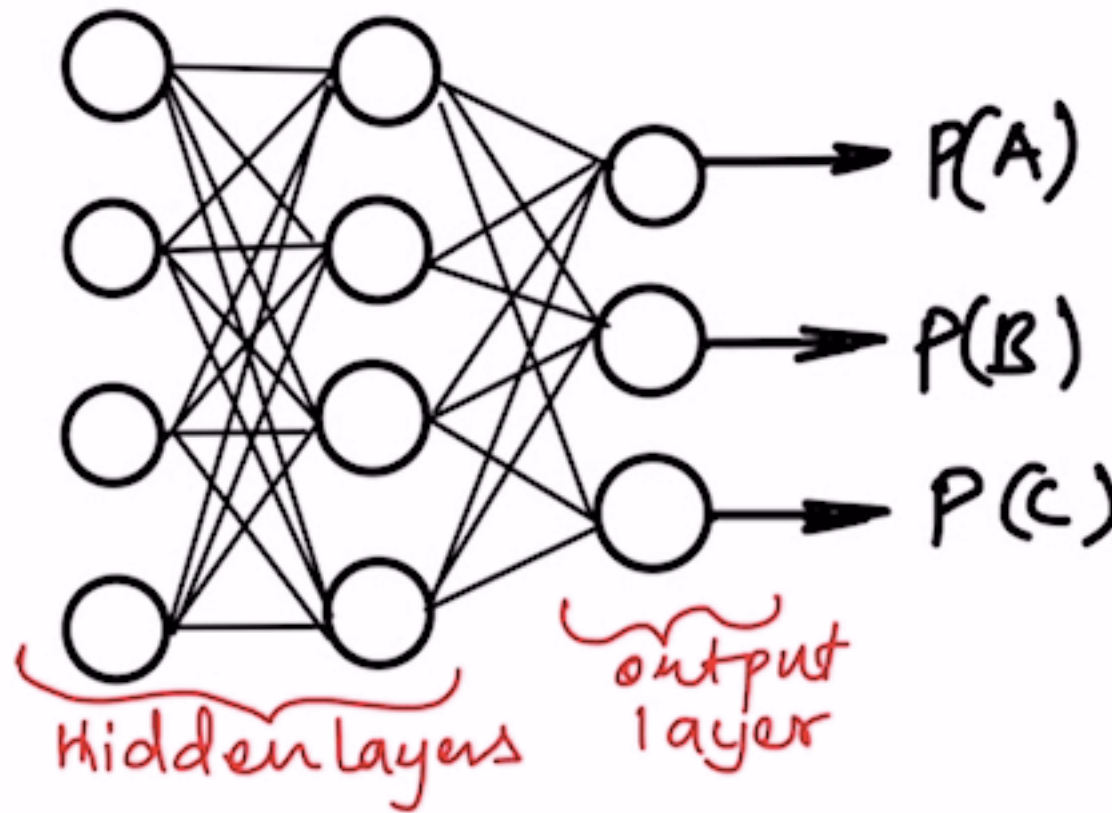
```
Restaurant review: negative (score 0.859)
Iliad 1.413–414 (tr.): negative (score 0.531)
```




afr_dev_track_c_00005	Die onkoste beloop R1 155 000 en die kapasiteit word met ± 3 miljoen m3...
afr_dev_track_c_00006	Ek is nie 'n filatelis nie, maar my oudste dogter, Melita, wel.
afr_dev_track_c_00007	Hiertoe dra die Staat 80% by d.m.v 'n subsidie.

	anger int64	disgust int64	fear int64	joy int64	sadness int64
is reeds vir keling in...	0	0	0	1	0
itvoergerig	0	0	0	0	0
	0	0	0	0	0
aan met	0	0	0	1	0
	0	0	0	1	0
	0	0	0	0	0

Multi-class classification




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from transformers import pipeline

# 7-class emotion model: anger, disgust, fear, joy, neutral, sadness, surprise
classifier = pipeline(
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for label, text in texts:
    scores = sorted(classifier(text)[0], key=lambda d: d["score"], reverse=True)
    print(f"\n{label}")
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```

Restaurant review

disgust 0.690

fear 0.200

anger 0.051

Iliad 1.413–414 (tr.)

sadness 0.961

neutral 0.015

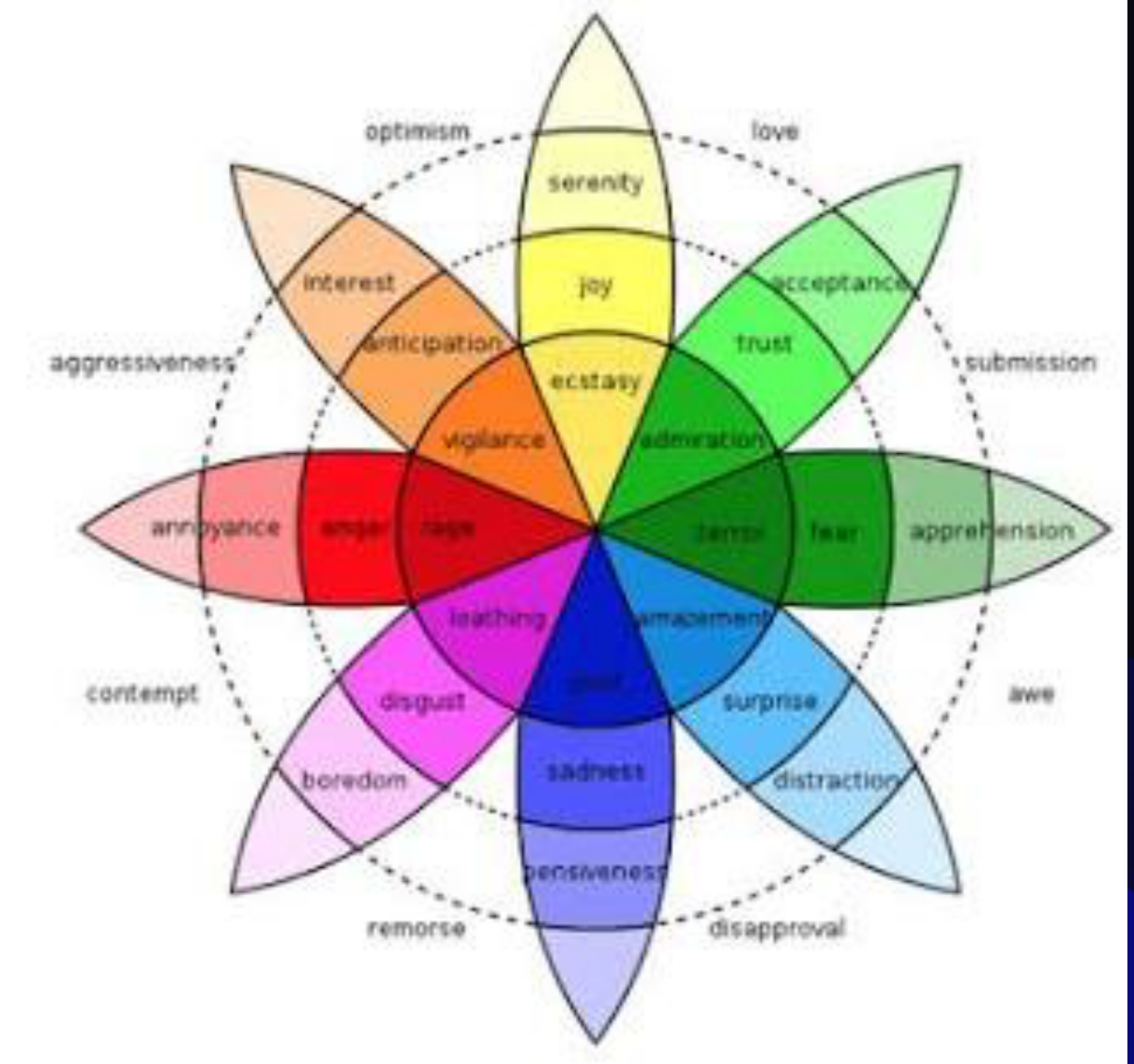
disgust 0.011

II

**How should emotion analysis annotators
annotate?**

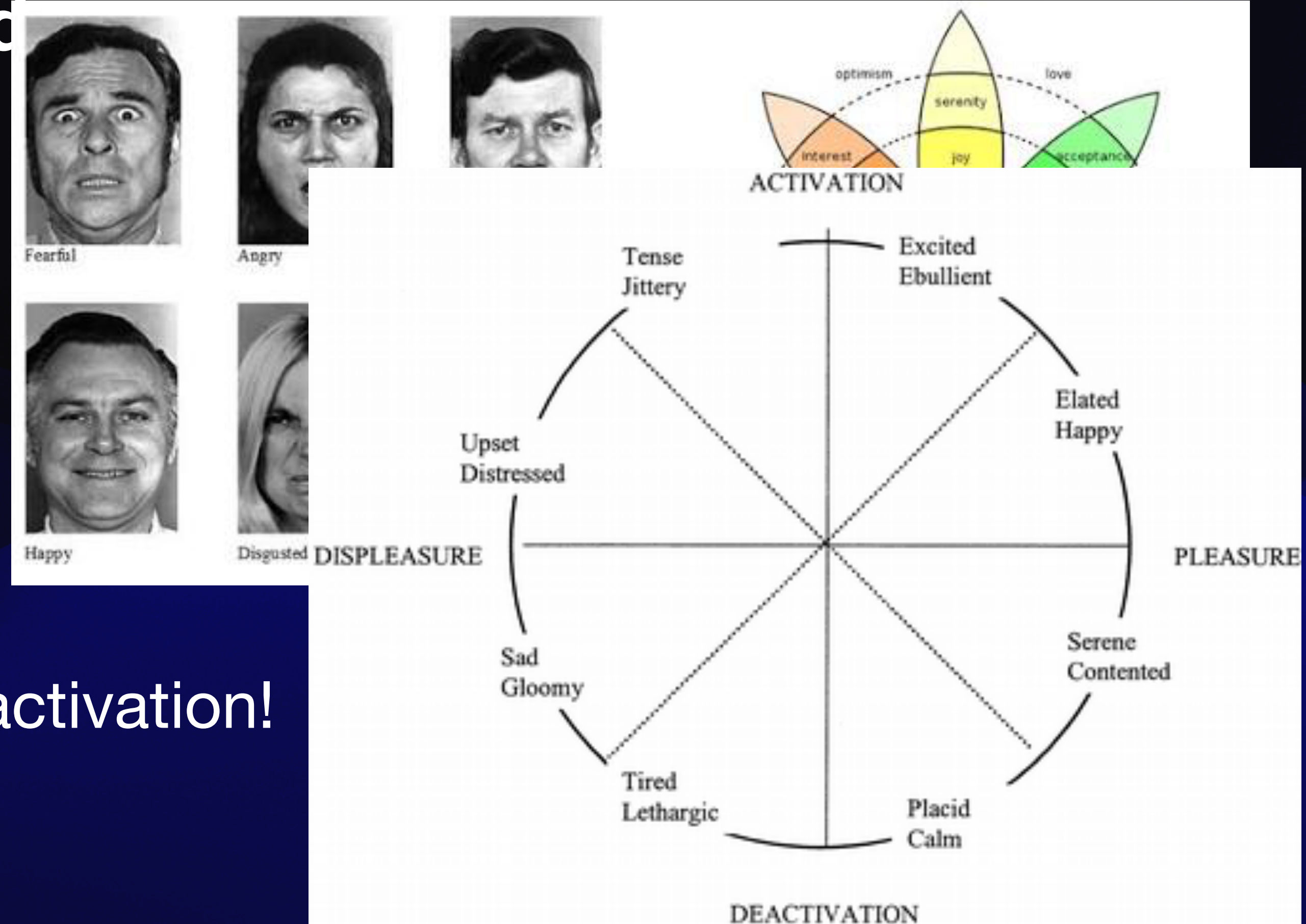
Current answer: Let theory decide

- Basic emotions theory
 - Adopt Ekman's six categories!



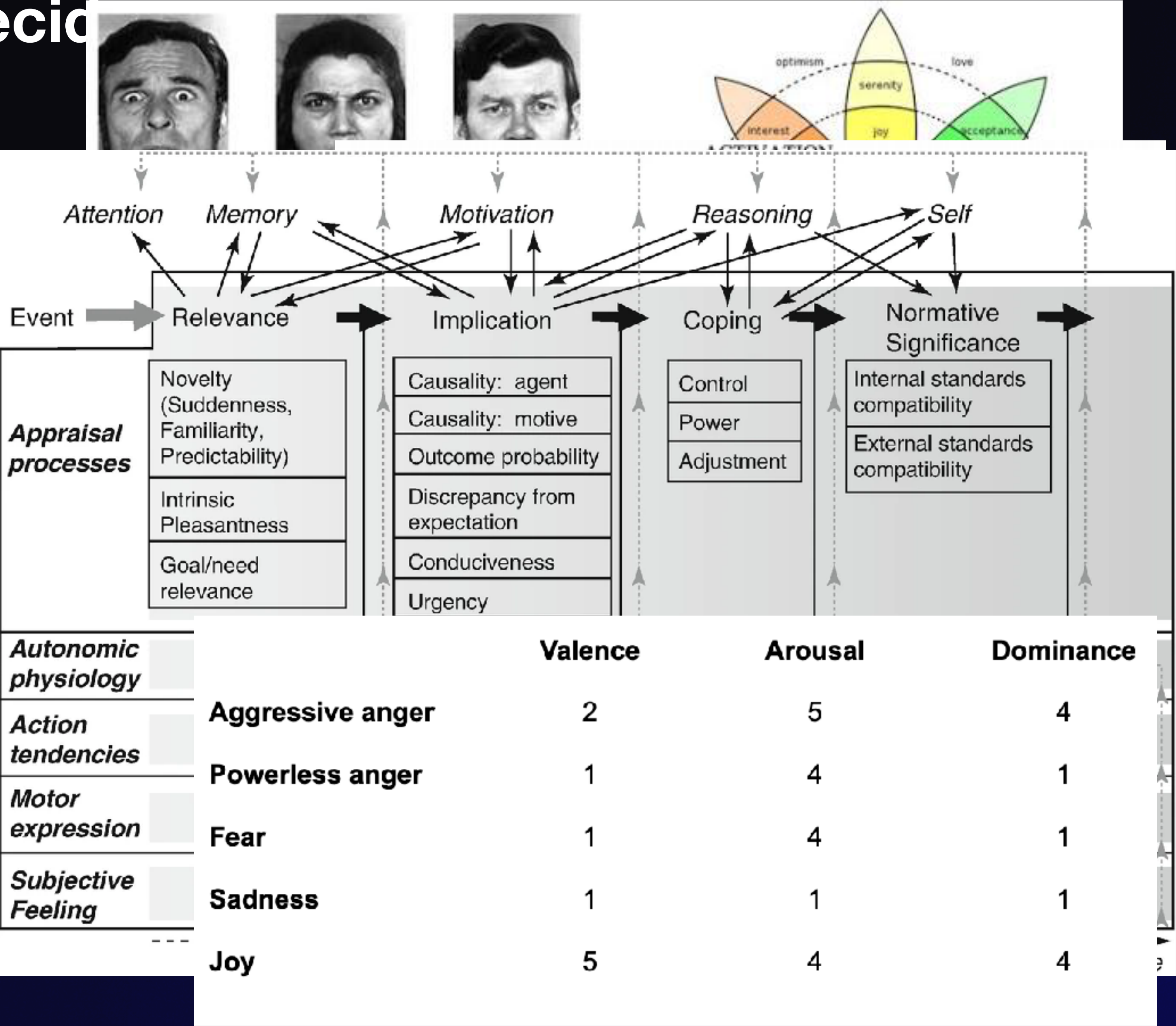
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- Psychological constructivism
 - use two dimensions: valence and activation!



Current answer: Let theory decide

- Basic emotions theory
 - Adopt Ekman's six categories!
- Psychological constructivism
 - use two dimensions: valence and arousal
- Componential process theory
 - Use 3–15 dimensions!



Confusion of causal explanans with textual explanandum

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- Basic emotions theory posits 6 basic programs, but do not deny that nostalgia and moral disgust exist (just that they are mixes).
- *Psychological constructivism* holds that emotions are not natural kinds but cultural constructions based on a simple two-dimensional preconceptual substrate, but they do not deny that a rich repertoire of different meaningful states arise from this substrate+language/culture mix, perhaps best captured by categories
- *Componential appraisal theory* holds that emotions are causally determined by fifteen distinct subpersonal stimulus-evaluation checks (there are $\approx 5^{12} \times 3^3$, six and a half billion emotions!) but they do not deny that these varied experiences are conceptualized as a limited number of fuzzy clusters (anger, fear etc.)

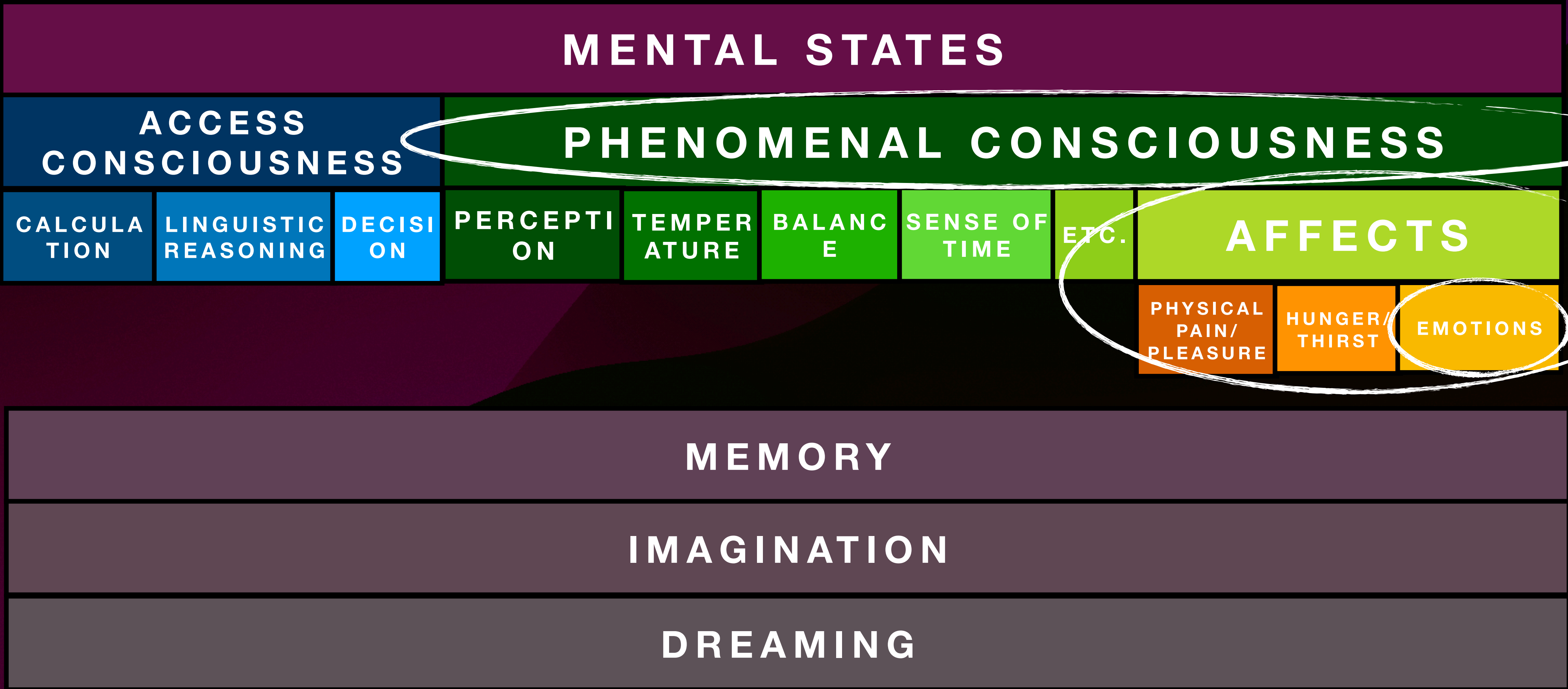
Upshot:

Emotion analysis is about representations, expressions and elicitation of emotions in text.

It is not clear that theorizing about the innateness or psychological etiology of emotions is relevant for that.

We need some practical agreement on how to delimit and individuate emotions, and in what ways they can be present in text segments.

What is an not an emotion? (demarcation)



How are emotions different? (individuation)

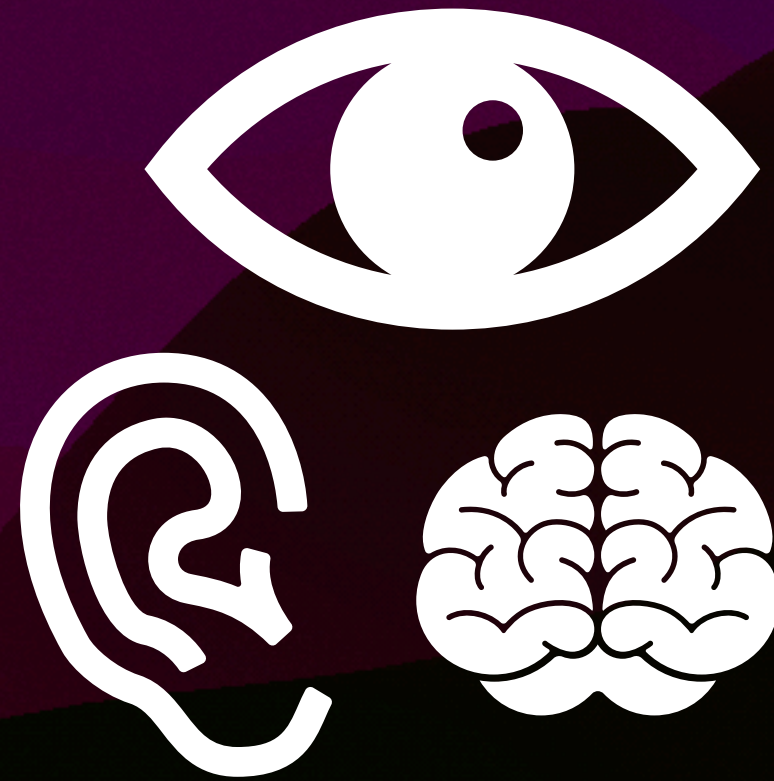


CONTENT

How are emotions different? (individuation)

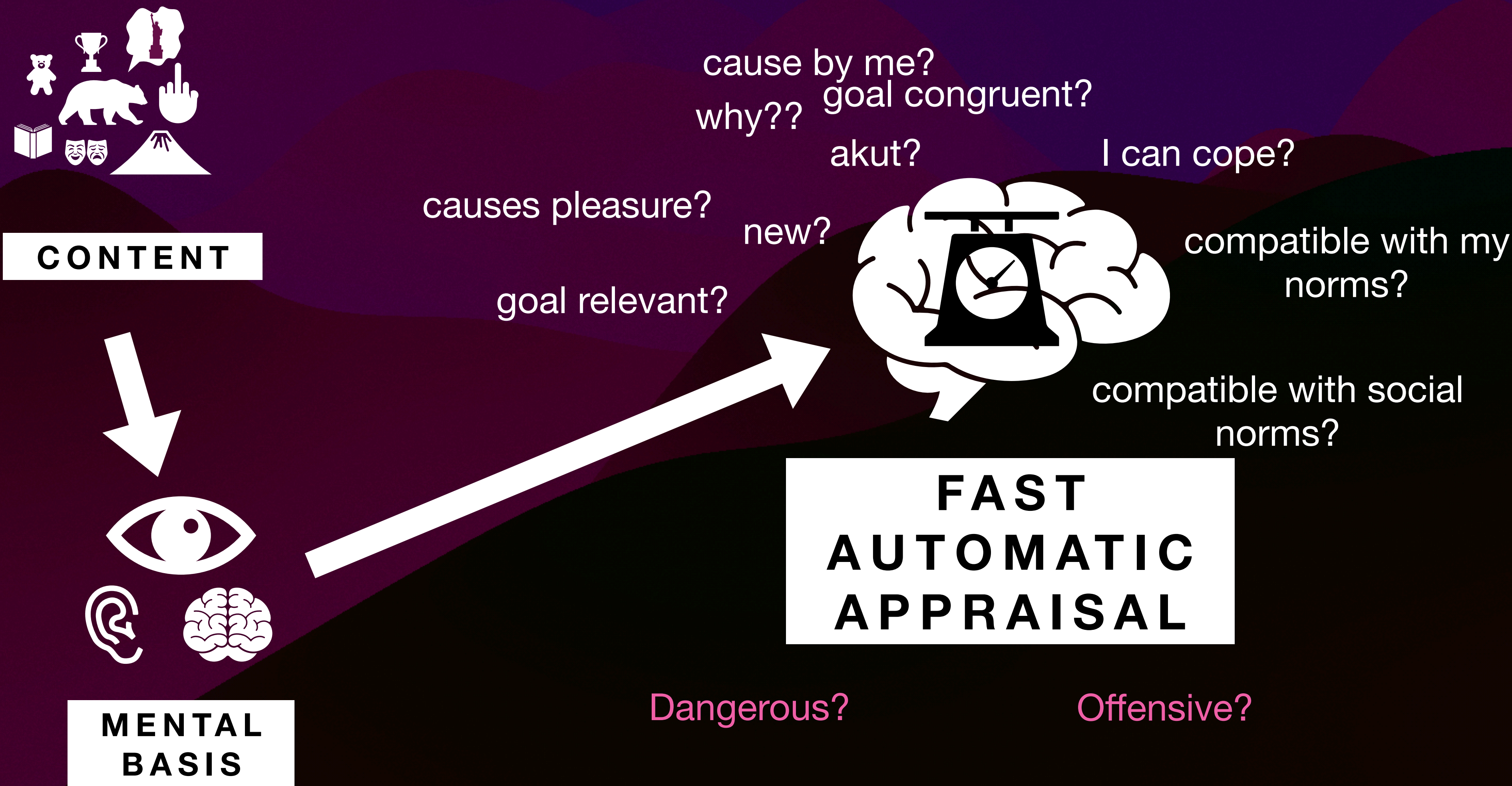


CONTENT



**MENTAL
BASIS**

How are emotions different? (individuation)



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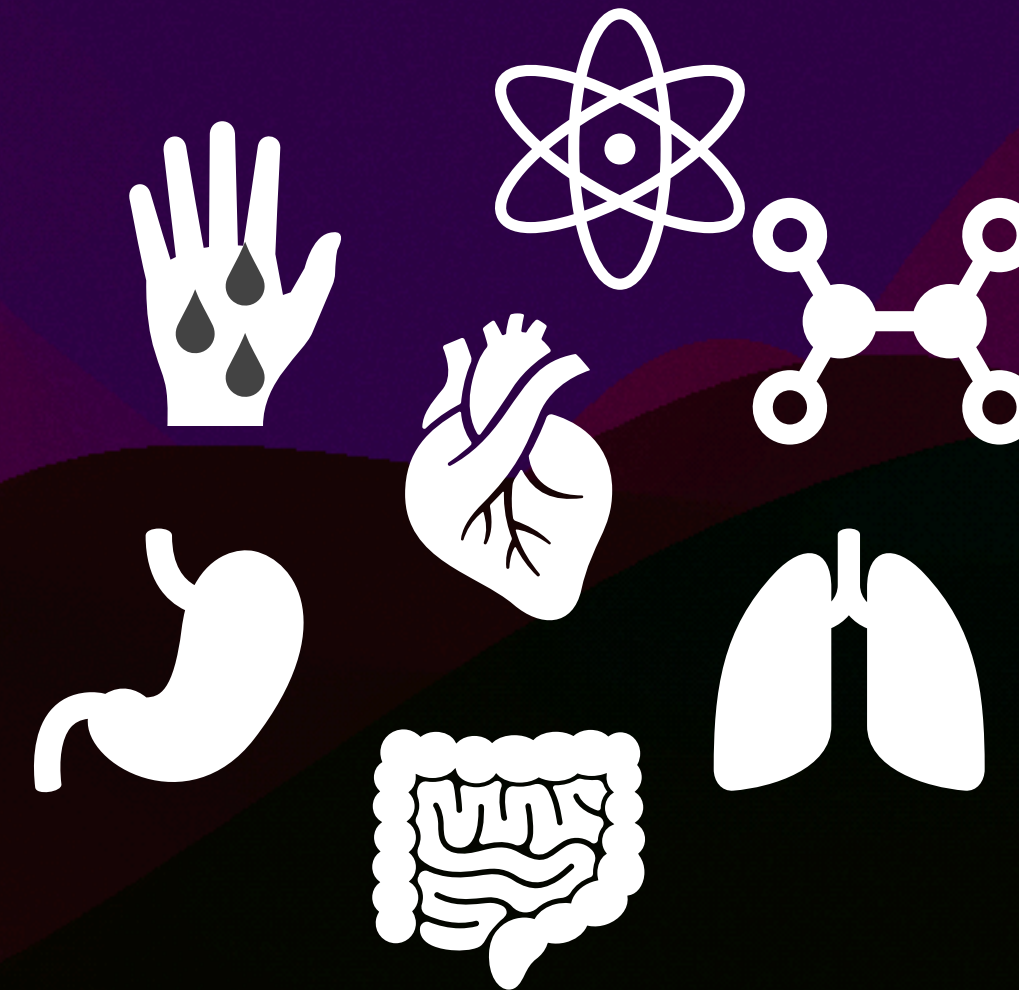
CONTENT



**MENTAL
BASIS**



**FAST
AUTOMATIC
APPRAISAL**

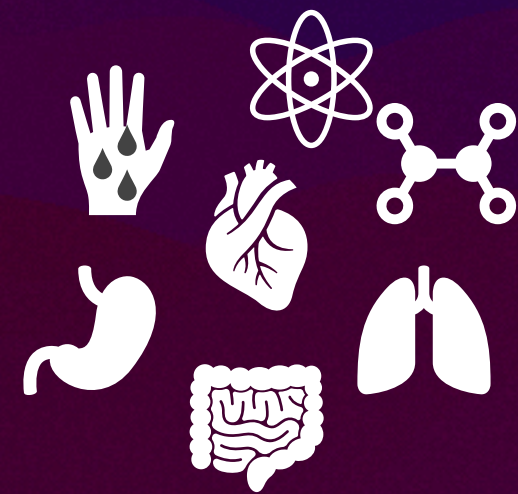


**BODILY
CHANGES**

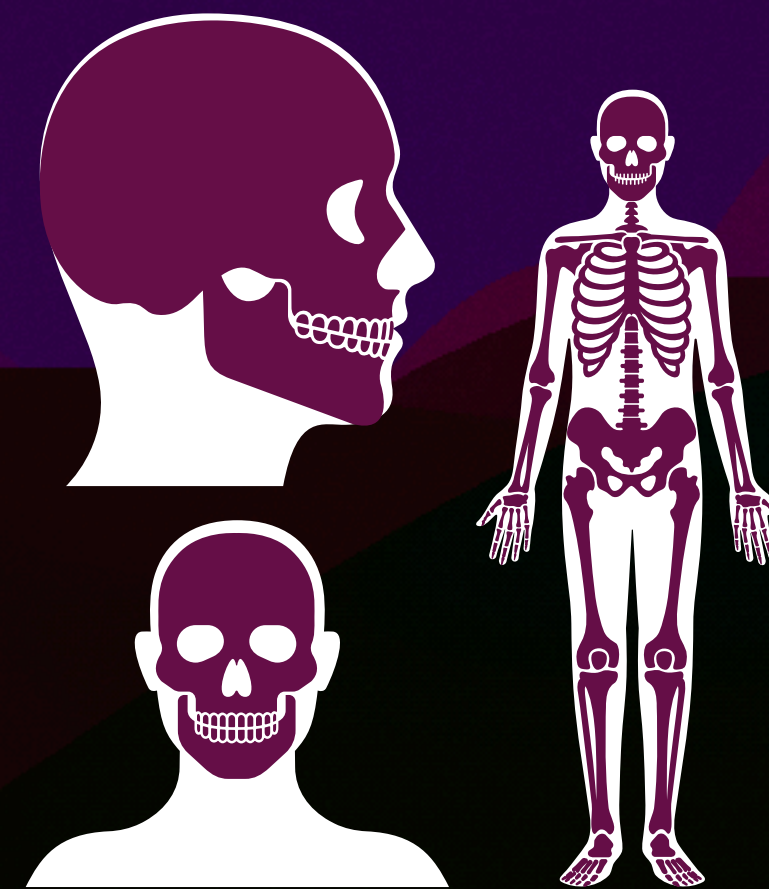
How are emotions different? (individuation)



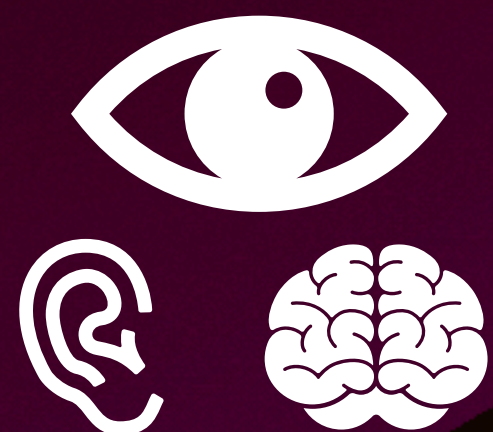
CONTENT



BODILY CHANGES



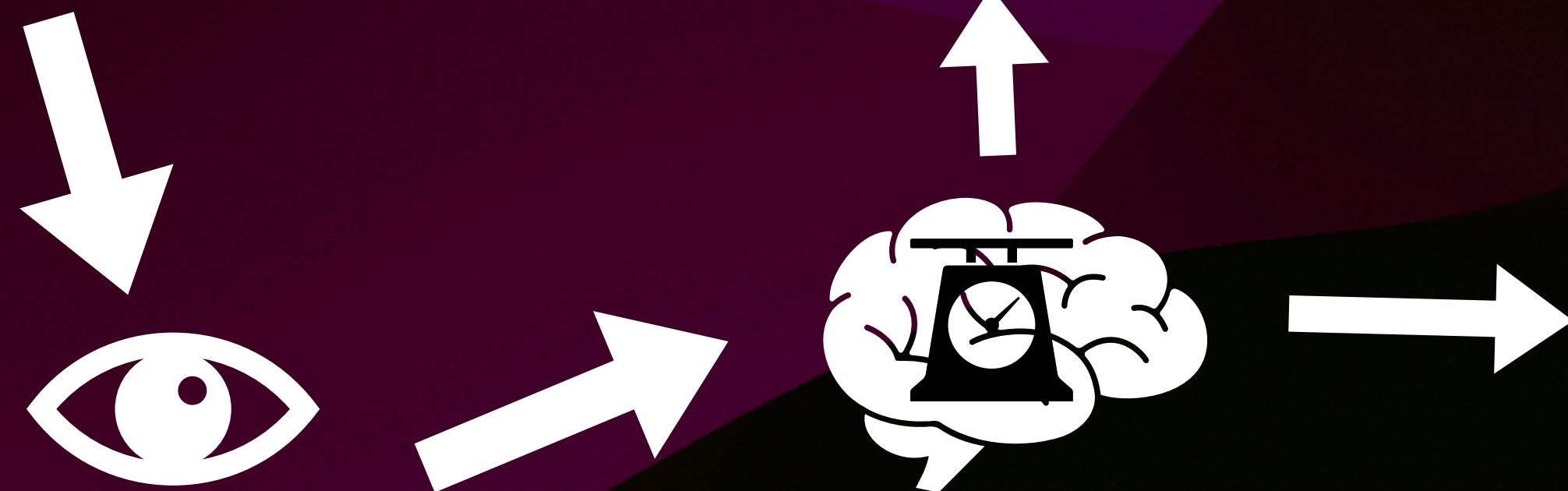
**MUSCULAR
CHANGES**



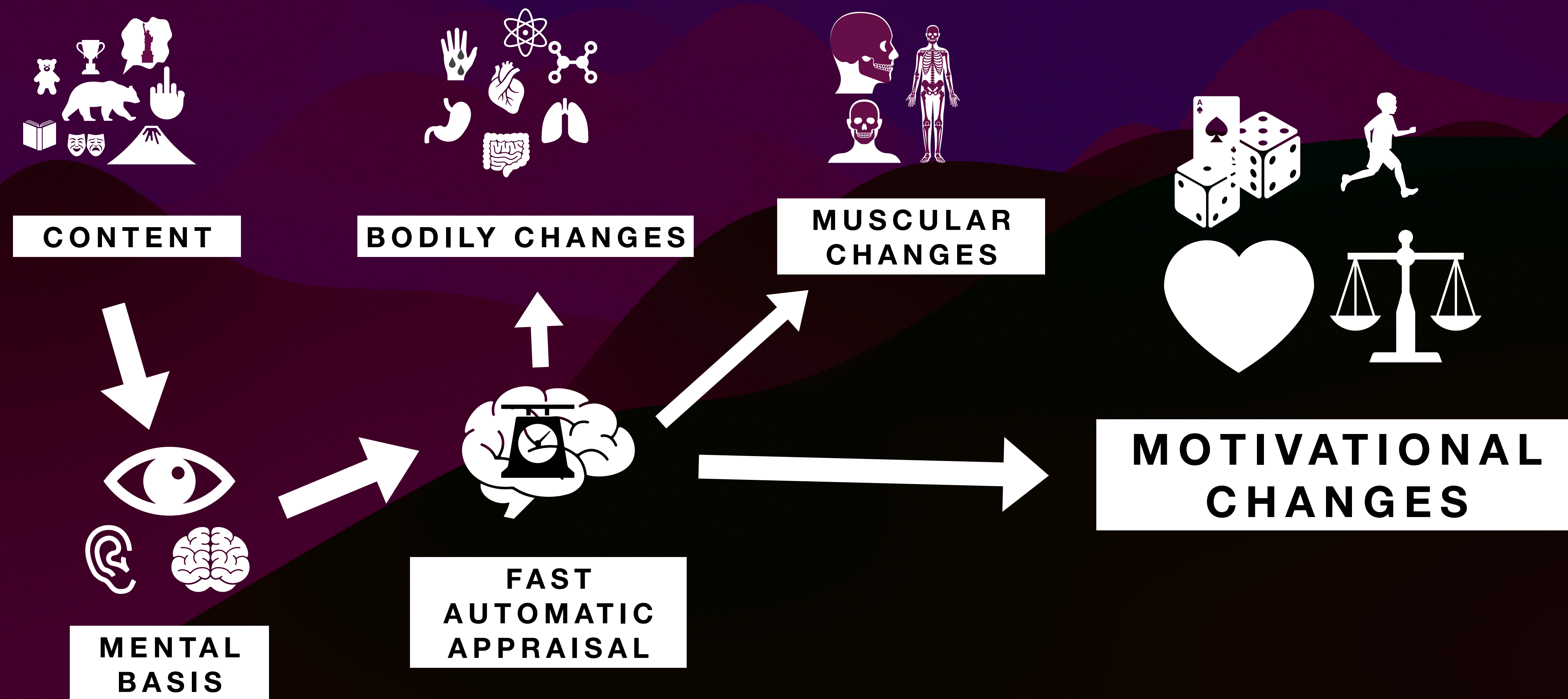
**MENTAL
BASIS**



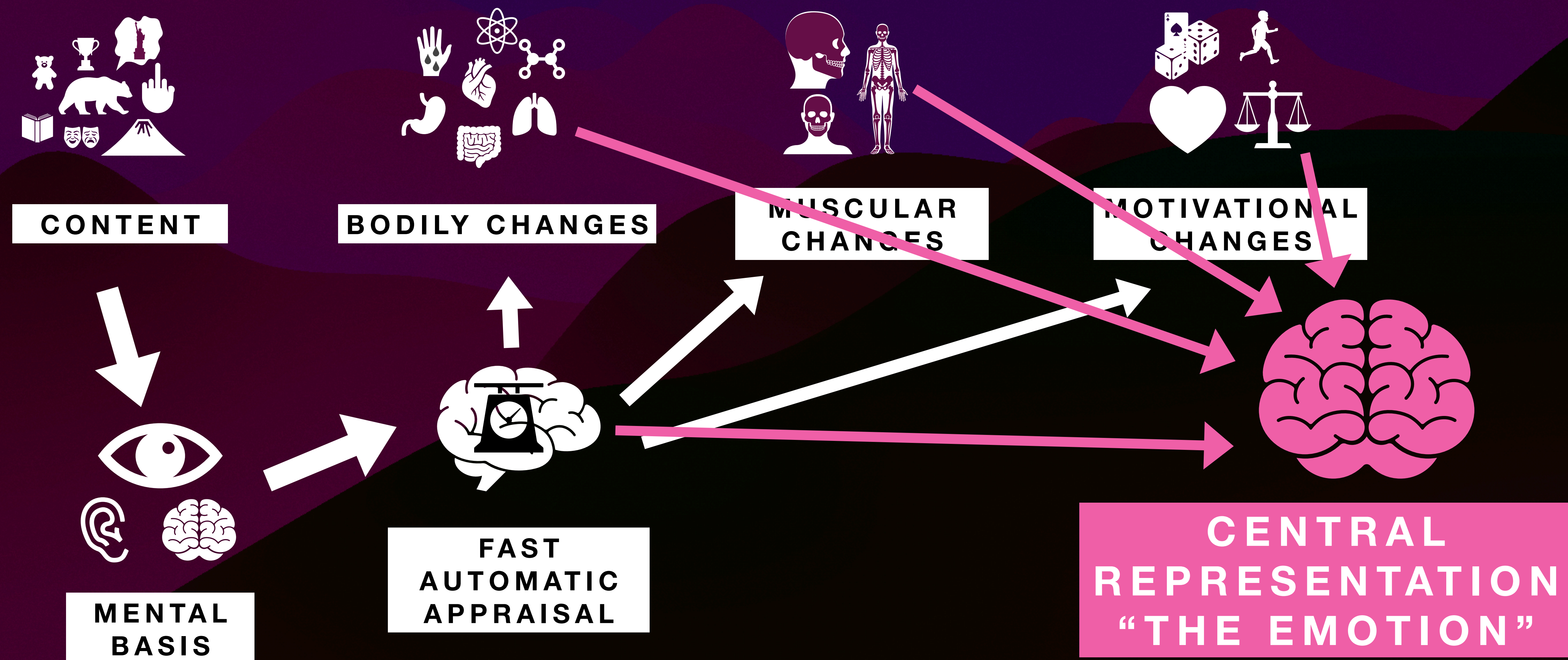
**FAST
AUTOMATIC
APPRAISAL**



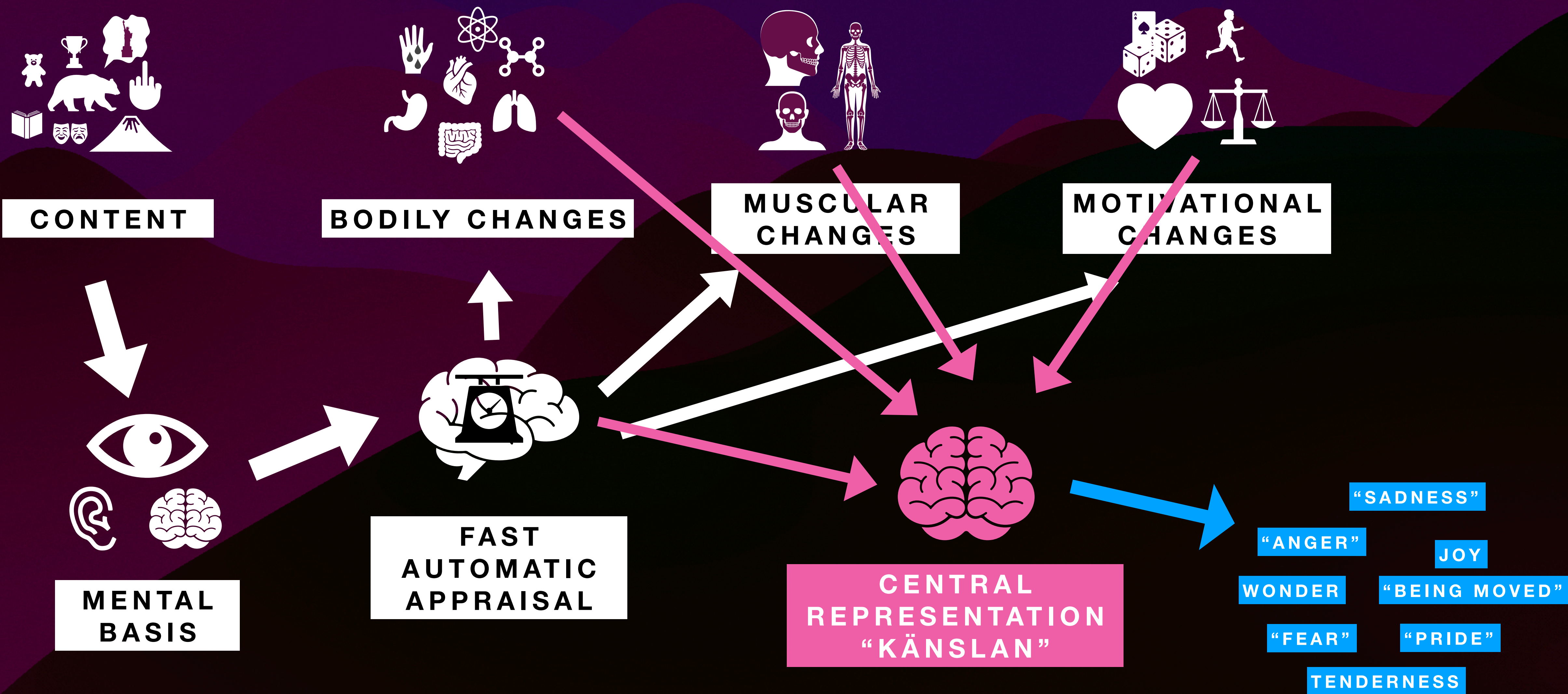
How are emotions different? (individuation)



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How are emotions different? (individuation)



Where can emotions be found in a text segment?

FORM

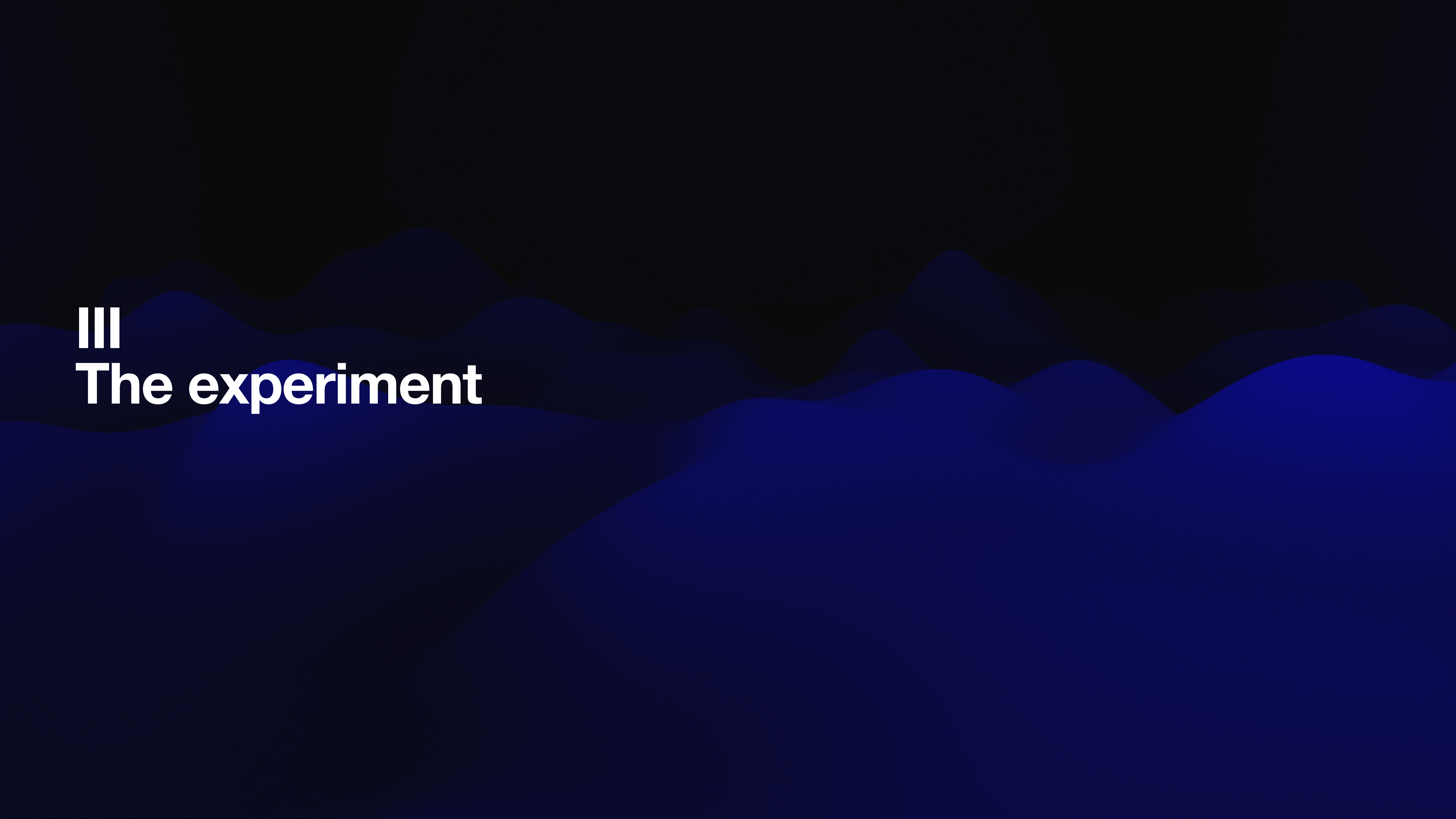
assonances, rhymes, rhythm, metaphors etc. can cause emotions or express a certain emotional mood of the narrator

NARRATION

Narrator expresses emotions (interjections, framing etc.)
Organization of the material gives rise to emotions (cliffhangers, flashbacks)
intertextual links gives rise to emotions

CONTENT

Selection of material implies narrator's emotions (Griffin's short obituaries)
Characters experience of talk about emotions
Emotions of characters are implied (rain, sunsets)
objects, actions or facts give rise to audience emotions
(disgusting things, dangerous situations, offensive actions etc.)

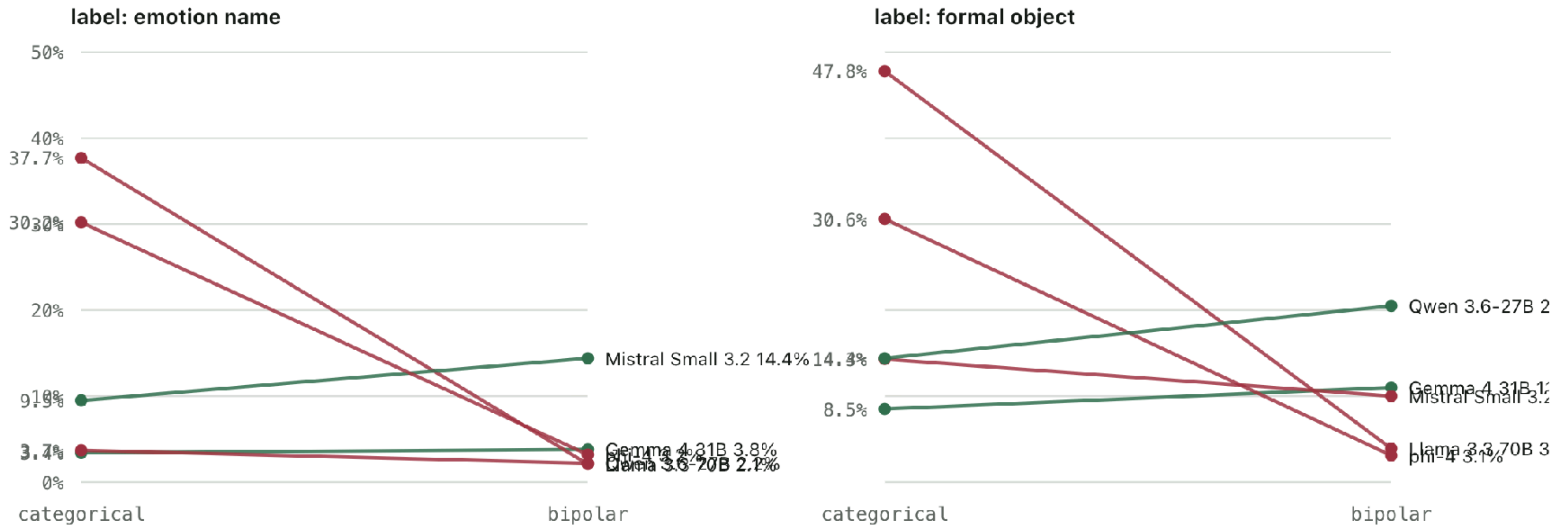


III The experiment

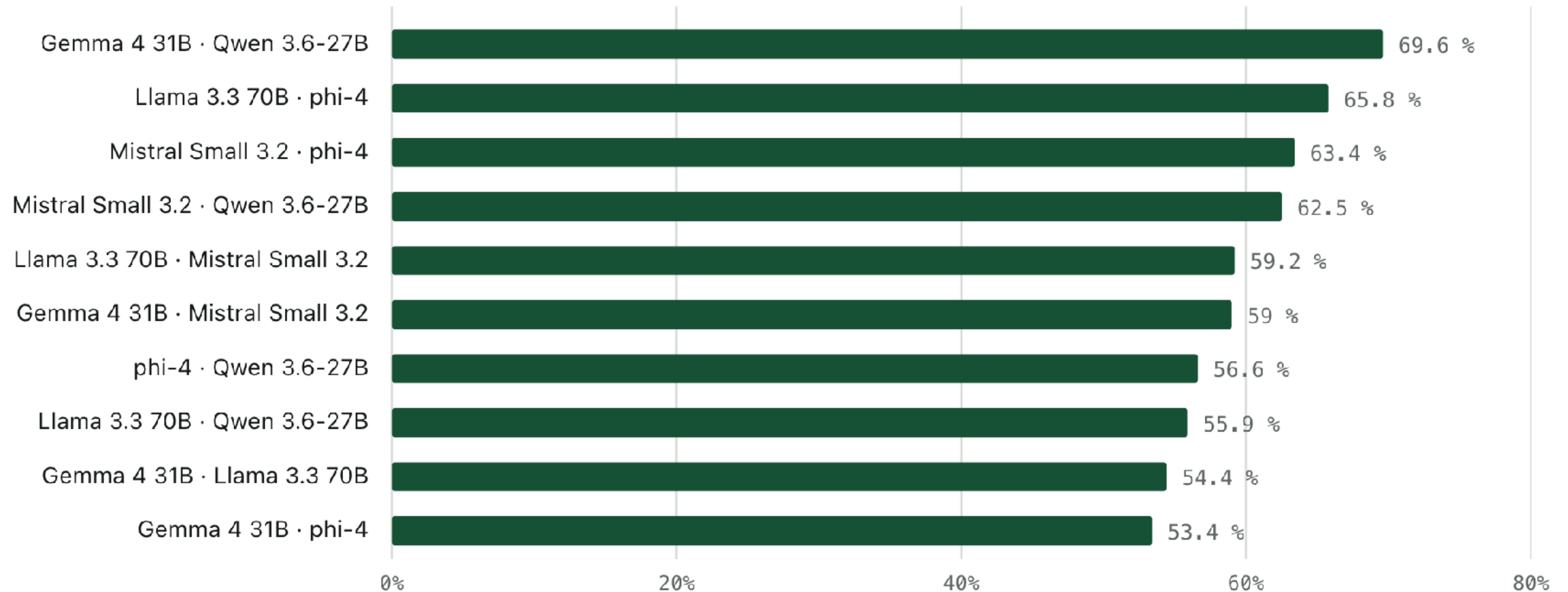
My “annotators”

MODEL	ROLE IN THE COMPARISON	VALID ANSWERS
Qwen 3.6-27B	reasoning	96.74%
Gemma 4 31B	reasoning	99.93%
Mistral Small 3.2 24B	direct answer	99.97%
Llama 3.3 70B (4-bit)	direct answer	100.00%
phi-4 14B	direct answer	100.00%

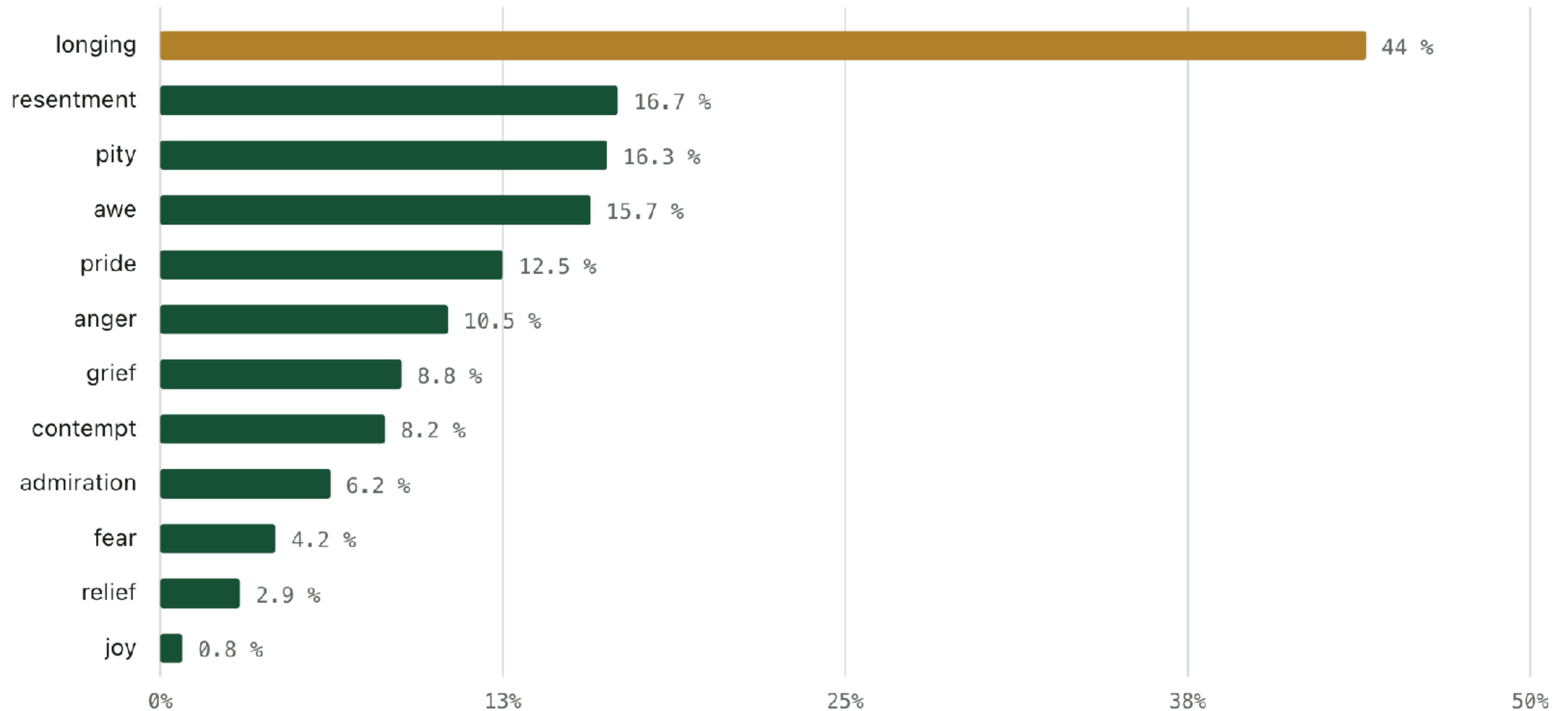
Give Positive, negative, mixed, or
positive (yes/no) and negative (yes/
no), latter seems better



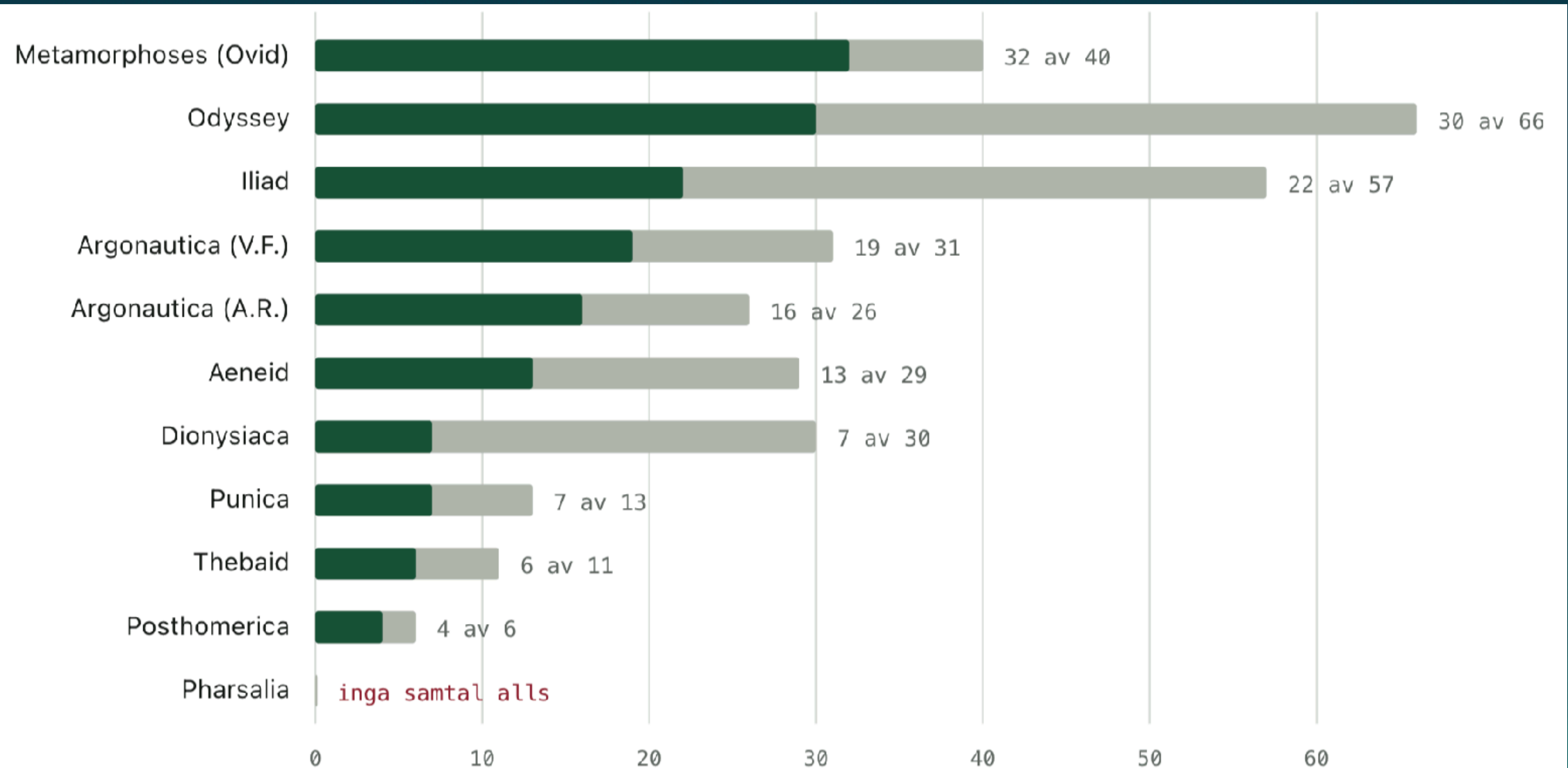
inter-model agreement (how does this agree with human annotators?)



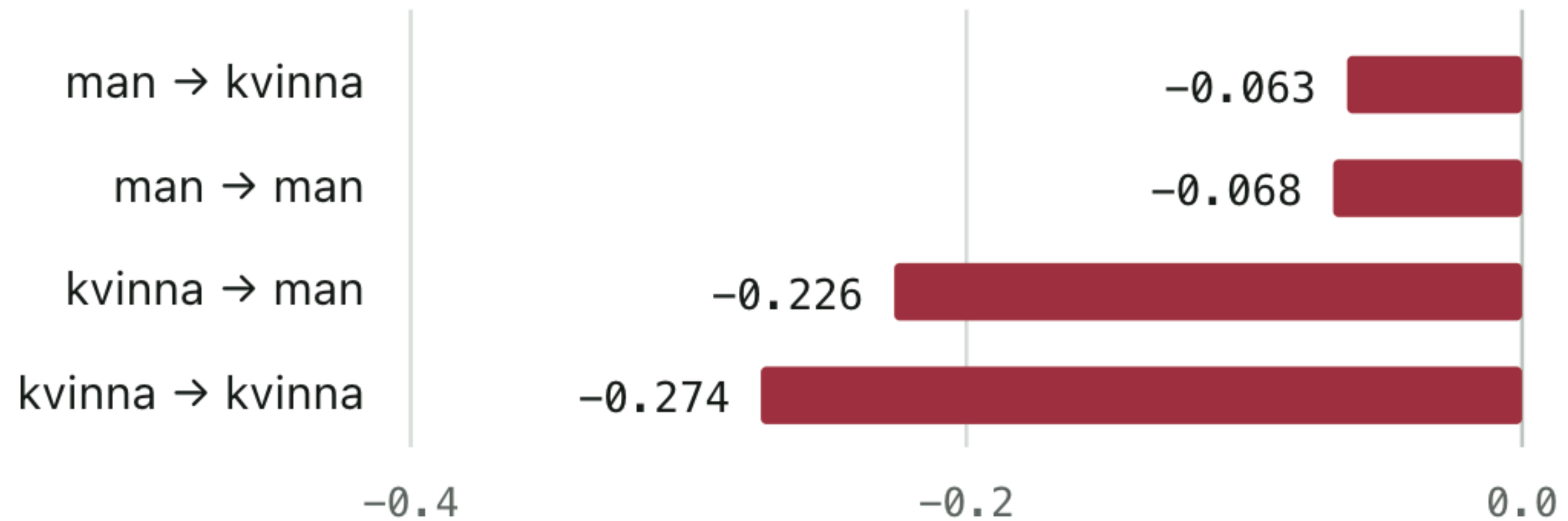
Explore emotions, e.g. Which emotions are mixed?



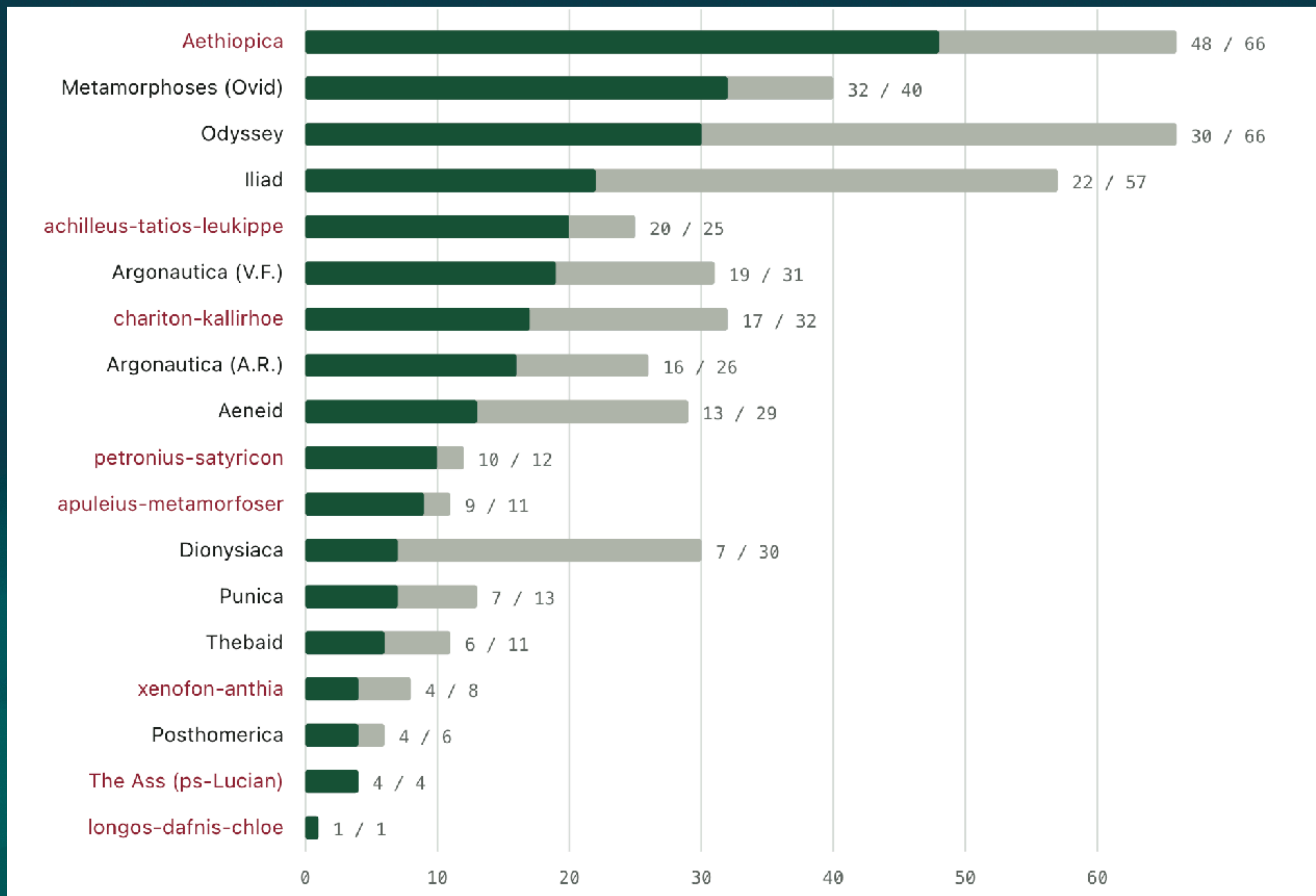
Explore the texts: The Bechdel-test (Two women who speak to each other
(grey) something other than a man (green))



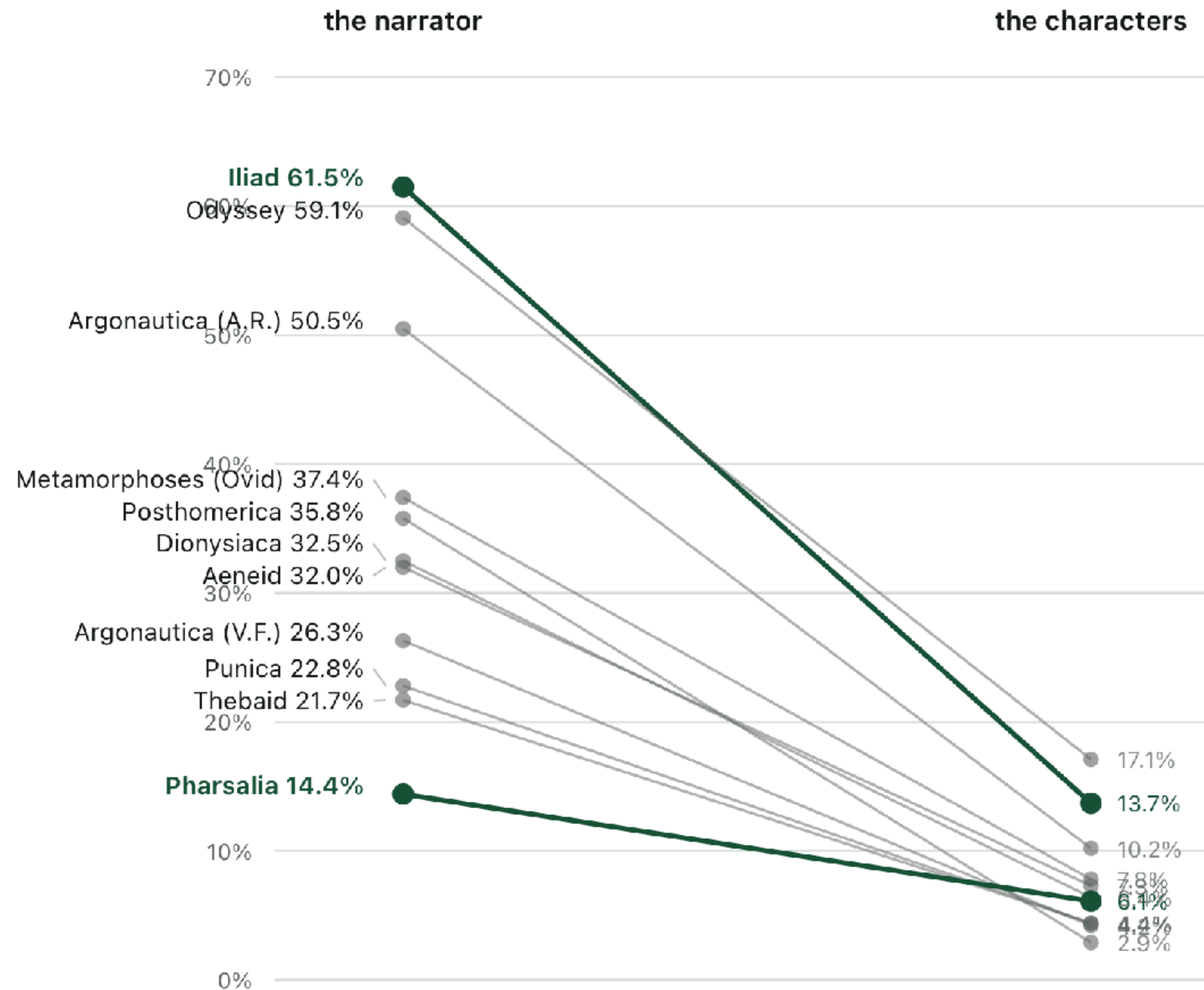
My Bechdel test addition: and are they happy?!



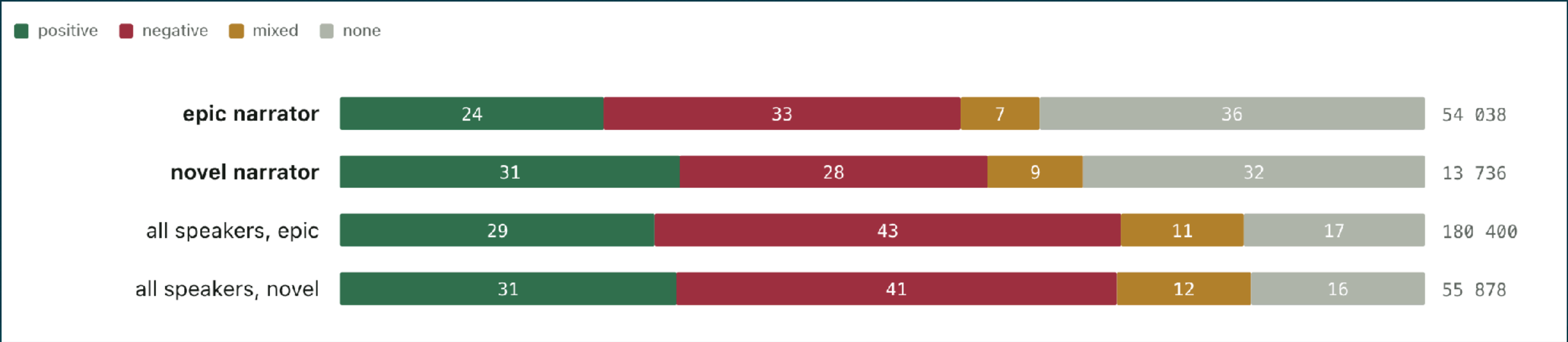
Adding the greek novels



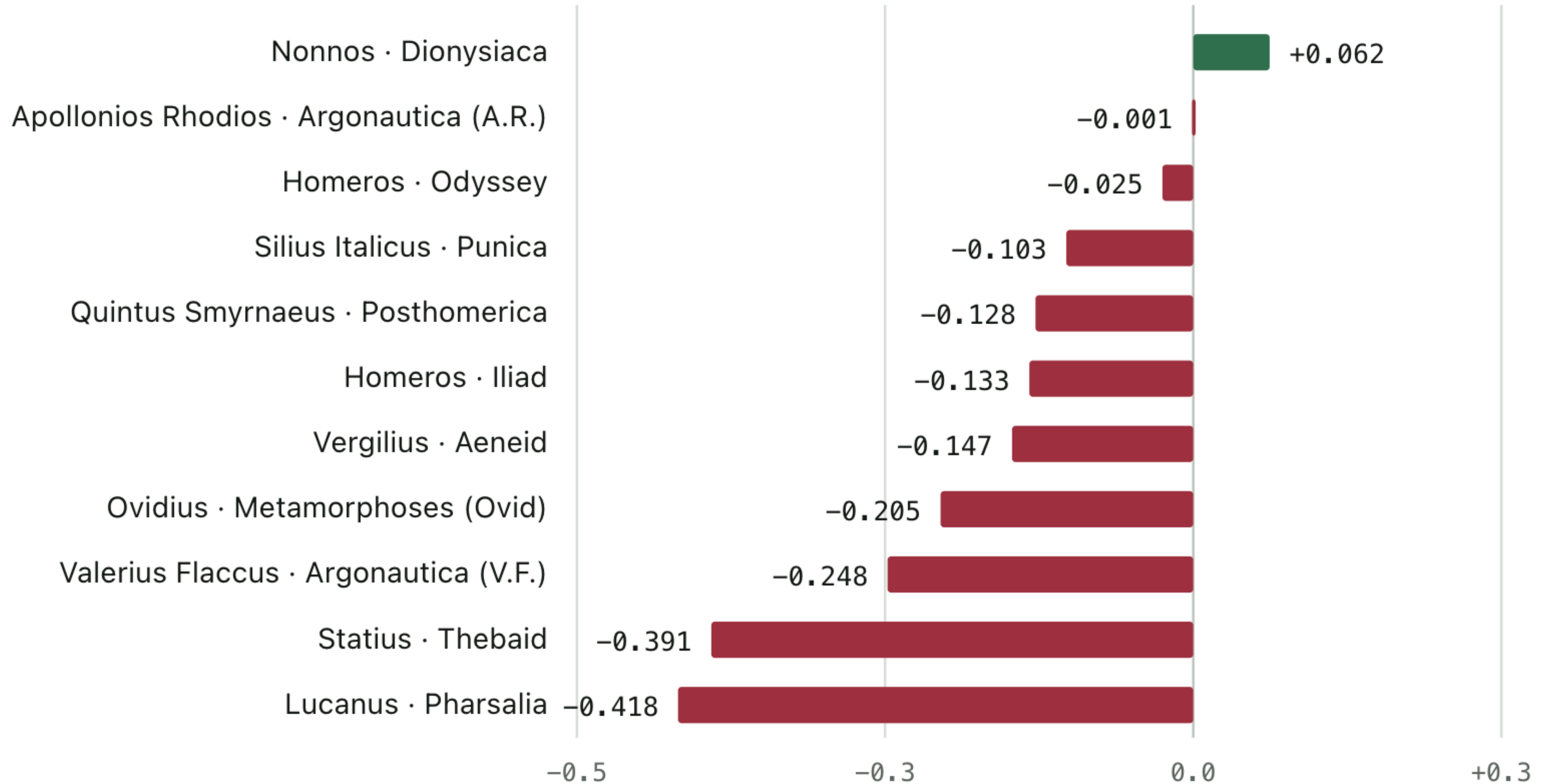
Who is the most dispassionate narrator?



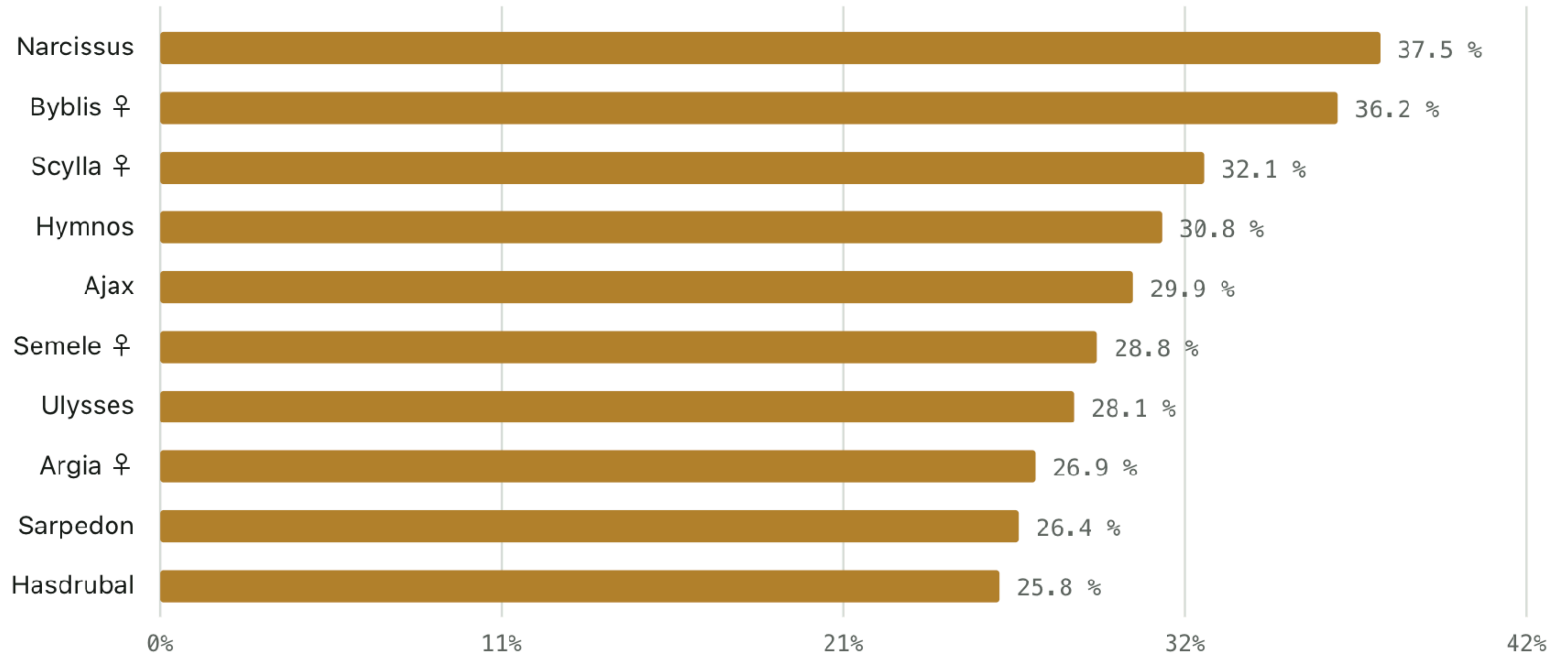
How warm are epic and novel narrators?



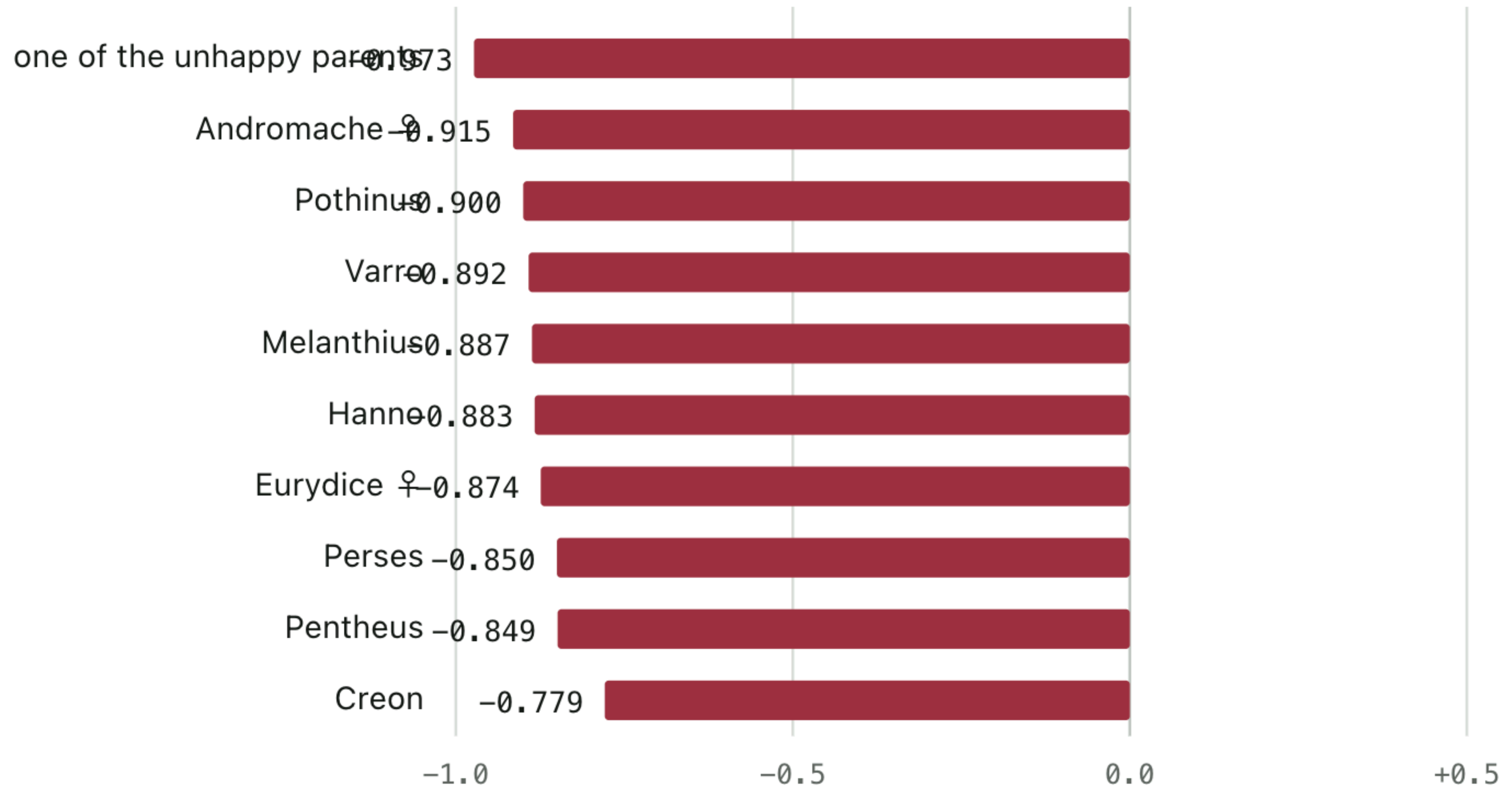
Happiest epic?



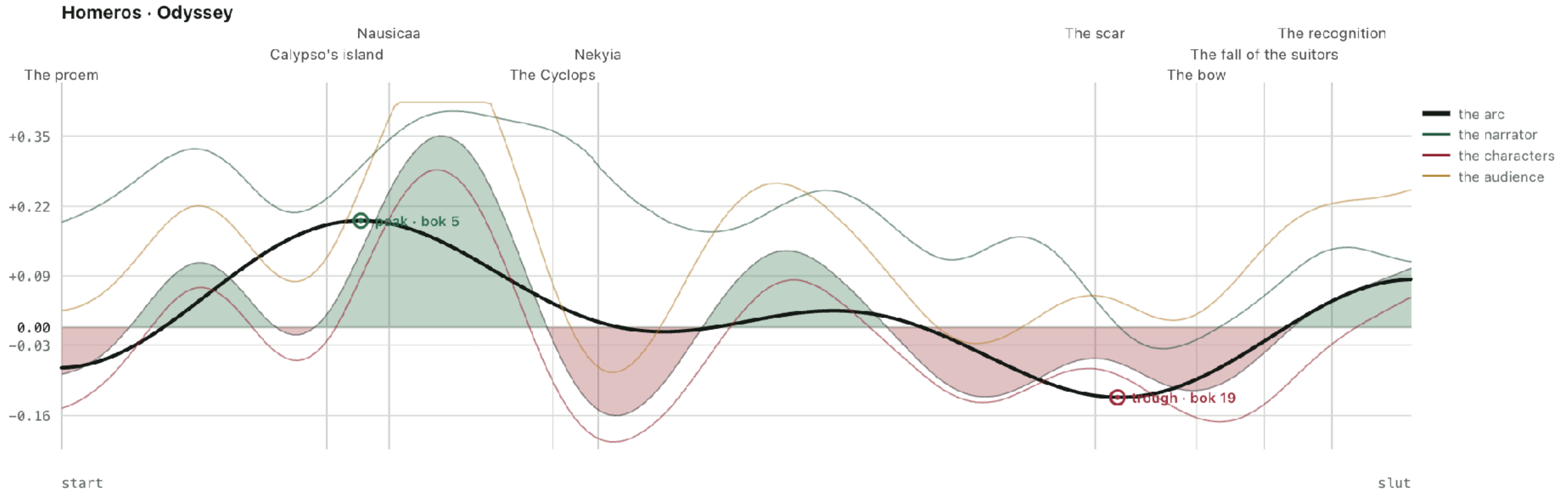
Character with most mixed emotions?



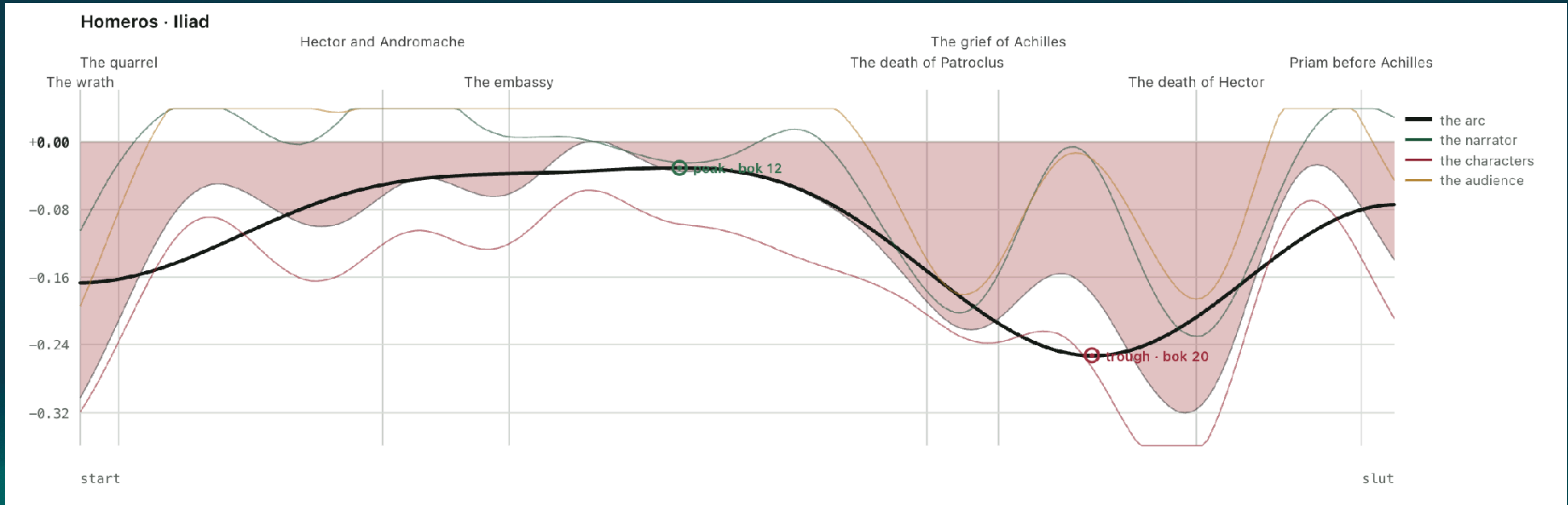
Most afflicted character?



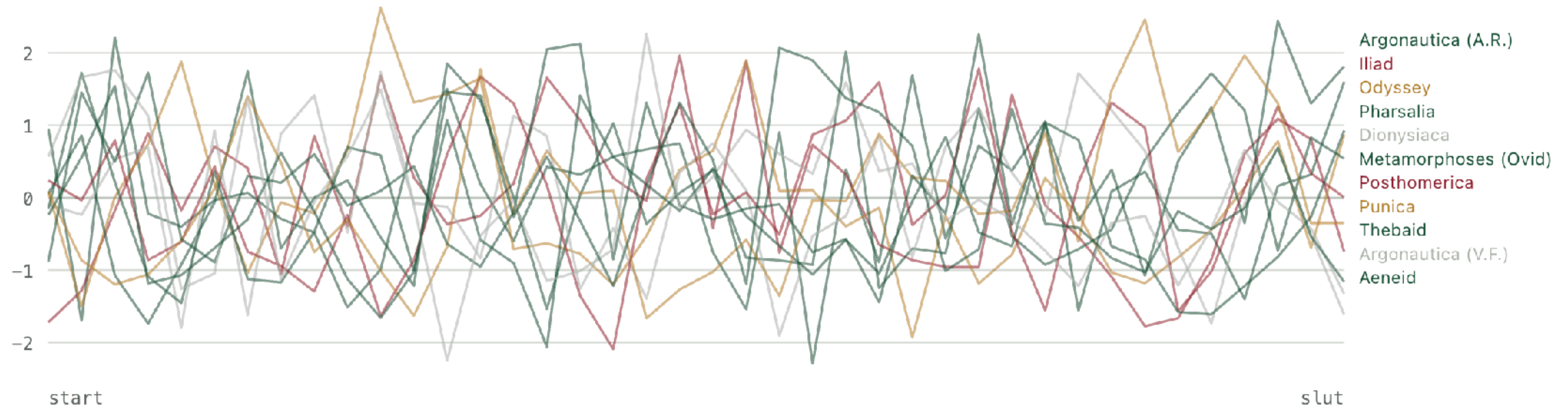
Development?



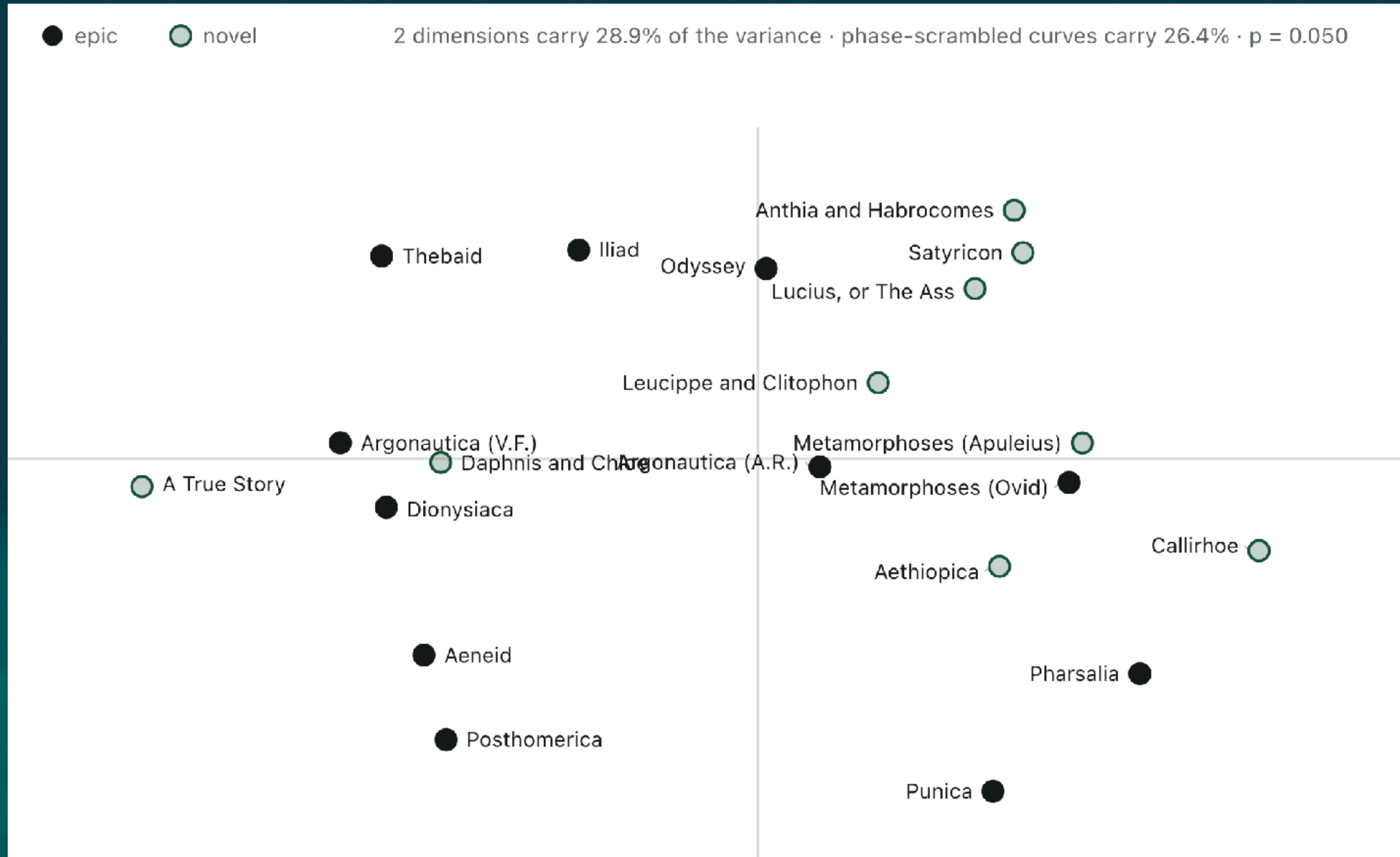
Development?



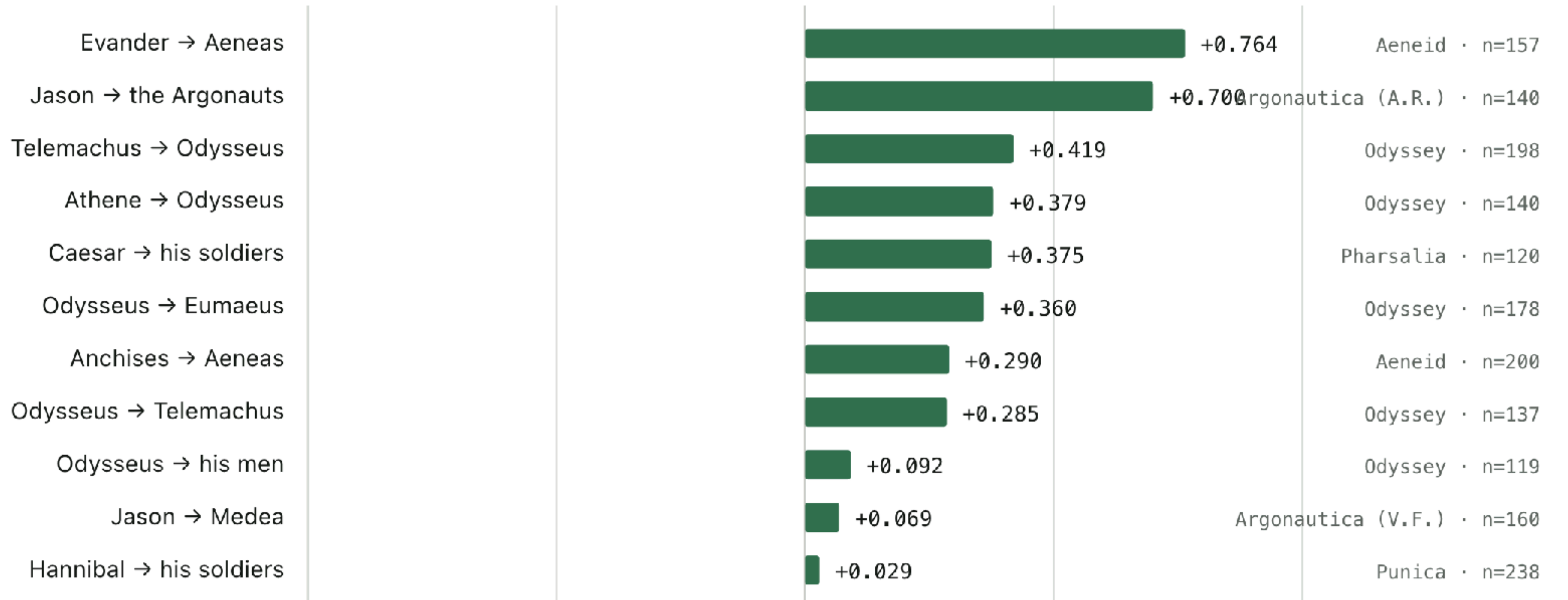
Does epic have a shape?



Distance to novels?



Most positive conversations?



Most negative conversations?

