

# **Affect First!?**

## **Evaluating the Prominence of Affective Meaning through Valence**

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**New and experimental perspectives on valence**  
13 June 2025  
Sorbonne Université, Paris



Blankenship, Ben (2020), <https://photocontest.smithsonianmag.com/photocontest/detail/parrot-snake-strike/>





# Affect-First Hypothesis

Wundt 1907; Zajonc 1980, 2000; Murphy & Zajonc 1993; LeDoux 1996; Stapel, Koomen & Ruys 2002

# HATE

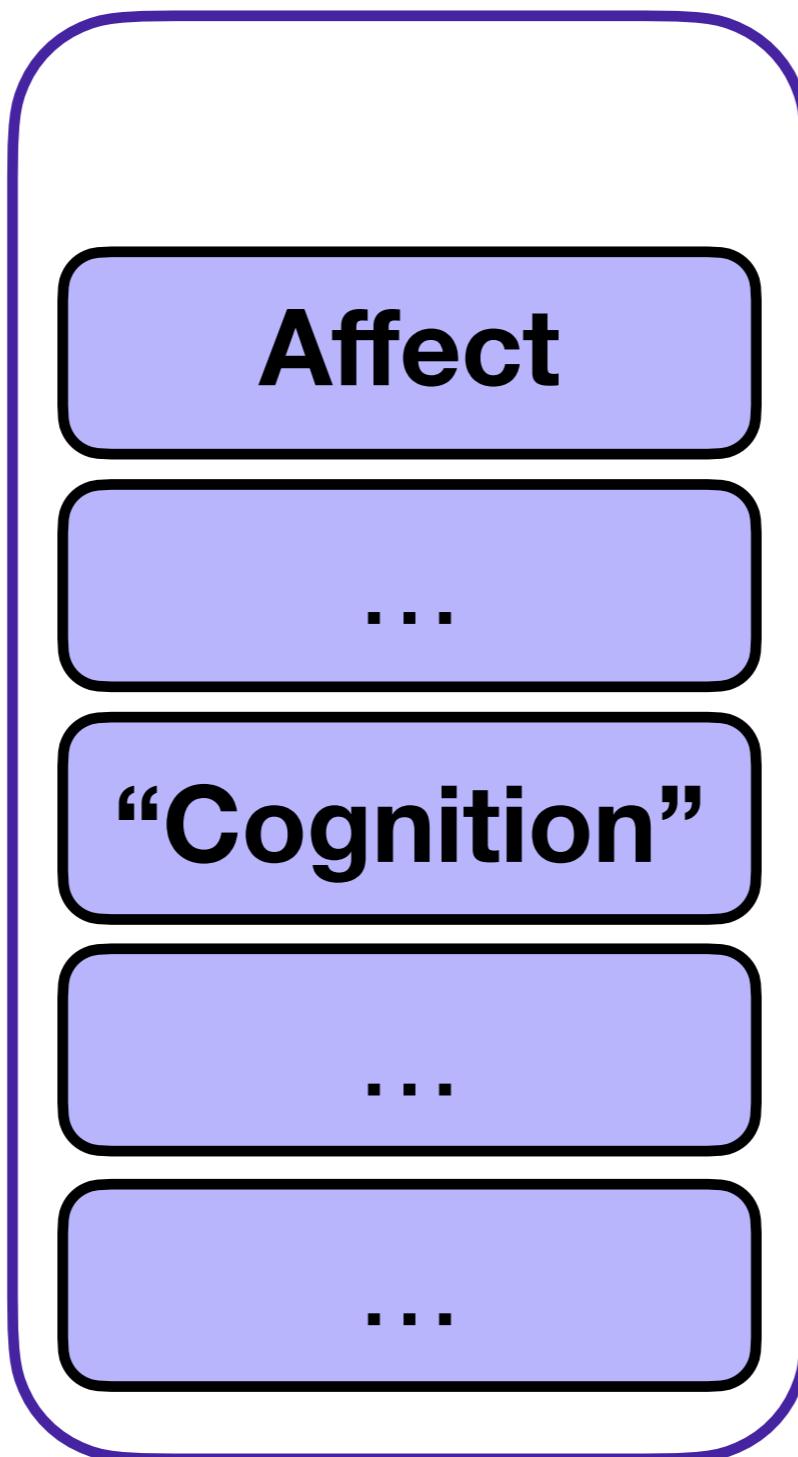
F

positive

J

negative

# AFH ~ prominence



# Evidence for AFH

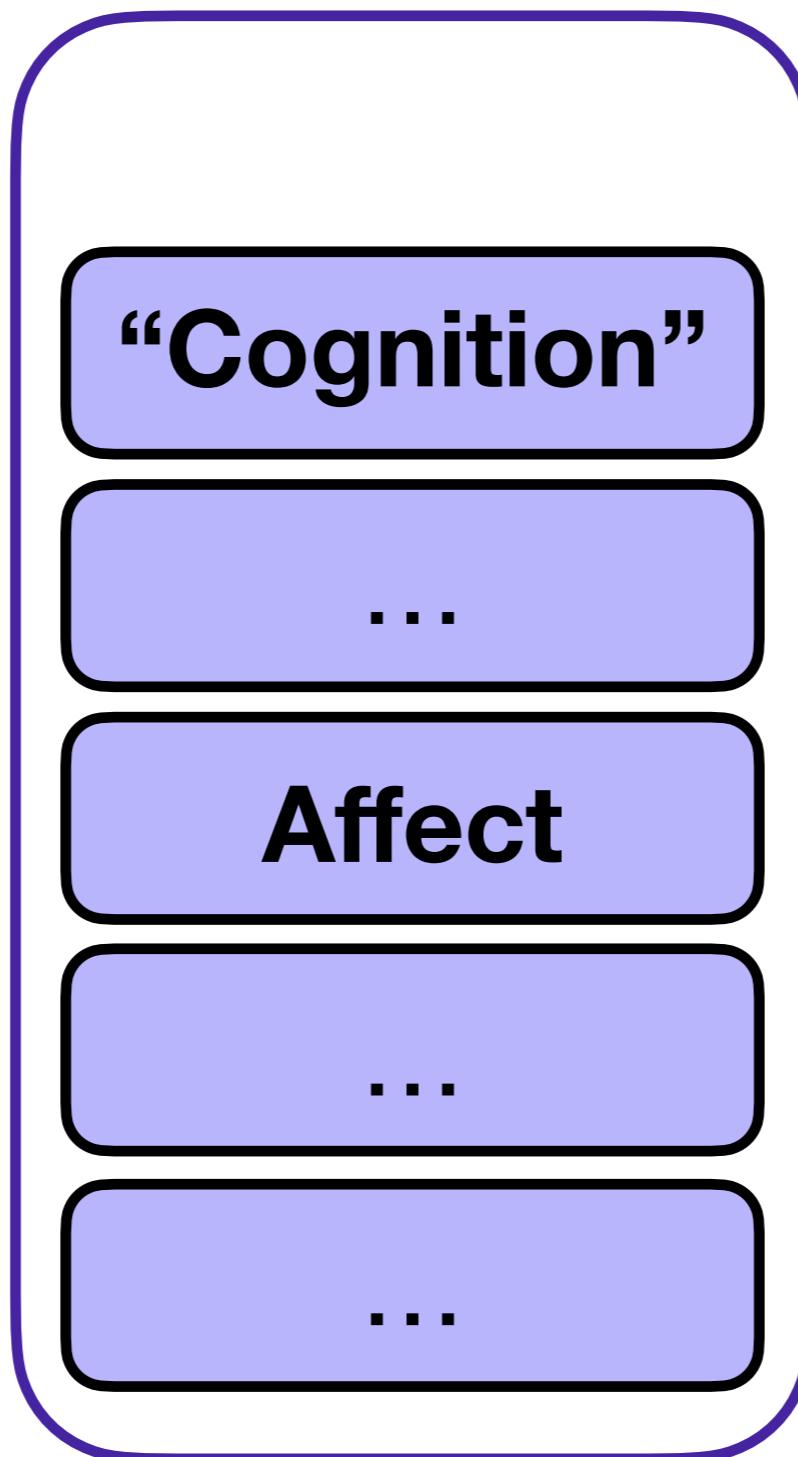
Mere Exposure Effect and Affective priming

(Zajonc 1968; Fazzio 2001)

Participants respond faster + early  
ERP responses to Emo than neutral  
words

(Costa et al 2009; Vigliocco et al 2011; Scott et al 2012)

# Alternative



# Evidence for Alternative

Object recognition required to establish affective response (affect effect)

(Lazarus 1984; Rolls 1999; Storbeck, Robinson & McCour 2006; Storbeck & Clore 2007; Calvo & Nummenmaa 2007; Batty, Cave, & Pauli, 2005; Fox et al., 2000; Horstmann & Bauland, 2006; Nummenmaa, Hyönä & Calvo 2010)

# Conceptual foils

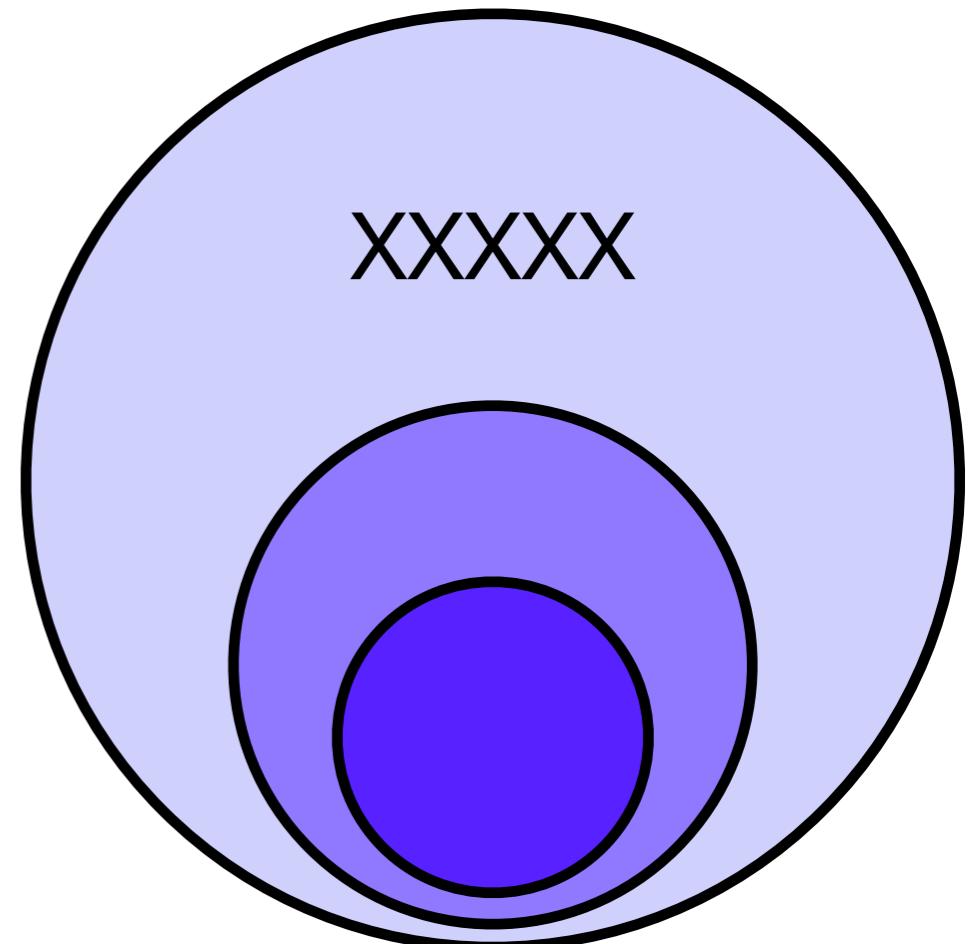
Concrete vs. abstract (Exp1)

Physical vs. psychological (Exp2a)

Physical vs. social (Exp2b)

Animate vs. inanimate (Exp3)

Noun vs. verb (Exp4)



# Roadmap

I. Introduction

II. Background ~ AFH & affective meaning

**III. Experiments 1-4: Speeded Categorization**

- A. Exp 1: Concrete vs. Abstract (V, N, A)
- B. Exp 2a: Physical vs. Psychological (V)
- C. Exp 2b: Physical vs. Social (A)
- D. Exp 3: Animacy (N)
- E. Exp 4: Syntax (N vs. V)

IV. Analyses of Accuracy

V. Experiment 5: Similarity judgements (V)

VI. Discussion

# HATE

F

positive

J

negative

# HUG

F

abstract

J

concrete

# Speeded categorization

2 x 1 within-subjects, blocked design  
(counterbalanced)

- Task (Valence, Conceptual)
- Items presented 3x per block and randomized within block
- DM: key board press F or J (counterbalanced)

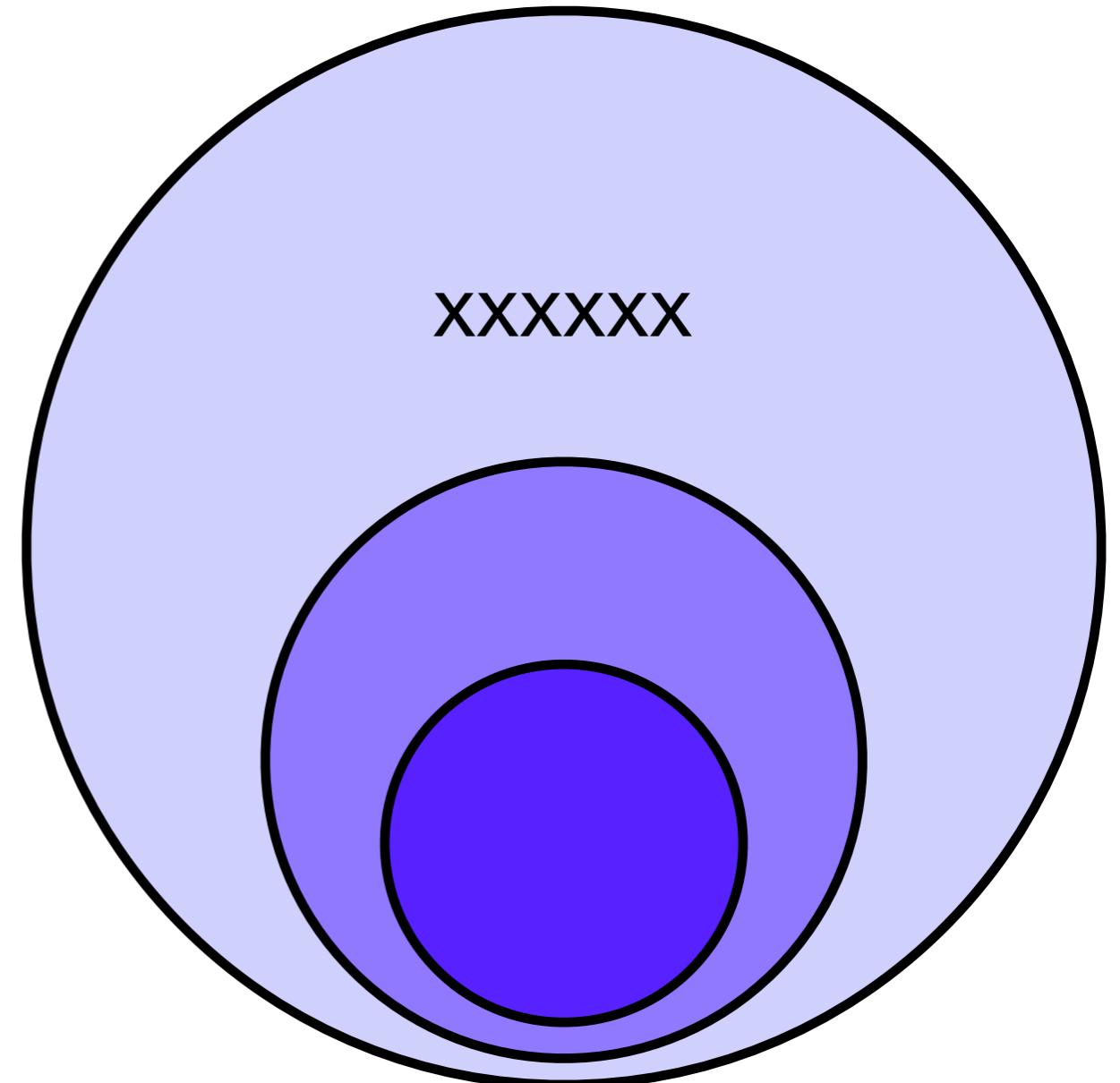
# **Experiment 1a-c: concrete / abstract**

# Valence x Concreteness

Relationship Status: HS sweethearts but it's complicated

Long-established  
dimension of  
concept meaning

(Kousta et al 2011; Vigliocco et al 2014; Ponari et al, 2018, Lund et al 2019; Kim et al 2020; Palazova et al 2003; (Kansuke & Kotz 2007; Hinojosa et al 2019; Winter 2022)



# Exp 1 (n=120)

Using Corpus norms for Valence (Warriner et al 2013) and Concreteness (Brysbaert et al 2013)

High Frequency, and within +/-2sd of mean Word Length

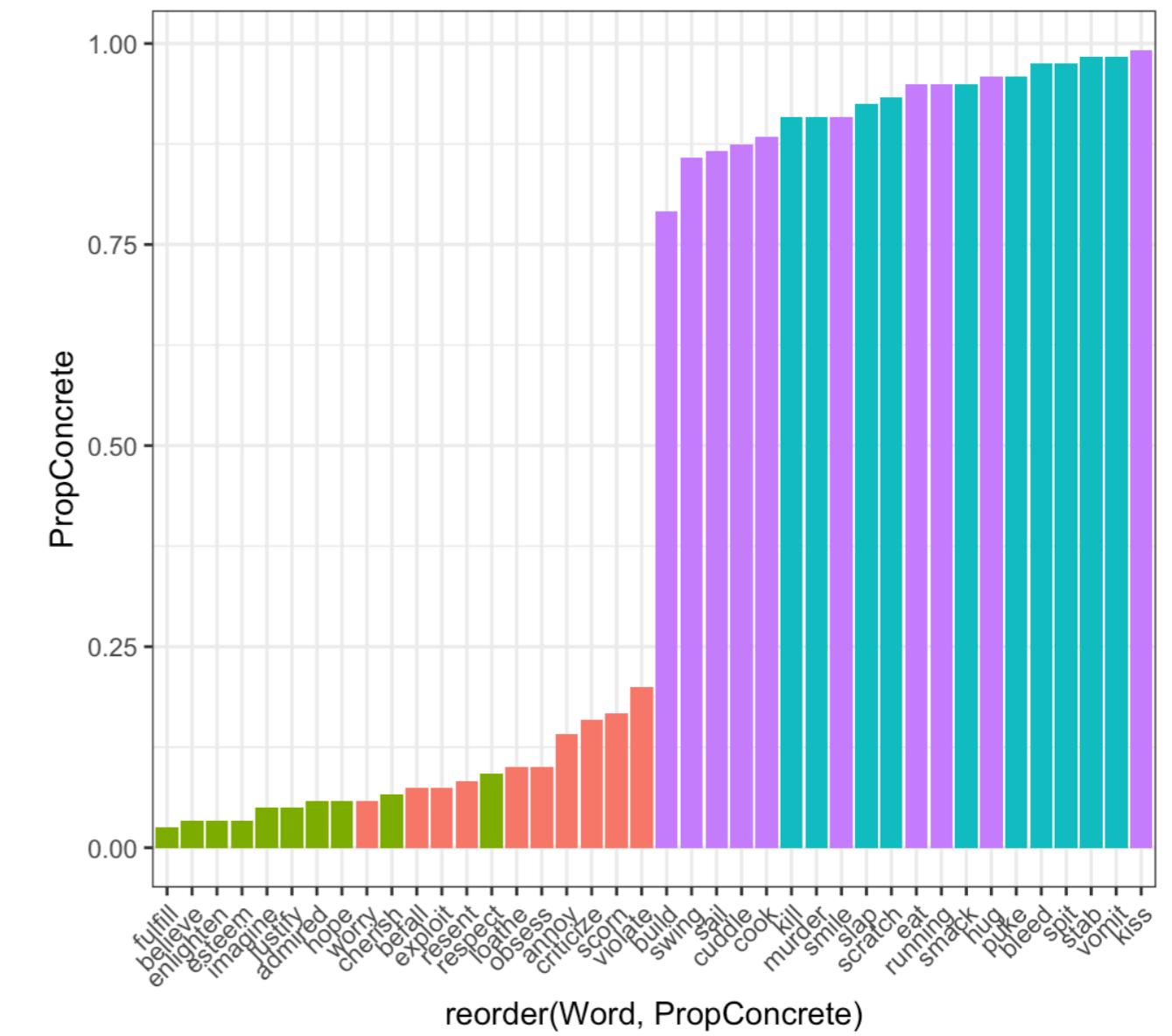
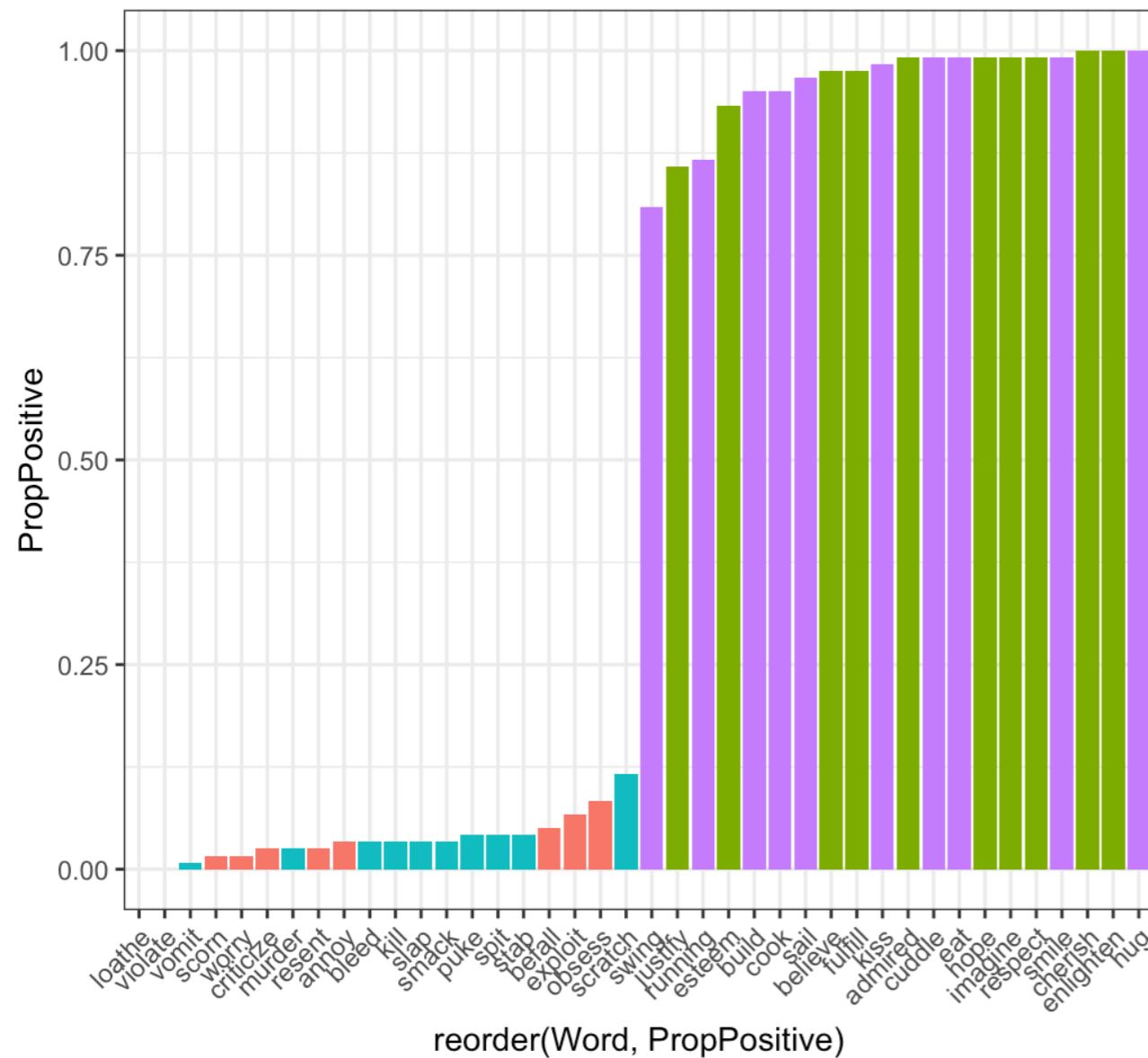
40 words, 10 from each combo of Conc+Val

- Maximizing mean rating for concrete/positive
- Minimizing mean rating for abstract/negative
- Minimizing rating SD

# Responses - Verbs

ConcValCombo

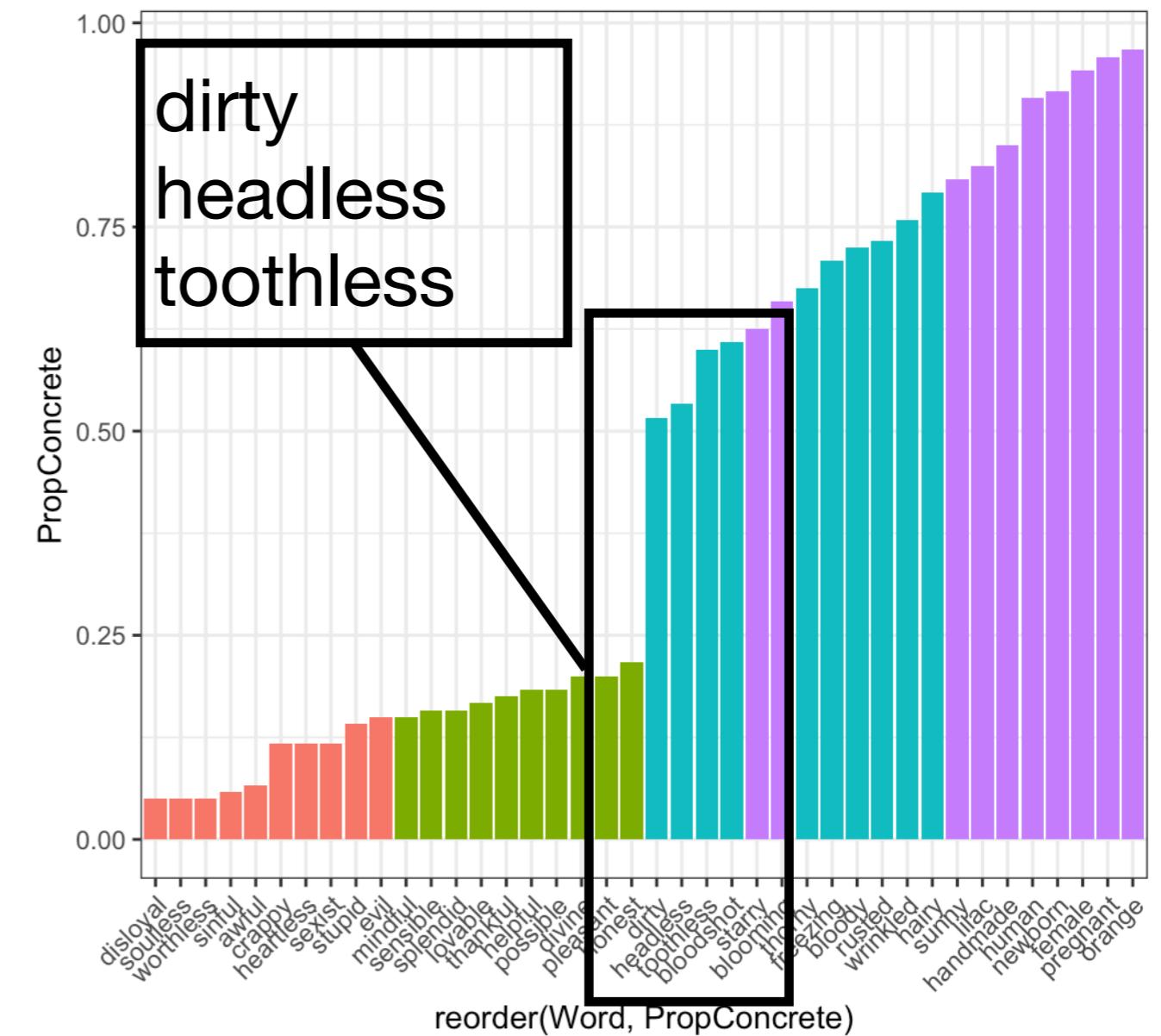
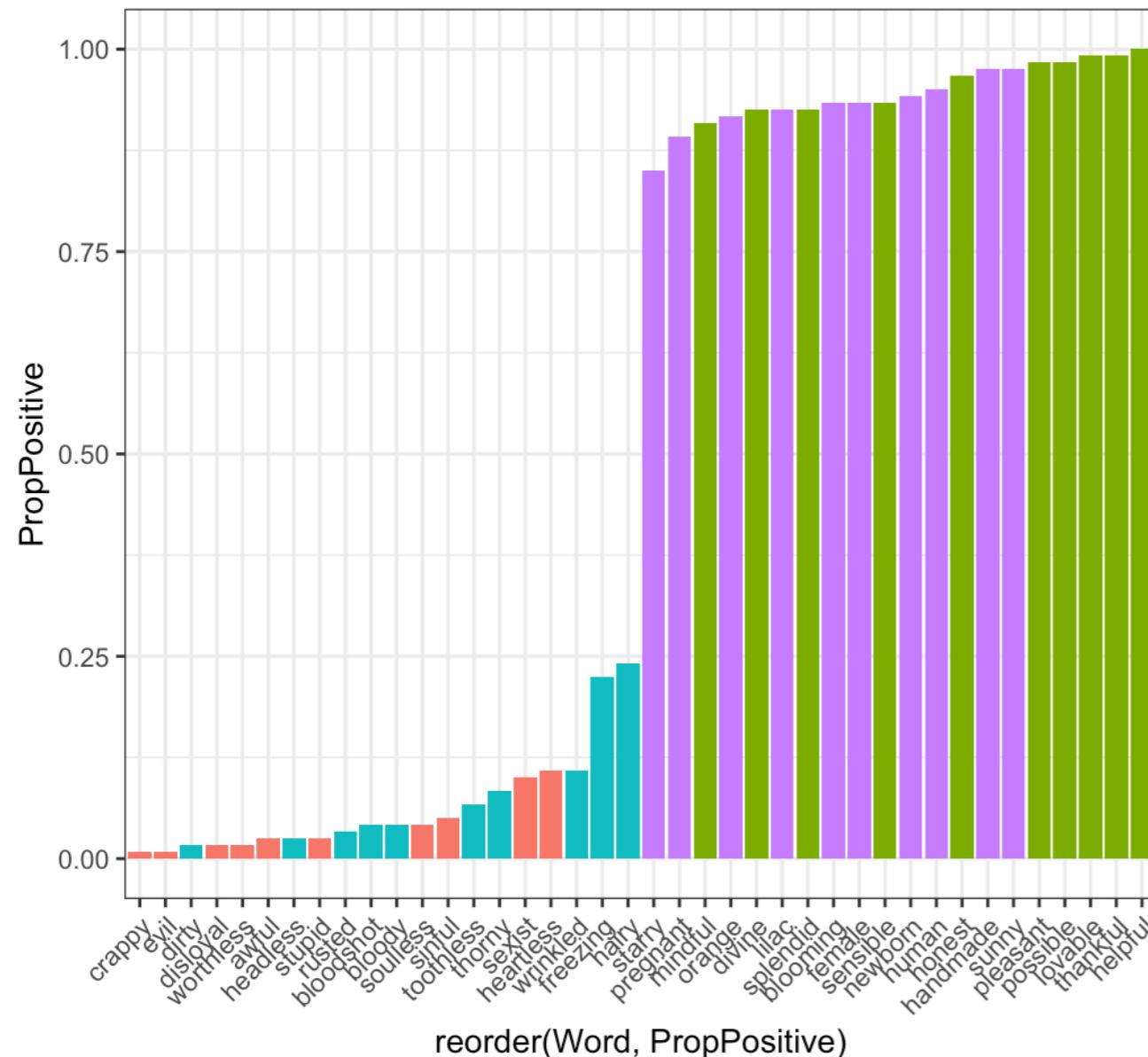
- abstract-negative
- abstract-positive
- concrete-negative
- concrete-positive



# Responses - Adjs

ConcValCombo

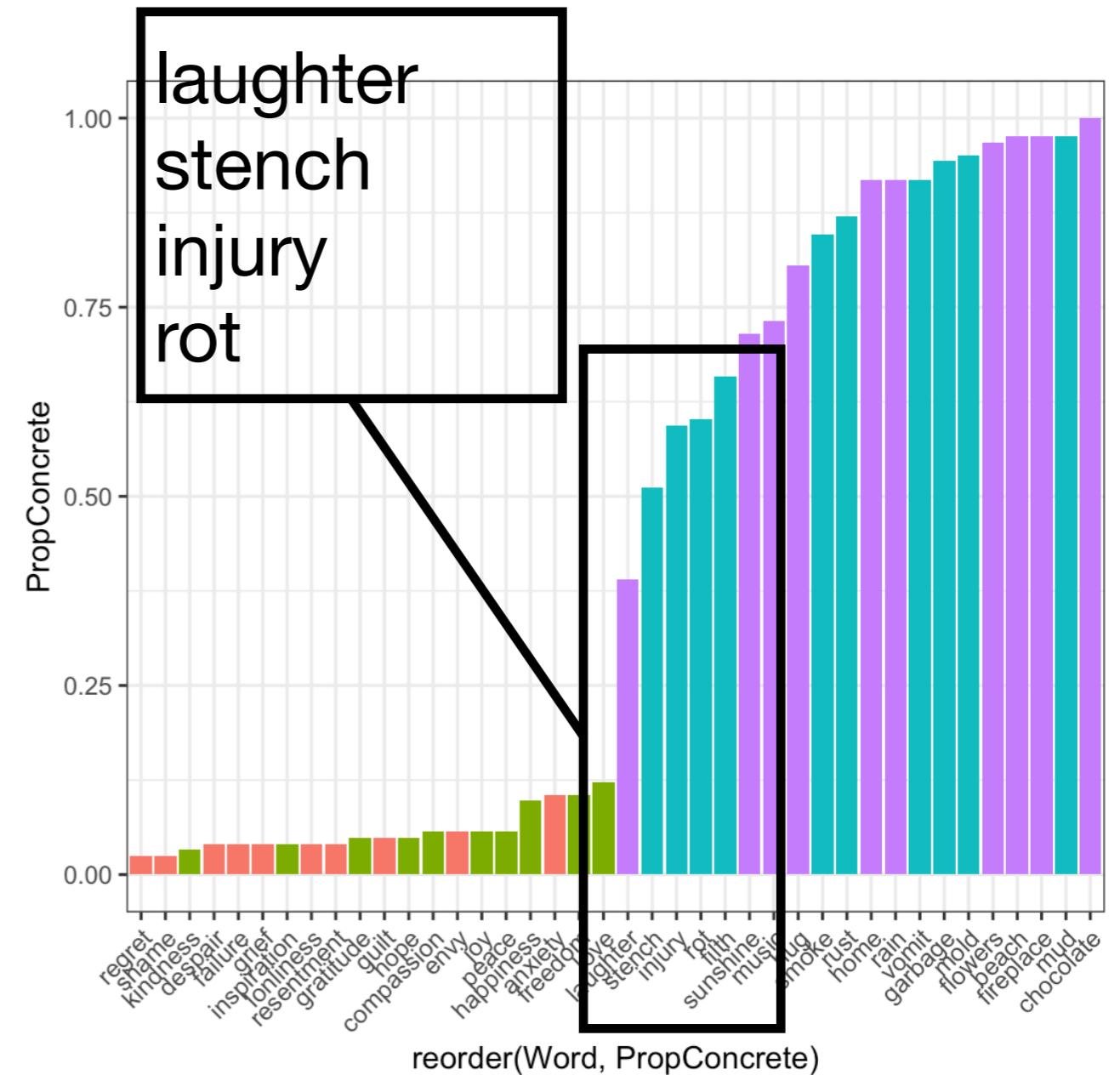
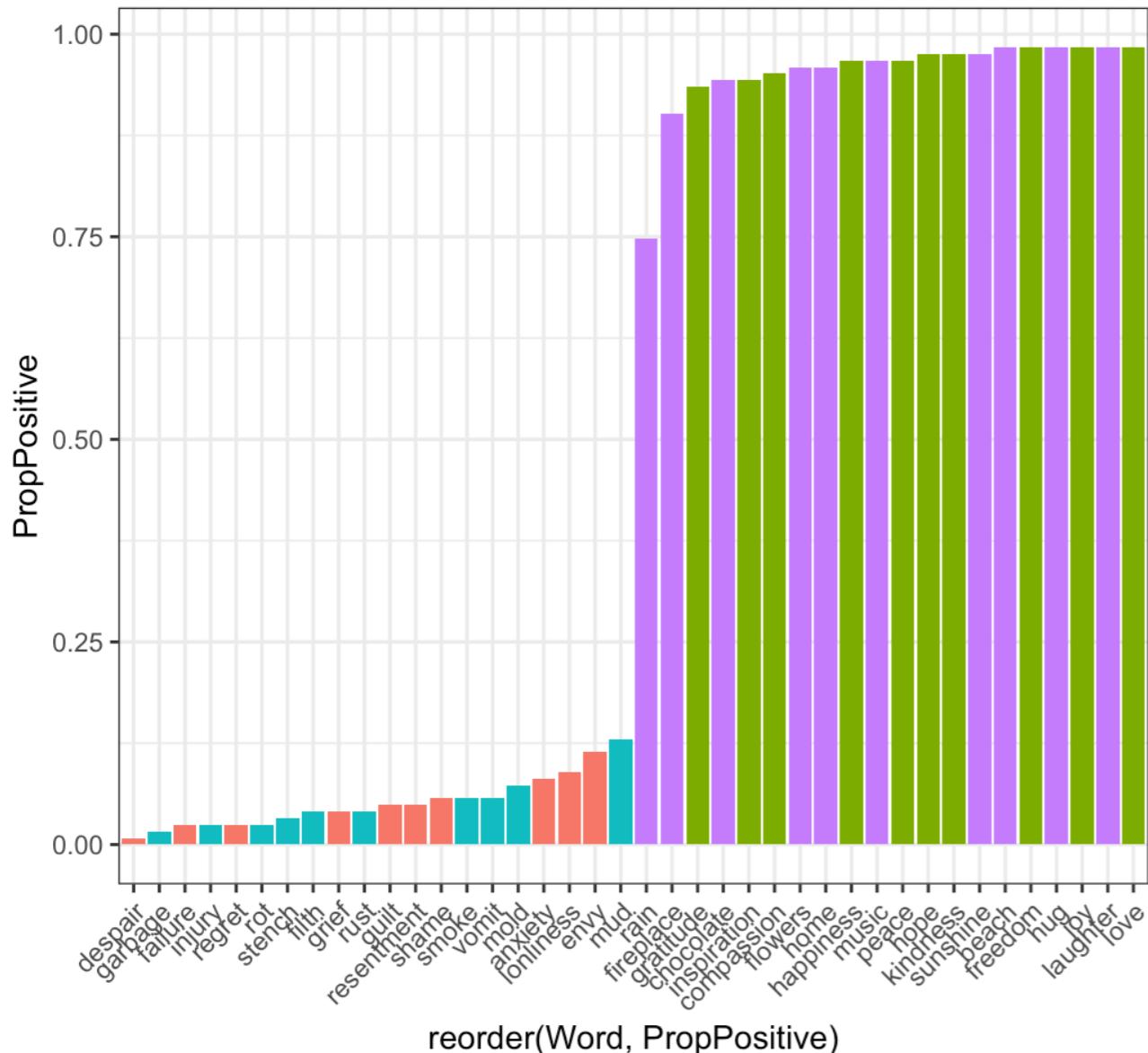
- abstract-negative
- abstract-positive
- concrete-negative
- concrete-positive



# Responses - Nouns

ConcValCombo

- abstract-negative
- abstract-positive
- concrete-negative
- concrete-positive



# RT Analysis MEM

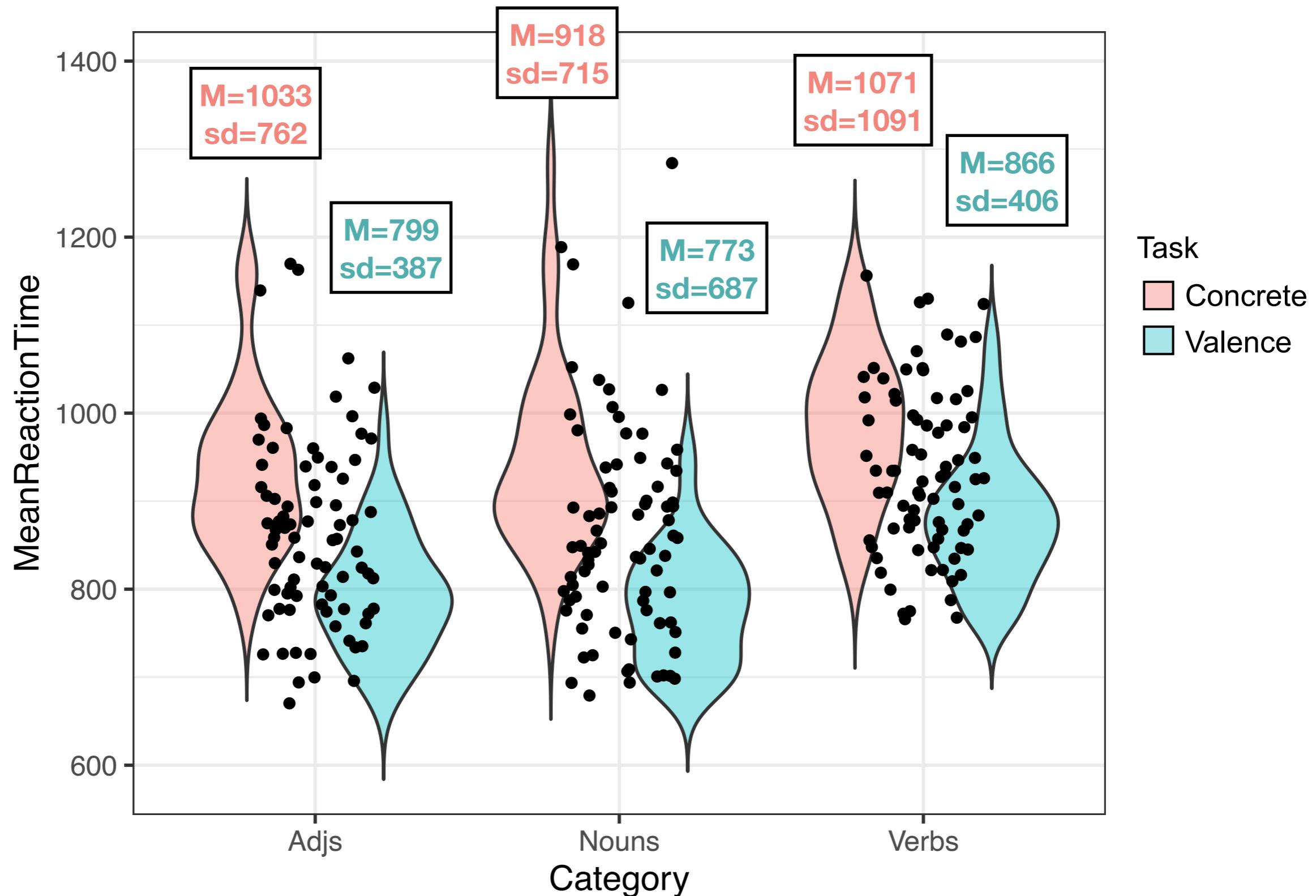
- Inaccurate participants removed ( $\text{Acc} < 75\%$ )
- Only Accuracy trials included
- Outliers exclusions:  $+/- 3^*\text{IQR LogRT}$

Range of data excluded across exps: ~10-15%

Model:

$$\text{lmer( LogRT } \sim \text{cTask} + (1 + \text{cTask} | \text{ID}) + (1 + \text{cTask} | \text{Word}))$$

# Experiment 1 Results



# Adjs



# Nouns



# Verbs

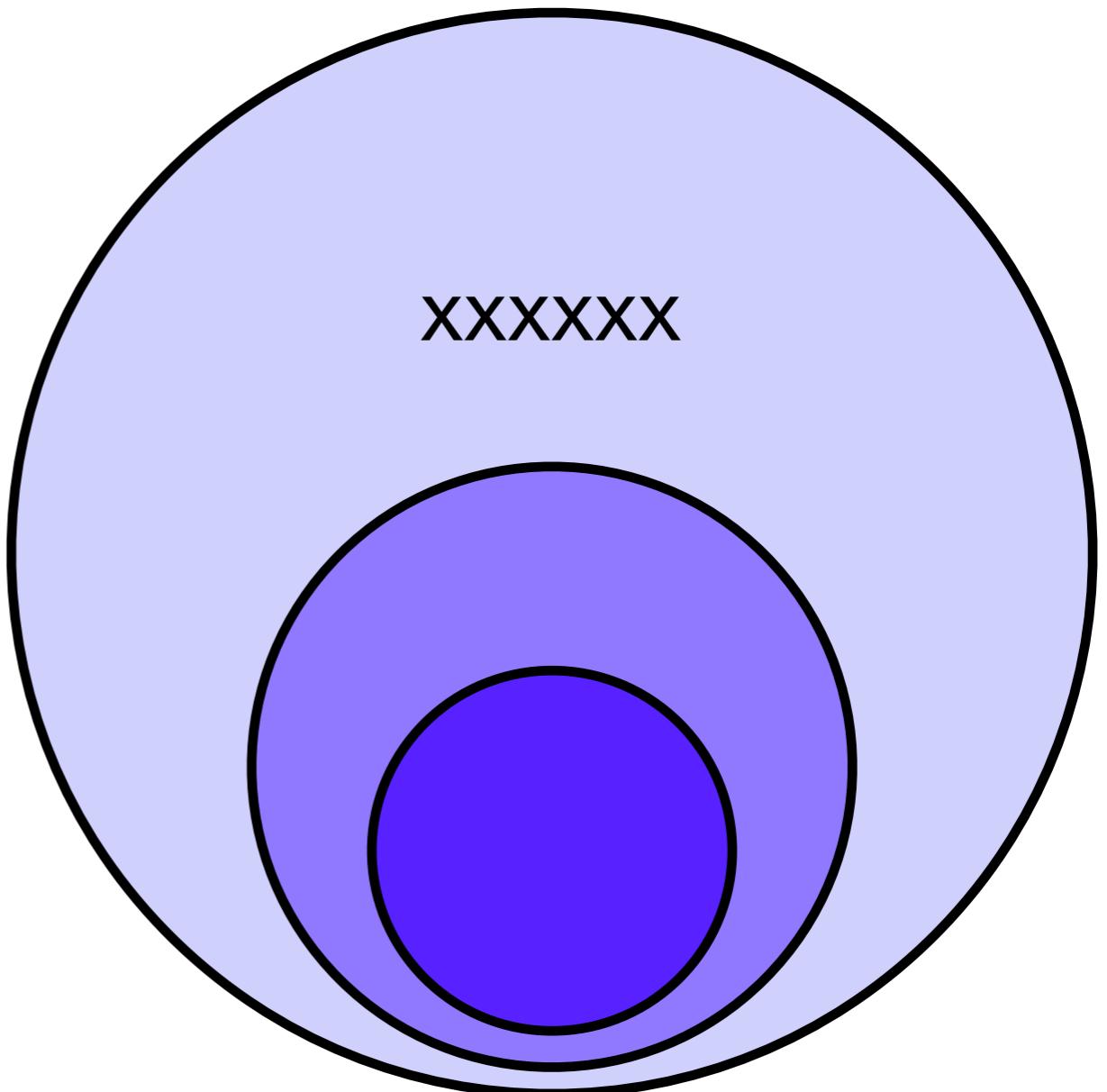


# **Experiment 2a-b: physical vs psychological (verbs)/ social (adjs)**

# physical v. psychological/ social

Psychologically  
important domain  
of reasoning

(Strickland et al . 2017; Kuhn et al.  
2021; Leslie & Keeble 1987,  
Spelke et al. 1995; Saxe et al.  
2005; Newman et al. 2010, a.o.)



# Exp 2 Stimuli

## Verbs:

- Pre-test norming of 168 verbs from Levin (1993)
- Evaluated on Valence/Conceptual (phys-psych) 7-pt likert scale
- Verbs chosen based on distance to endpoint

## Adjectives:

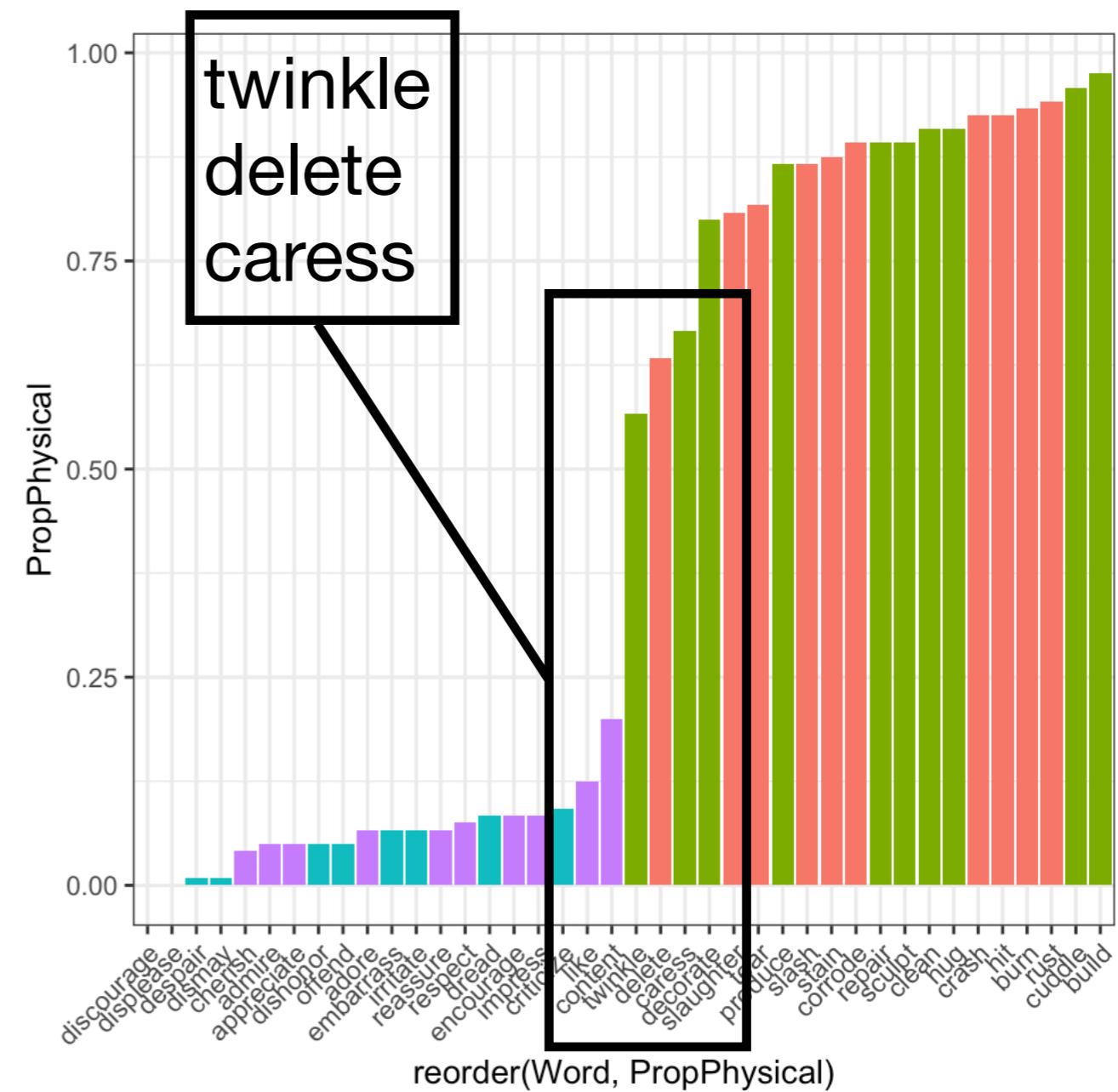
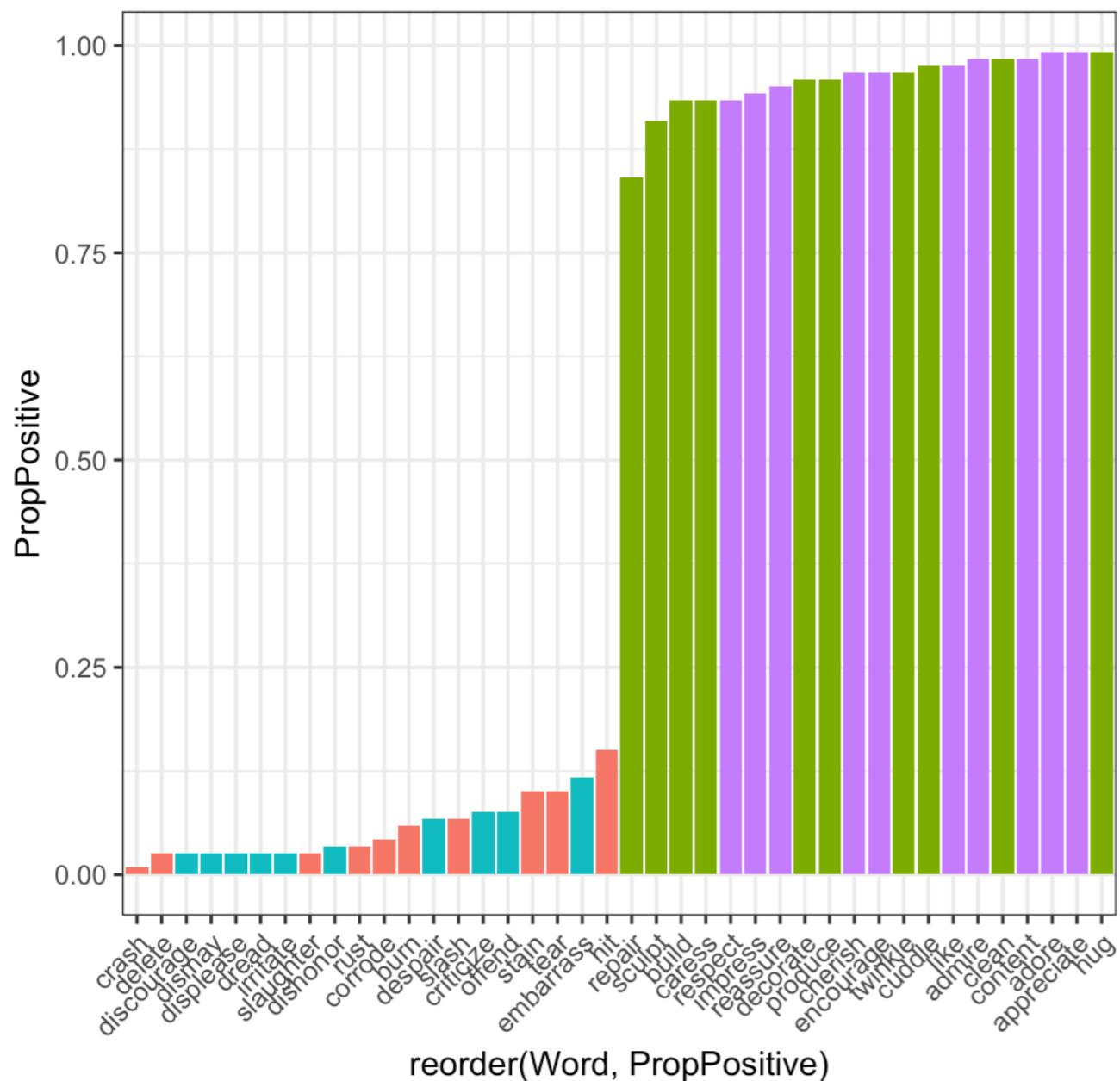
- Pre-test norming of 289 adjectives from Warriner et al (2013)
- Evaluated on Social/Physical on 7-pt Likert
- Adjs chosen based on weighted average and minimized rating variance

# Responses 2a

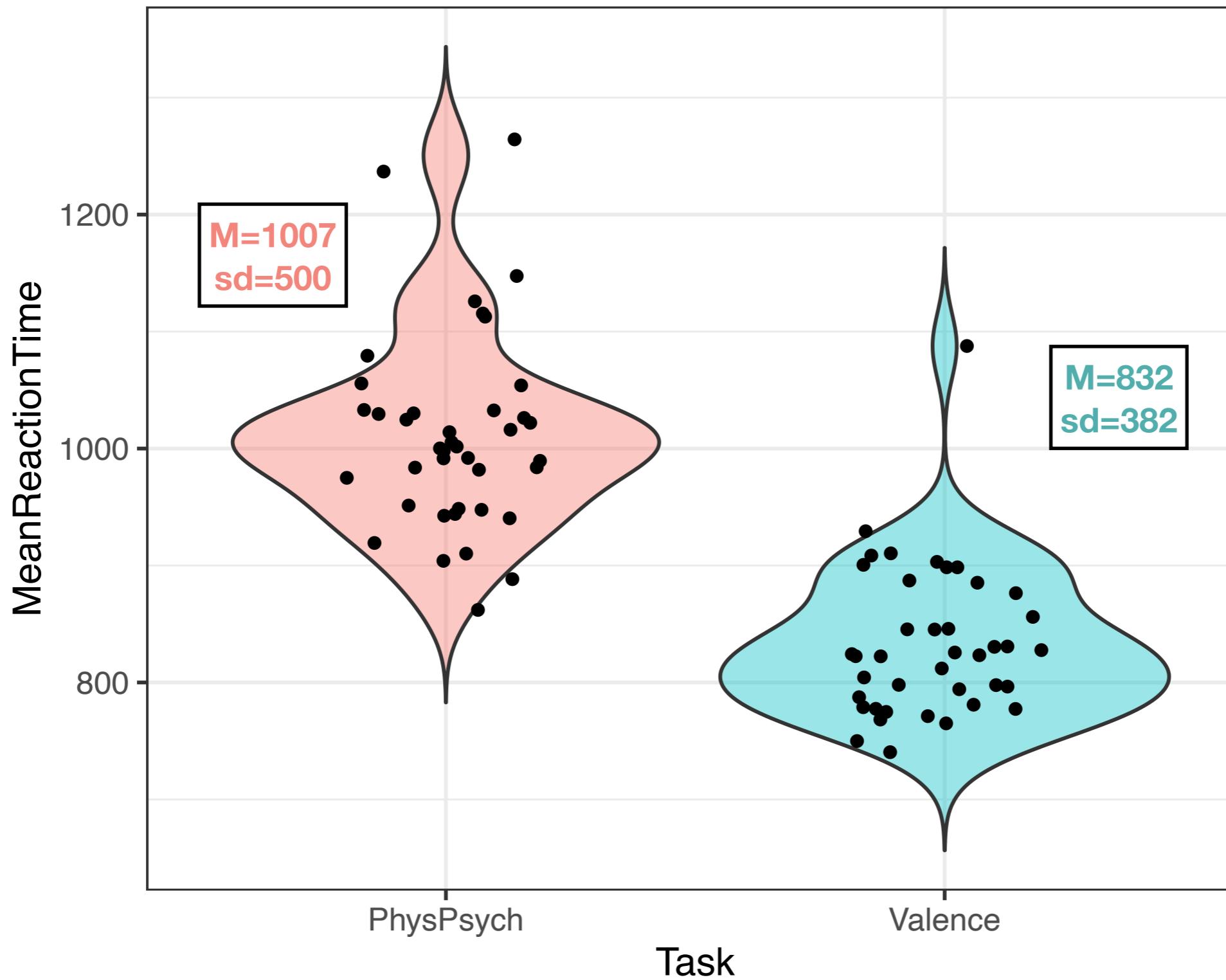


ConcValCombo

- physical-negative
- physical-positive
- psychological-negative
- psychological-positive



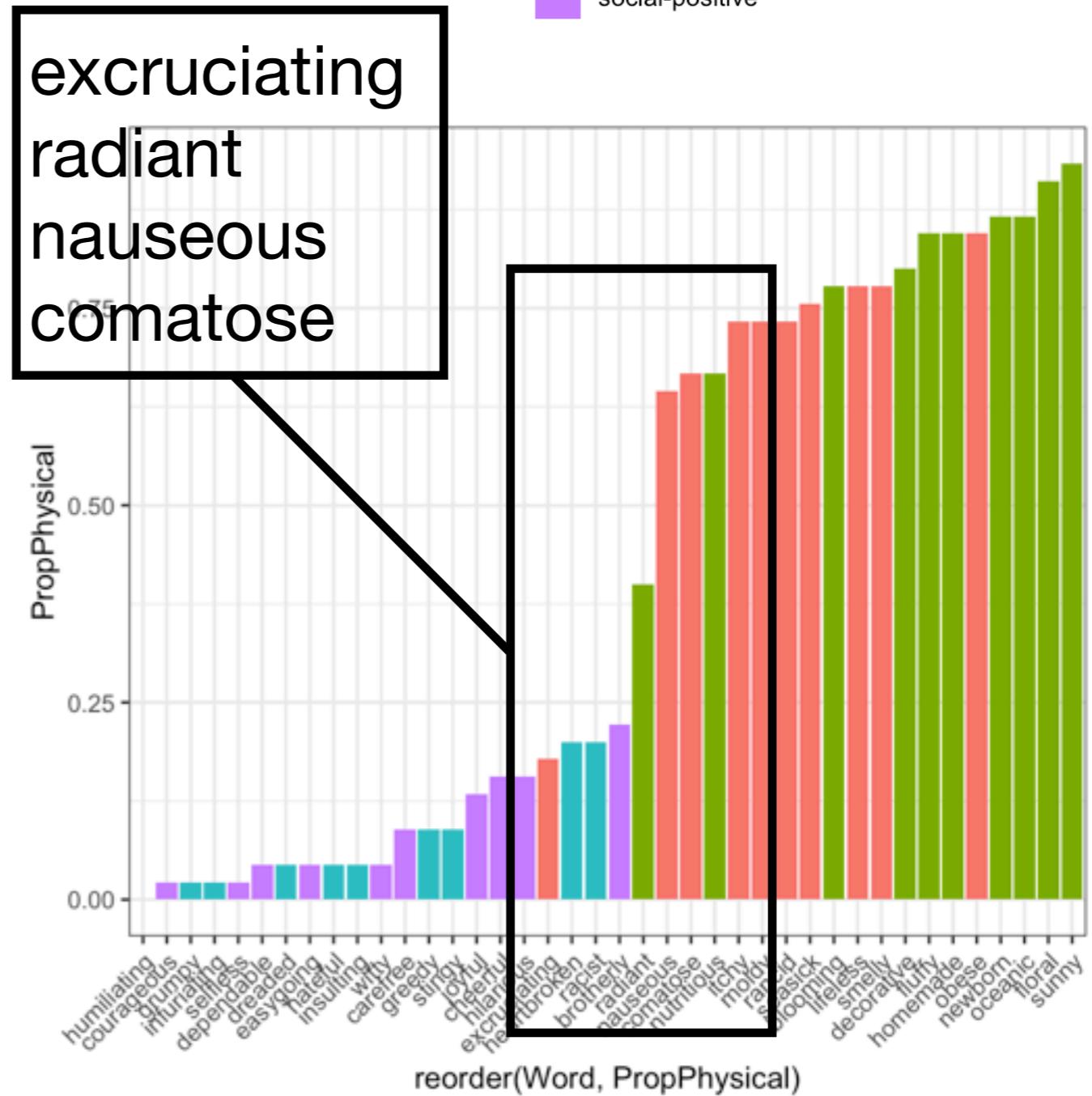
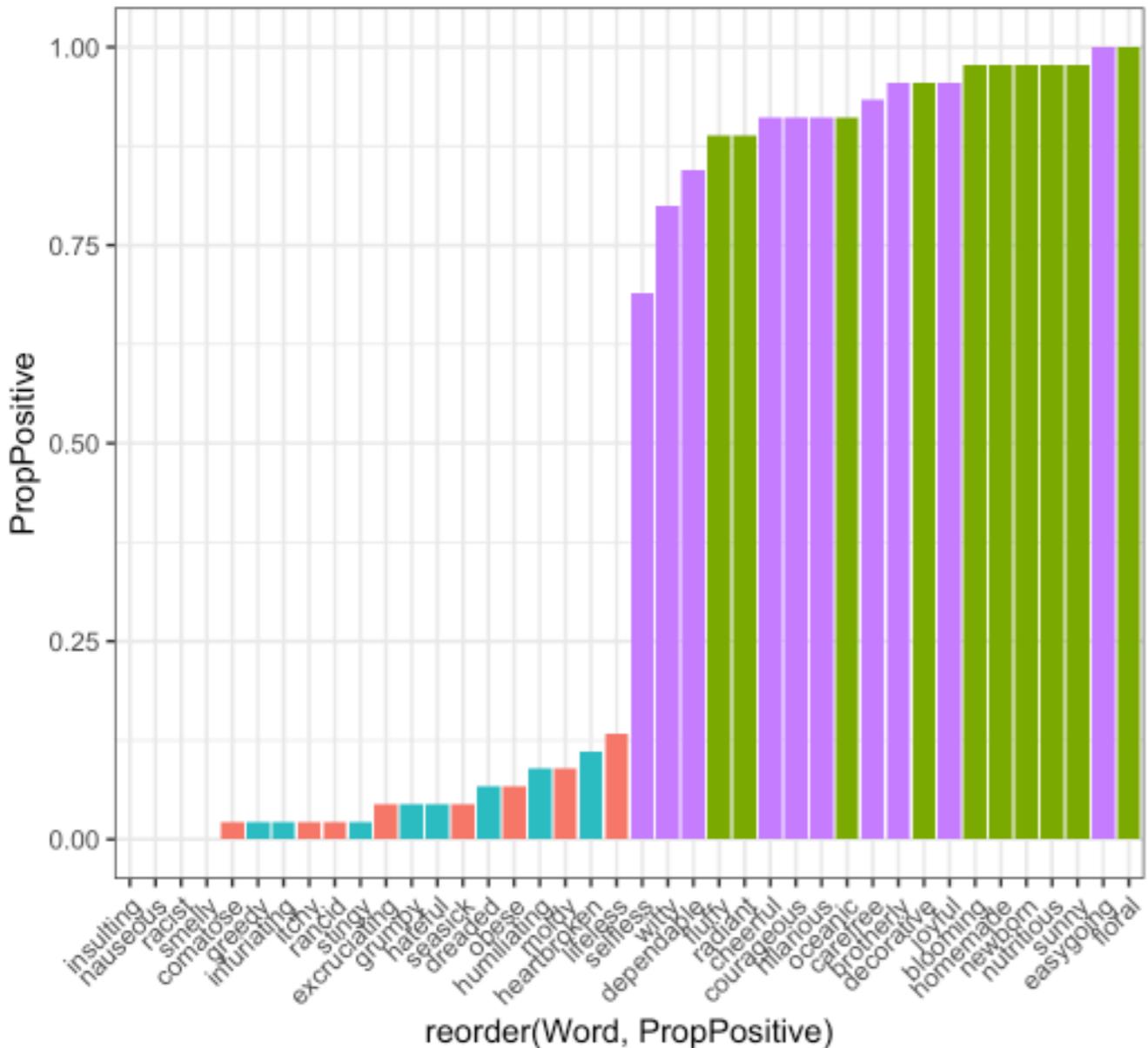
# Exp 2a (Verbs) Results



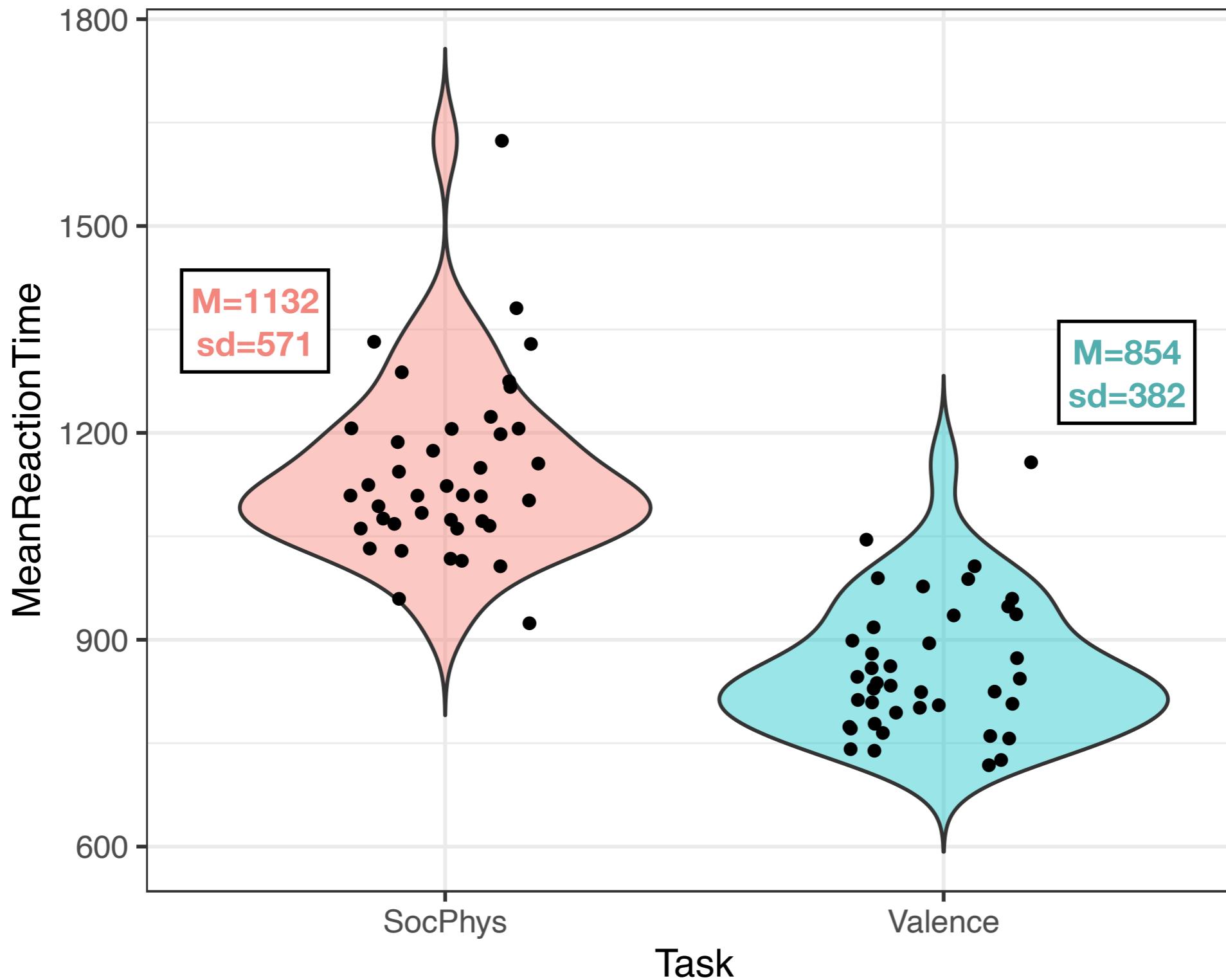
# Verbs



# Responses 2b



# Exp 2b (Adjs) Results



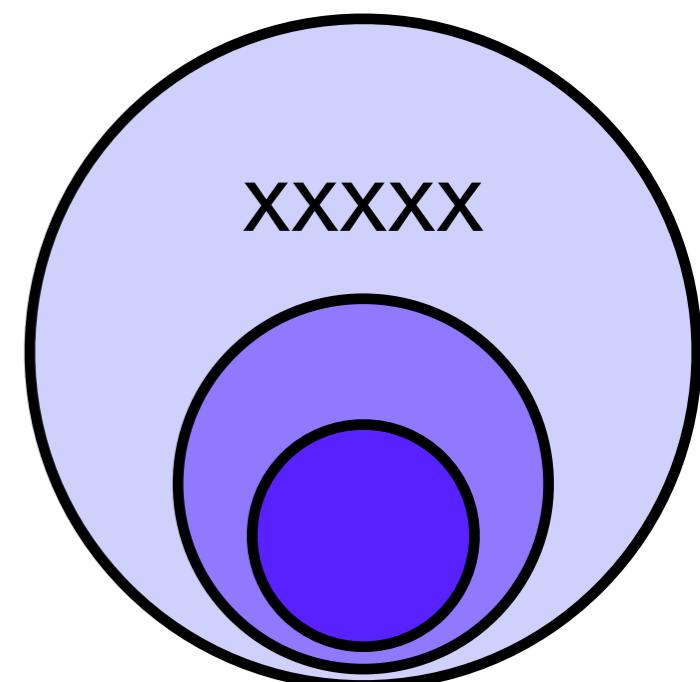
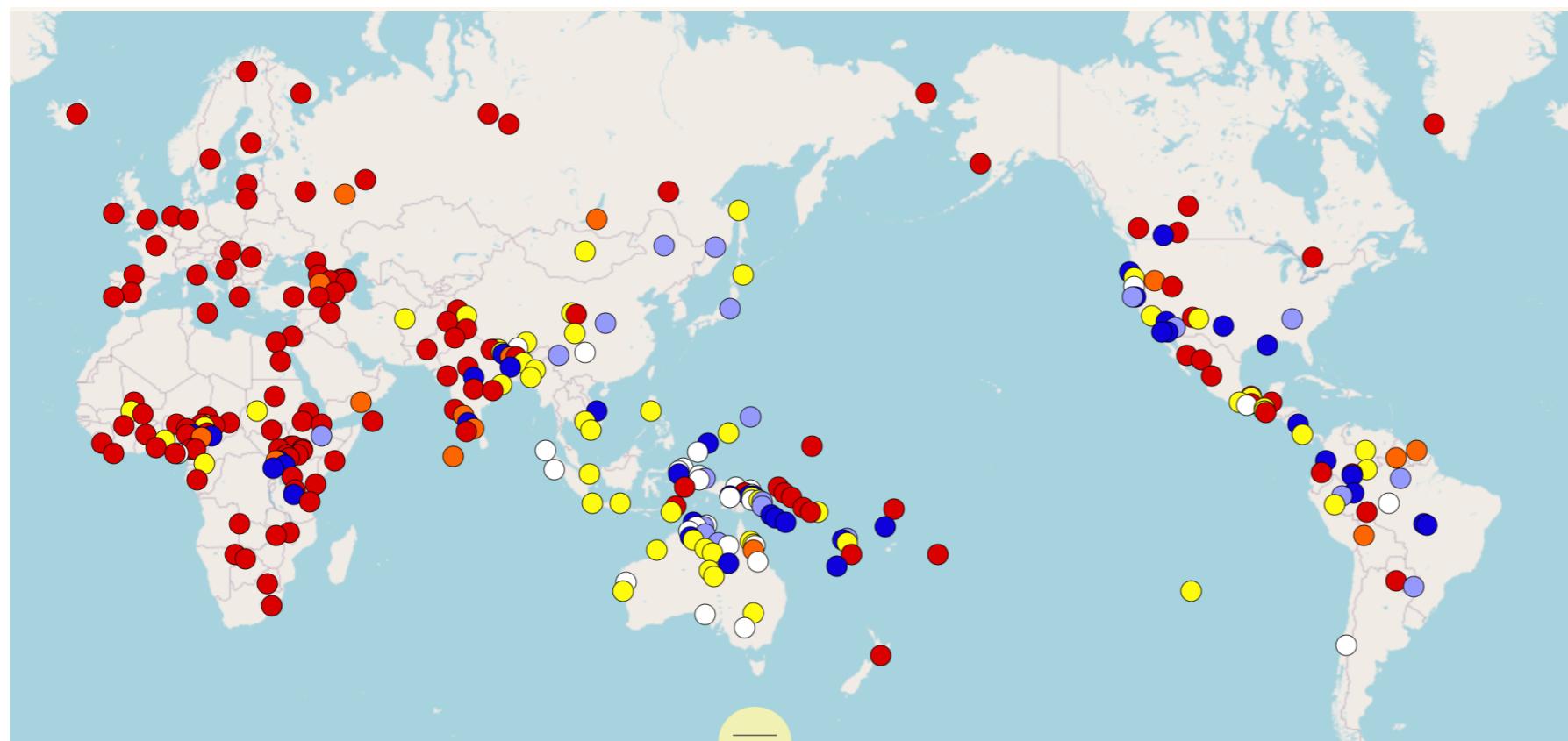
# Adjs



# **Experiment 3: Animacy (Nouns)**

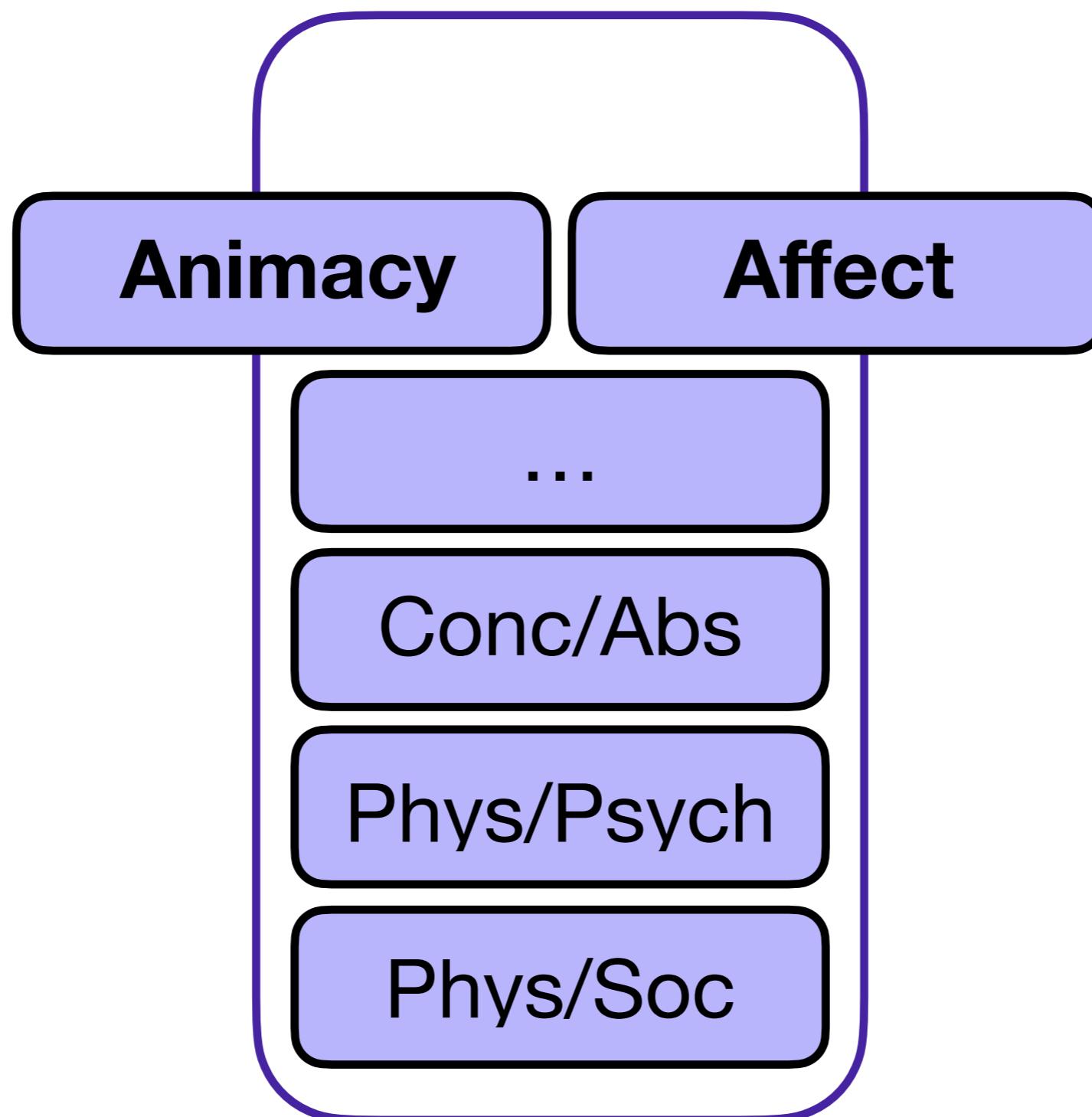
# Animacy

	No nominal plural	28
	Only human nouns, optional	20
	Only human nouns, obligatory	40
	All nouns, always optional	55
	All nouns, optional in inanimates	15
	All nouns, always obligatory	133



Rakison & Poulin-Dubois 2001; Caramazza & Shelton 1998; Spelke, Phillips, & Woodward 1995; Childers & Echols 2004; Baron-Cohen 1995; Carey 1985...Vihman & Nelson 2019; Haspelmath 2013

# Animacy vs. Affect?



# Exp 3 Stimuli

Using Corpus norms for Valence (Warriner et al 2013)

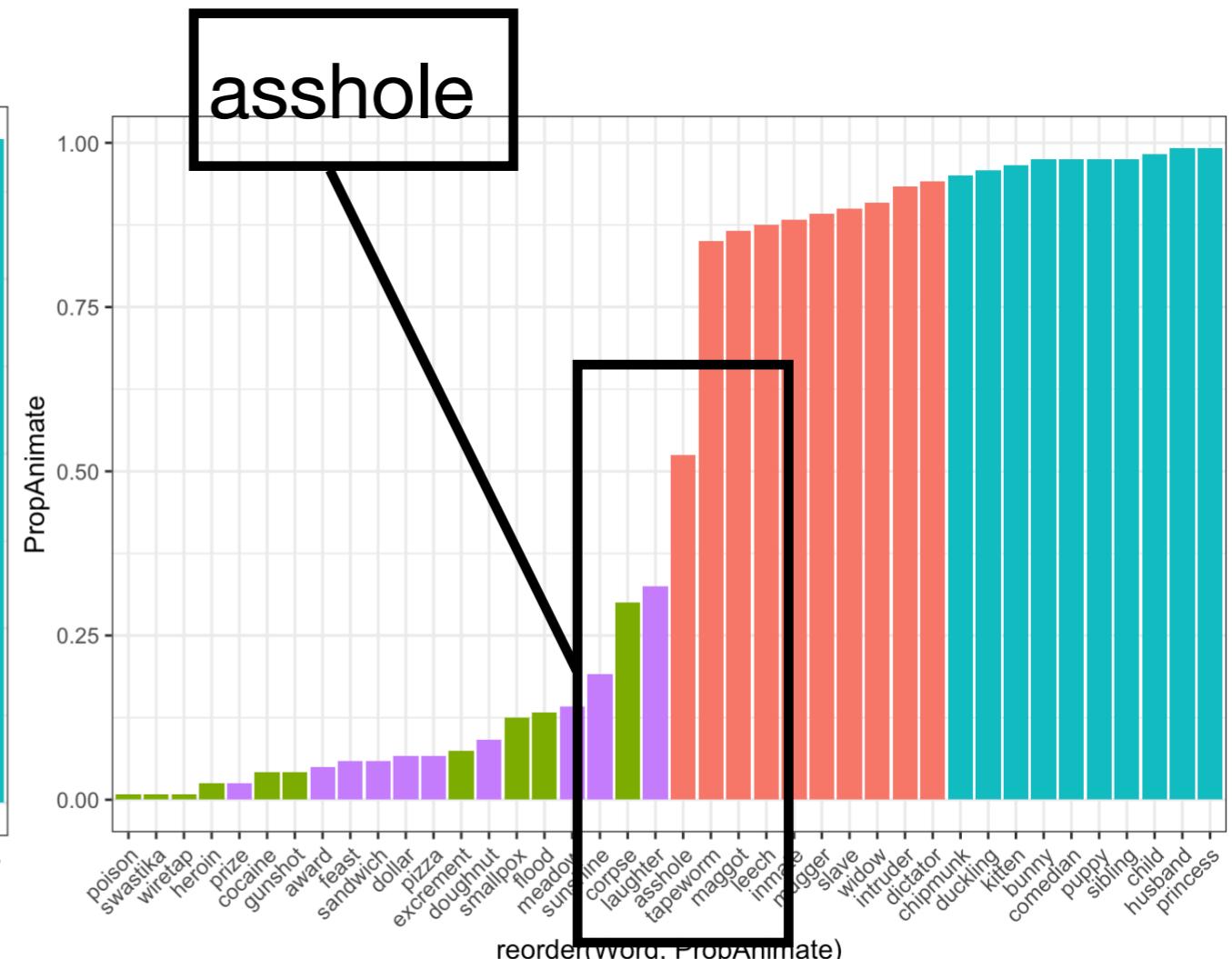
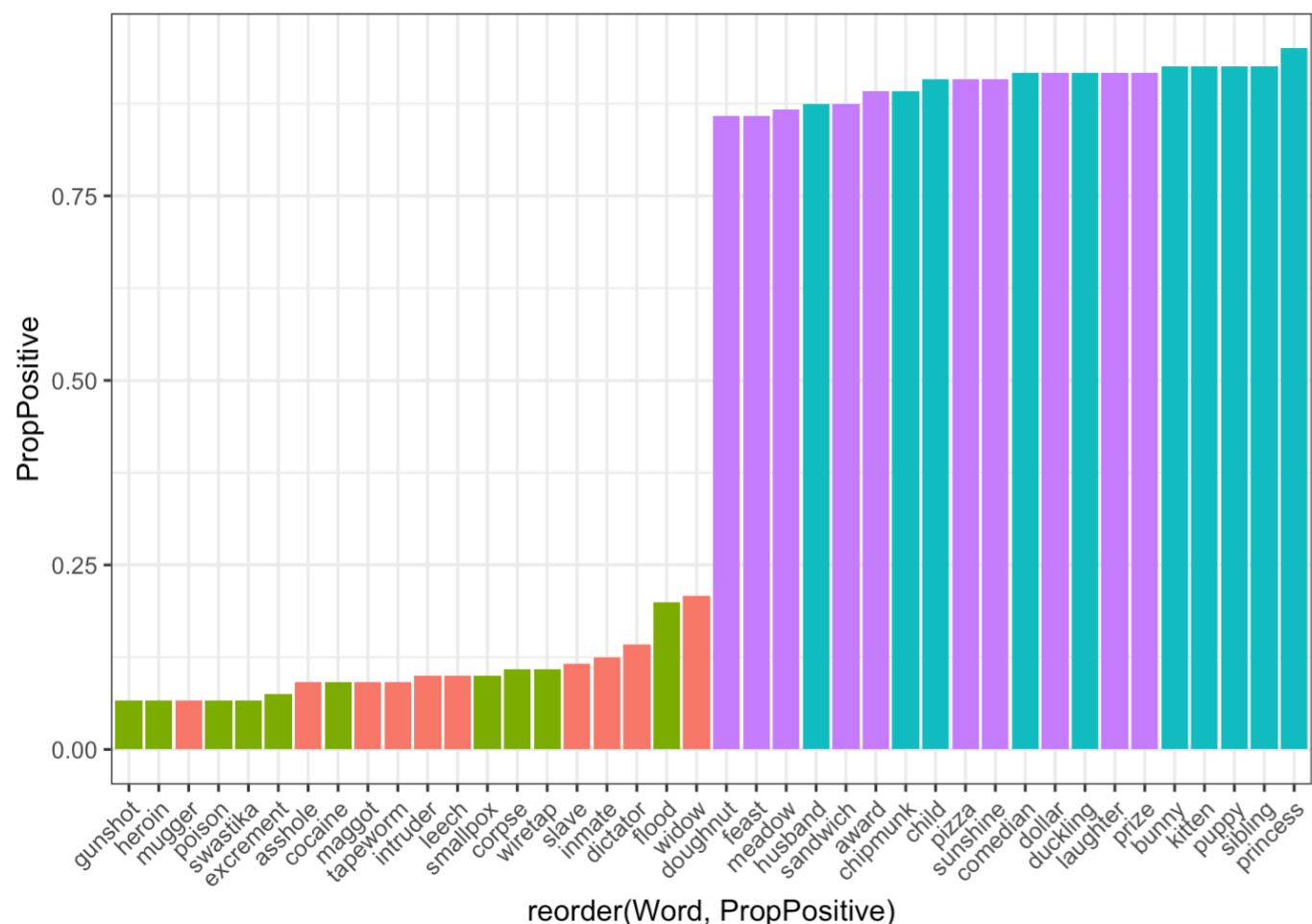
WordNet (Fellbaum 1998) words with ‘living thing’ or  
‘organism’ as synset

High Frequency, and within +/-2sd of mean  
Word Length

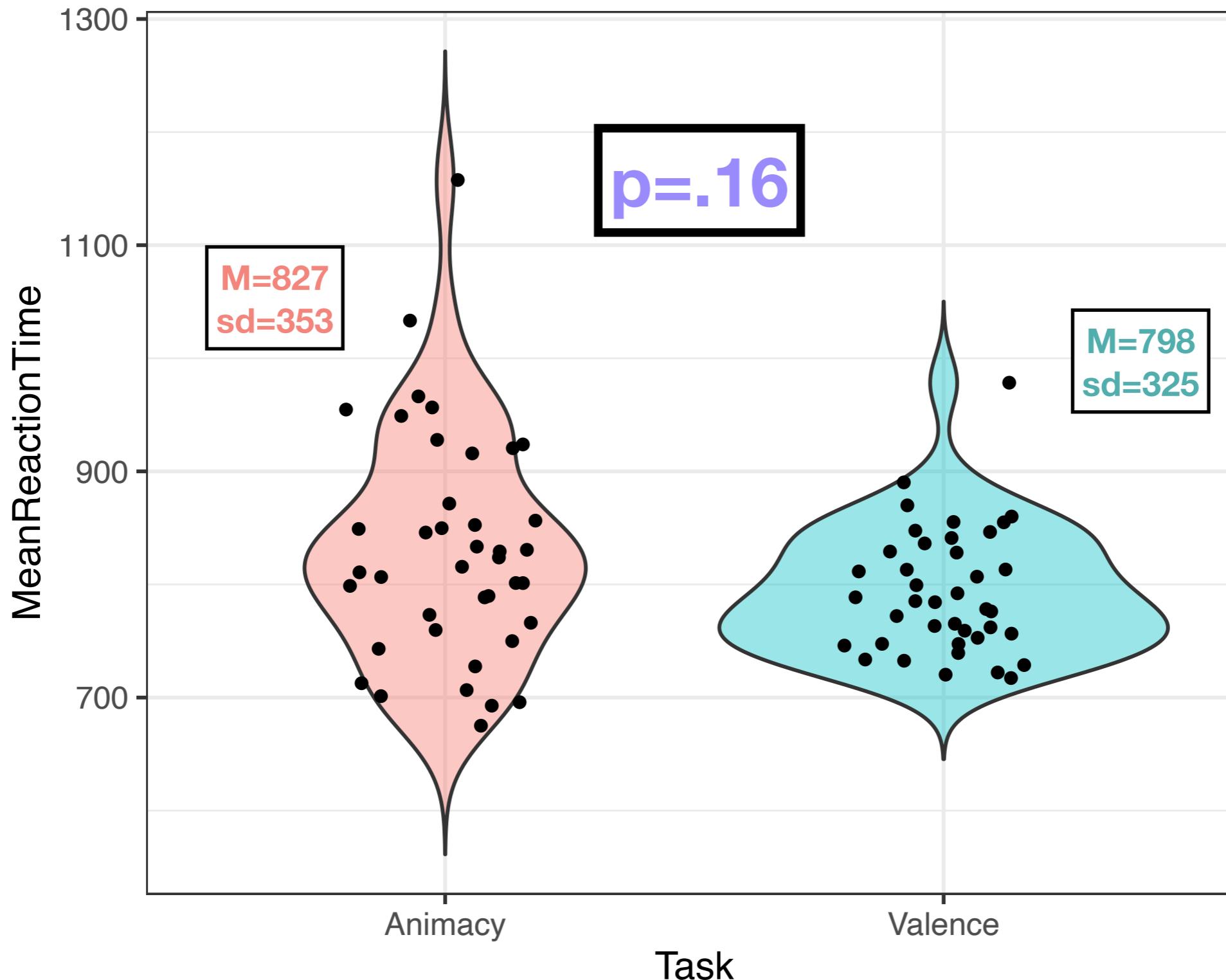
# Responses Exp3

ValAniCombo

- █ negative-animate
- █ negative-inanimate
- █ positive-animate
- █ positive-inanimate



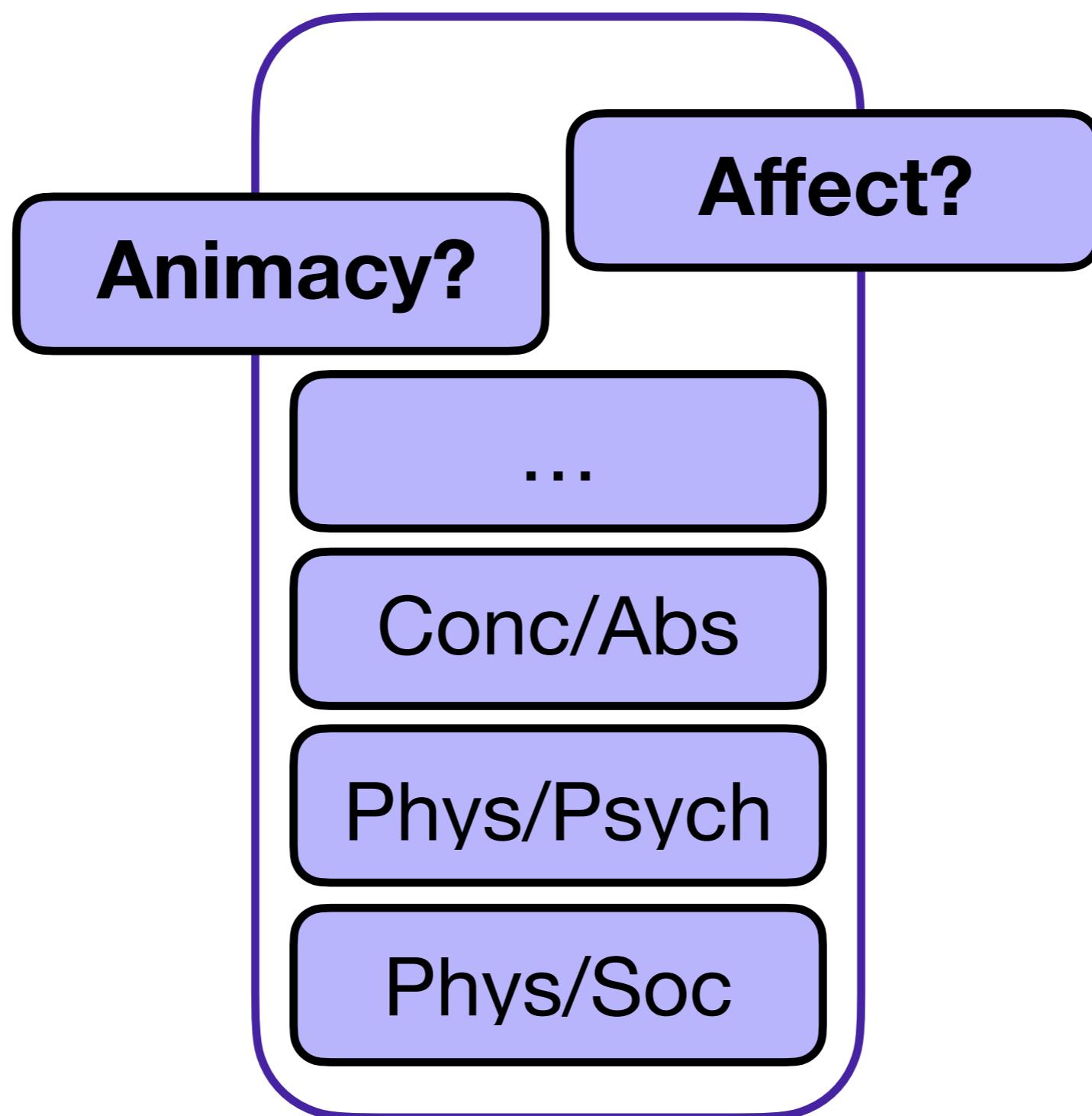
# Exp 3 Results (Nouns)



# Nouns



# Affect < Animacy



# **Experiment 4:**

# **Syntax**

# Syntactic categorization

Lexical information about syntactic category argued to be retrieved early (Strijkers & Costa 2011)

Is judging syntactic category (pre-conceptual) faster than valence?

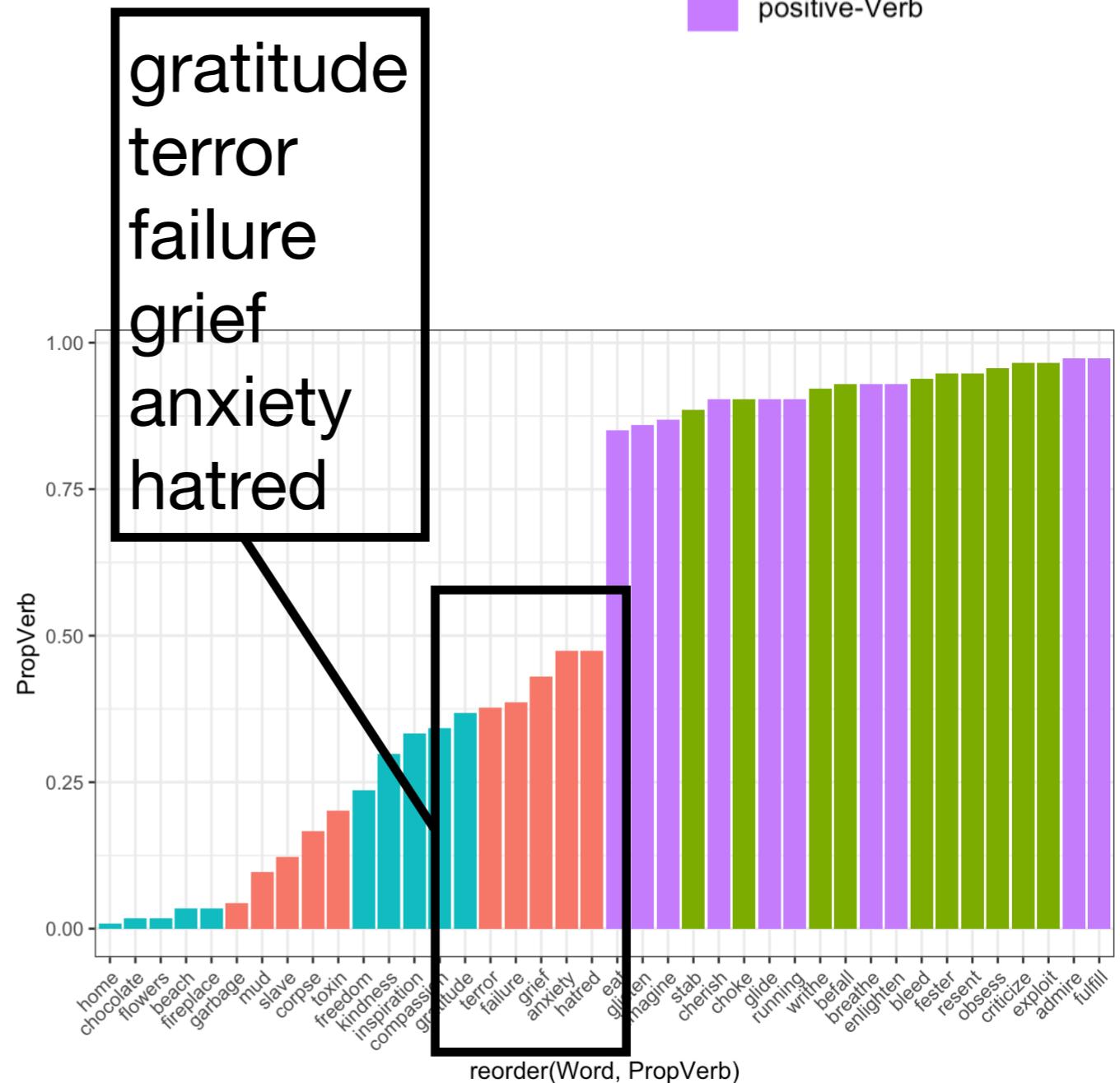
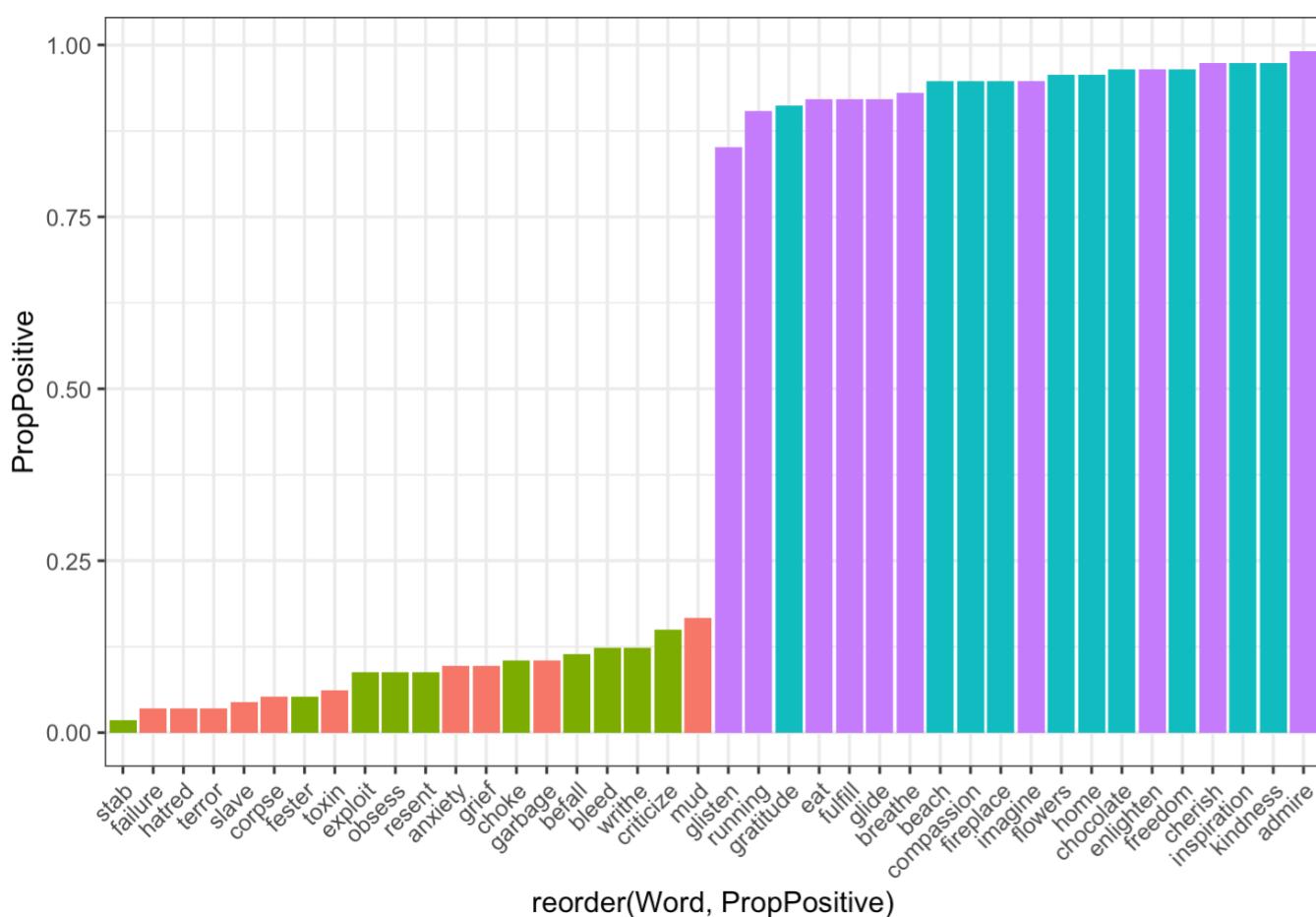
Noun vs. Verbs

- Conceptually more distinct than Adjs
- Used only unambiguously N or V words

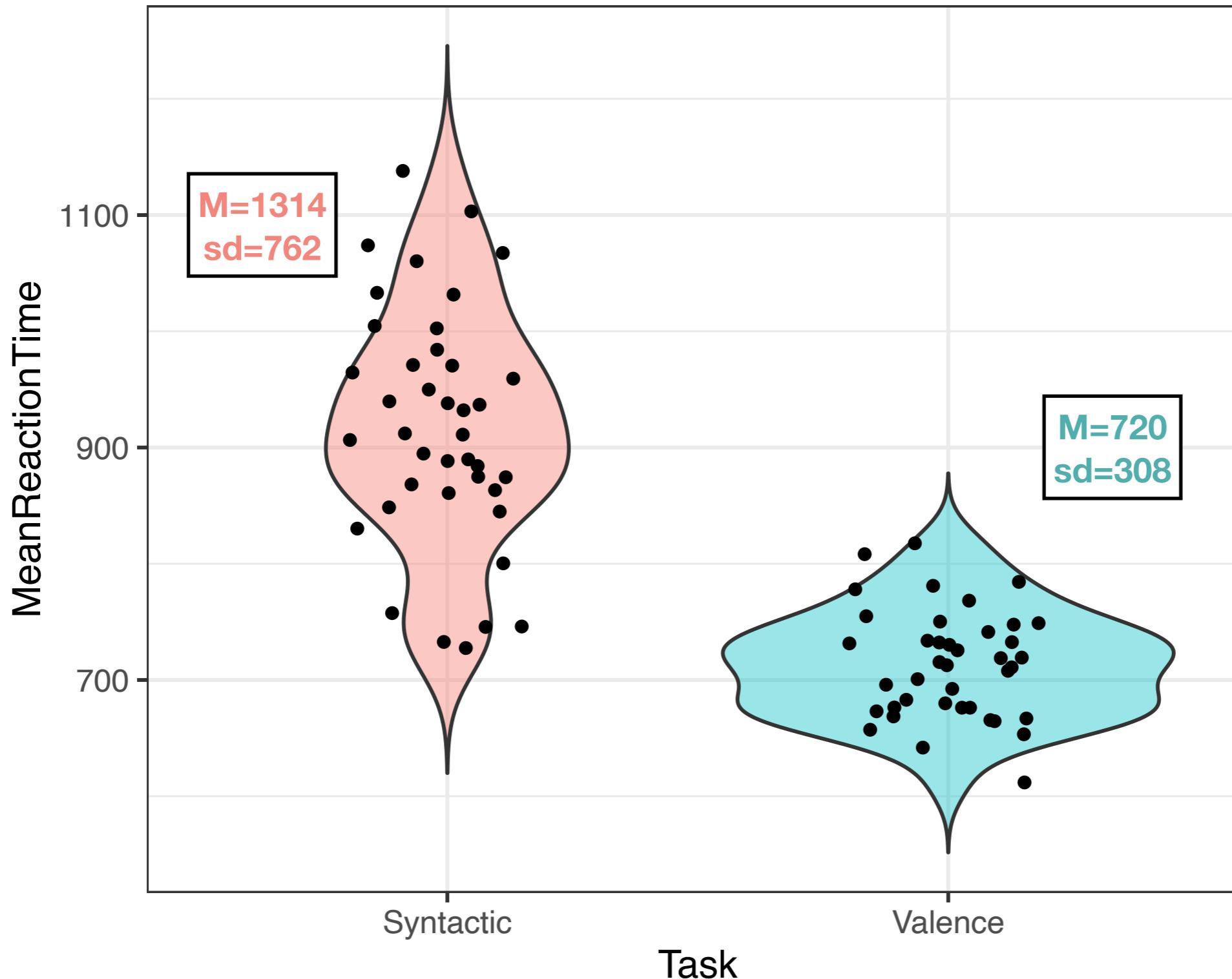
# Responses Exp4

ValSynCombo

- █ negative-Nouns
- █ negative-Verb
- █ positive-Nouns
- █ positive-Verb



# Exp 4 Results



# Verbs Nouns



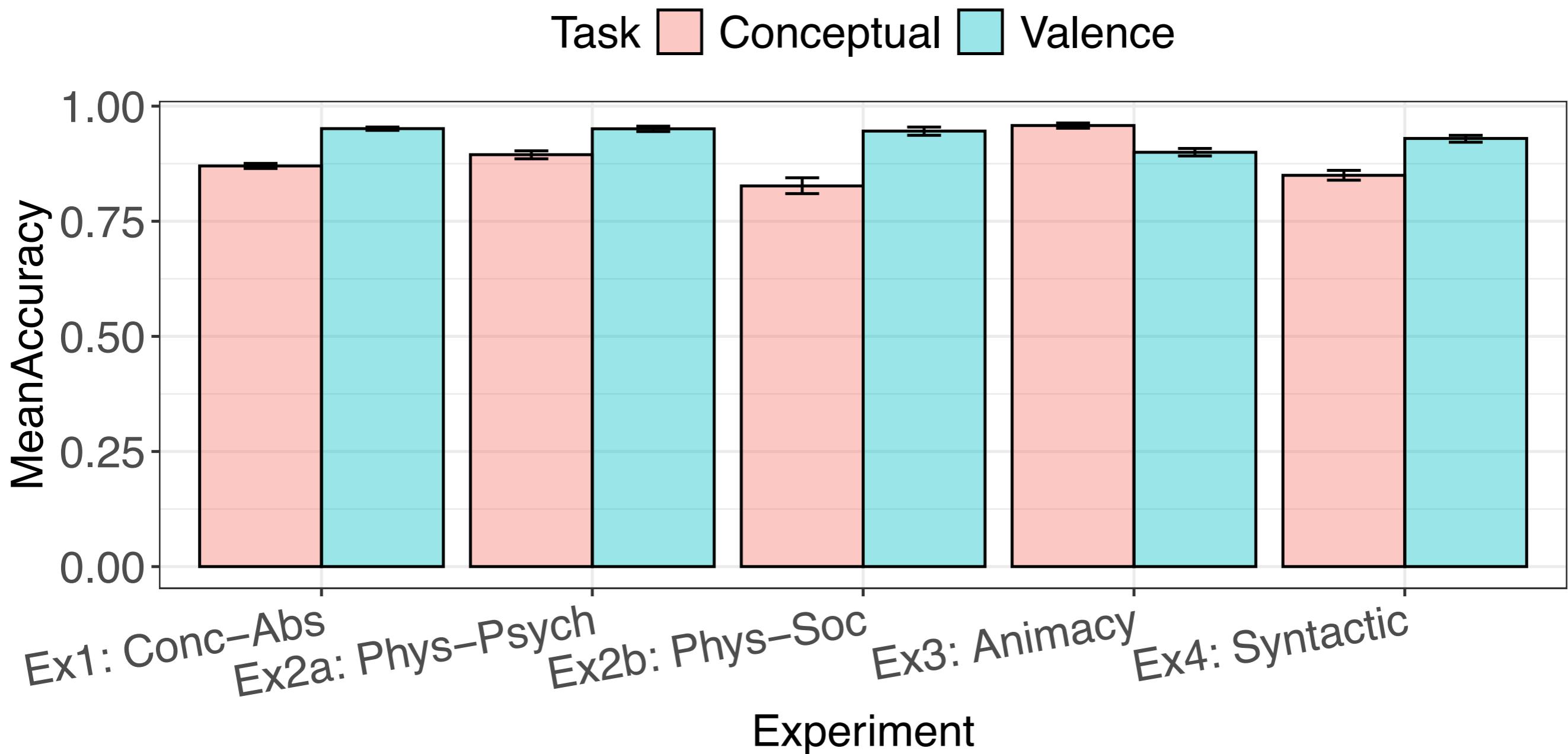
Task

- Syntactic
- Valence

# Accuracy Redux:

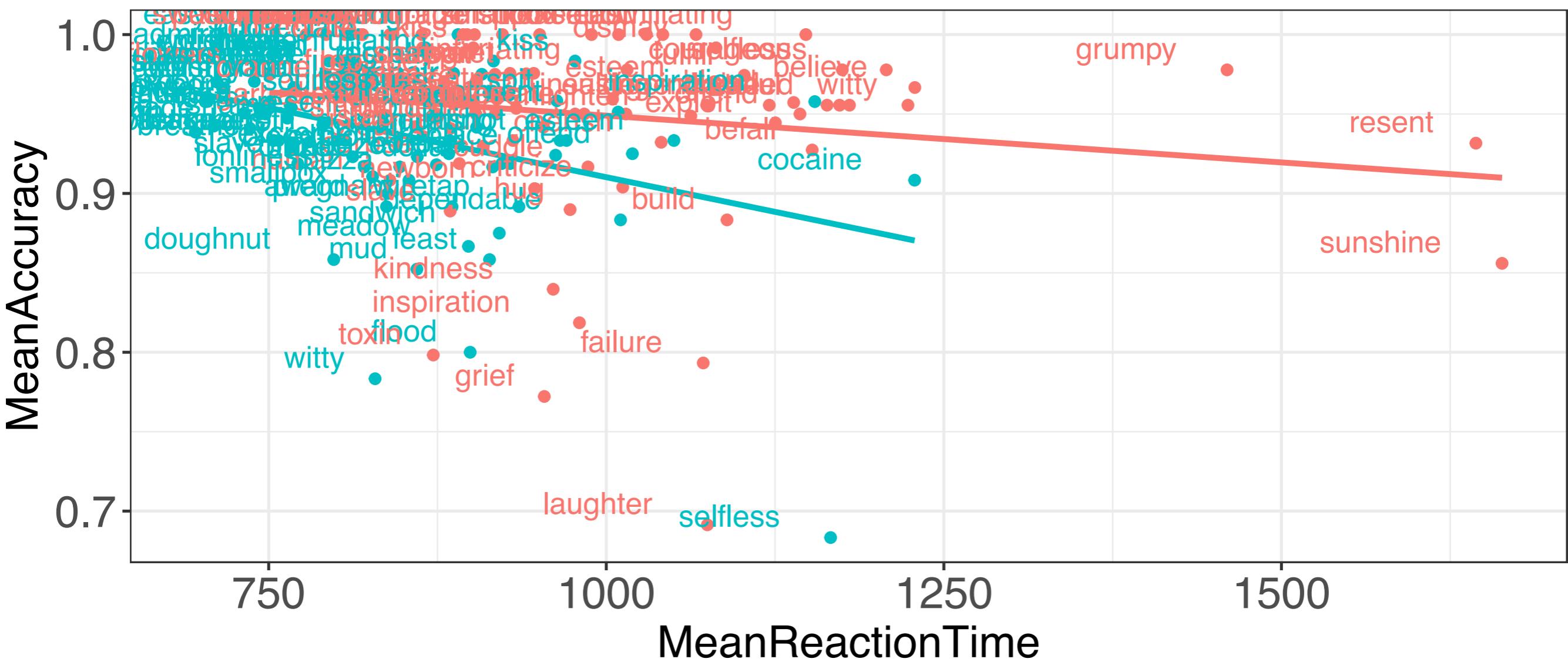
Is affect really faster, or is it still a reflection of a poor conceptual foil?

# Total Accuracy



# ACC<sub>Conceptual</sub> ≥ ACC<sub>Valence</sub>

# Task →<sub>a</sub> Conceptual →<sub>a</sub> Valence



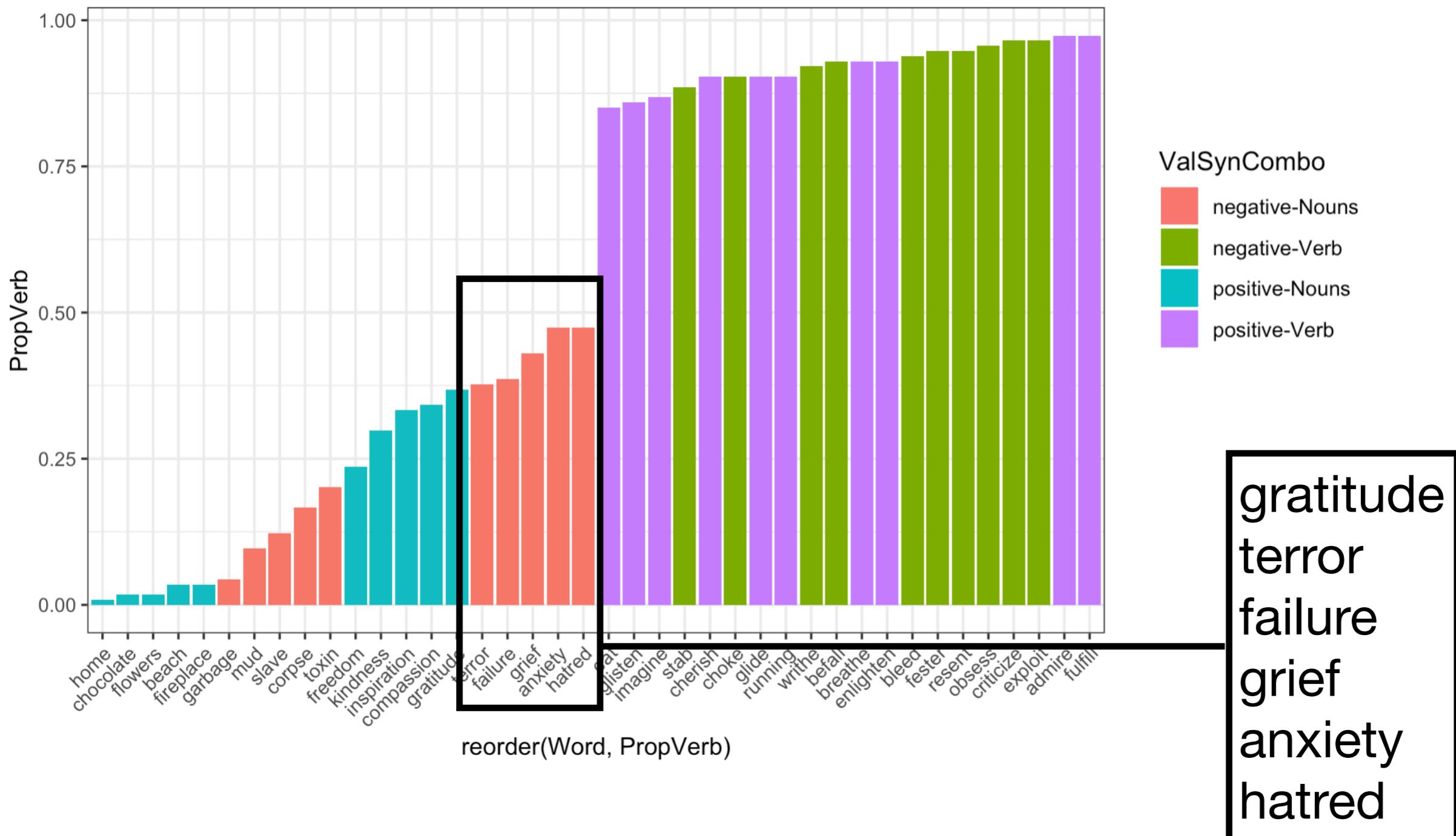
# Accuracy by-participant

# Most Accurate Words

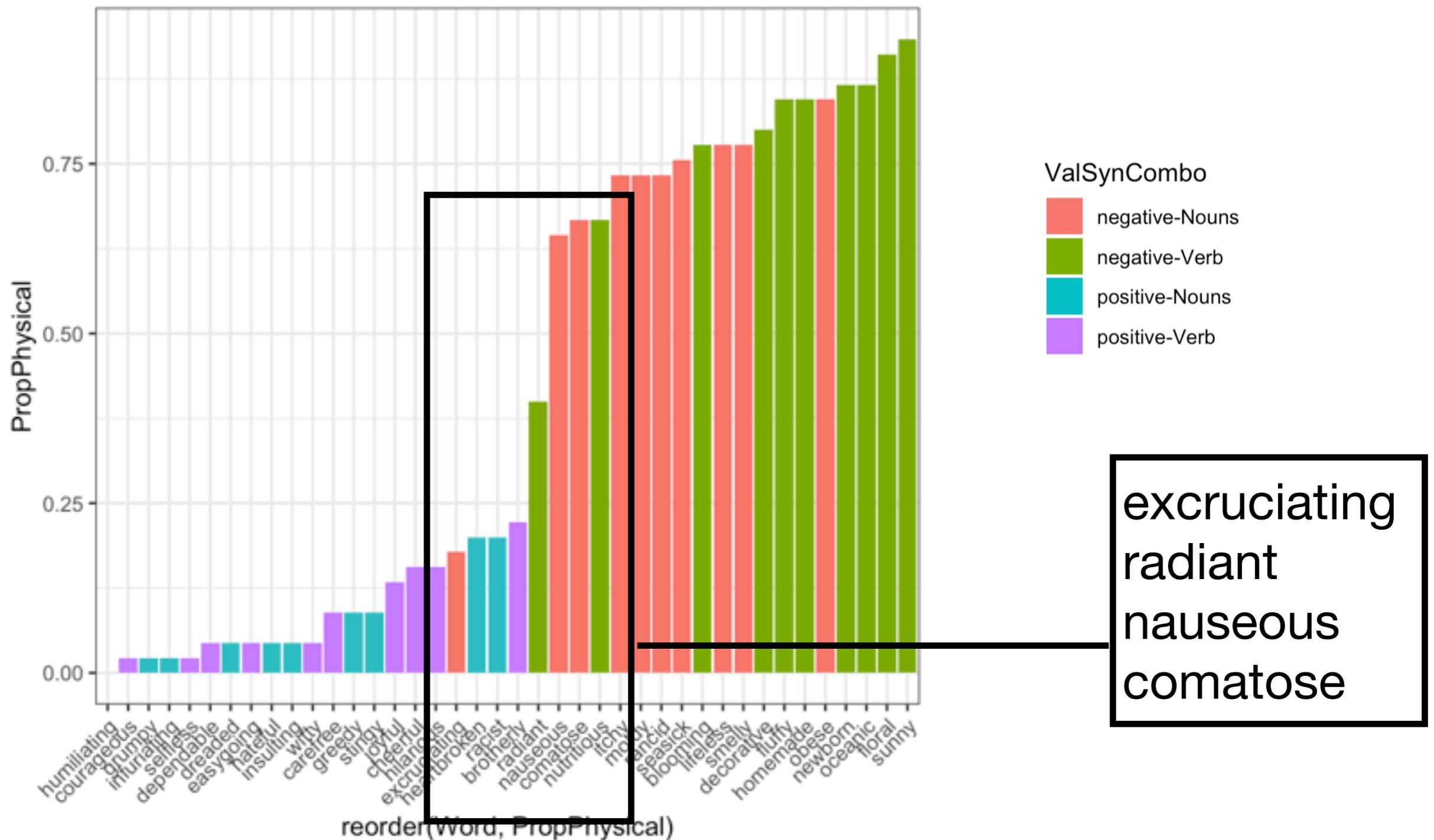
```
> print(concrete_accuracy_tot$Word)
```

[1] "orange"	"pregnant"	"disloyal"	"soulless"	"worthless"
[6] "female"	"sinful"	"awful"	"newborn"	"human"
[11] "chocolate"	"beach"	"fireplace"	"mud"	"regret"
[16] "shame"	"flowers"	"kindness"	"despair"	"failure"
[21] "grief"	"inspiration"	"lonliness"	"resentment"	"kiss"
[26] "stab"	"vomit"	"bleed"	"fulfill"	"spit"
[31] "believe"	"enlighten"	"esteem"	"hug"	"puke"
[36] "discourage"	"displease"	"despair"	"dismay"	"build"
[41] "cherish"	"cuddle"	"admire"	"appreciate"	"dishonor"
[46] "offend"	"humiliating"	"courageous"	"grumpy"	"infuriating"
[51] "selfless"	"dependable"	"dreaded"	"easygoing"	"hateful"
[56] "insulting"	"witty"	"award"	"cocaine"	"corpse"
[61] "dollar"	"doughnut"	"excrement"	"feast"	"flood"
[66] "gunshot"	"heroin"	"laughter"	"meadow"	"pizza"
[71] "poison"	"prize"	"sandwich"	"smallpox"	"sunshine"
[76] "swastika"	"wiretap"	"home"	"chocolate"	"flowers"
[81] "beach"	"fireplace"	"garbage"	"mud"	"slave"
[86] "corpse"	"toxin"	"admire"	"fulfill"	"criticize"
[91] "exploit"	"obsess"	"fester"	"resent"	"bleed"
[96] "befall"	"breathe"	"enlighten"		

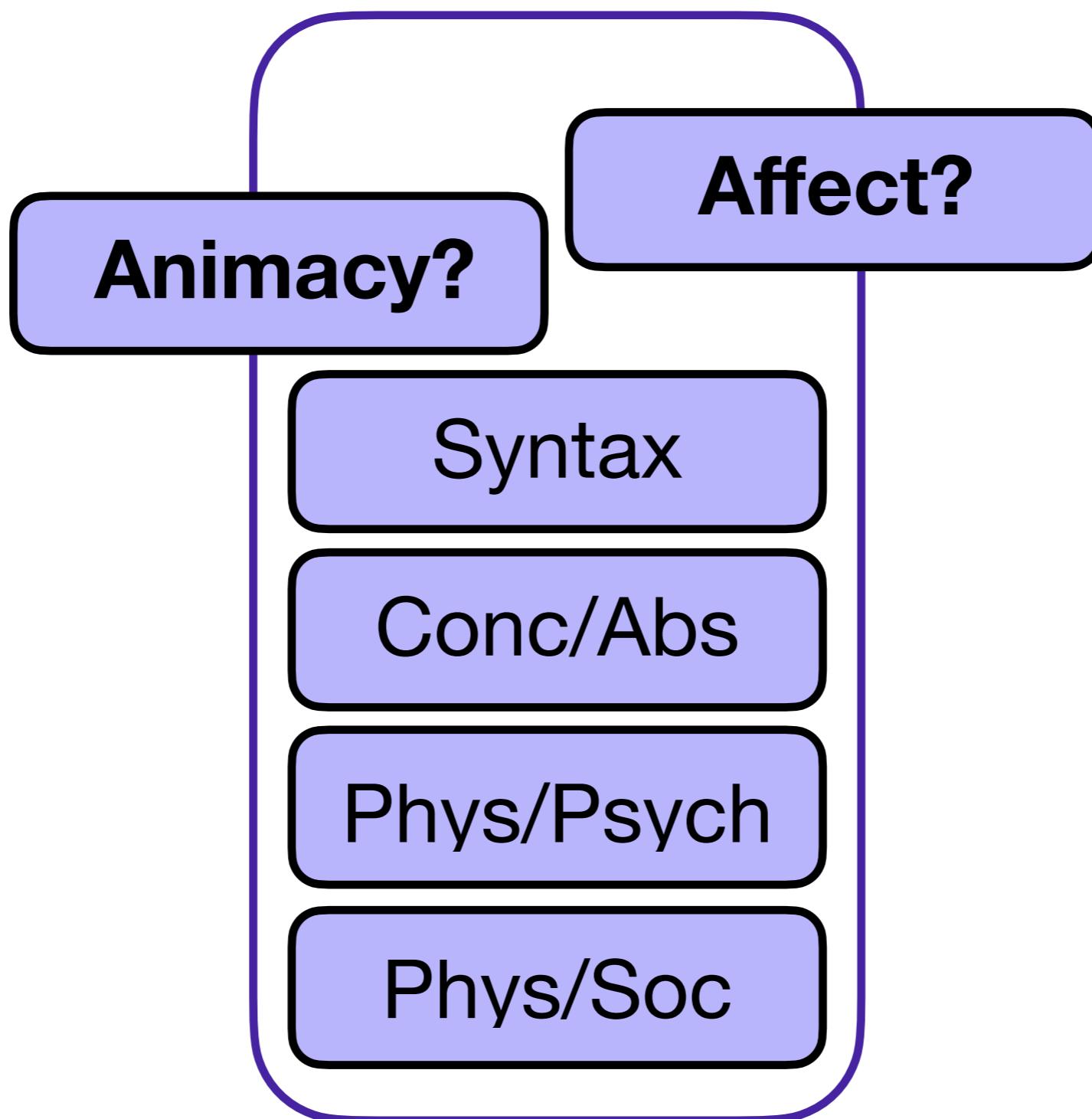
# Responses on Syntax



# Responses on SocPhys

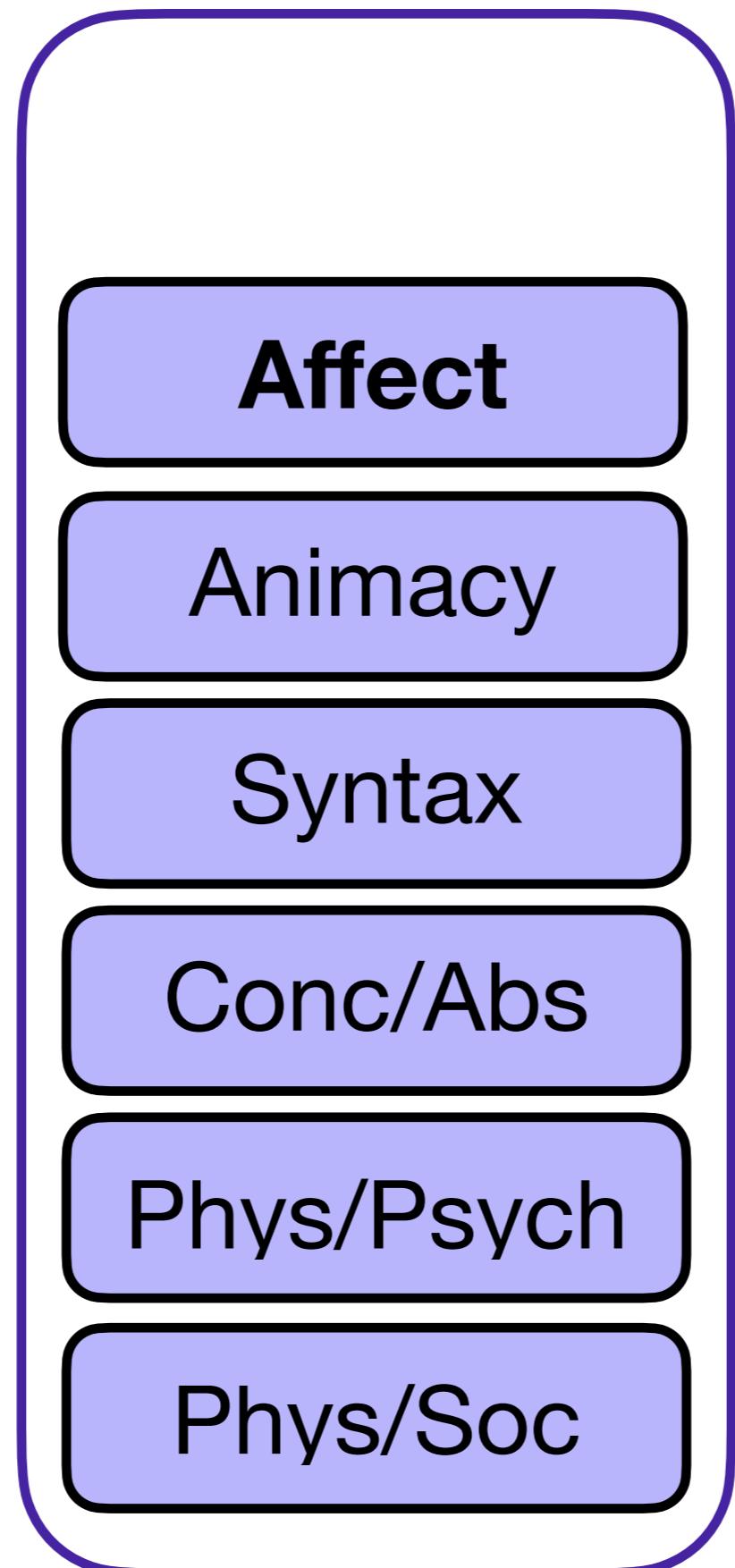


# Animacy vs. Affect



**Not just uncertainty about  
conceptual meaning**

**Not Just Habit**



# Roadmap

I. Introduction

II. Background ~ AFH & affective meaning

III. Experiments 1-4: Speeded Categorization

A. Exp 1: Concrete vs. Abstract (V, N, A)

B. Exp 2a: Physical vs. Psychological (V)

C. Exp 2b: Physical vs. Social (A)

D. Exp 3: Animacy (N)

E. Exp 4: Syntax (N vs. V)

IV. Analyses of Accuracy

V. Experiment 5: Similarity judgements (V)

VI. Discussion

# **Experiment 5: Similarity Judgements**

# Similarity judgements

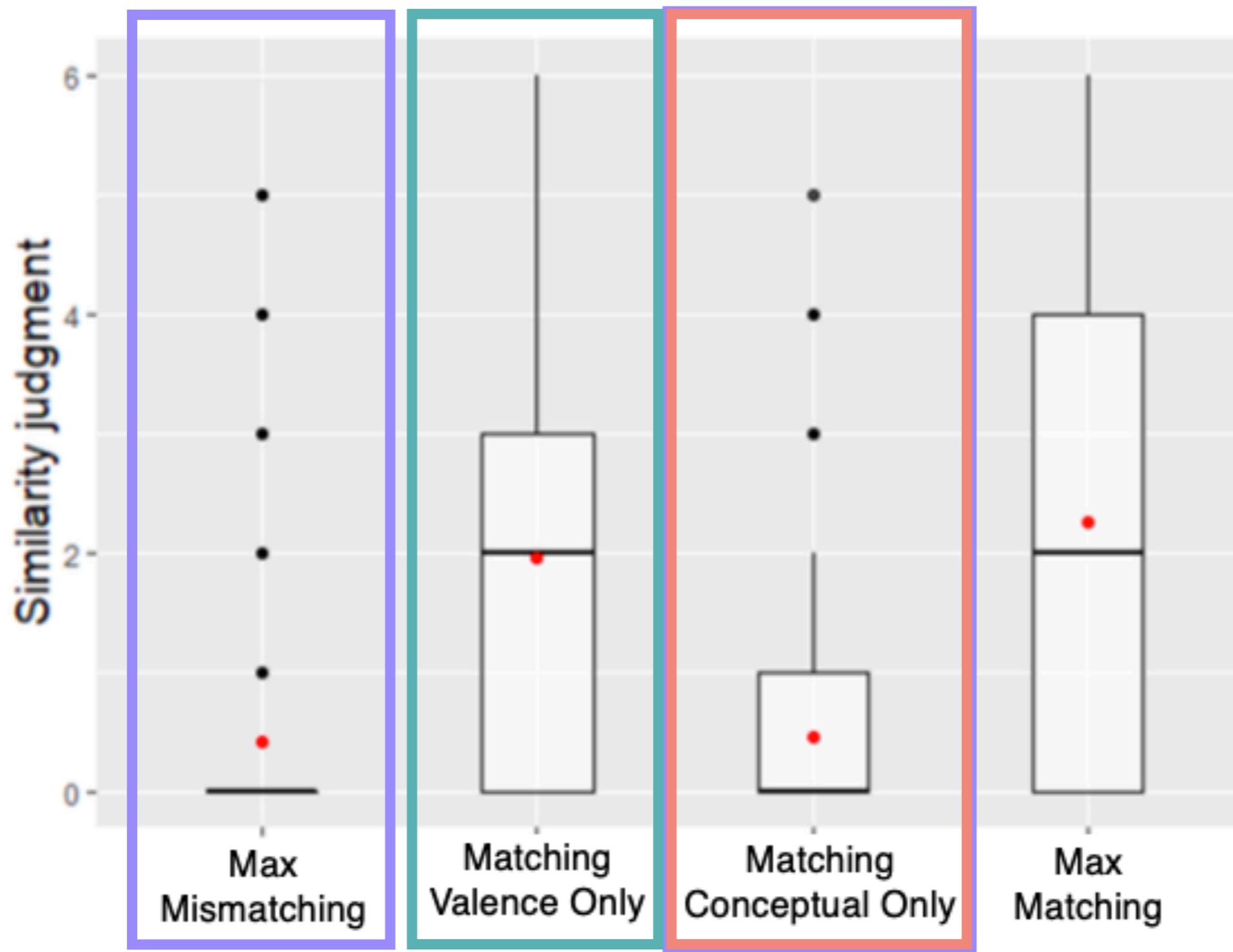
## Measure of word meaning

(Osgood et al 1957; Degen 2015; De Deyne, Perfors & Navarro 2016, a.o.)

2 x 2 design

- Valence (pos, neg) x Conceptual (phys, psych)
- Controls: MaxMismatch, MaxMatch
- Test: **MatchingValence only** vs.  
**MatchingConceptual only**
- DM: slider from 0 (dissimilar) to 6 (similar)

# Results (n=62)



# Discussion ~ Support for AFH

Valence faster than most Conceptual categories except Animacy

Persistent effect: found in majority of words tested

Valence, not Conceptual, features determine word meaning (similarity)

# Conclusion

Affective information is prominent in both processing and use

Affect

Animacy

Syntax

Conc/Abs

Phys/Psych

Phys/Soc

# Thank you!

EPIHETS-STAHL Workshop attendees  
Projet SU - Emergence "REV" OP24-126  
Valence Asymmetries, ERC Advanced Grant, grant n°  
101142133



Universitat  
Pompeu Fabra  
Barcelona

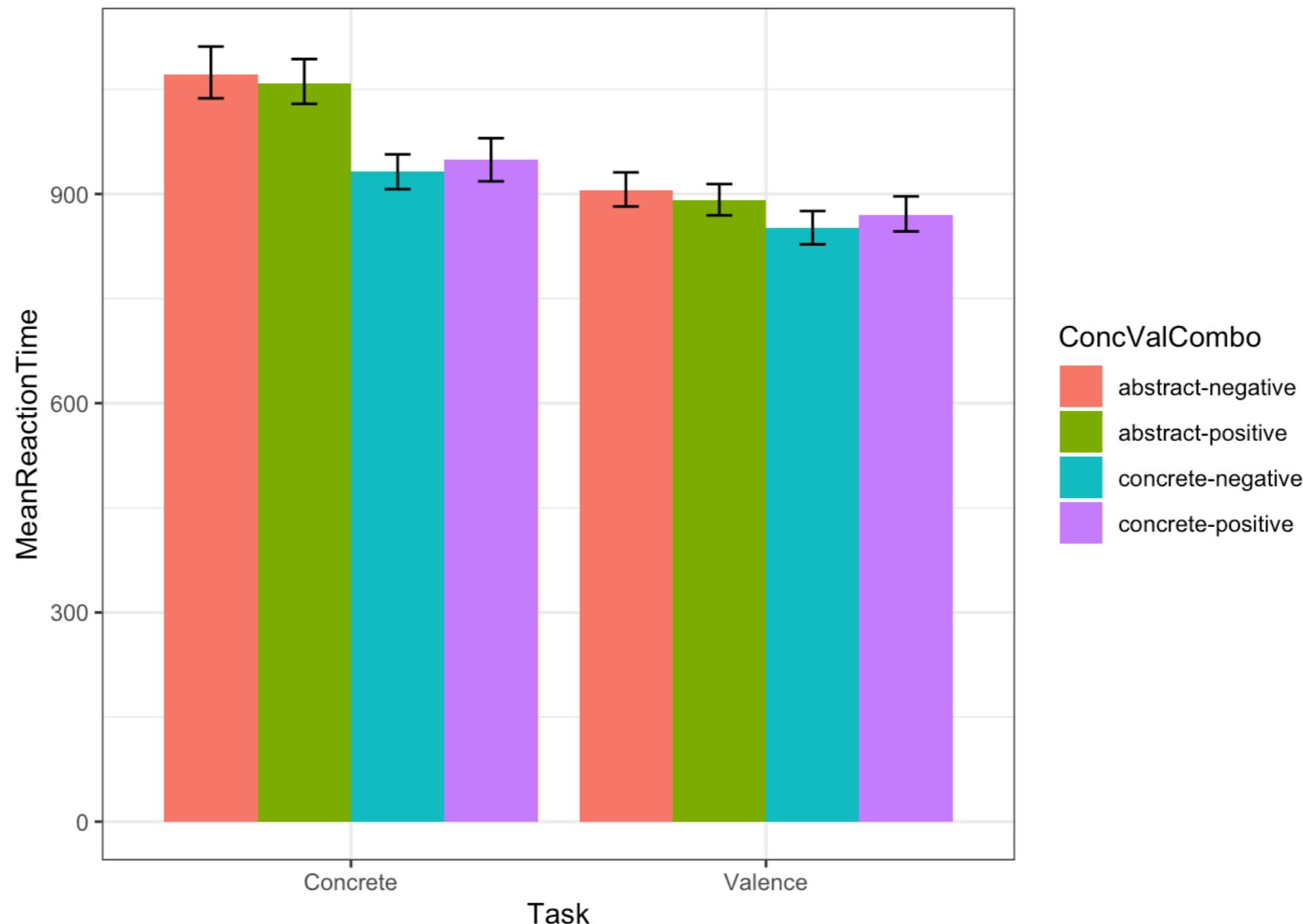


Funded by  
the European Union

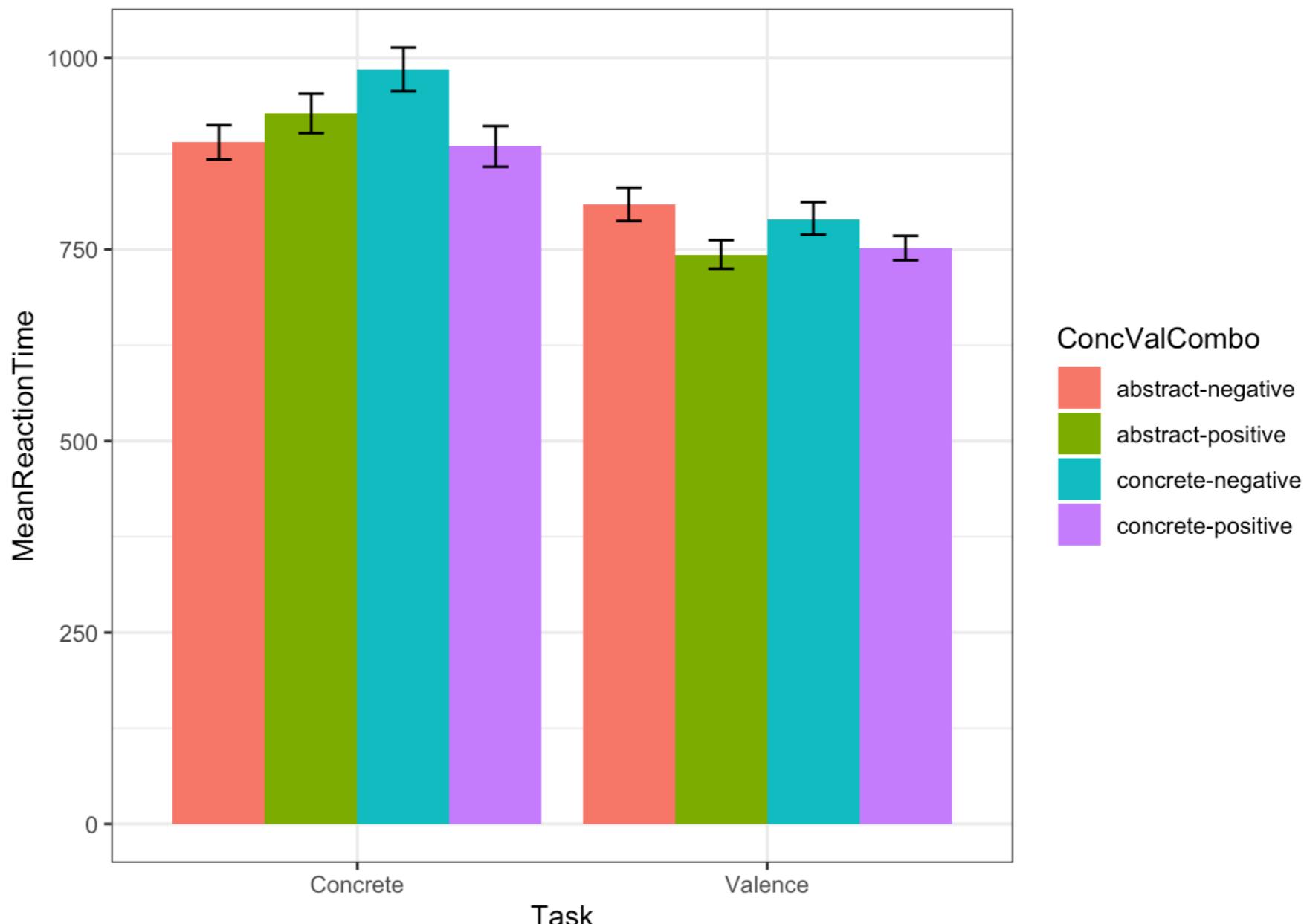


# **Features and RT**

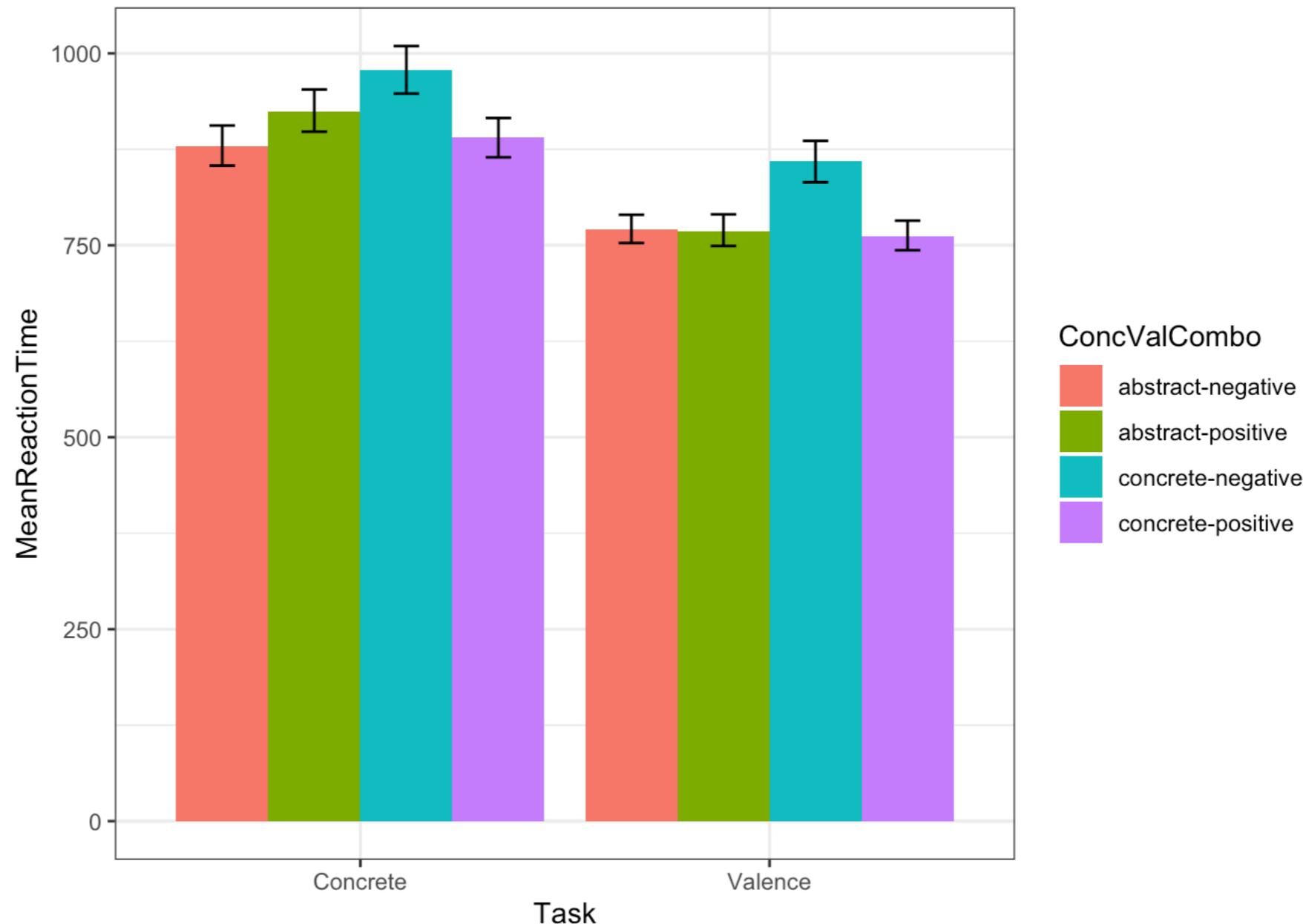
# Concreteness - Verbs



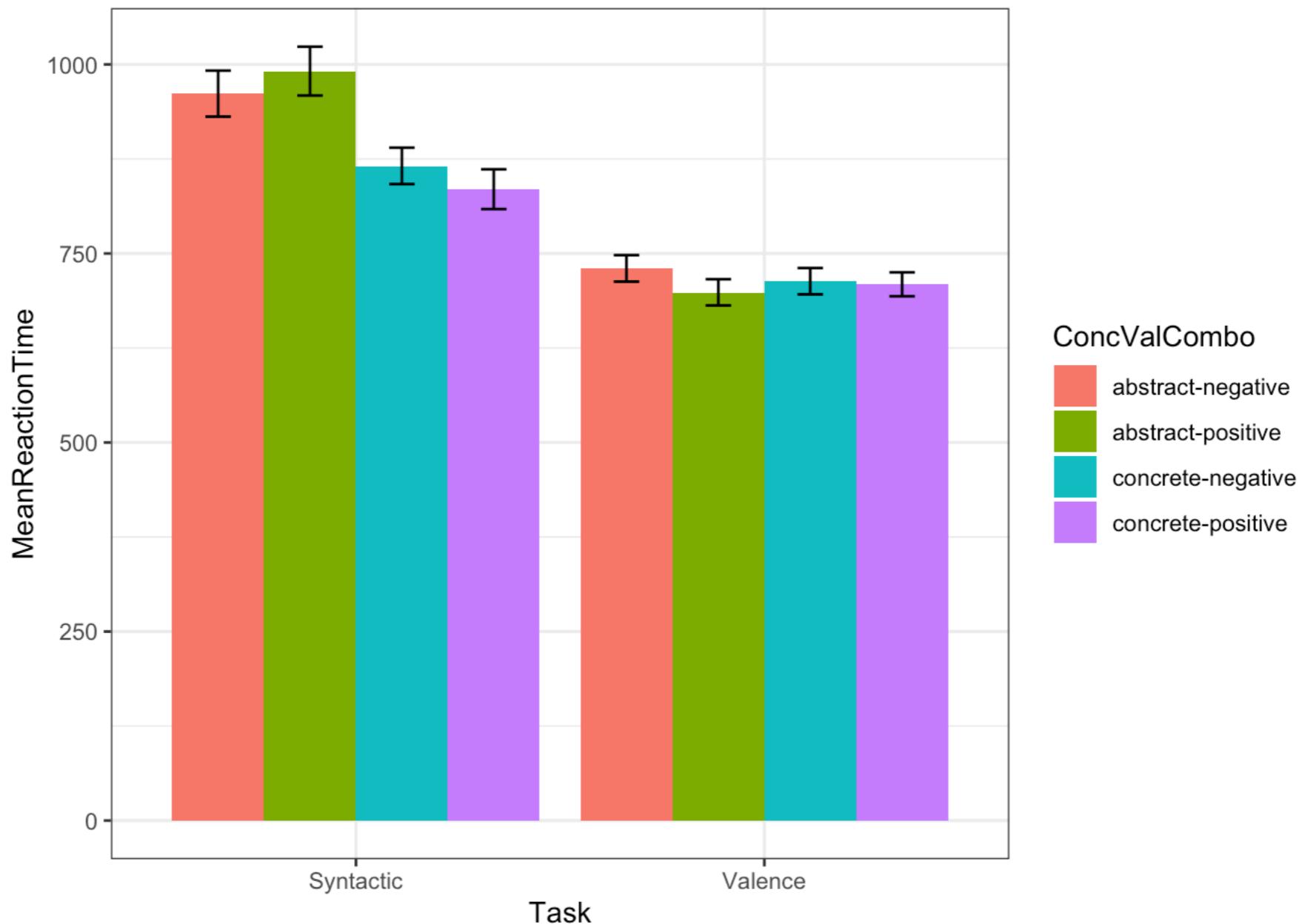
# Concreteness - Nouns



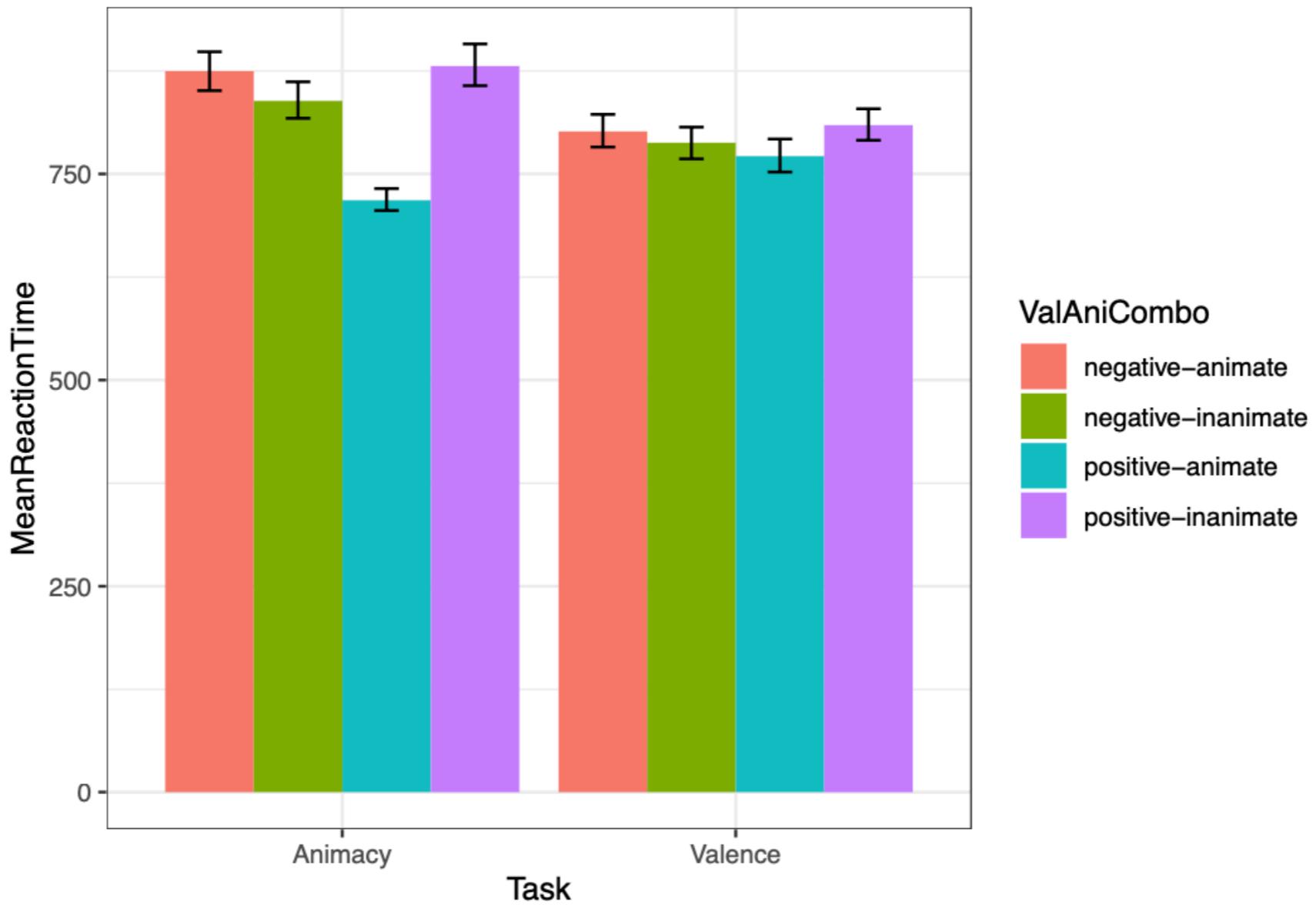
# Concreteness - Adjs



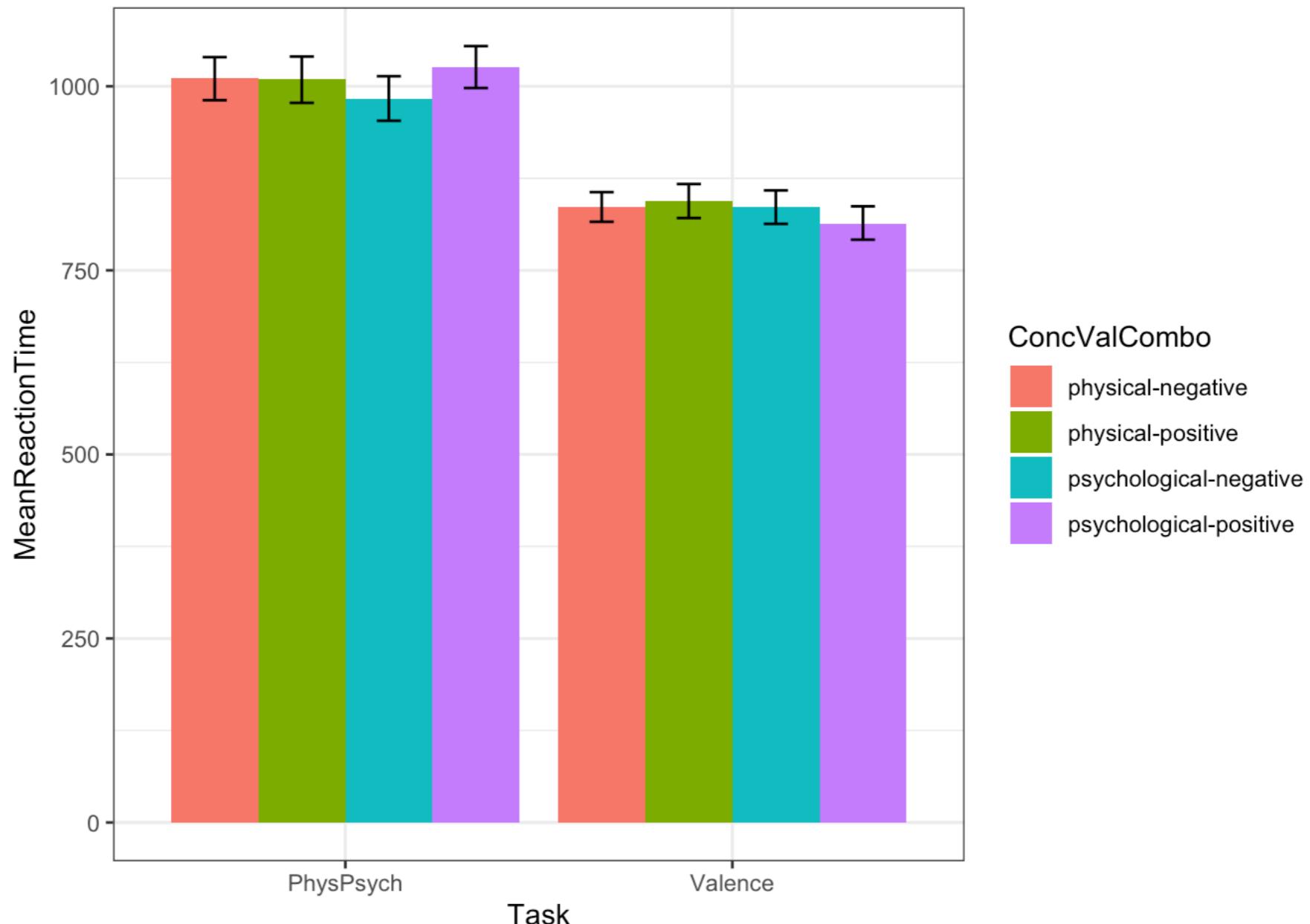
# Syntax



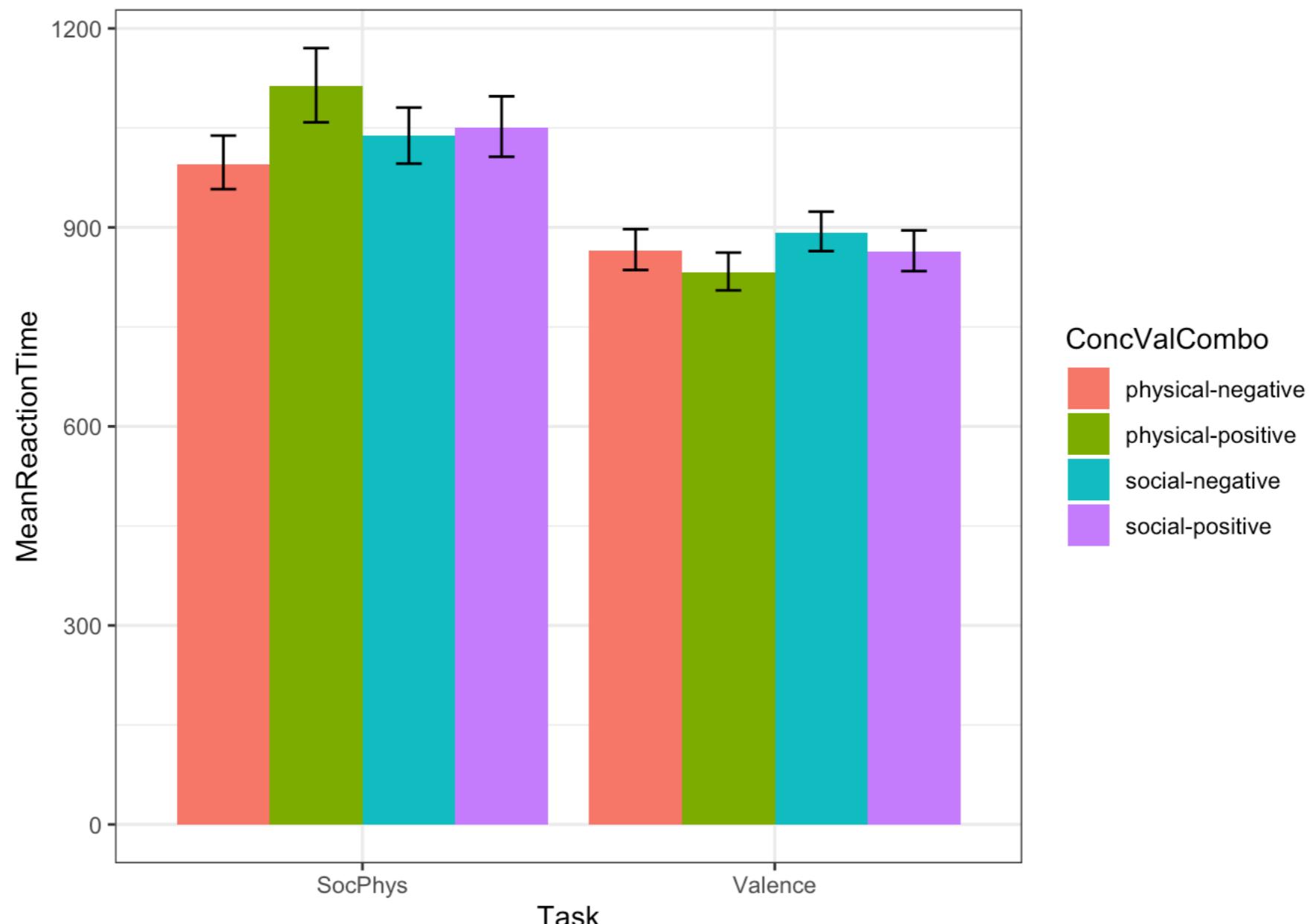
# Animacy



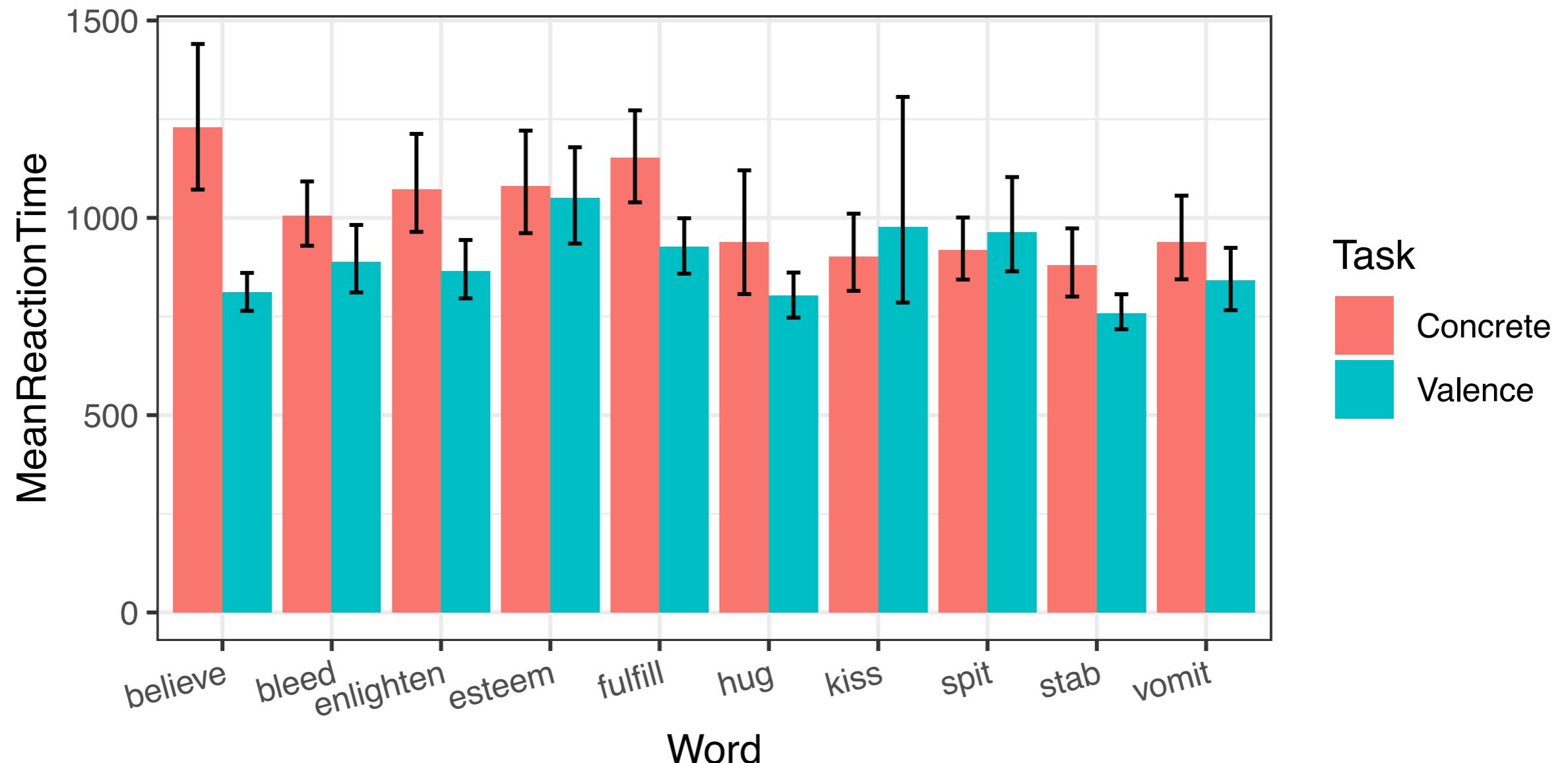
# Physical-psychological



# Physical-social



# Conc/Abs Verbs



# Cluster Analysis:

What latent groupings emerge across the lexicon?

# Cluster Analysis with GMM

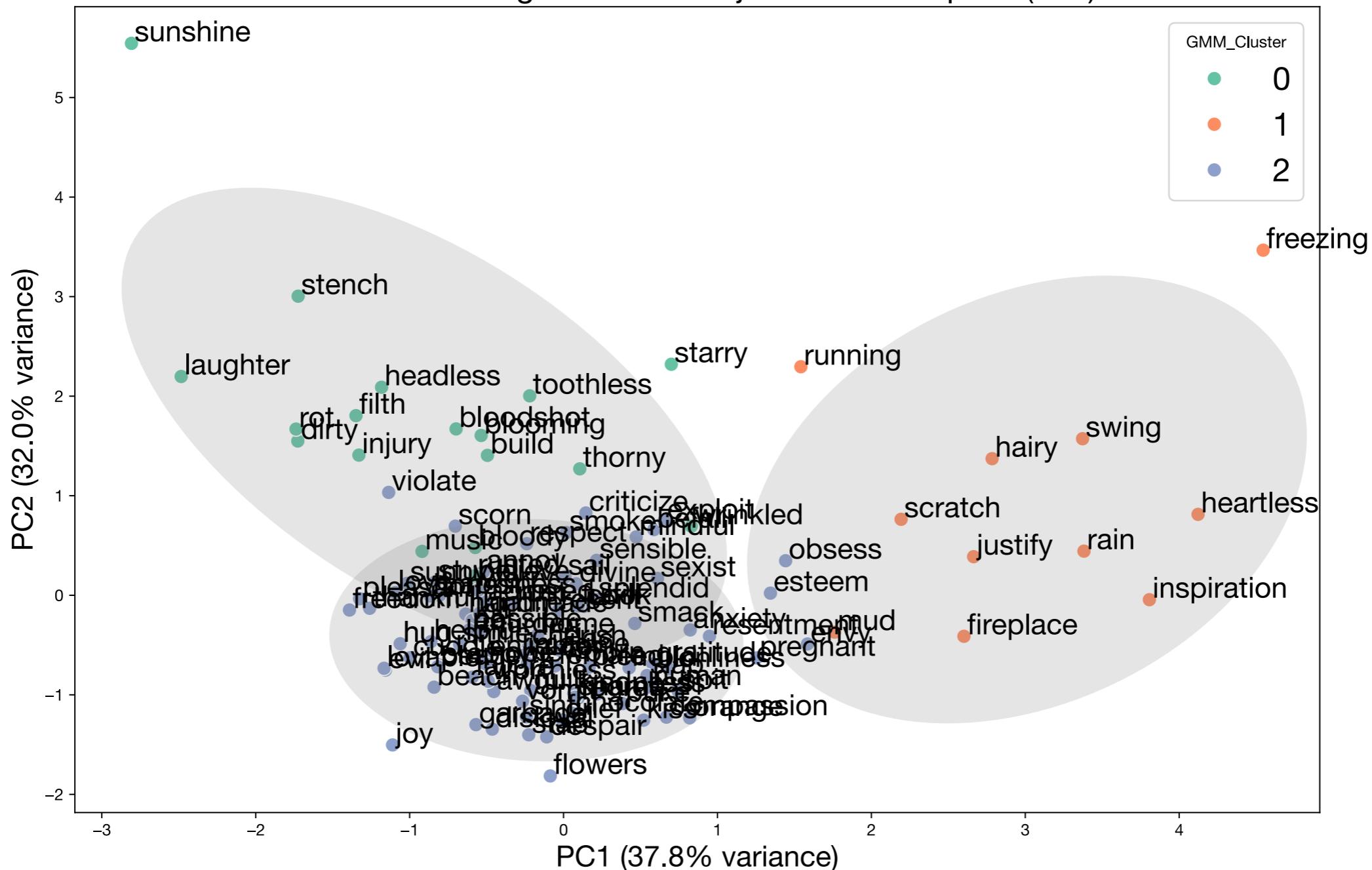
Gaussian Mixture Model (n=117)

Group the words based on behavioral profile in the Valence and Concreteness task (four features)

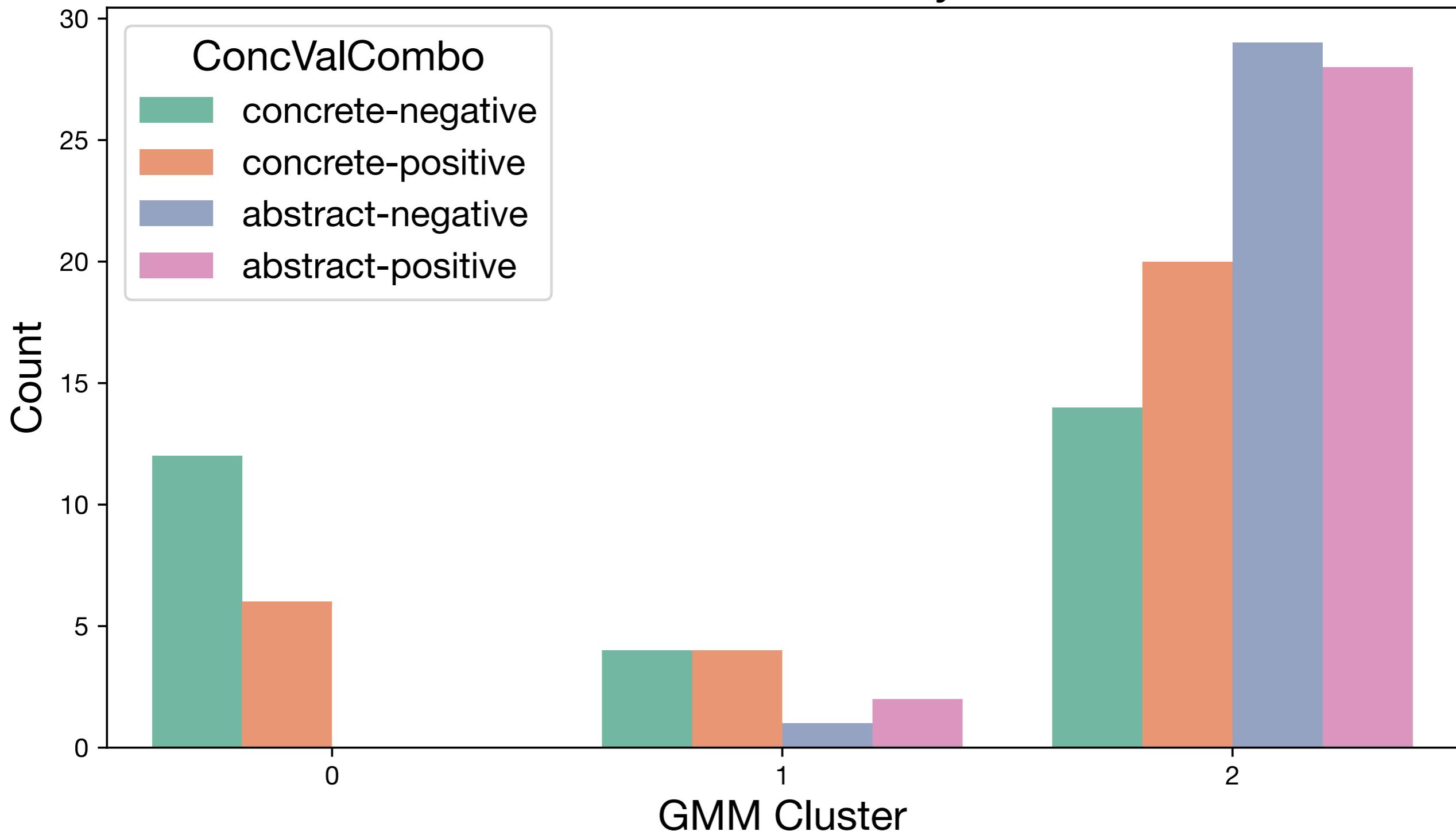
- Mean Reaction Time
- Mean Accuracy

# Classifying based on behavior only

## GMM Clustering with PCA Projection and Ellipses (n=3)



## Counts of ConcValCombo by GMM Cluster



## Cluster 0 (18 words):

---

<b>negative / concrete</b>	bloodshot, bloody, dirty, filth, headless, injury, rot, rusted, stench, thorny, toothless, wrinkled
<b>positive / concrete</b>	blooming, build, laughter, music, starry, sunshine

## Cluster 1 (11 words):

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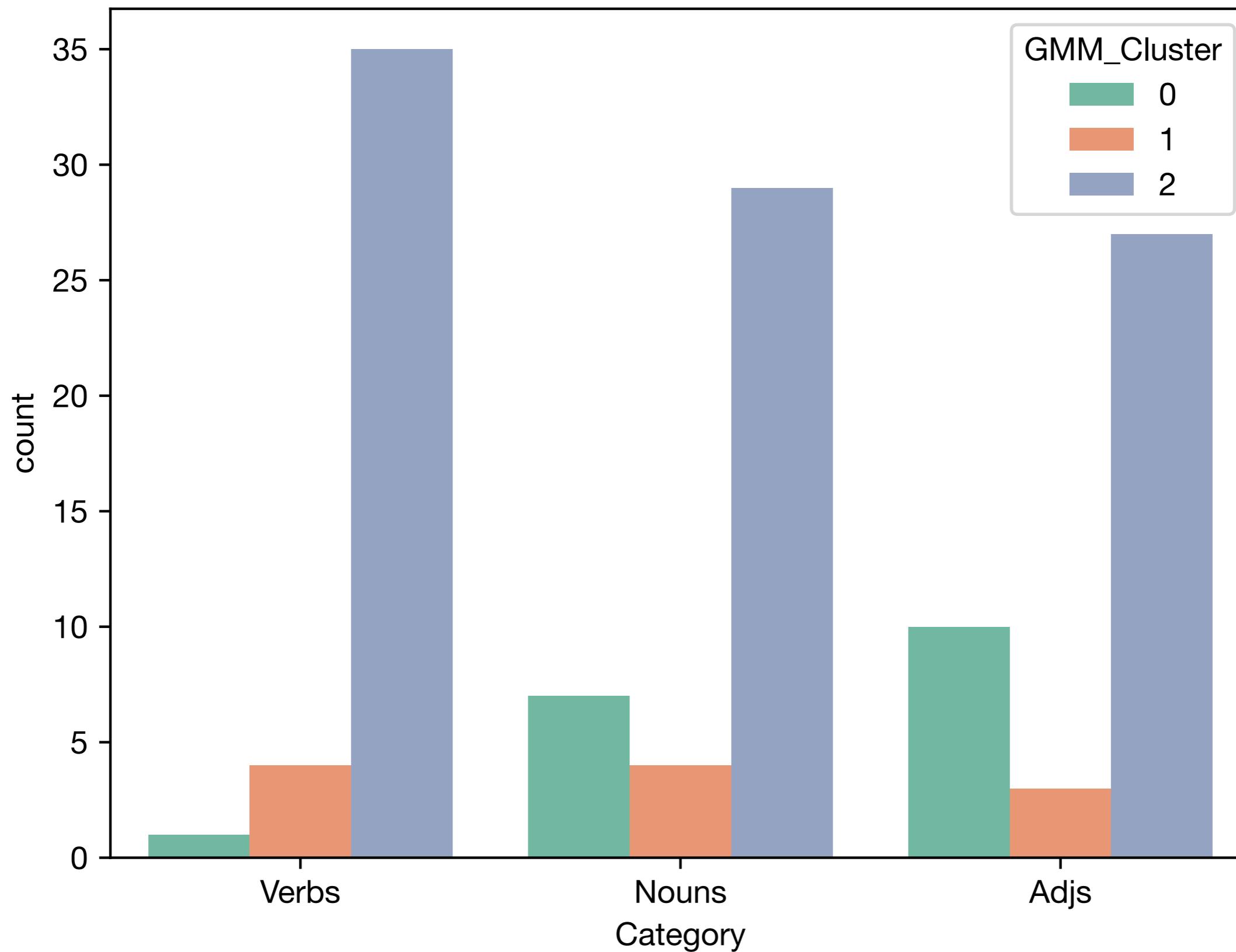
<b>negative / abstract</b>	heartless
<b>negative / concrete</b>	freezing, hairy, mud, scratch
<b>positive / abstract</b>	inspiration, justify
<b>positive / concrete</b>	fireplace, rain, running, swing

## Cluster 2 (91 words):

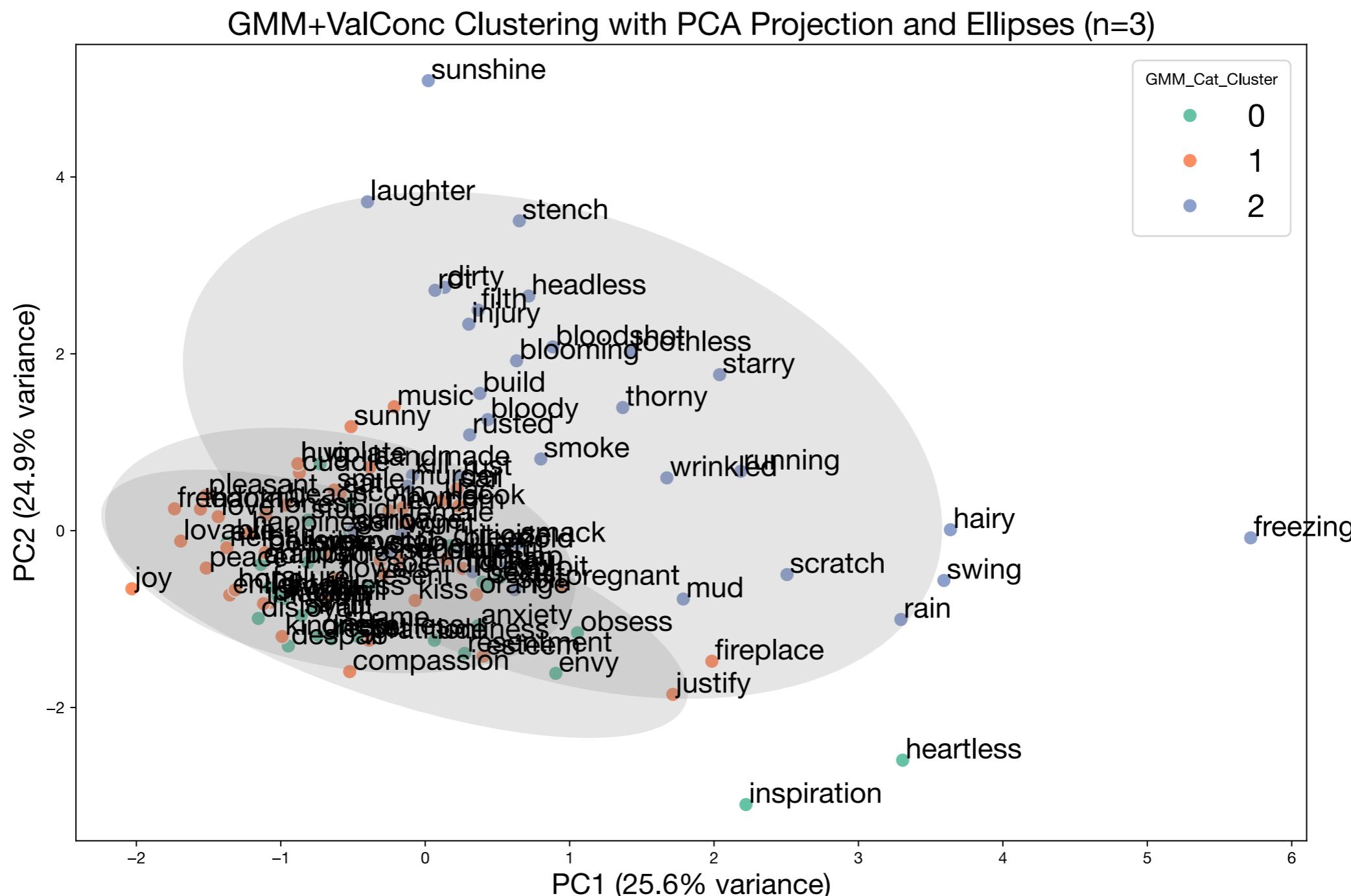
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<b>negative / abstract</b>	annoy, anxiety, awful, befall, crappy, criticize, despair, disloyal, envy, evil, exploit, failure, grief, guilt, loathe, loneliness, obsess, regret, resent, resentment, scorn, sexist, shame, sinful, soulless, stupid, violate, worry, worthless
<b>negative / concrete</b>	bleed, garbage, kill, mold, murder, puke, rust, slap, smack, smoke, spit, stab, vomit, vomit
<b>positive / abstract</b>	admired, believe, cherish, compassion, divine, enlighten, esteem, freedom, fulfill, gratitude, happiness, helpful, honest, hope, hope, imagine, joy, kindness, lovable, love, mindful, peace, pleasant, possible, respect, sensible, splendid, thankful
<b>positive / concrete</b>	beach, chocolate, cook, cuddle, eat, female, flowers, handmade, home, hug, human, kiss, lilac, newborn, orange, pregnant, sail, smile, sunny

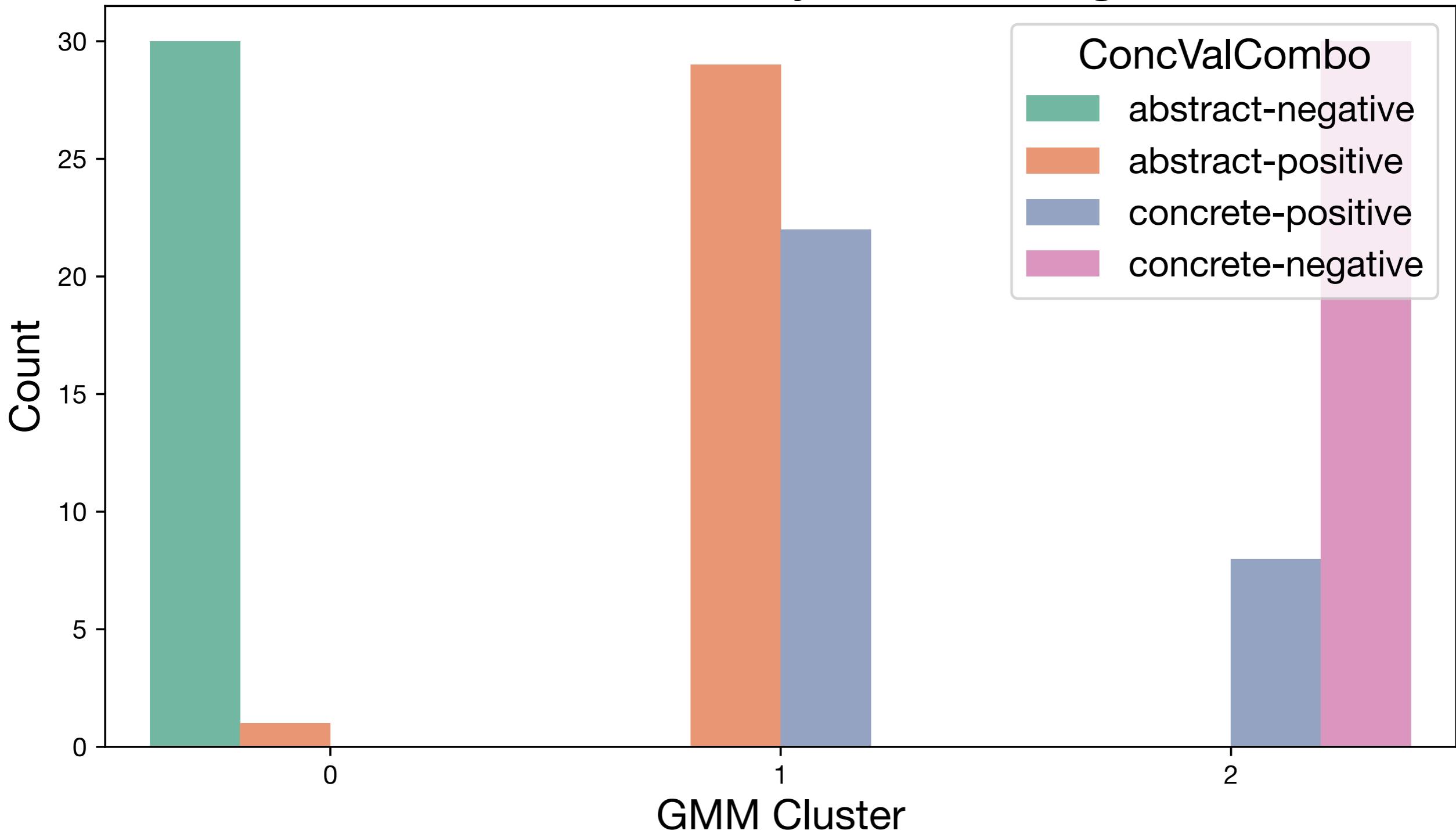
## Cluster membership by Category



# Classifying based on behavior AND Meaning



# Counts of ConcValCombo by GMM Categorical Cluster



## **Cluster 0 (31 words):**

---

<b>negative / abstract</b>	annoy, anxiety, awful, befall, crappy, criticize, despair, disloyal, envy, evil, exploit, failure, grief, guilt, heartless, loathe, loneliness, obsess, regret, resent, resentment, scorn, sexist, shame, sinful, soulless, stupid, violate, worry, worthless
<b>positive / abstract</b>	inspiration

## **Cluster 1 (51 words):**

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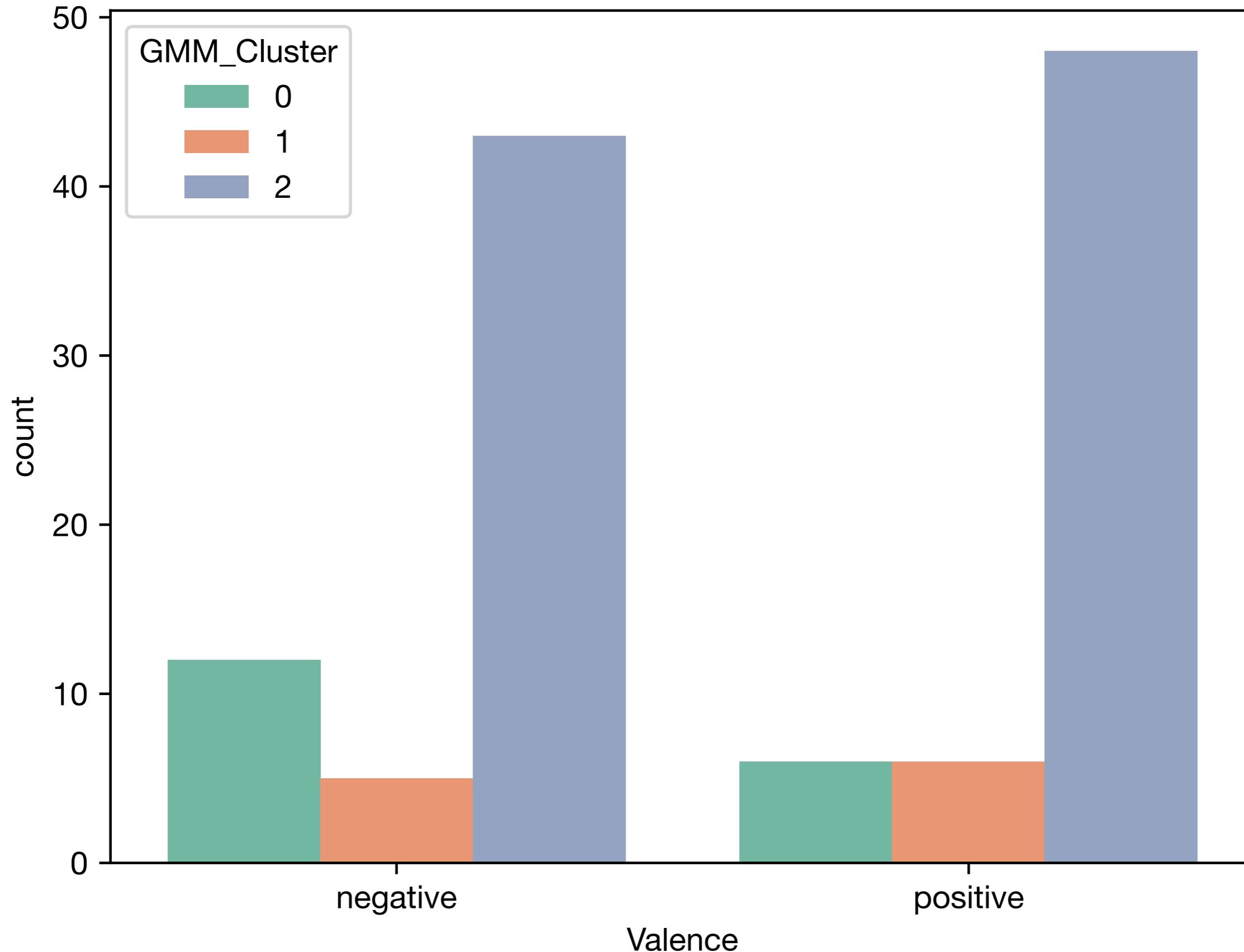
<b>positive / abstract</b>	admired, believe, cherish, compassion, divine, enlighten, esteem, freedom, fulfill, gratitude, happiness, helpful, honest, hope, hope, imagine, joy, justify, kindness, lovable, love, mindful, peace, pleasant, possible, respect, sensible, splendid, thankful
<b>positive / concrete</b>	beach, chocolate, cook, cuddle, eat, female, fireplace, flowers, handmade, home, hug, hug, human, kiss, lilac, music, newborn, orange, pregnant, sail, smile, sunny

## **Cluster 2 (38 words):**

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<b>negative / concrete</b>	bleed, bloodshot, bloody, dirty, filth, freezing, garbage, hairy, headless, injury, kill, mold, mud, murder, puke, rot, rust, rusted, scratch, slap, smack, smoke, spit, stab, stench, thorny, toothless, vomit, vomit, wrinkled
<b>positive / concrete</b>	blooming, build, laughter, rain, running, starry, sunshine, swing

## Cluster membership by Valence



## Cluster membership by Concreteness

