Degrees of metaphoricity:

A quantitative gesture analysis

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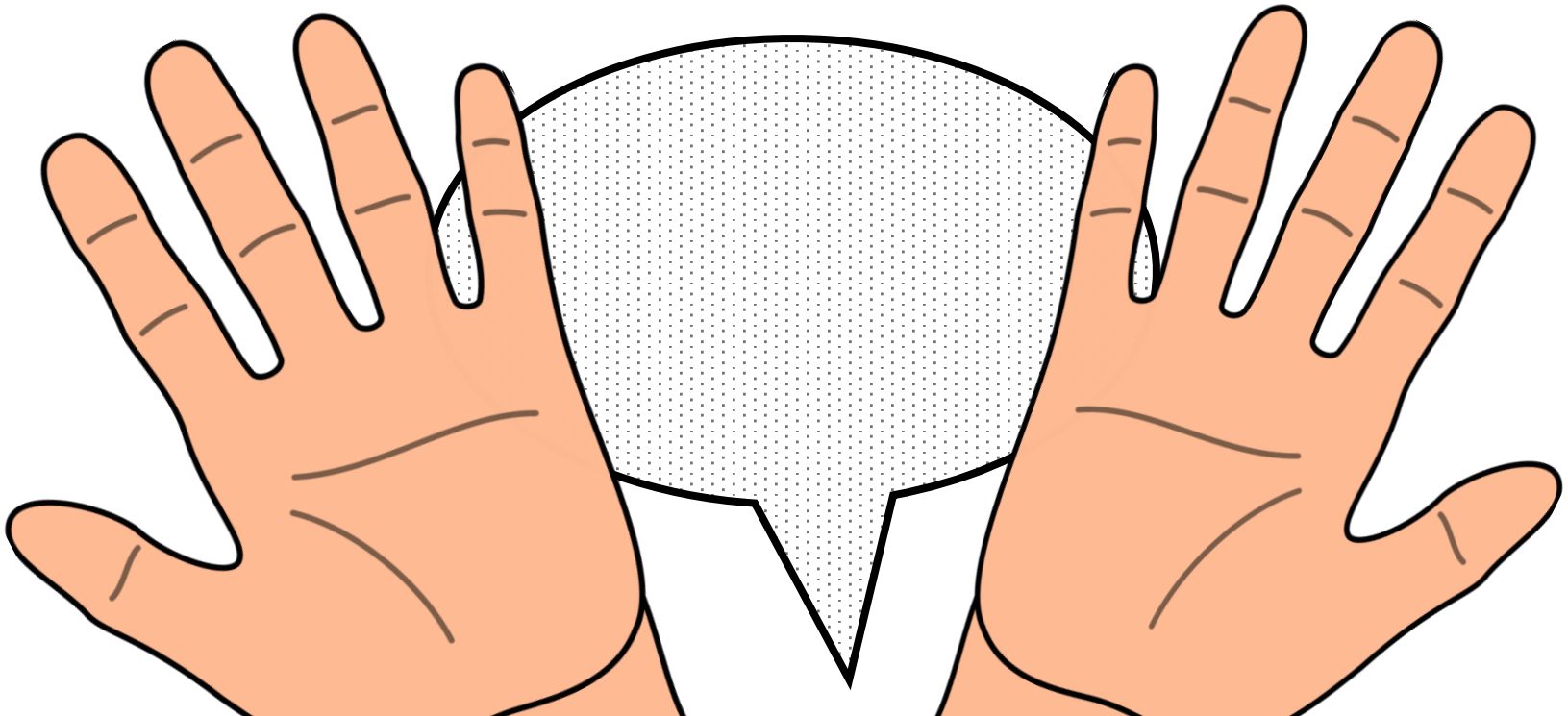

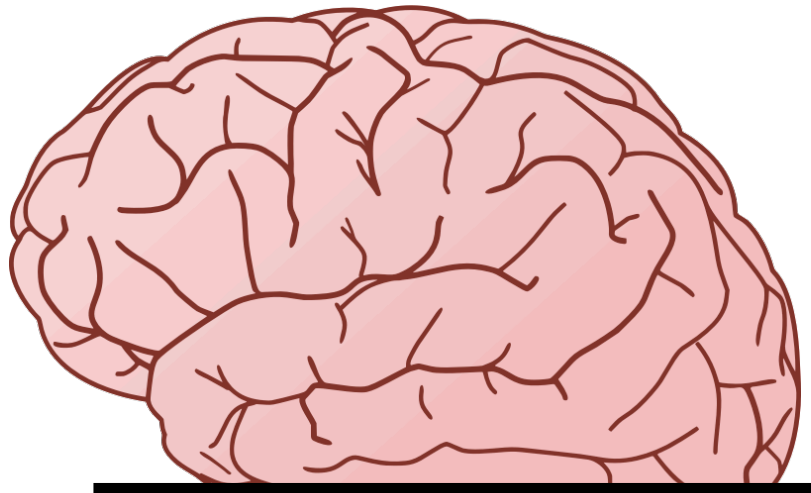

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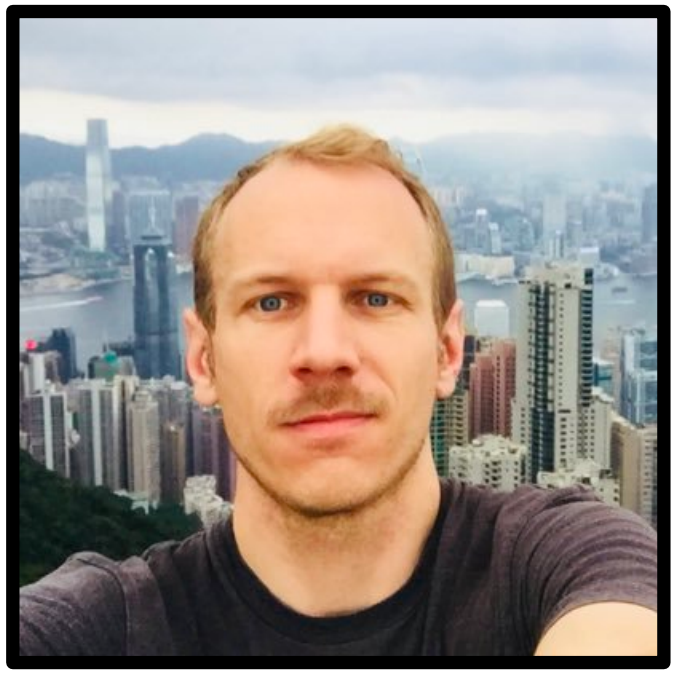

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1. Theory

2. Study

1. Theory

‘her spirits rose’

‘finished on a high’

‘raise the standard’

‘feeling on top form’

‘reaching a low point’

‘my heart sank’

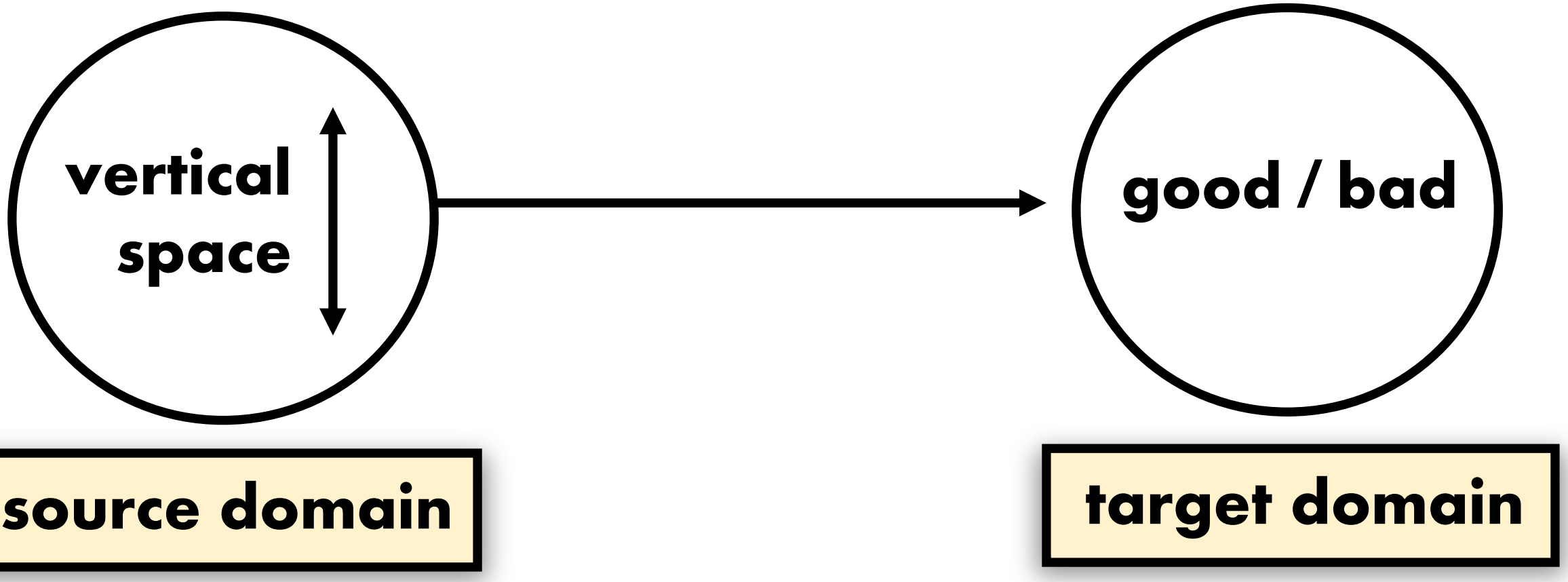
‘rock bottom and below’

‘low standard’

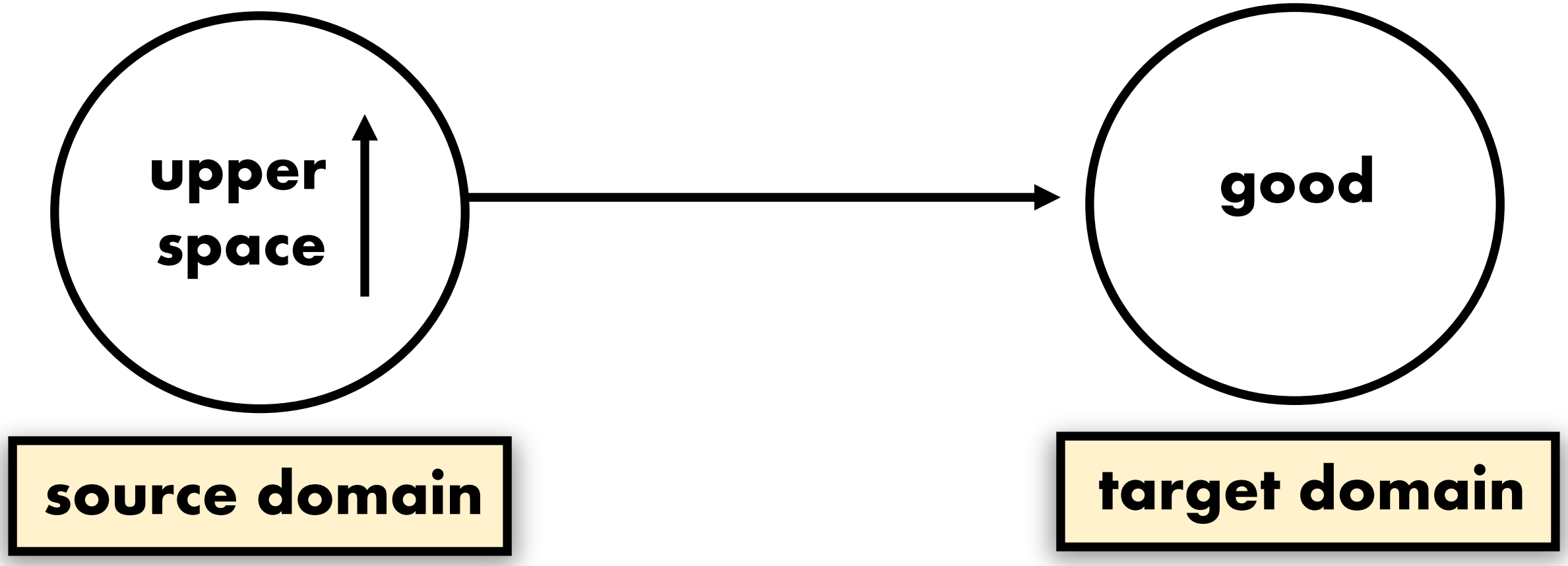
BYU-BNC (Davies, 2004)

Conceptual Metaphor Theory

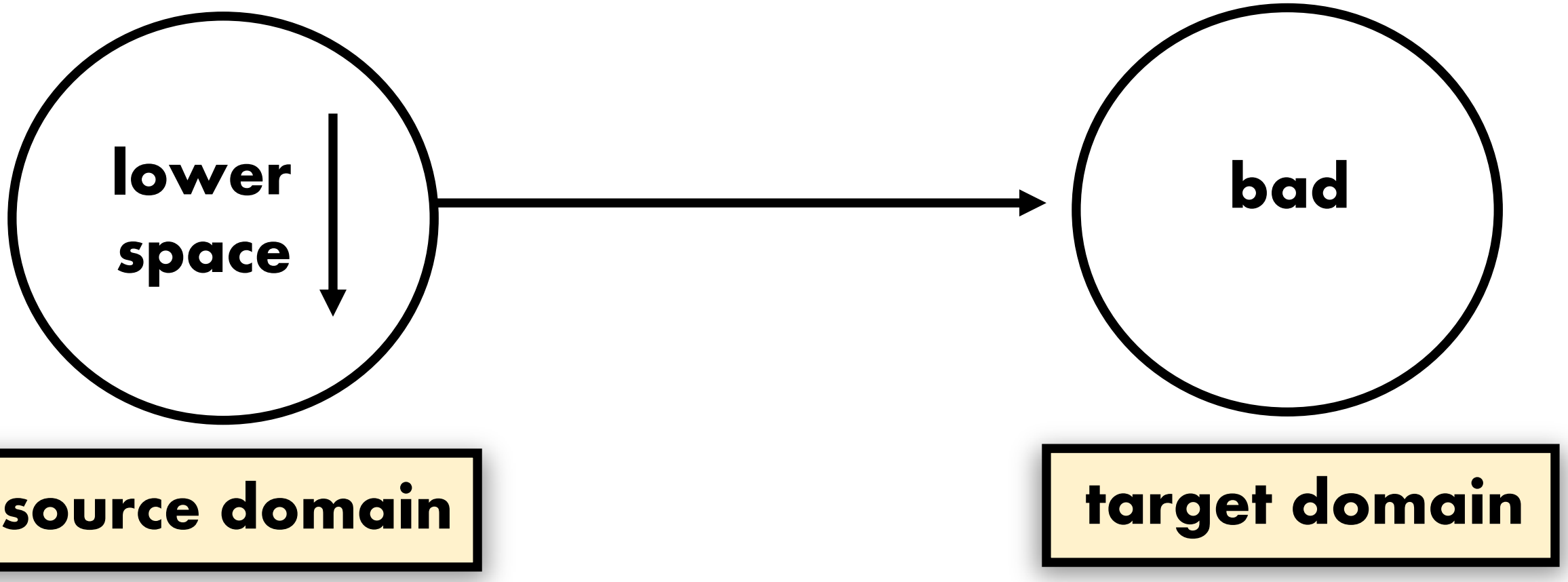
Lakoff and Johnson (1980), Gibbs (1994), Kövecses (2002)



‘raise the standard’



‘lower the standard’



Casasanto & de Bruin (2019)
Meier & Robinson (2004)

Casasanto & Dijkstra (2010)

Woodin & Winter (2018), see Tversky et al. (1991)

However...

Some linguistic metaphors may be so conventionalised that their metaphorical meanings hardly occur to those who use them.

Black (1993), Müller (2008)

So, how do we know when someone is 'thinking metaphorically' when they use a linguistic metaphor?

One answer is by looking at whether they use metaphoric gestures.

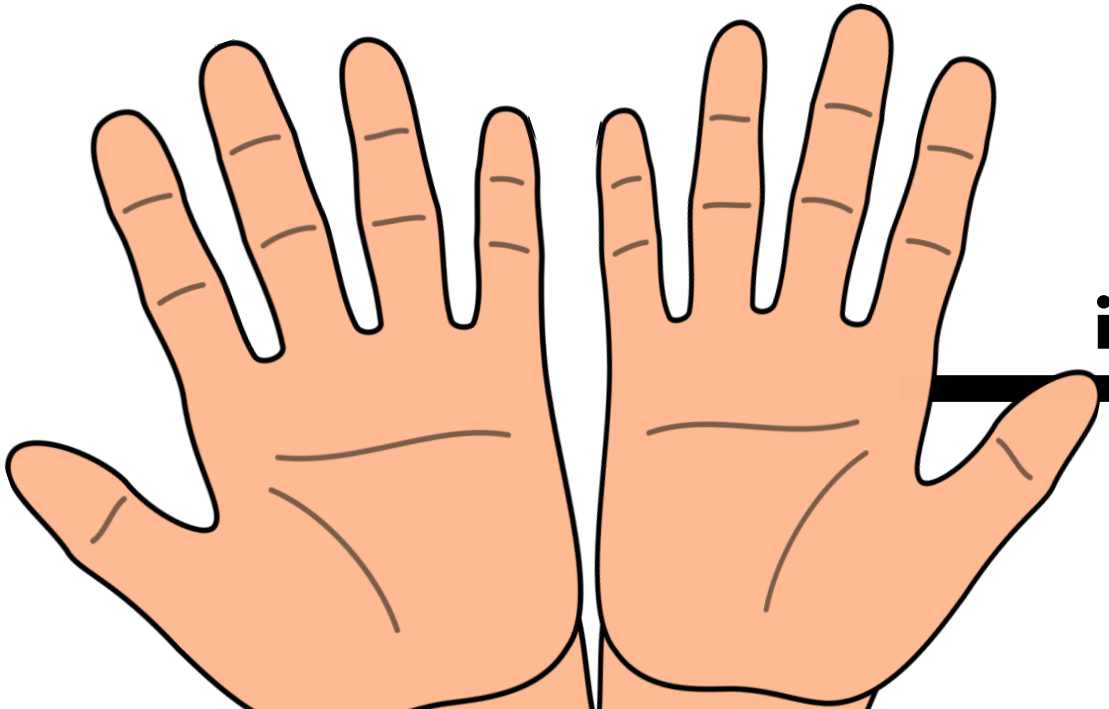
McNeill (1992), Cienki & Müller (2008), Müller (2008)


Monday
YOUNG SOUTHEAST ASIAN LEADERS INITIATIVE
The White House
East Room
C-SPAN2
c-span.org


Thursday
WHITE HOUSE
WASHINGTON
C-SPAN
c-span.org

Metaphoric gestures

McNeill (1992, 2005), Kendon (2005), Cienki & Müller (2008), Müller (2008)

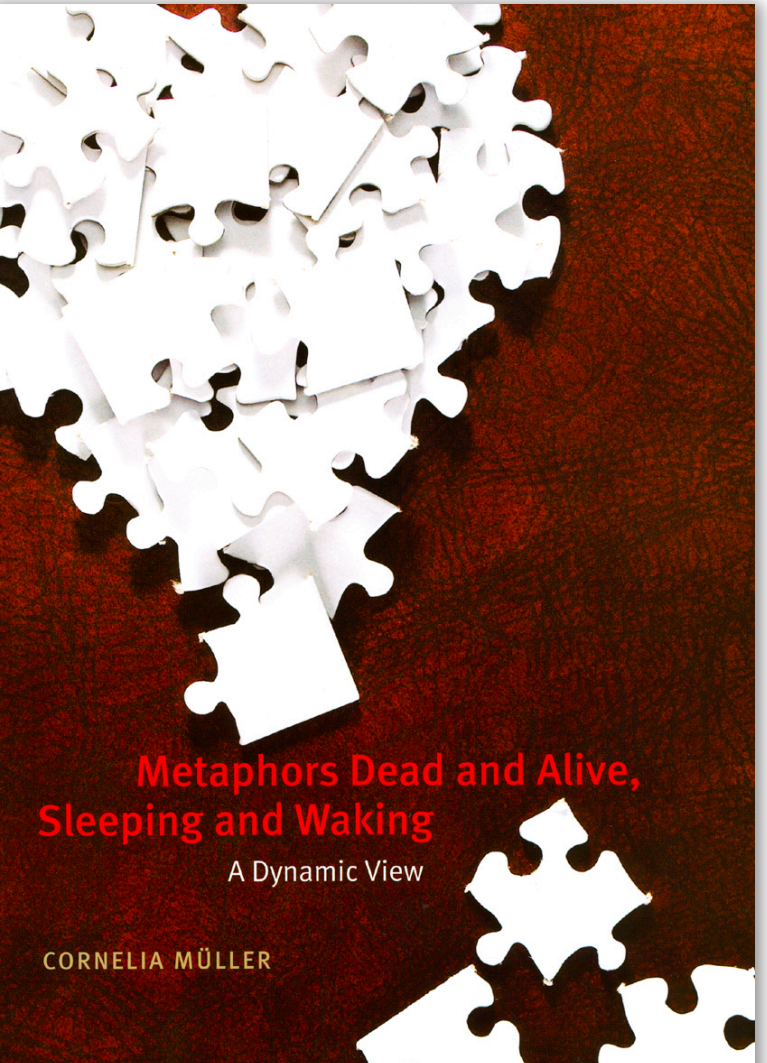


iconic mapping

metaphor's source domain

Degrees of metaphoricity

Müller (2008), see also Cameron (1991)

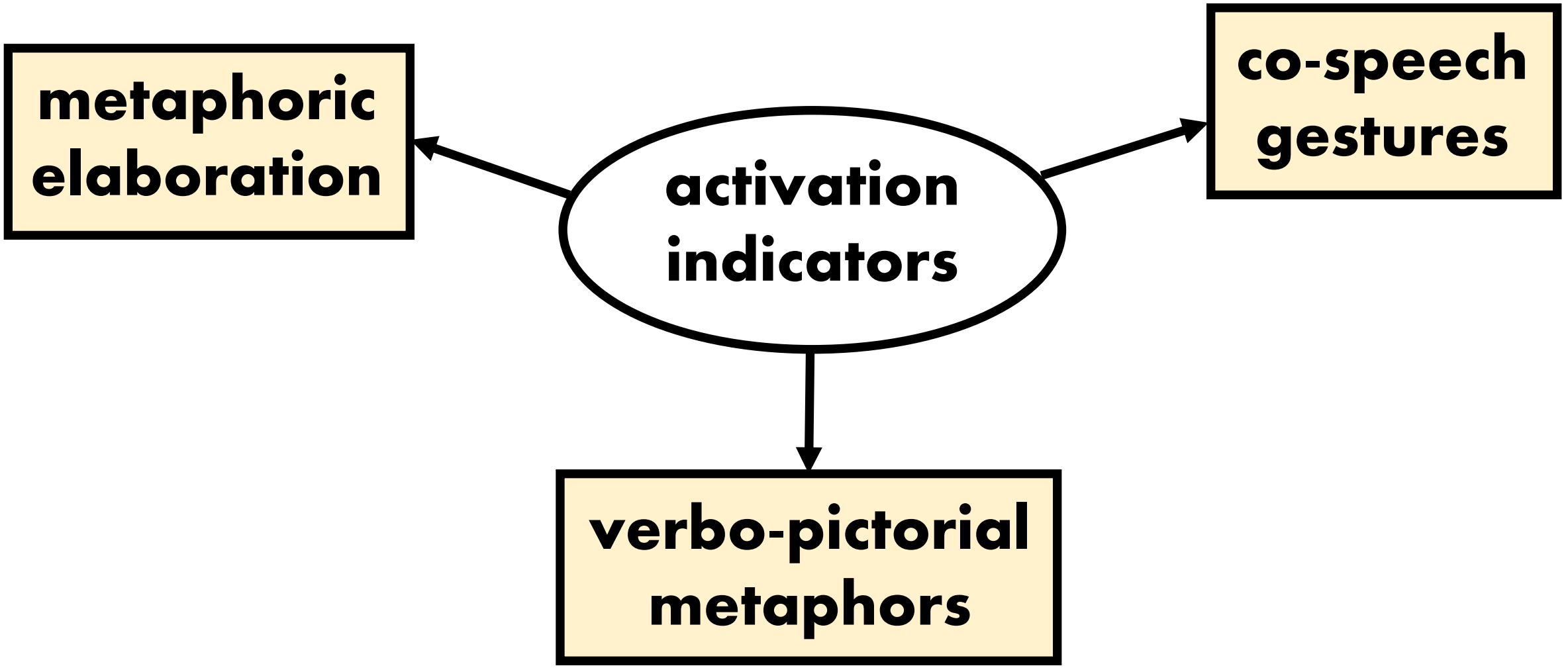


Metaphoricity:

continuum

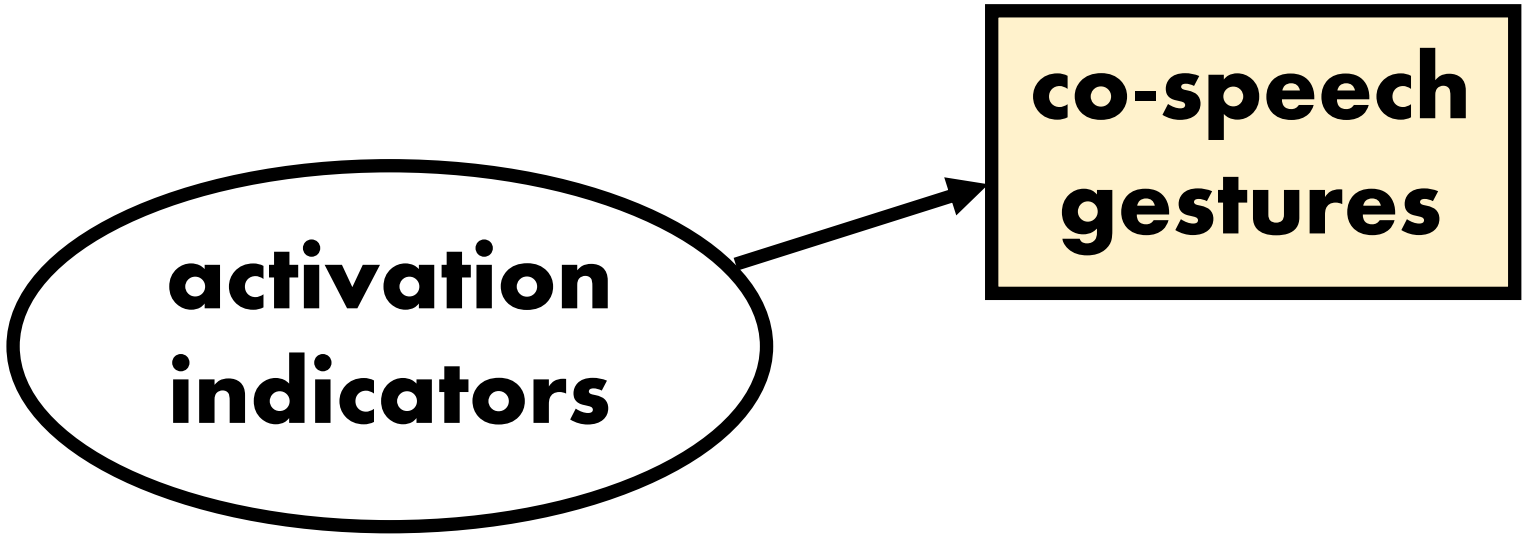
Degrees of metaphoricity

Müller (2008)

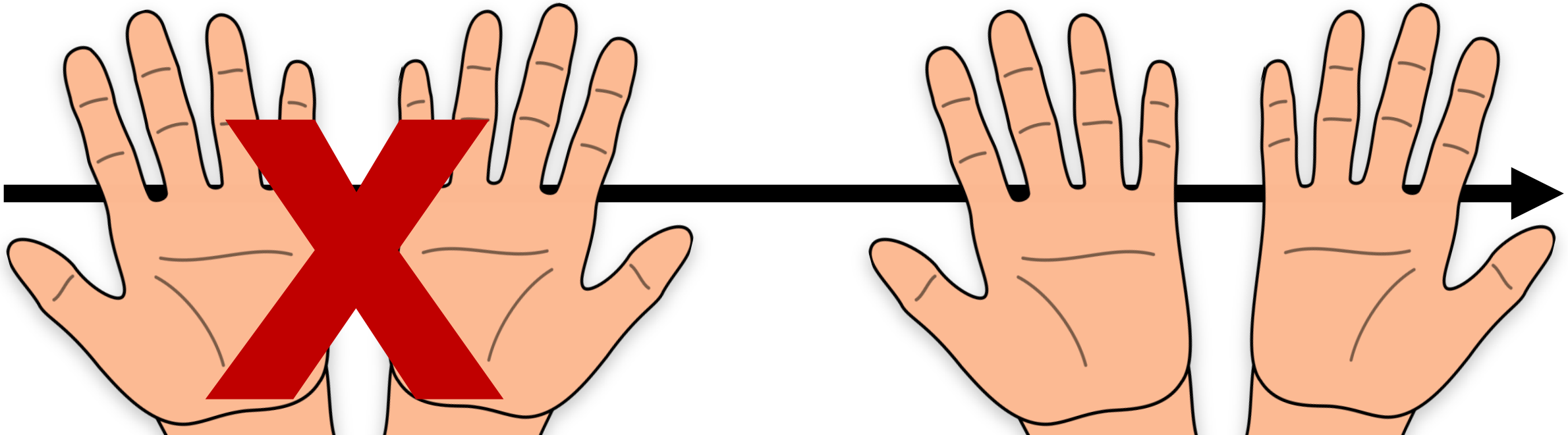


Degrees of metaphoricity

Müller (2008)



Degrees of metaphoricity



GLIM

Gesture as a Lens Into Metaphoricity

hypothesis

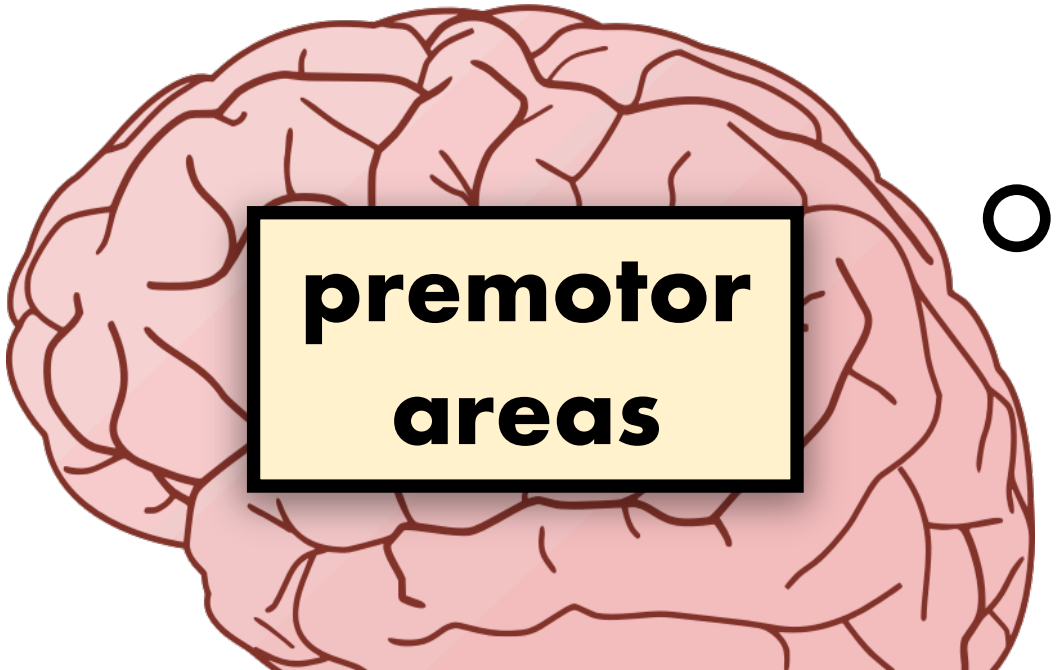
Gestures as Simulated Action

Hostetter and Alibali's (2008) GSA framework proposes that gestures are the outward manifestations of mentally simulated actions.

Mental simulation:

the mental recreation of perceptions and actions

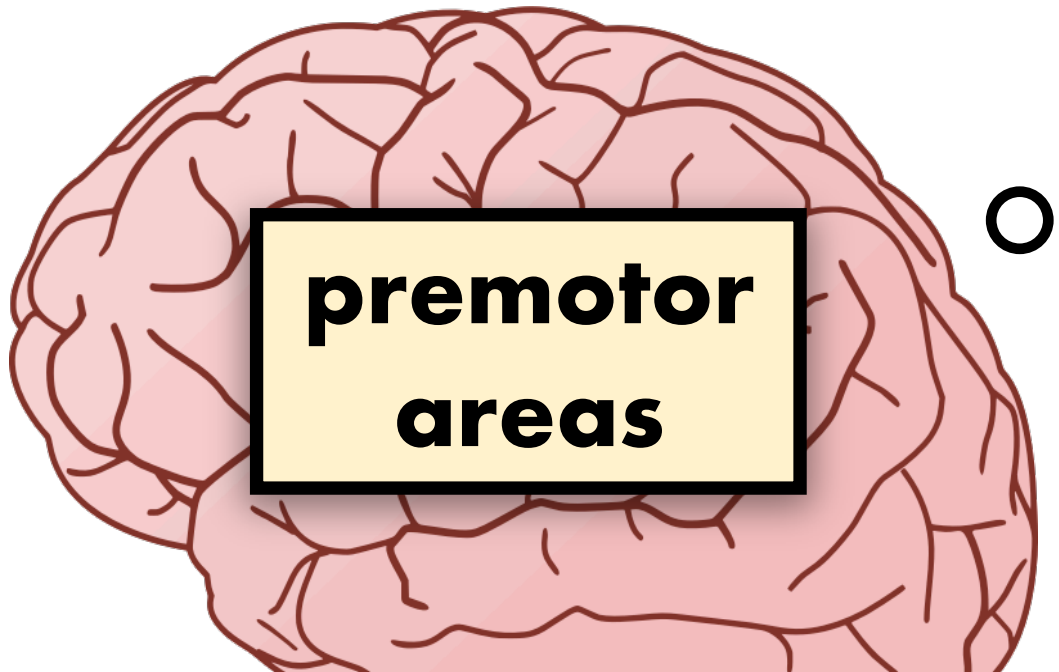
Barsalou (1999), Glenberg & Kaschak (2002), Zwaan (2009), Bergen (2012)



e.g., Jeannerod (1994)

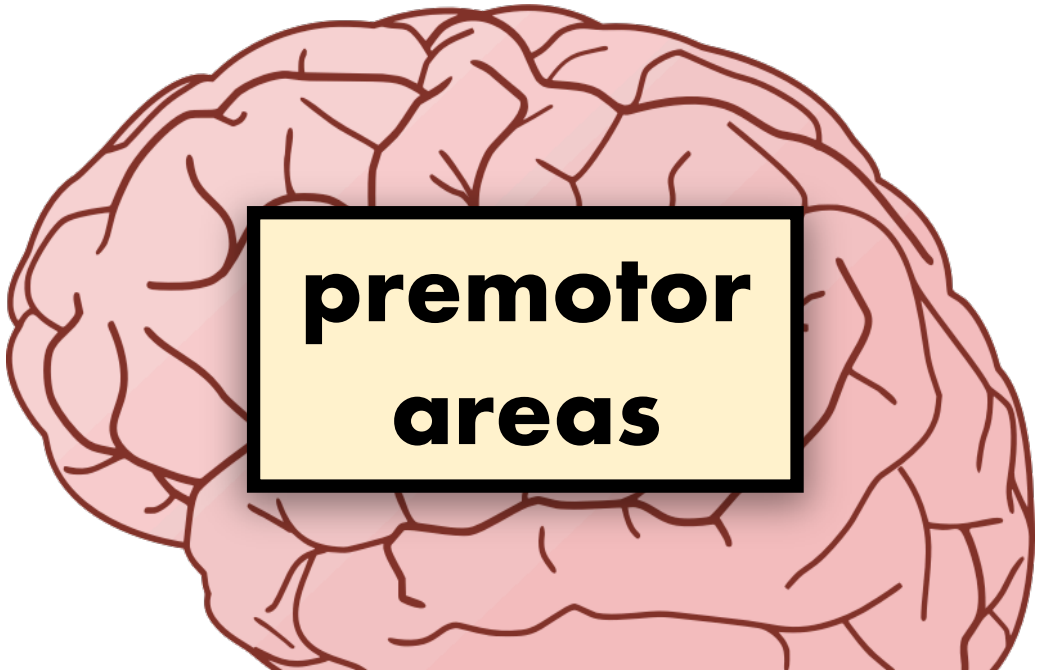
"As simulators for words develop in memory, they become associated with simulators for the entities and events to which they refer."

Barsalou, 1999 (p. 592)



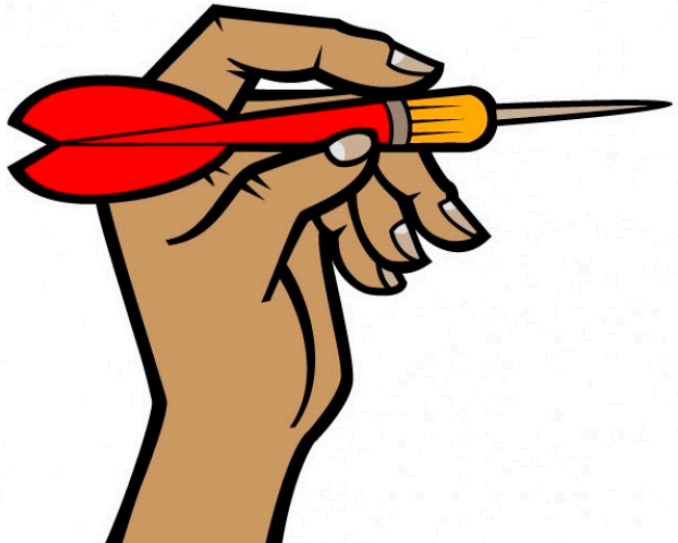
e.g., Jeannerod (1994)

kick



e.g., Pulvermüller (2005)

aim a dart



Klatzky et al. (1989)

put the pencil in the cup

Stanfield & Zwaan (2001)

grasp the concept

Wilson & Gibbs (2007)

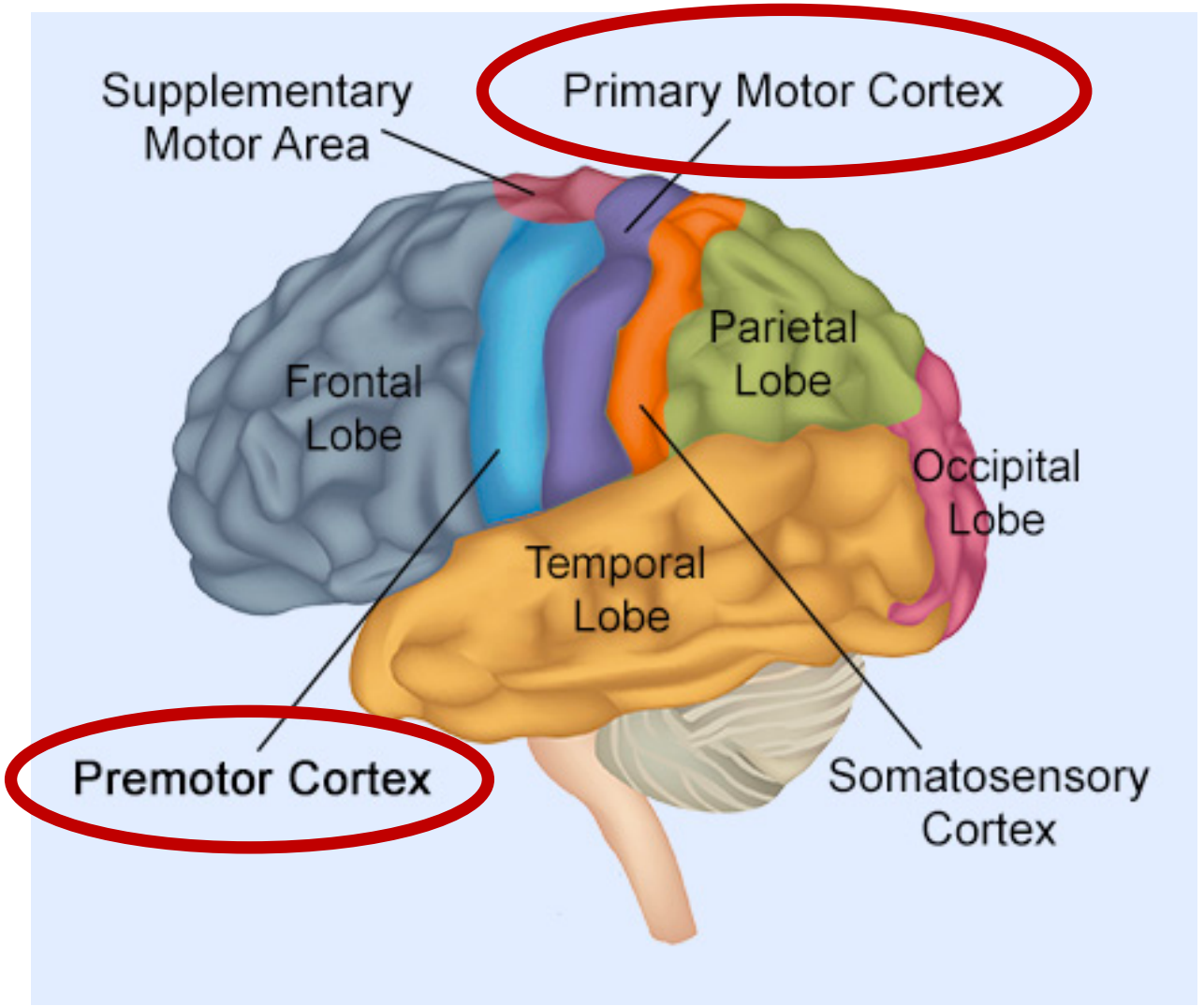
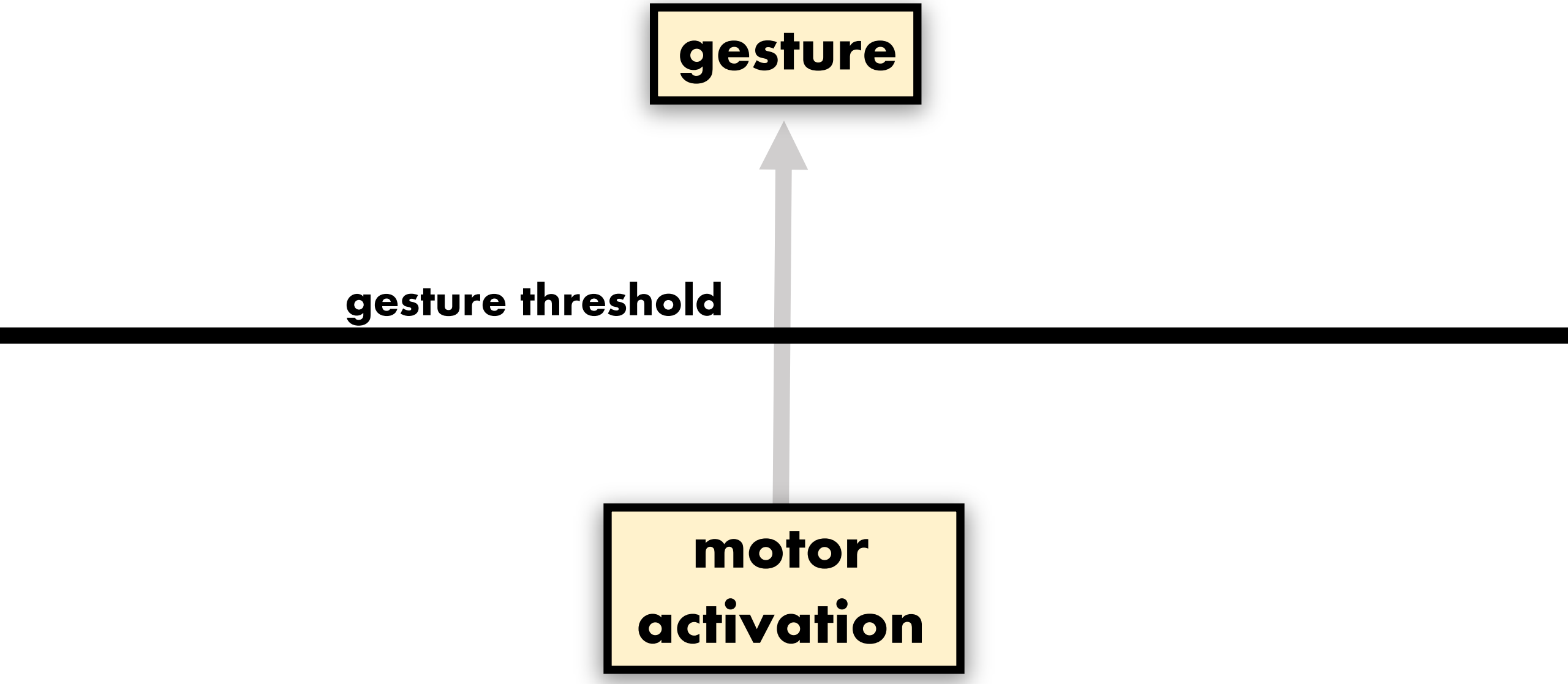


Image from *Bodytomy*



Hostetter & Alibali (2008)

Predictions

The more actively the source domain of a metaphor is simulated, the greater the chance that the premotor activation caused by this simulation will spread to the motor cortex and cause a speaker to gesture.

Predictions

Moreover, the form of this gesture should iconically reflect the metaphor's source domain.

Increased premotor activation should also manifest itself in more effortful gestures.

Predictions

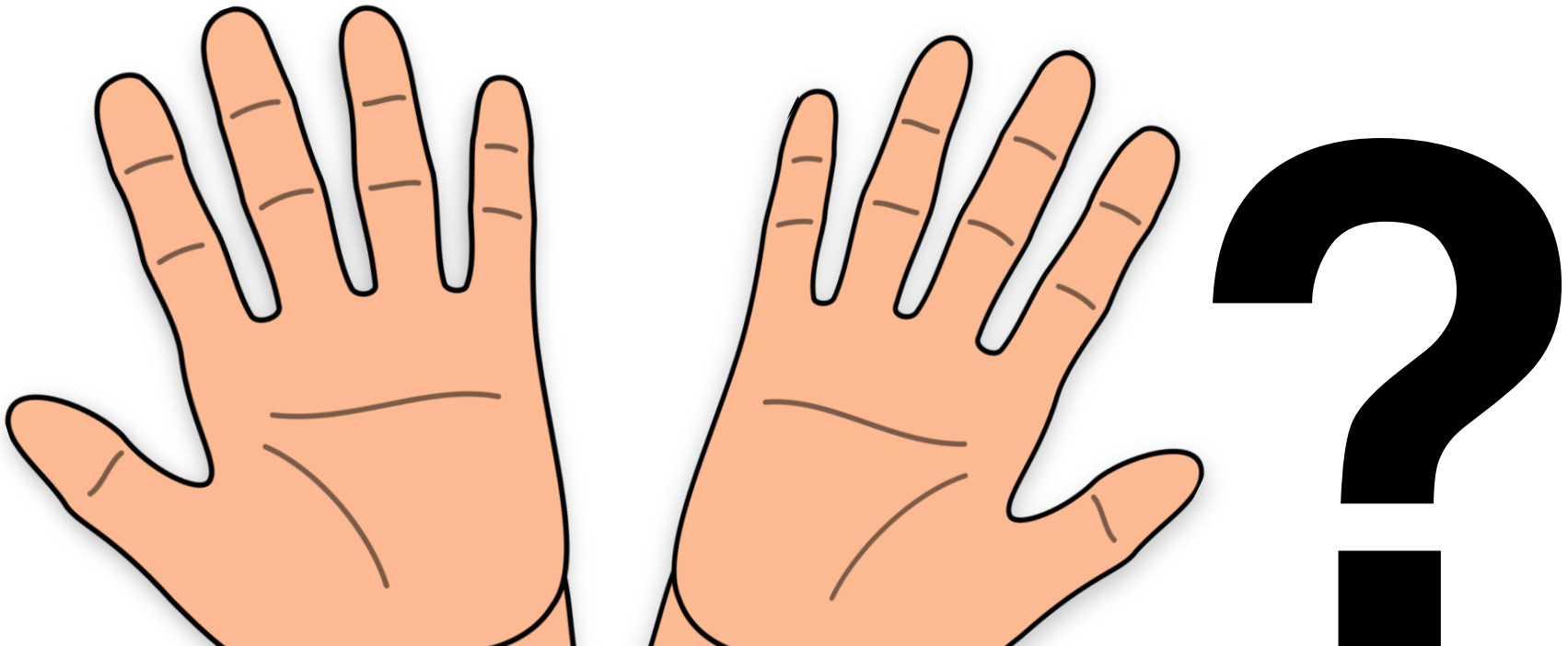
motor information > **visuospatial information**

‘lower’ **‘raise’** **‘low’** **‘high’**

Based on the GSA framework, the GLIM hypothesis suggests three criteria for quantifying the metaphoricity of a given linguistic metaphor

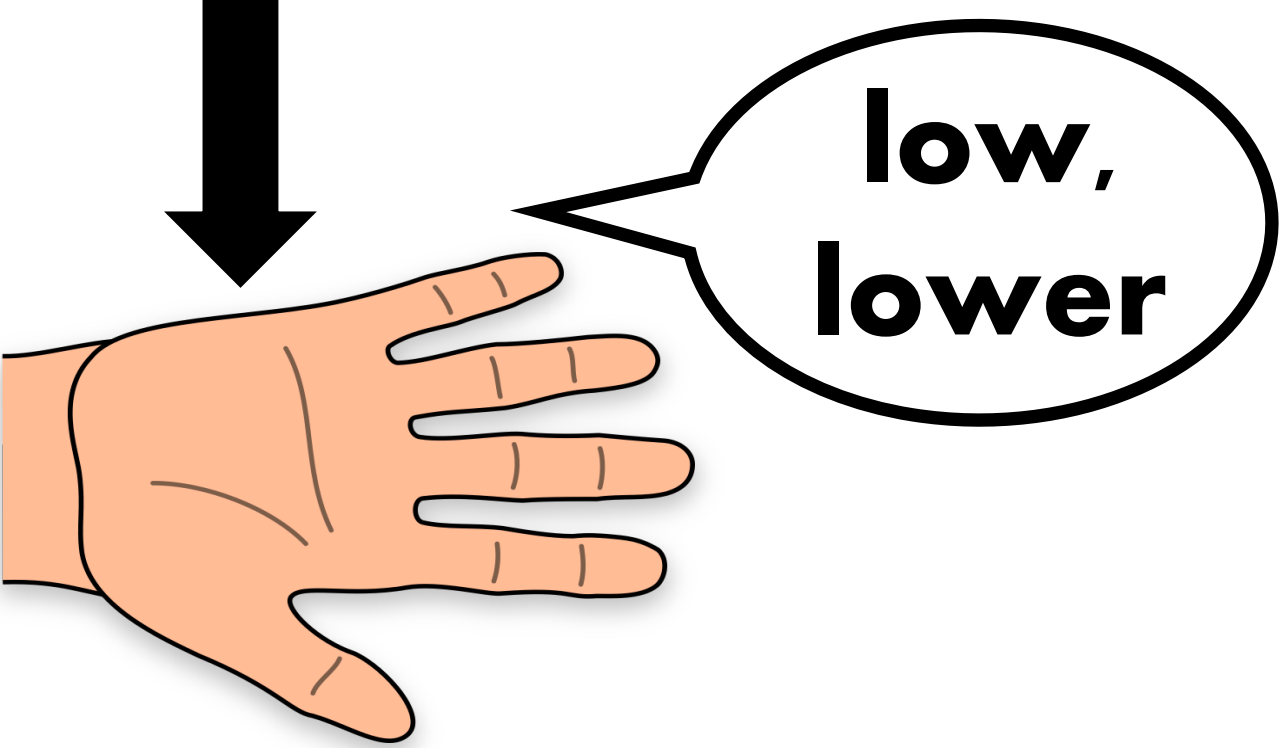
Gesture co-occurrence

whether or not speakers gesture at all when using a linguistic metaphor



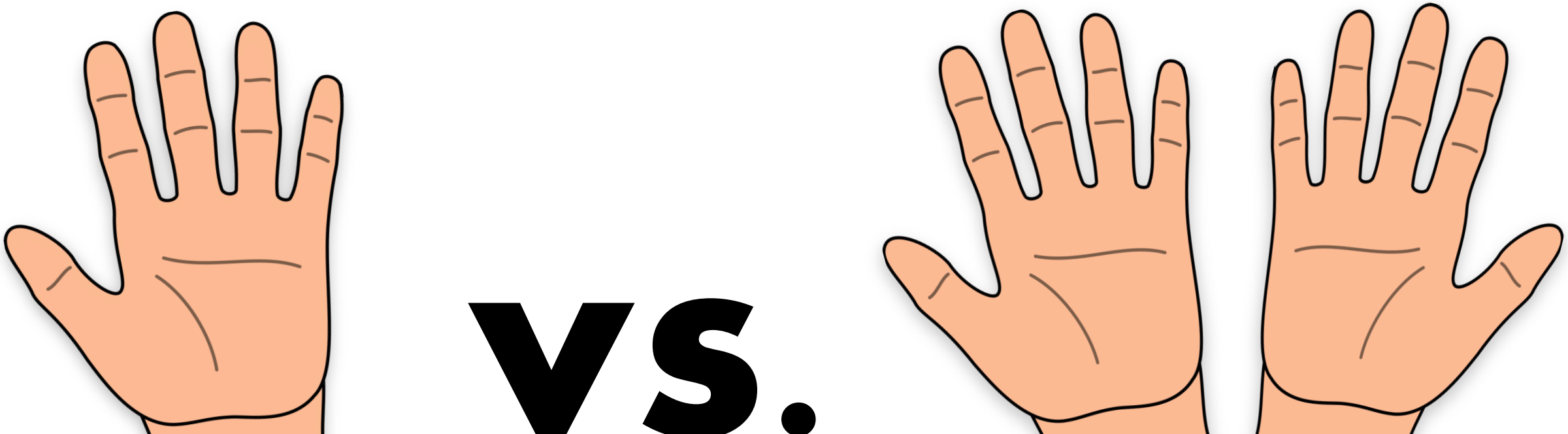
Gestural fit

whether or not speakers produce gestures that reflect the meaning of the linguistic metaphor.



Gestural effort

how effortful speakers' gestures are,
e.g., one hand vs. both hands



vs.

2. Study

Methodology

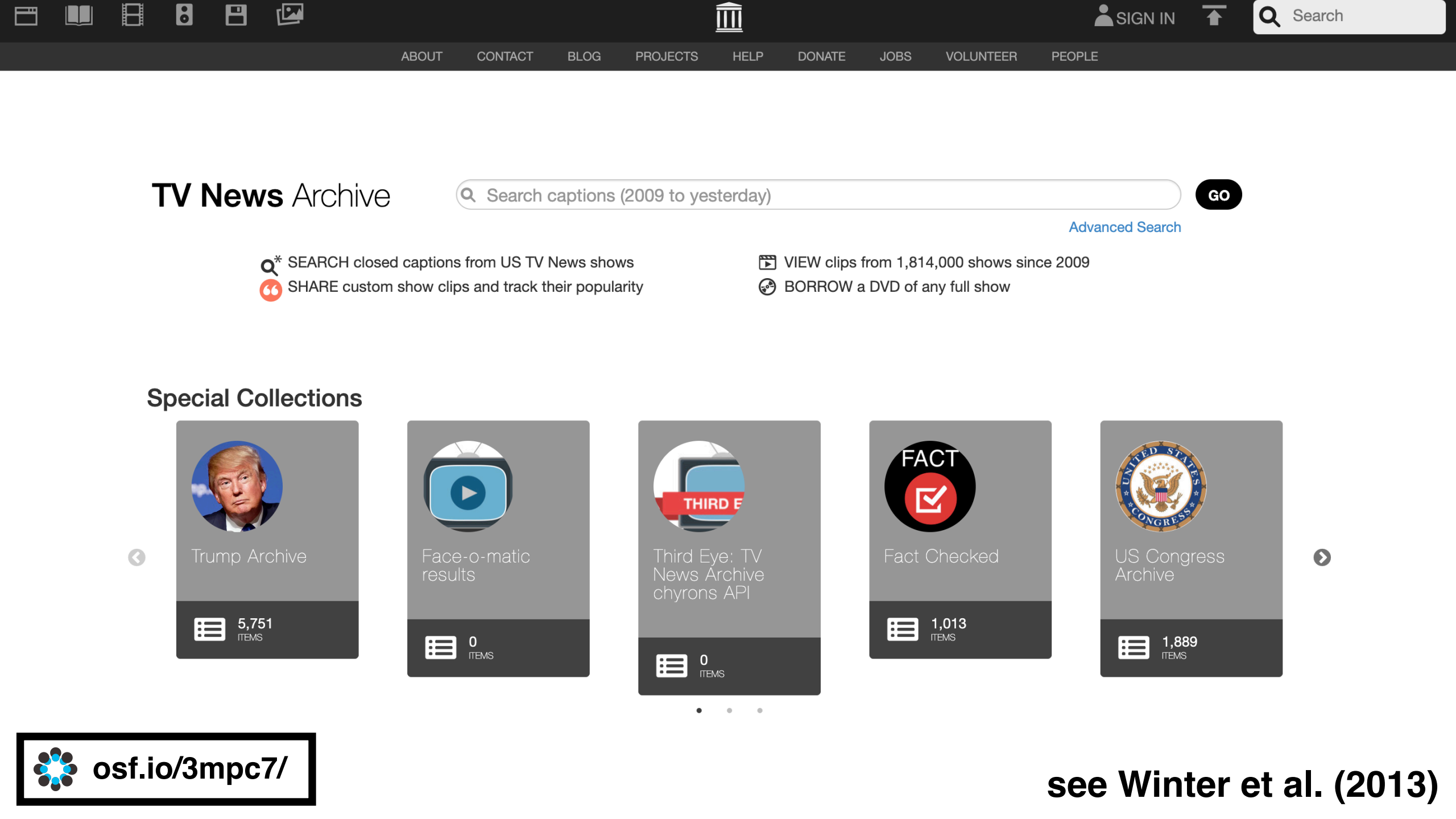
raise the standard

high standard

low standard

lower the standards

osf.io/3mpc7/



osf.io/3mpc7/

see Winter et al. (2013)

400

high standard

400

raise the standard

1600
videos

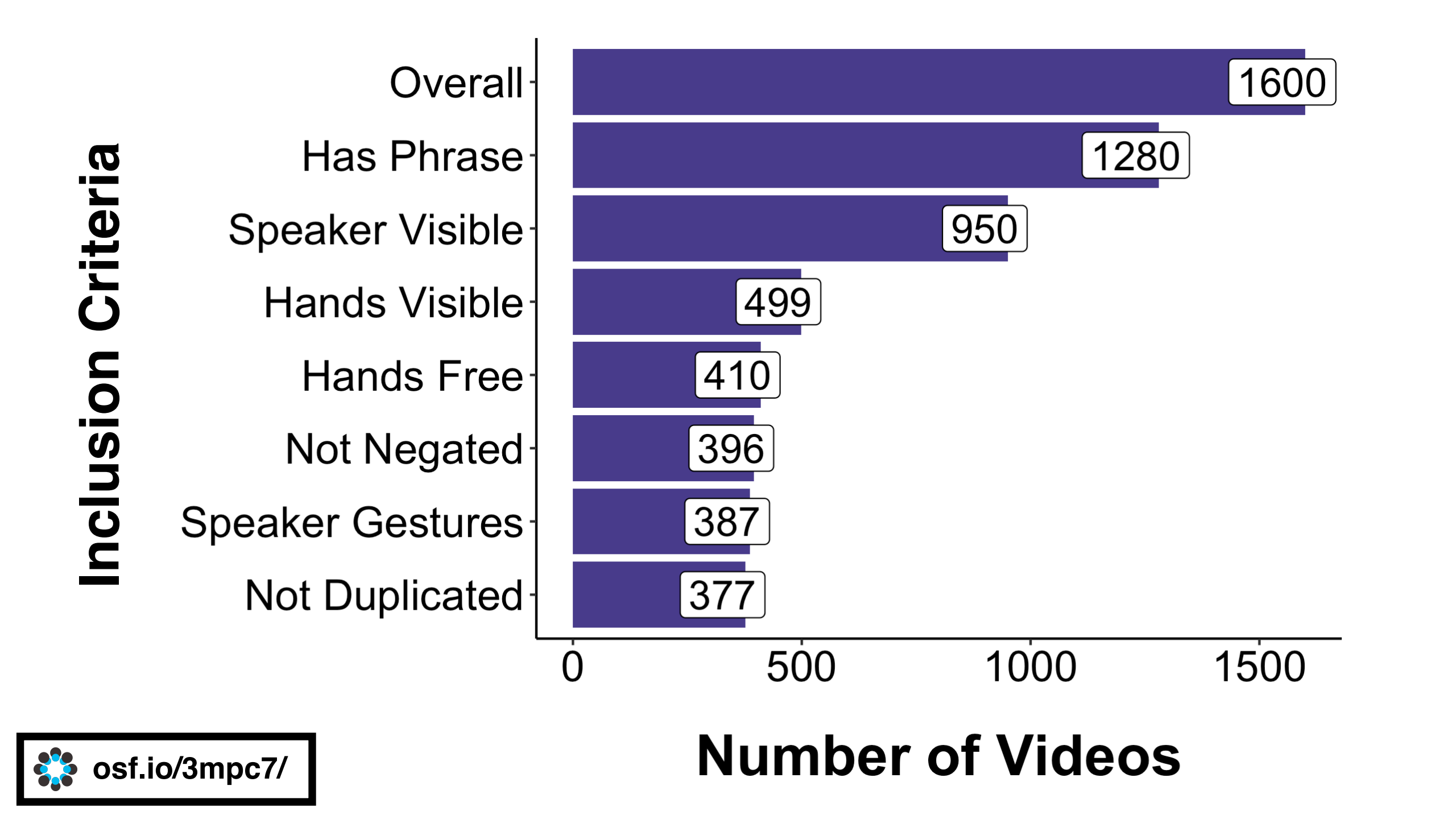
400

low standard

400

lower the standard

osf.io/3mpc7/


Inclusion Criteria
Overall
Has Phrase
Speaker Visible
Hands Visible
Hands Free
Not Negated
Speaker Gestures
Not Duplicated
1600
1280
950
499
410
396
387
377
0
500
1000
1500
Number of Videos

osf.io/3mpc7/

Videos manually coded for

1. **Gesture co-occurrence** (gesture vs. no gesture)
2. **Gestural fit** (fit vs. no fit)
3. **Gestural effort** (of those gestures that fit: one hand vs. two hands)

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Prediction:

There will be higher rates of gesture co-occurrence, gestural effort and gestural fit for verbs (‘lower’, ‘raise’) than for adjectives (‘low’, ‘high’)

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Statistical analyses

Logistic regression

Independence violation

1000 random samples with unique speakers

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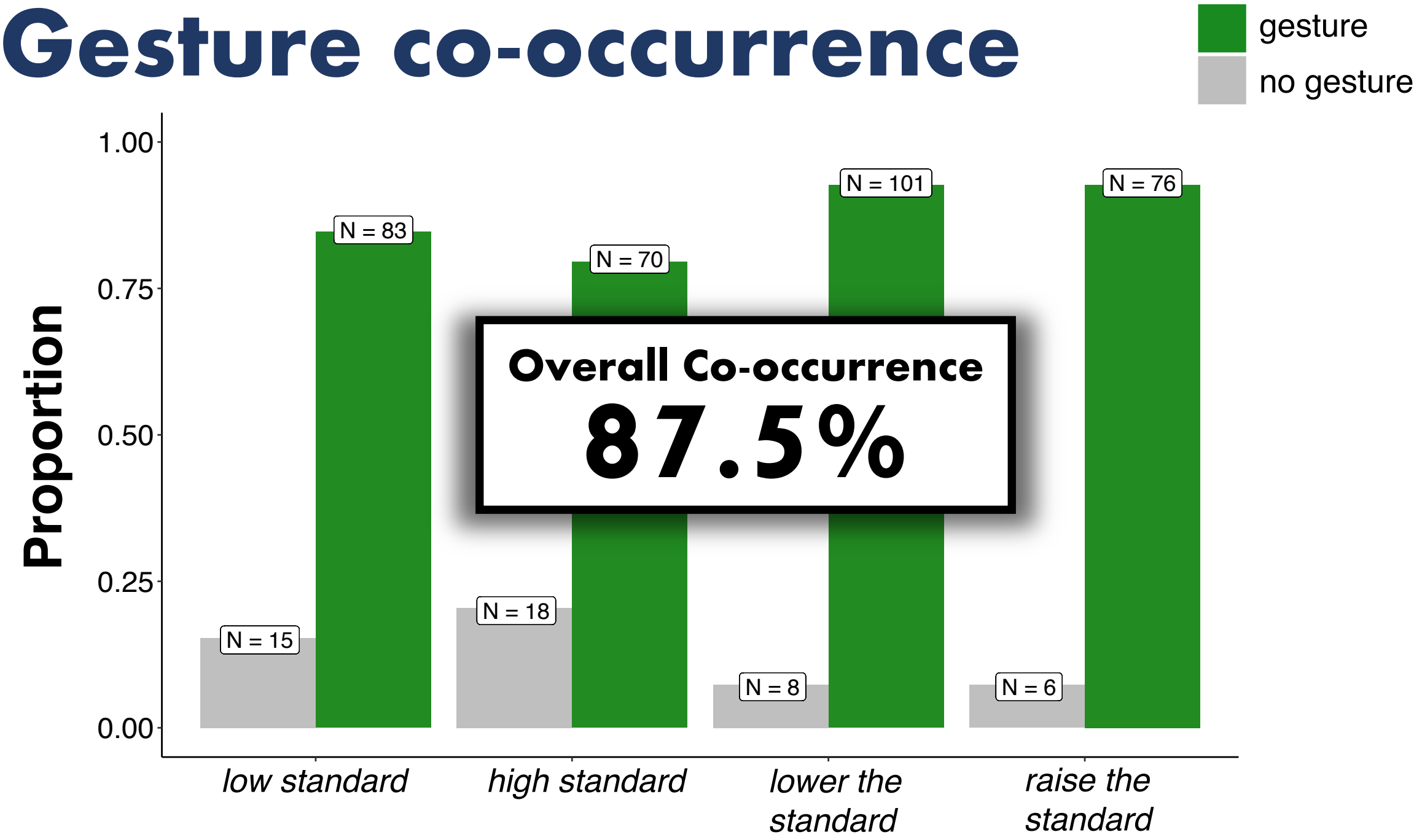
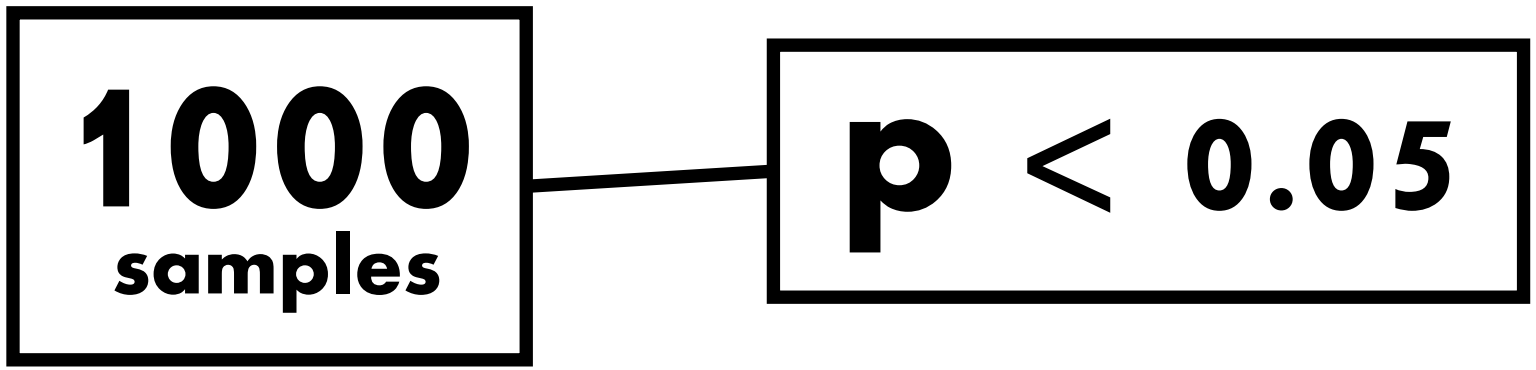
Gesture co-occurrence

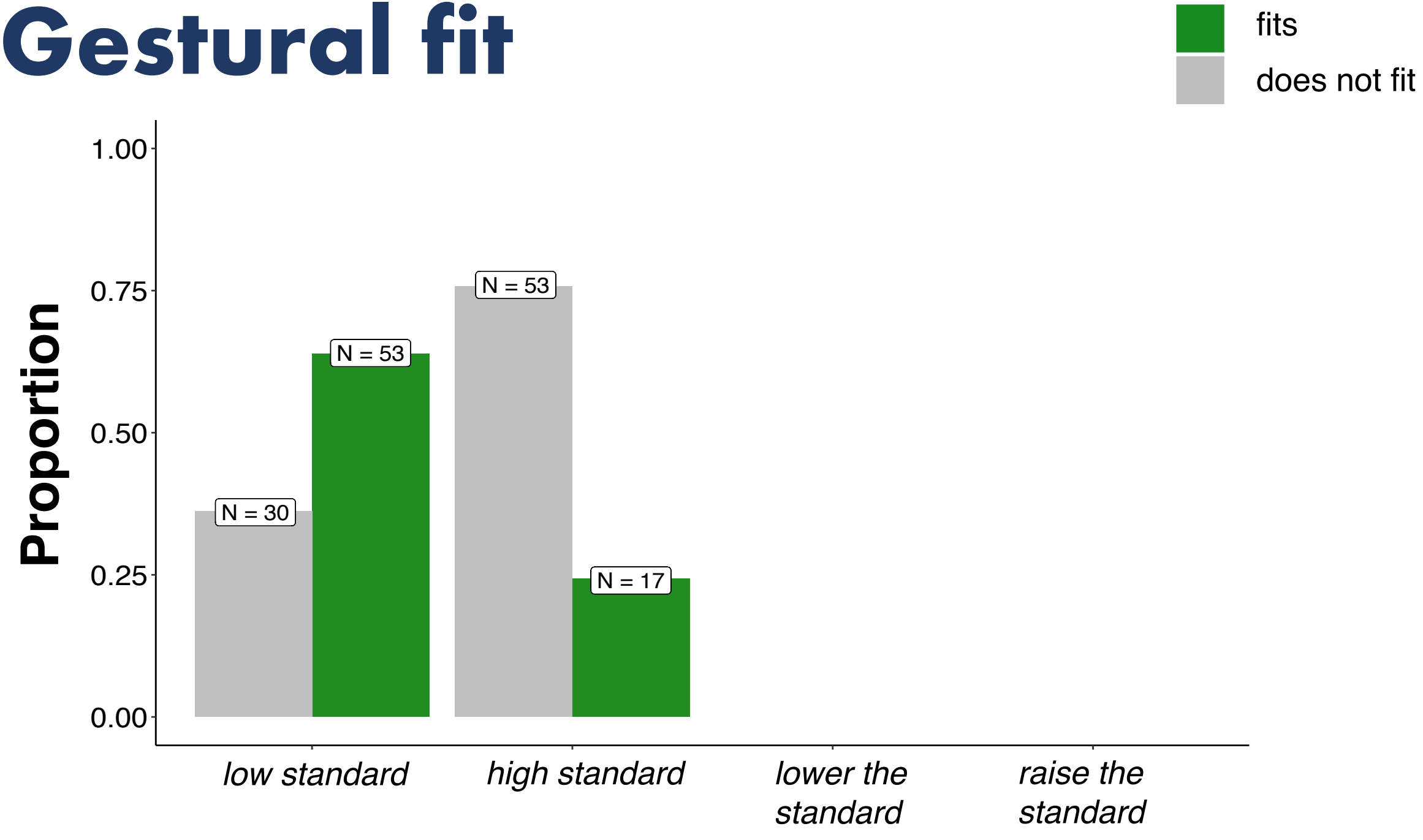


Verbs vs. adjectives:

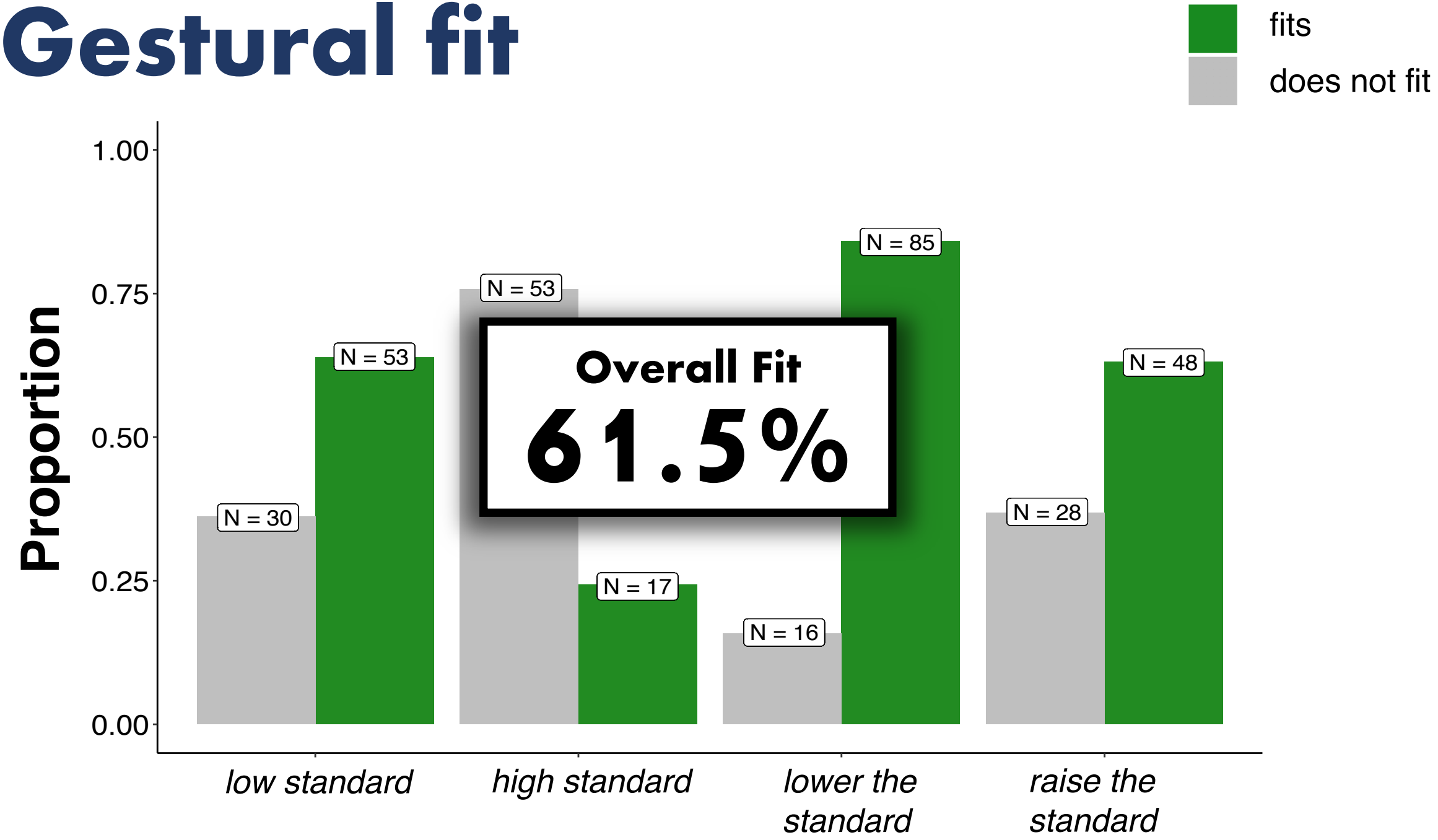
Log odds of speakers gesturing were 0.92 times higher alongside verbs than alongside adjectives ($p = 0.0026$)



Gestural fit

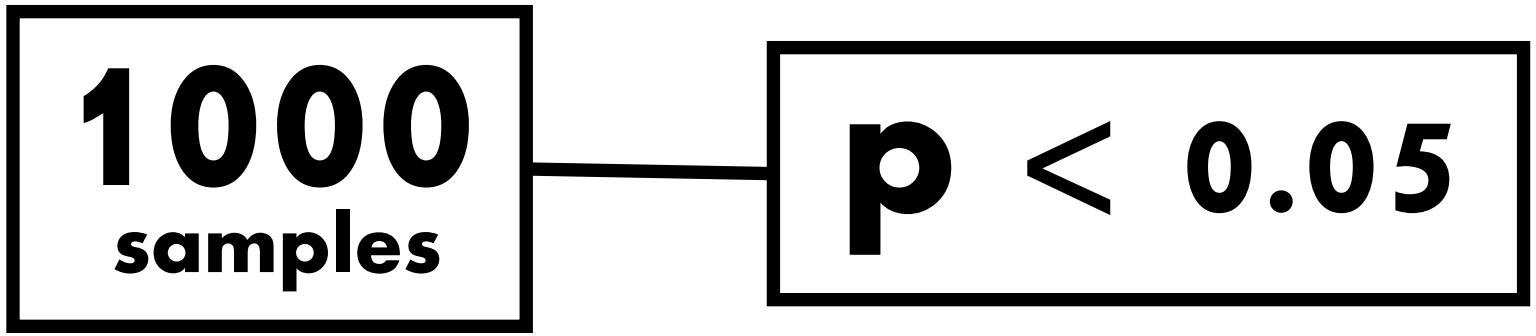


Gestural fit

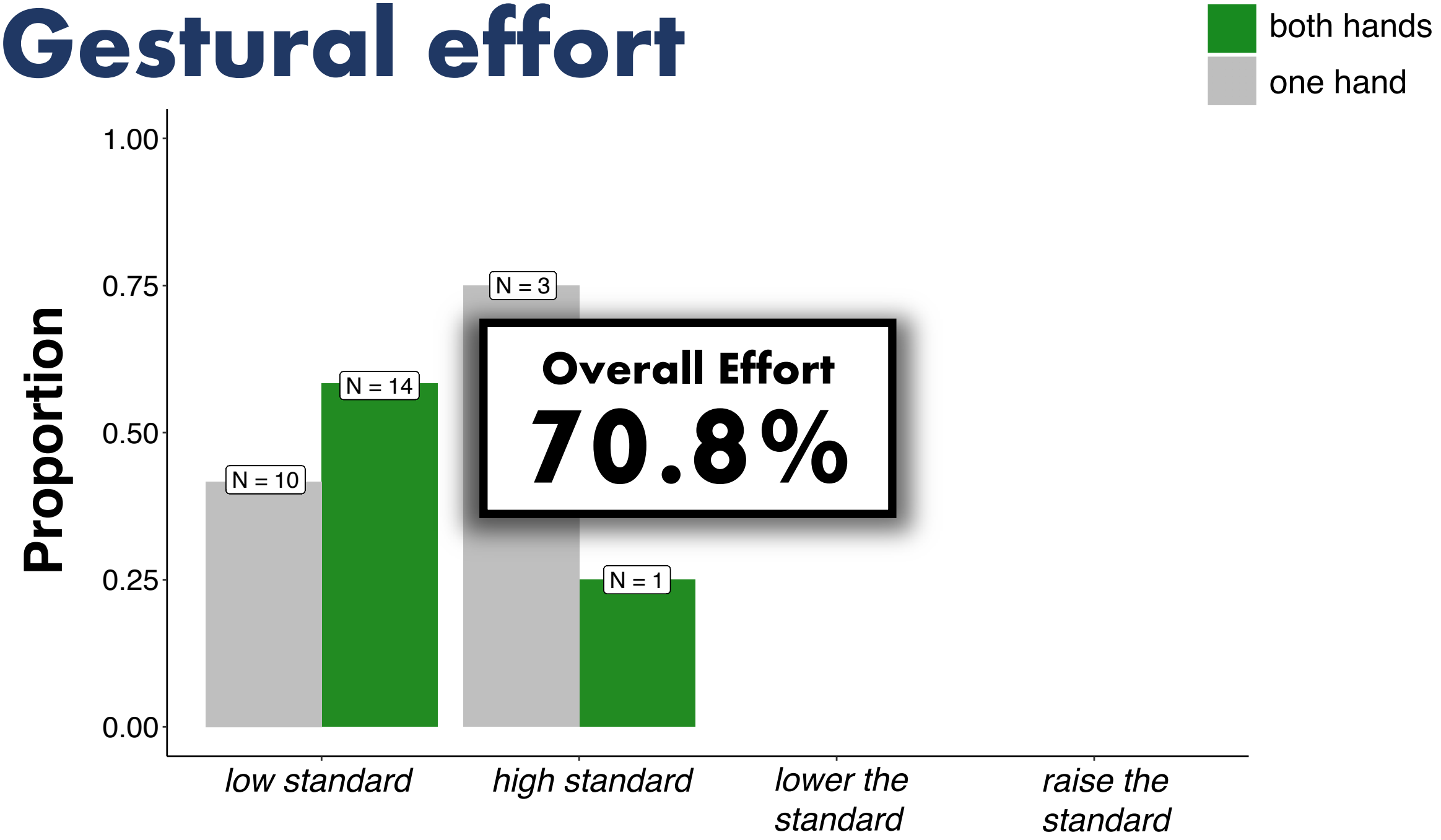


Verbs vs. adjectives:

Log odds of speakers producing 'fitting' gestures were 1.28 times higher alongside verbs than alongside adjectives ($p < 0.001$)

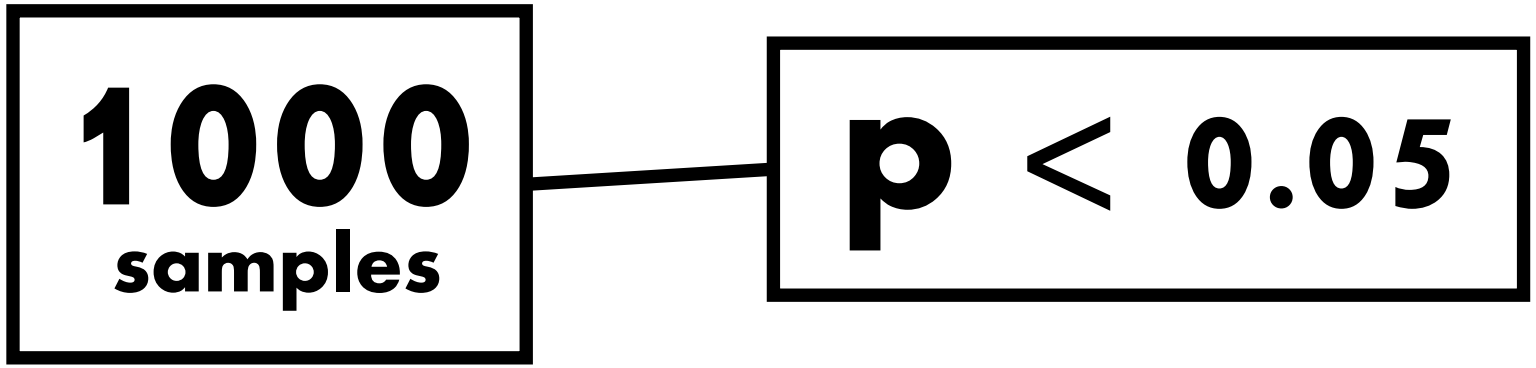


Gestural effort



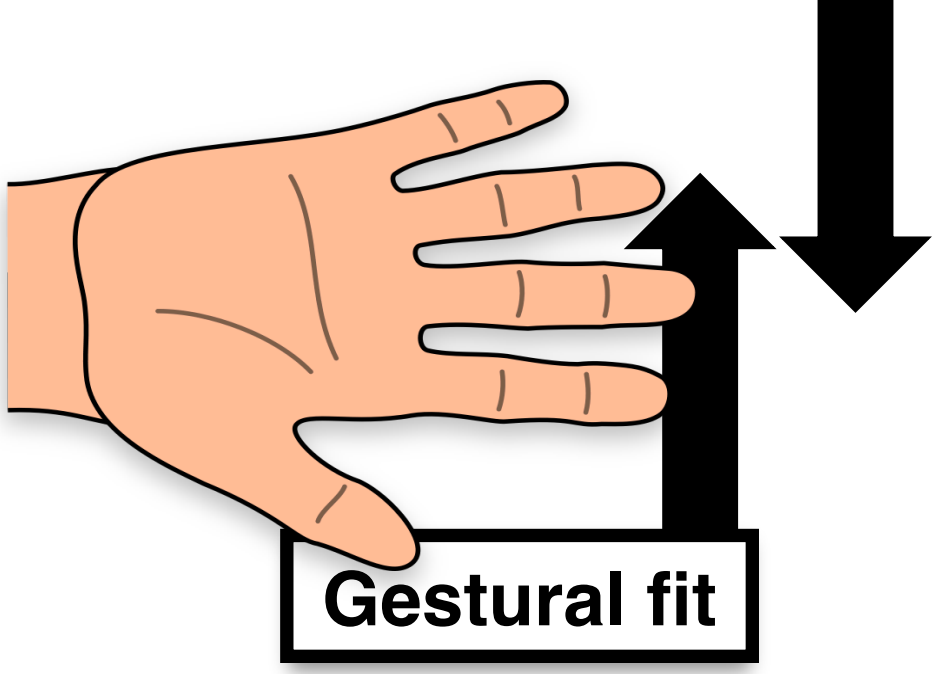
Verbs vs. adjectives:

Log odds of speakers producing both-handed metaphoric gestures were 1.16 times higher alongside verbs than alongside adjectives ($p = 0.018$)

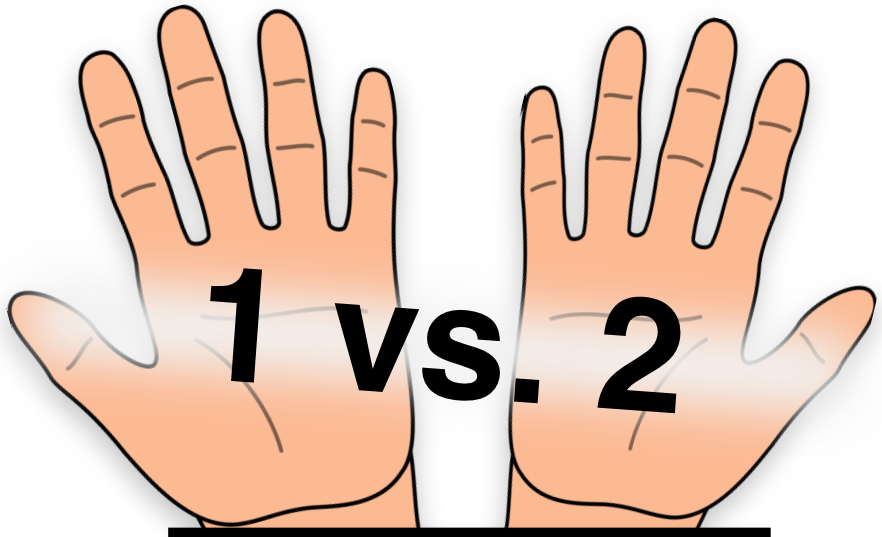


Conclusions

Gesture co-occurrence



Gestural fit



Gestural effort

Conclusions

Overall
87.5%

Gesture co-occurrence

Overall
61.5%

Gestural fit

Overall
70.8%

Gestural effort

motor information

>

visuospatial information

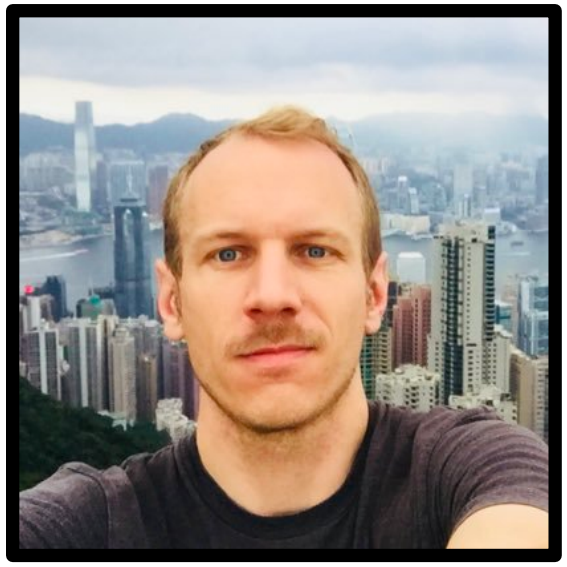
'lower' 'raise'

'low' 'high'

Metaphoric gestures for numerical quantity and emotional valence in the TV News Archive

Greg Woodin[1], Bodo Winter[1], Marcus Perlman[1], Jeannette Littlemore[1] and Teenie Matlock[2]

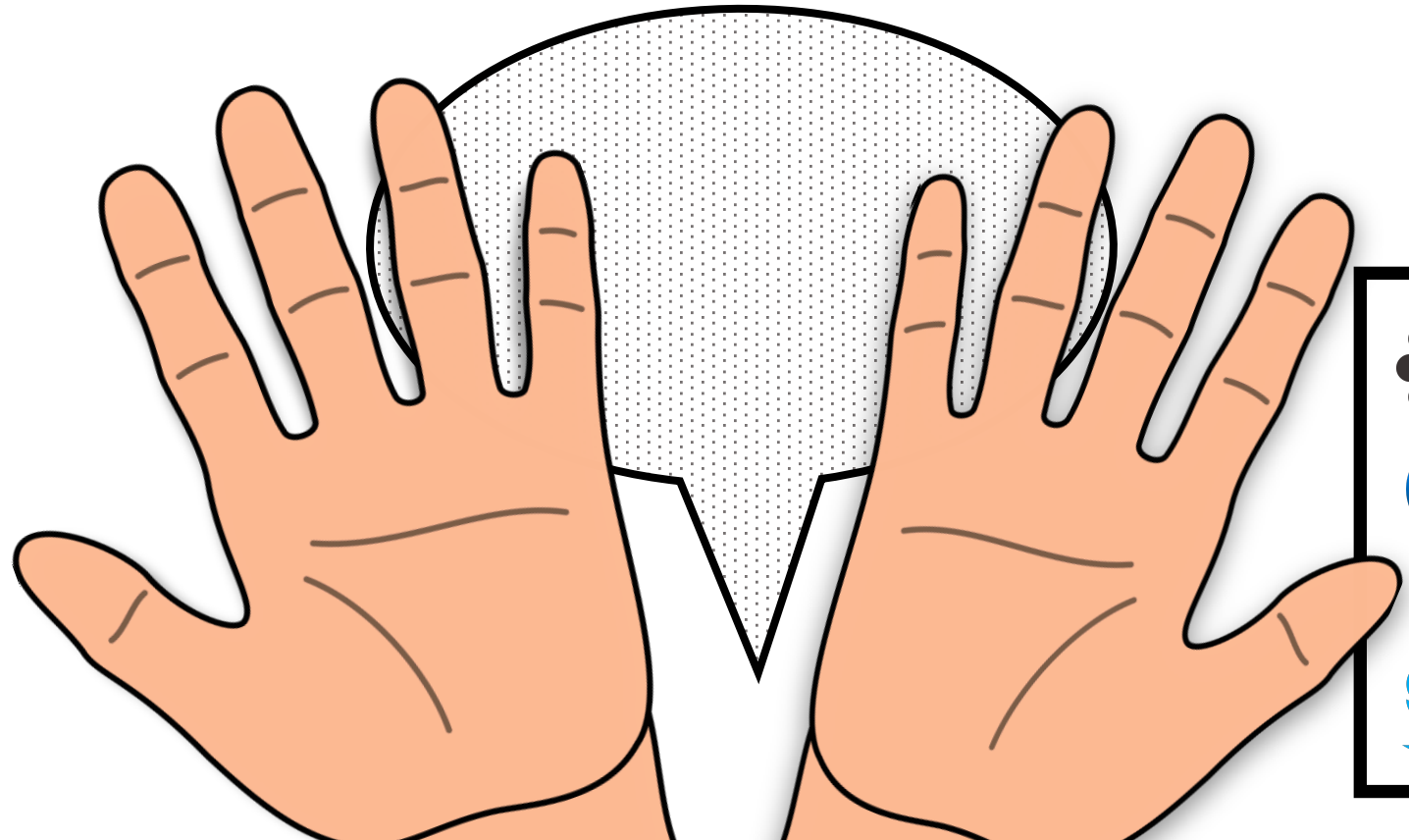
osf.io/dncjg/

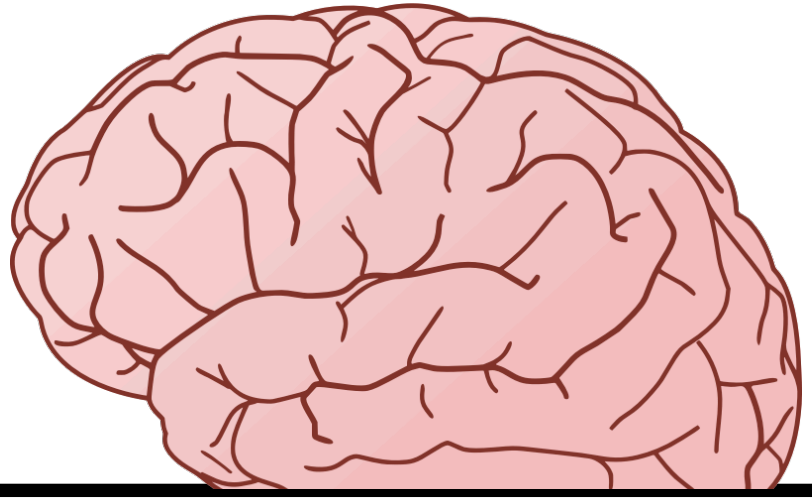




S&P VIX 18.48 +0.64
NAS VIX 20.91 +0.75
OIL VIX 28.89 +0.01
MARKETS NOW
STOCKS LOWER AS FISCAL CLIFF LOOMS
BRENT CRUDE(Feb)
-0.58 -0.53%
108.39
ussell 3K (IWV) 295@84.49 ▼ 0.22 NYSE Euronext (NY
ple (AAPL) 296@521.87 ▲ 2.54 Amazon.com (AMZN
CNBC
RT

Thank you





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