Universität Bielefeld

COMPREHENSIBILITY IN L2 SPEECH:

LEXICAL STRESS VERSUS SENTENCE ACCENT

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Bielefeld
University

MOTIVATION

- Prosody influences comprehensibility more than segments

(Field 2005, Mehlhorn 2007, Hirschfeld 2010, Dahmen & Hirschfeld 2016)

- lexical stress
- sentence accent
- pitch movement
- tempo
- pause
- …

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- tempo
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MOTIVATION

- sentence accent → information structure, focus, contrast

(Akker & Cutler 2003, Avesani et al. 2015,Ho Kwan Ip, Cutler 2016)

- lexical stress

→ word retrieval/lexical access

(Cutler 2005, Field 2005, Van Donselaar et al. 2005, Aitchison 2012)

HYPOTHESES

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Incorrect lexical stress has worse consequences for comprehensibility than incorrect sentence accent.

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- *H1:*

Incorrect lexical stress has worse consequences for comprehensibility than incorrect sentence accent. ***LS*** < ***LS***

- *H2:*

Sentences with both correct lexical stress and sentence accent are easier to understand than sentences that contain incorrect lexical stress and/or incorrect sentence accent. ***LS*** > ***LS***, ***LS***, ***LS***

- *H3*

Sentences with both incorrect lexical stress and incorrect sentence accent are more difficult to understand than sentences that exhibit just one of the two types of mistakes ***LS*** < ***LS***, ***LS***, ***LS***

METHOD

- online survey, 78 native speakers of German
- 12 sentences (native Italian speaker)
  - 4 prosodically different versions:
    - Variant 1: Correct lexical stress (L) & correct sentence accent (S)
    - Variant 2: Incorrect lexical stress (L) & incorrect sentence accent (S)
    - Variant 3: Correct lexical stress (L) & incorrect sentence accent (S)
    - Variant 4: Incorrect lexical stress (L) & correct sentence accent (S)
- 5-point Likert scale

METHOD

- online survey, 78 native speakers of German
- 12 sentences per listener

H1: Variant 3 (L, S) > Variant 4 (L, S)

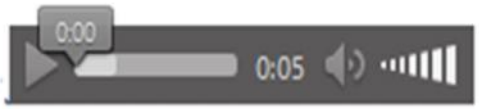
H2: Variant 1 (L, S) > Variant 2 (L, S), Variant 3 (L, S)
& Variant 4 (L, S)

H3: Variant 2 (L, S) < Variant 1 (L, S), Variant 3 (L, S)
& Variant 4 (L, S)

METHOD

2. Tim erzählt Marco, dass er sich schon seit drei Tagen hauptsächlich von Schokoladenkuchen ernährt, den seine Mutter gebacken hat.

Marco sagt:



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Tim tells Marco that he's mostly been living off chocolate cake for the past three days that his mother made for him.

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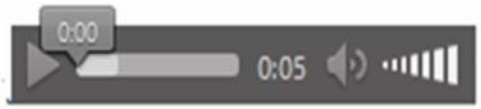

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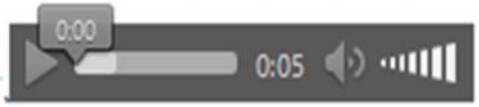
Marco sagt:

„Ich glaube, dass so viel Schokoladenkuchen nicht gesund ist."

„I think that this amount of chocolate cake is not healthy."



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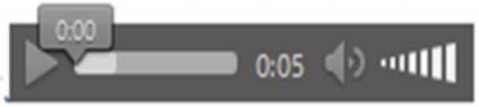

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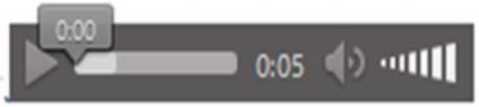

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Marco sagt: Variant 1

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L S

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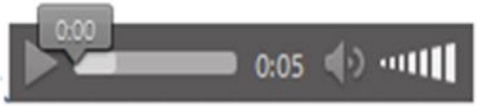

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Marco sagt: **Variant 2**

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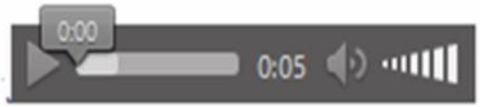

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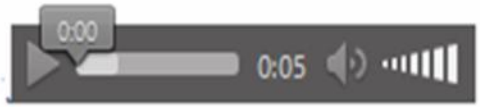

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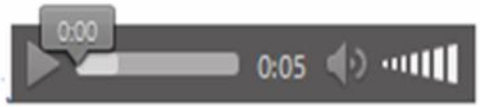

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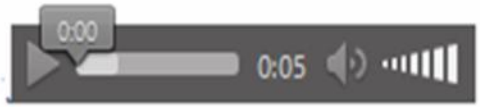

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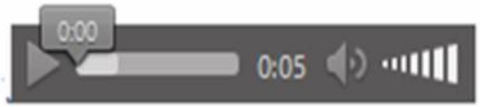

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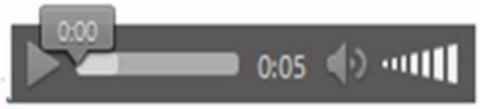

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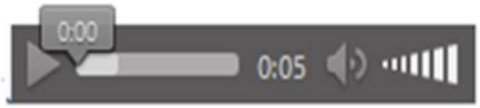

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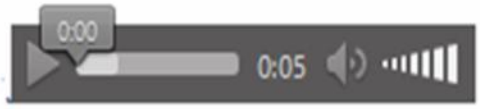

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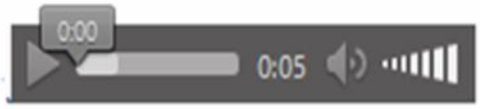

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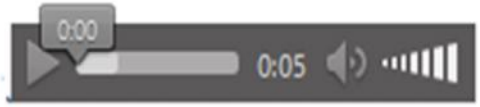

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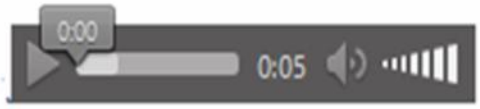

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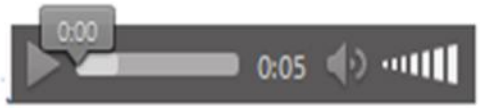

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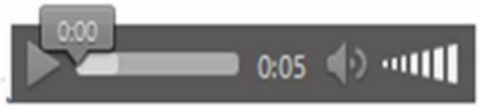

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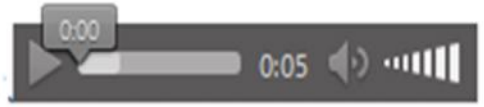

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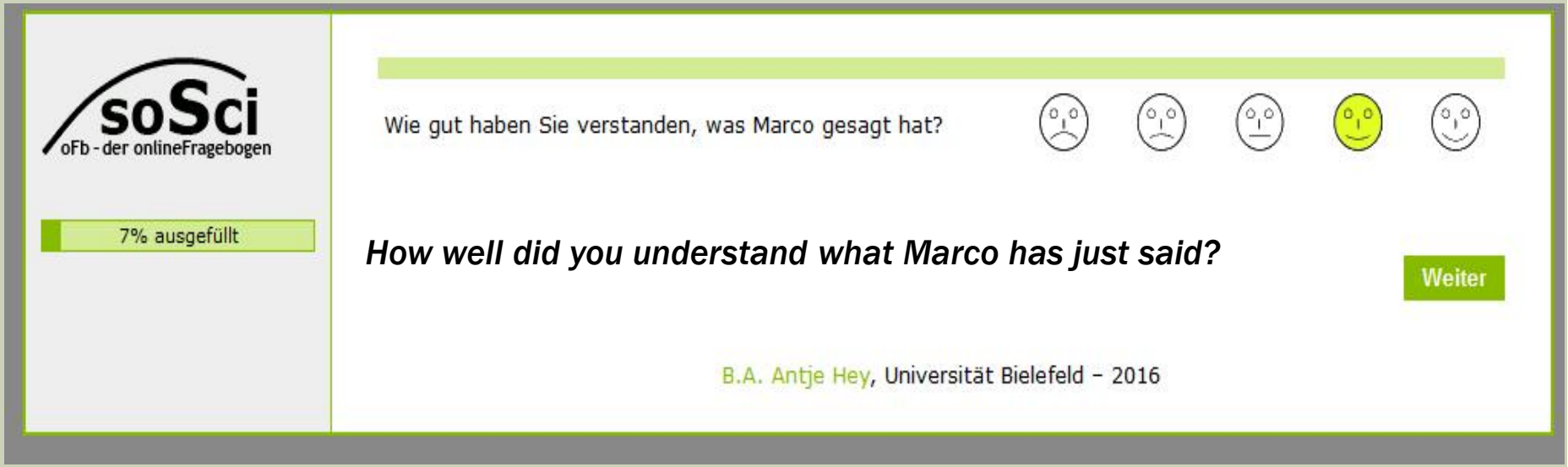
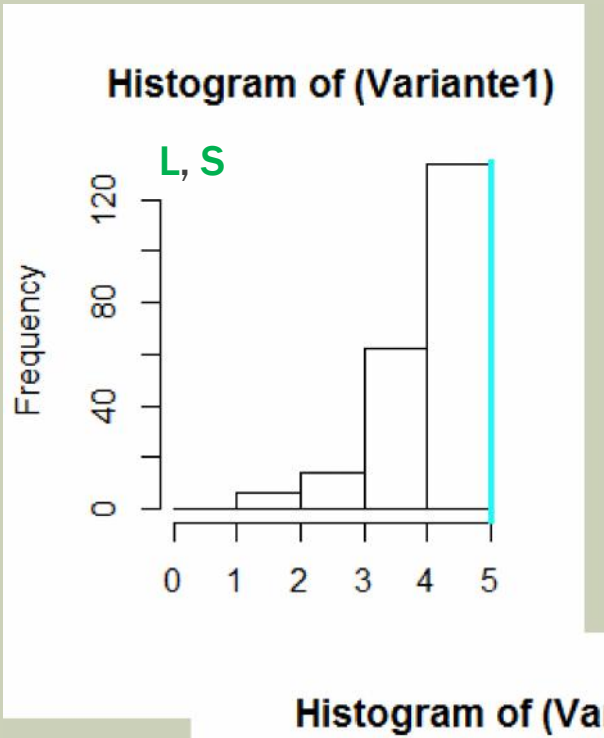
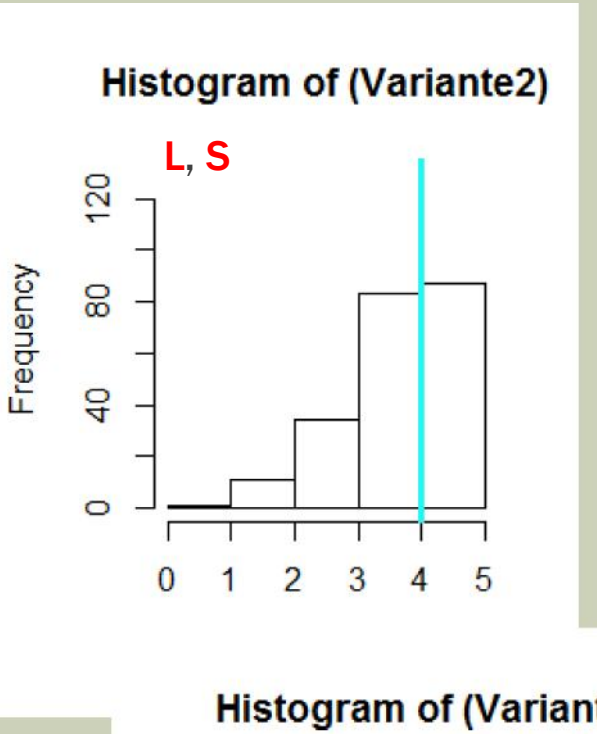
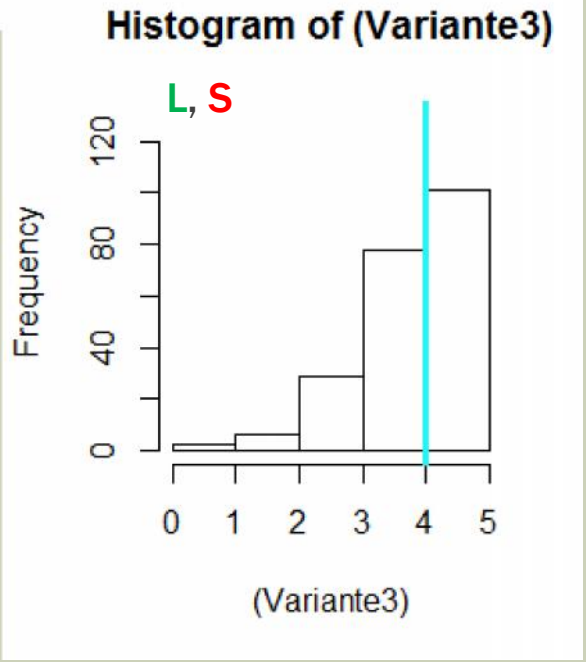
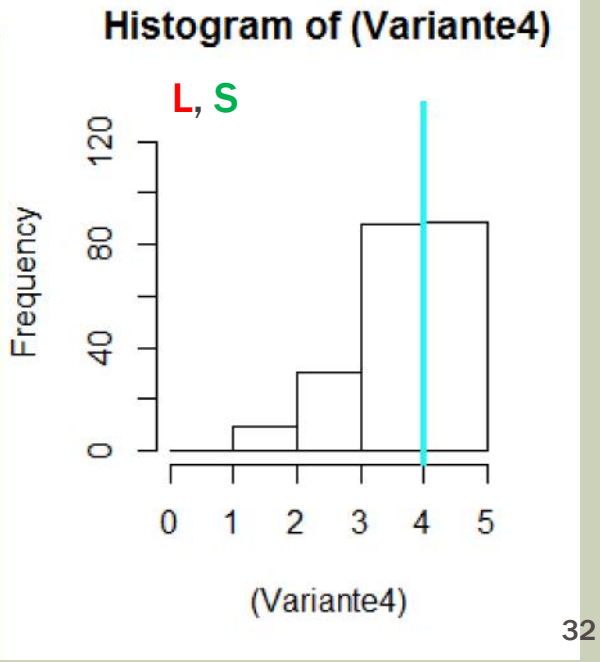

soSci
oFb - der onlineFragebogen
7% ausgefüllt
Wie gut haben Sie verstanden, was Marco gesagt hat?
How well did you understand what Marco has just said?
Weiter
B.A. Antje Hey, Universität Bielefeld – 2016

RESULTS


Histogram of (Variante1)
L, S
Frequency
0
40
80
120
0 1 2 3 4 5


Histogram of (Variante2)
L, S
Frequency
0
40
80
120
0 1 2 3 4 5


Histogram of (Variante3)
L, S
Frequency
0
40
80
120
0 1 2 3 4 5
(Variante3)


Histogram of (Variante4)
L, S
Frequency
0
40
80
120
0 1 2 3 4 5
(Variante4)

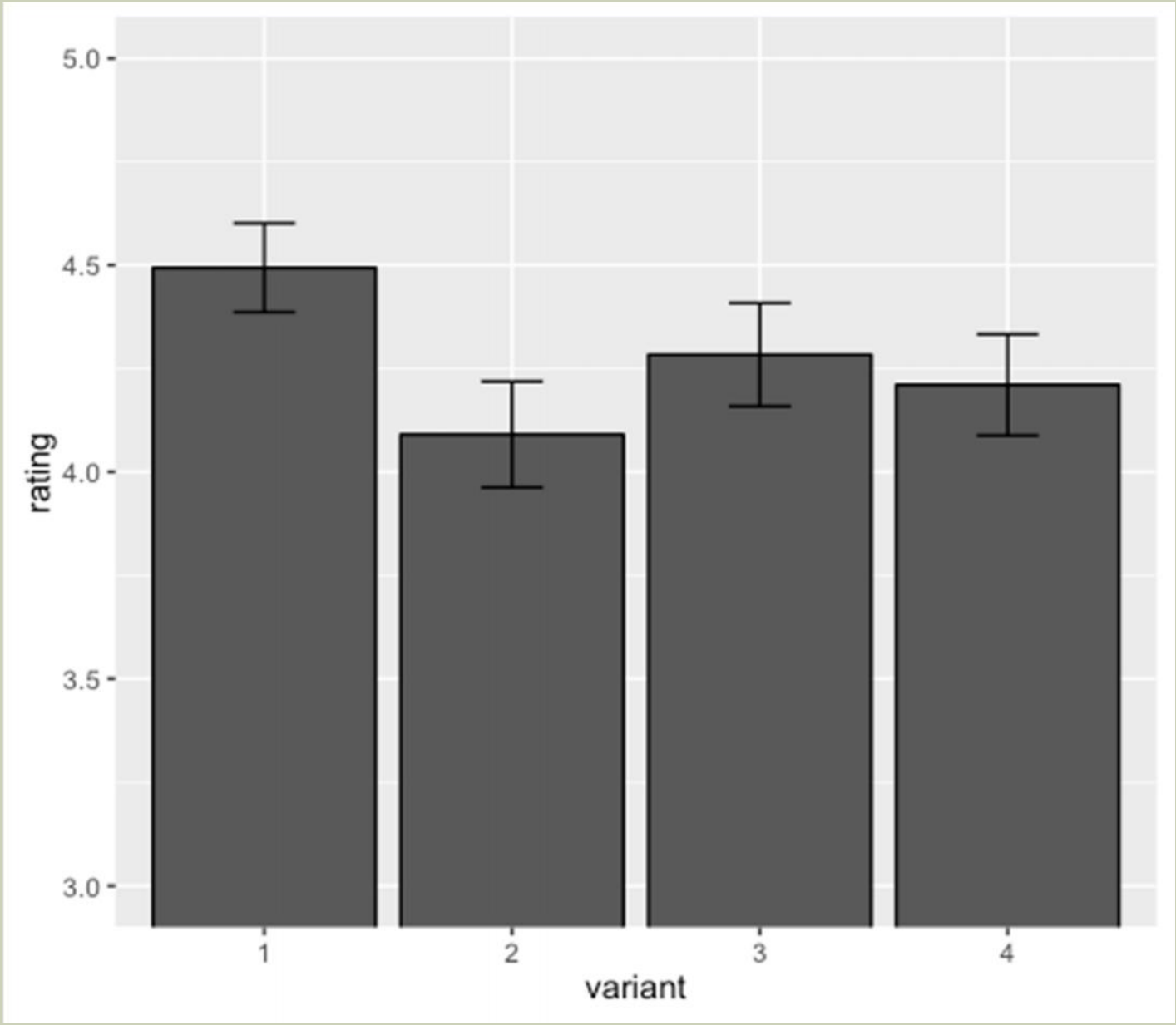


Figure 2: Mean ratings and error bars for the 4 prosodic error versions

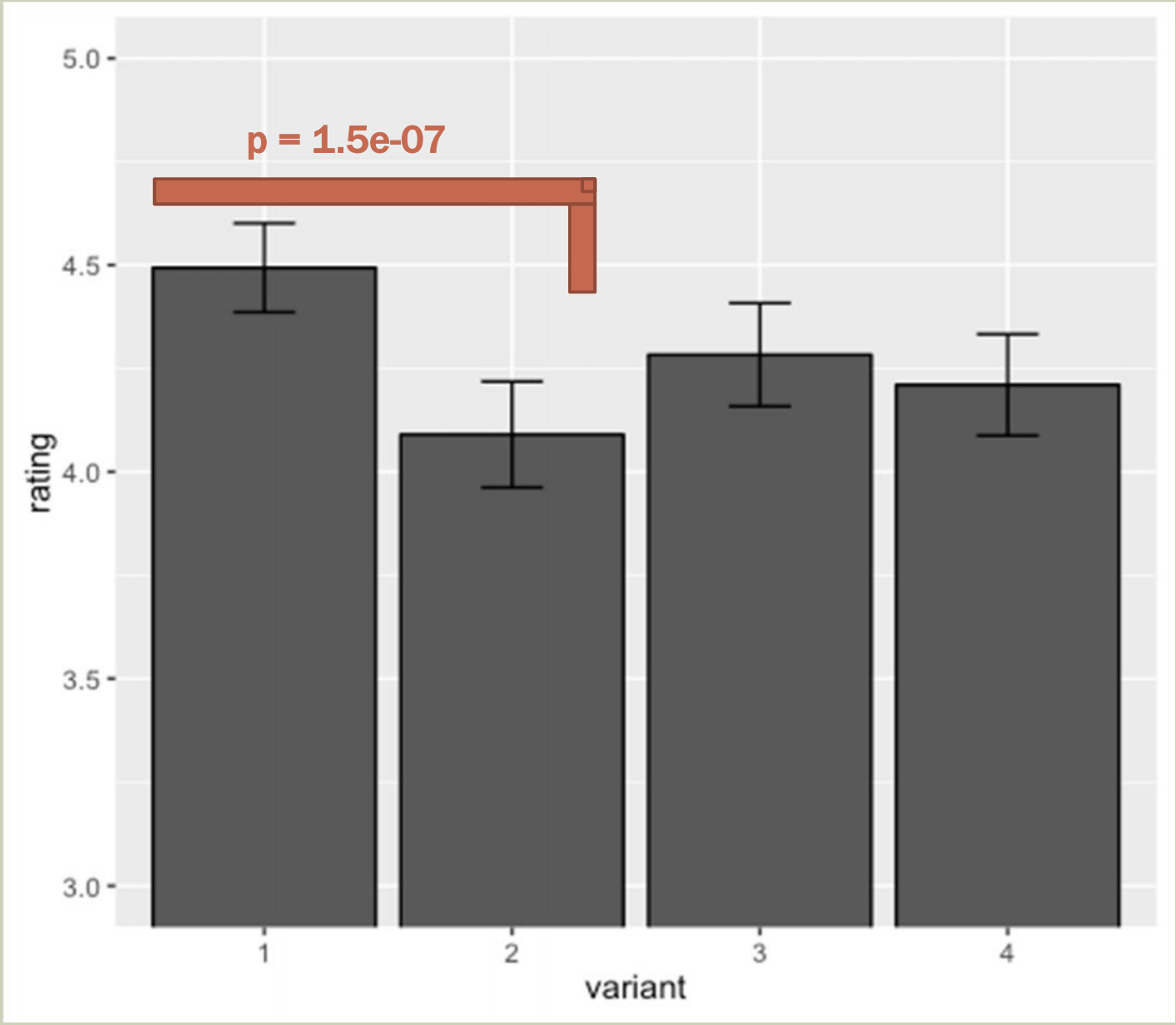
RESULTS

- Kruskal-Wallis test:

H = 33.5, df = 3, p = 2.663e-07

→ Significant difference between the four “error” groups

→ Posthoc Dunn test



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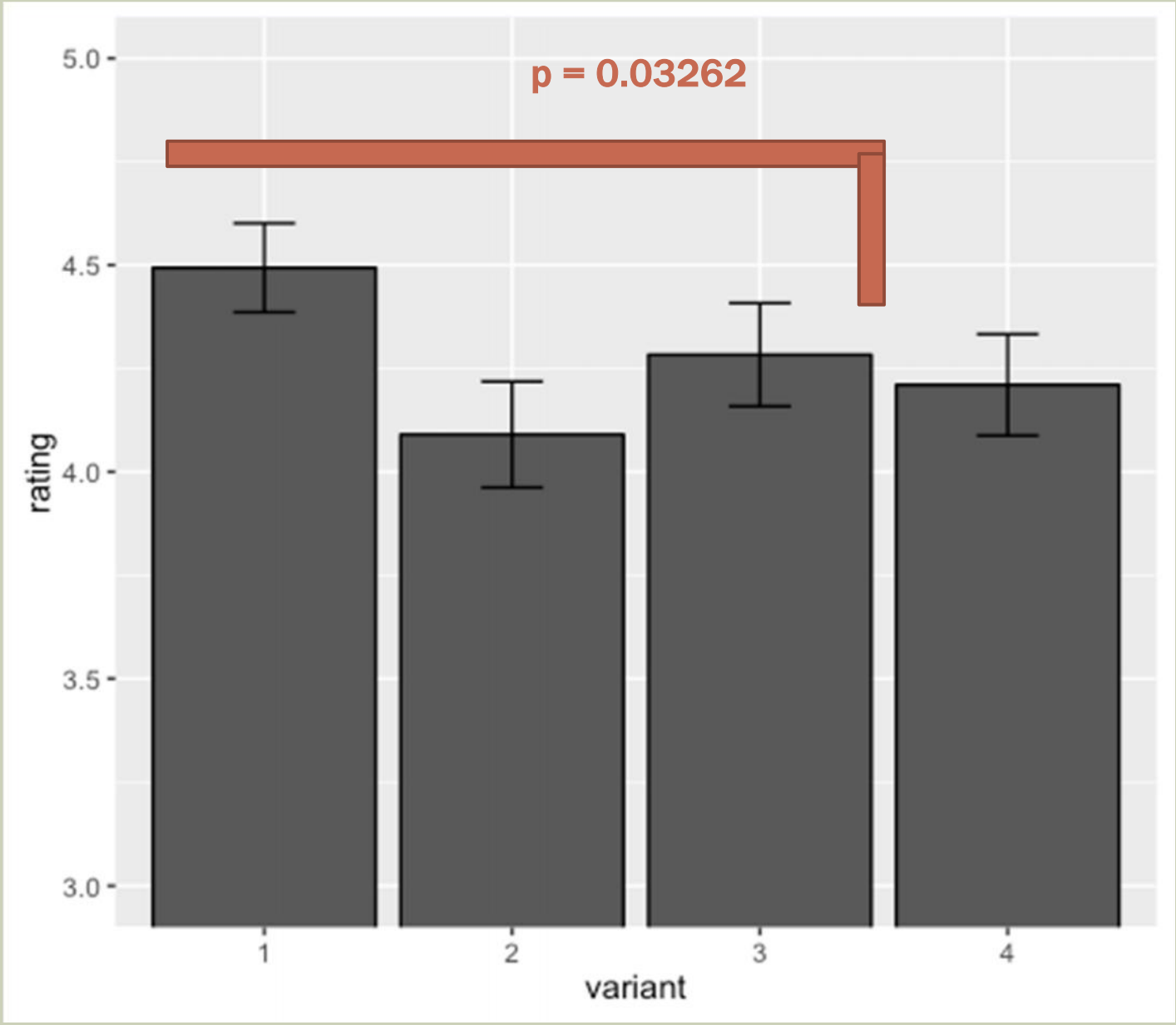

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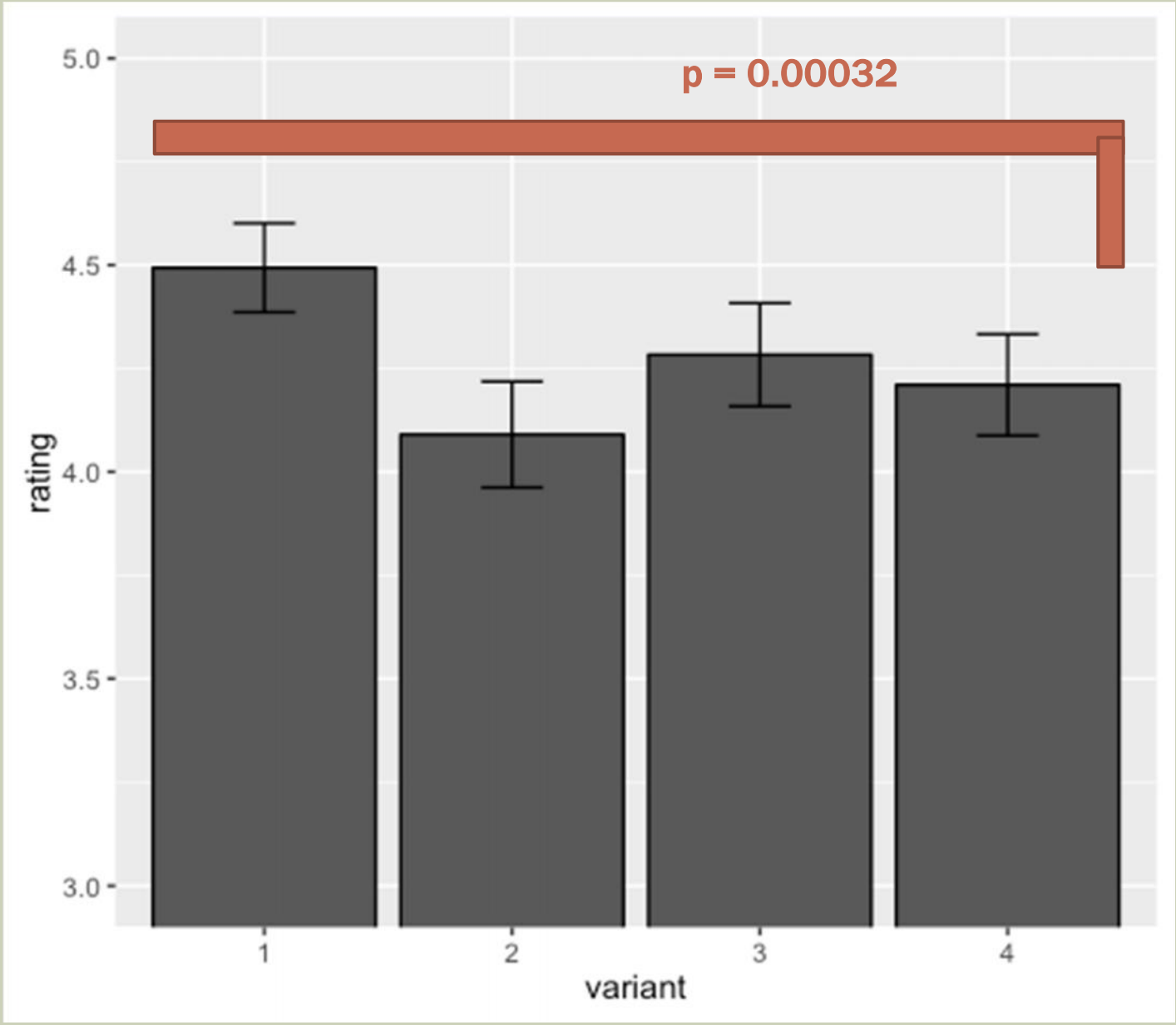

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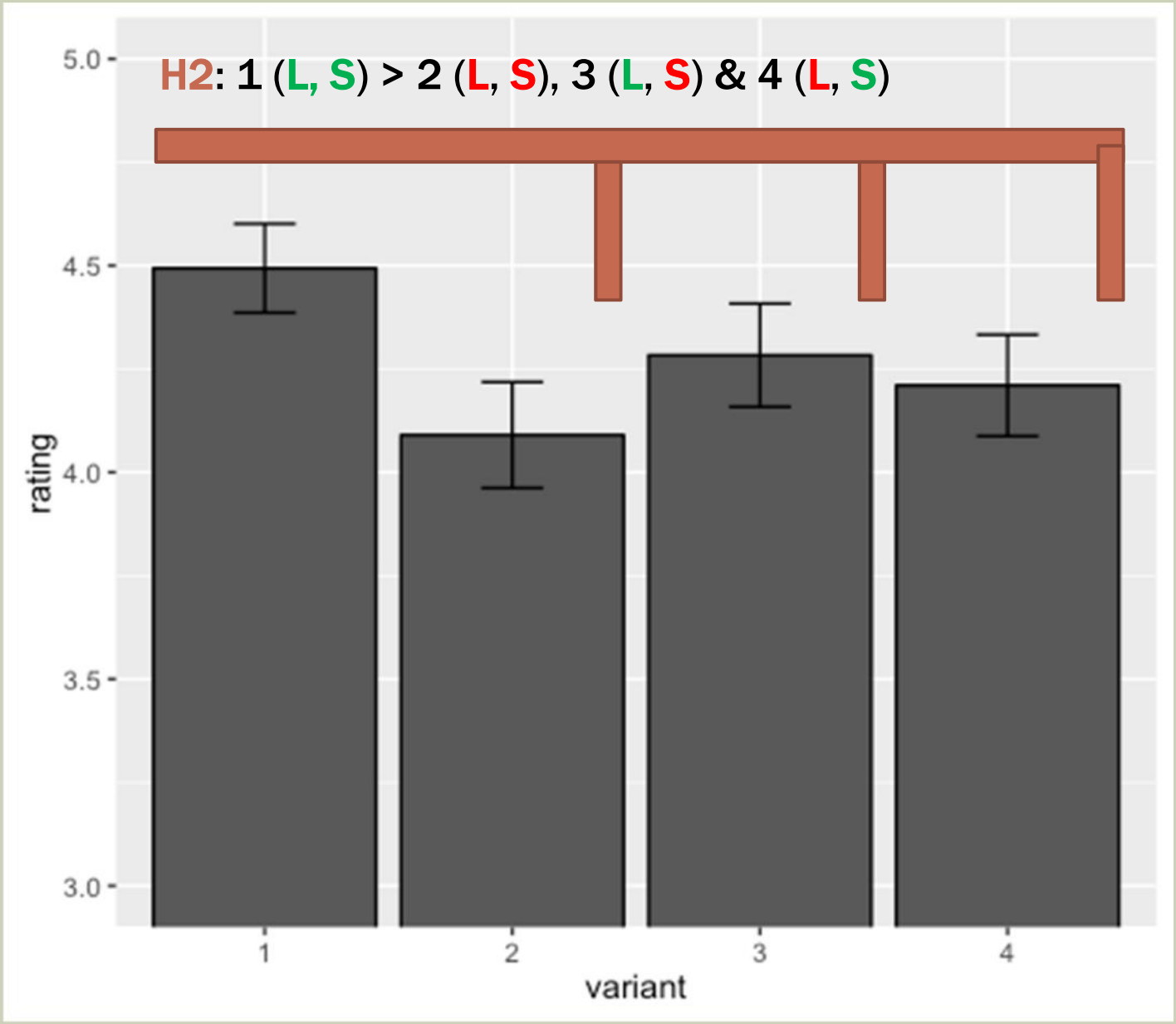

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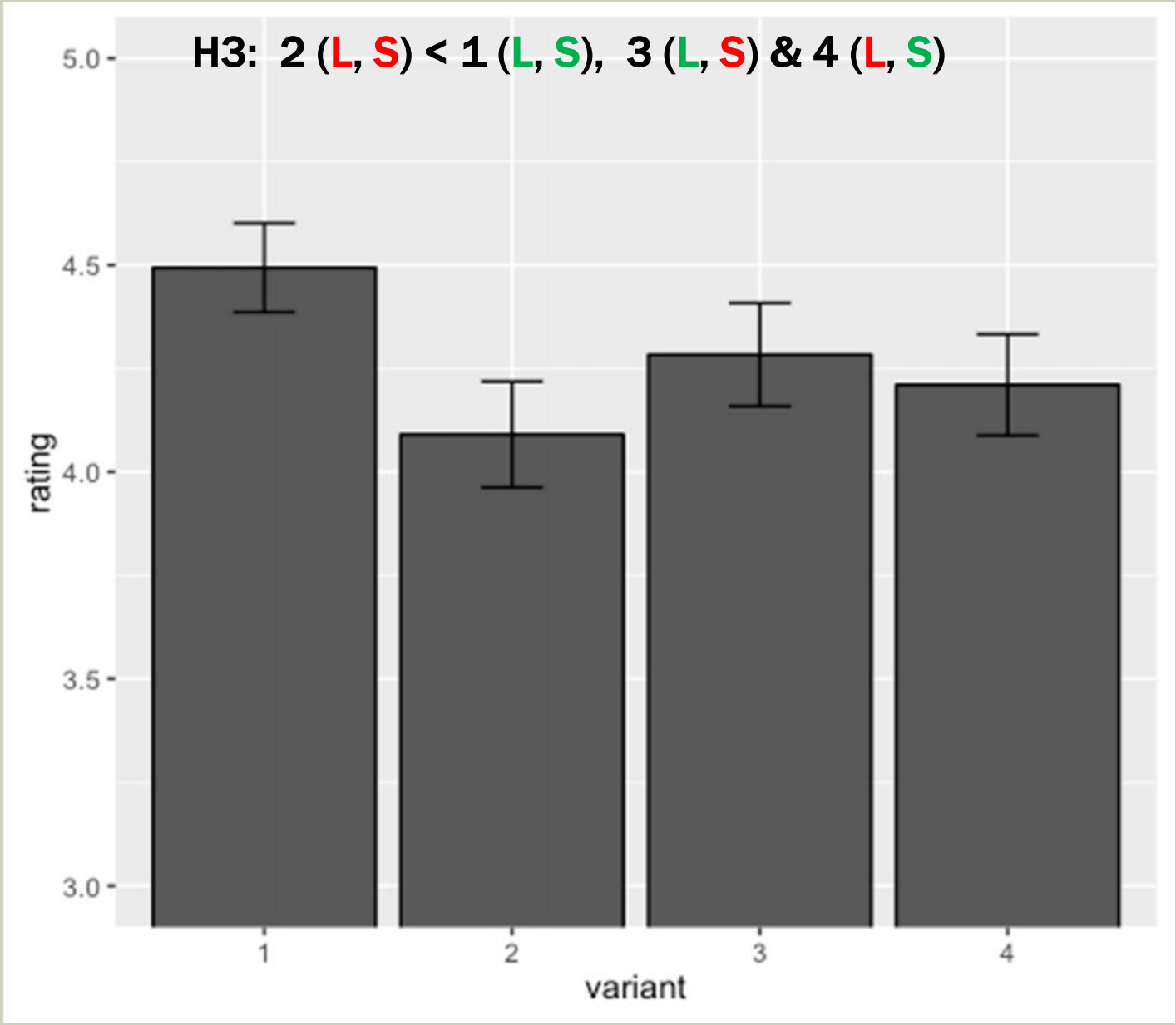

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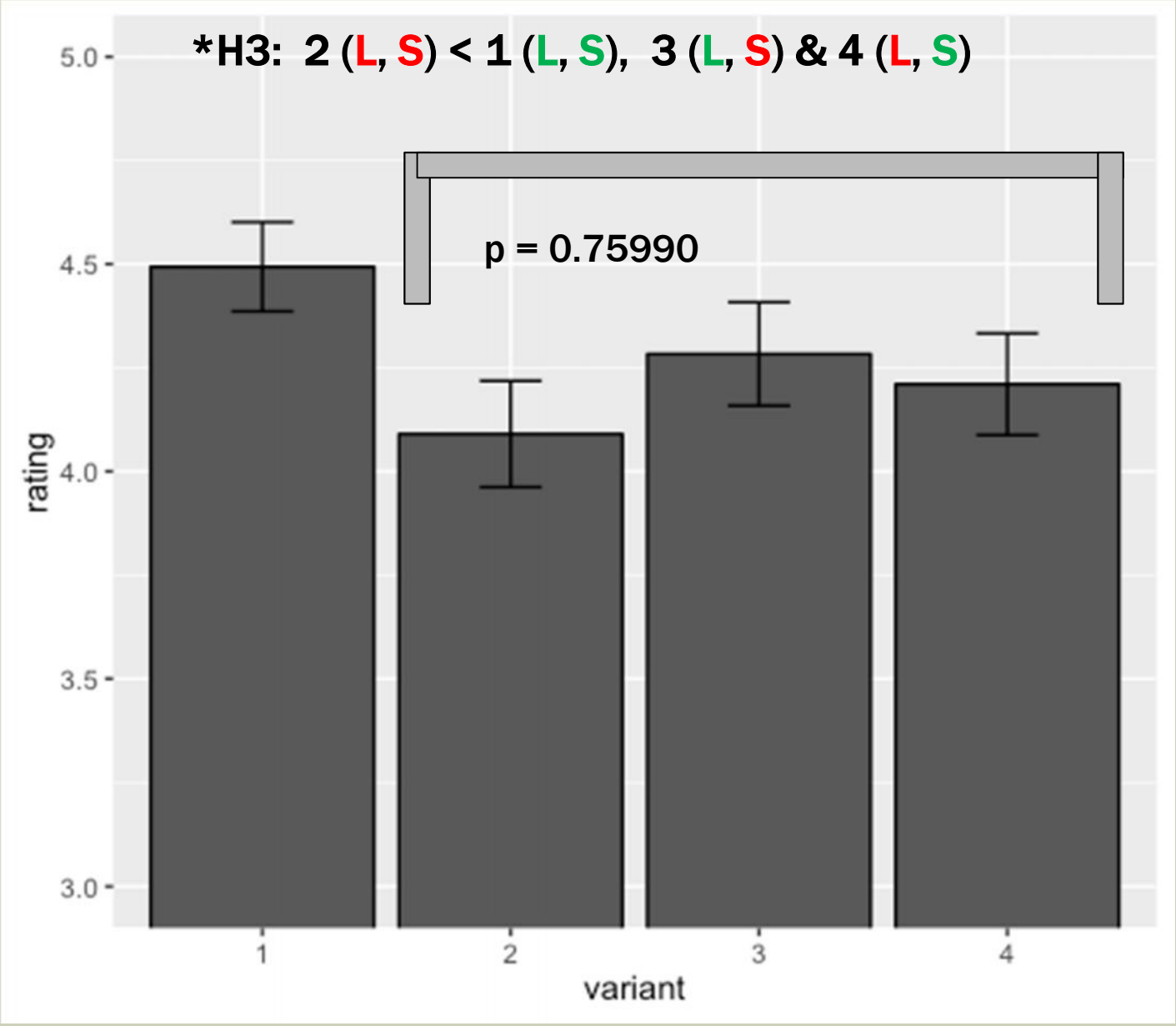

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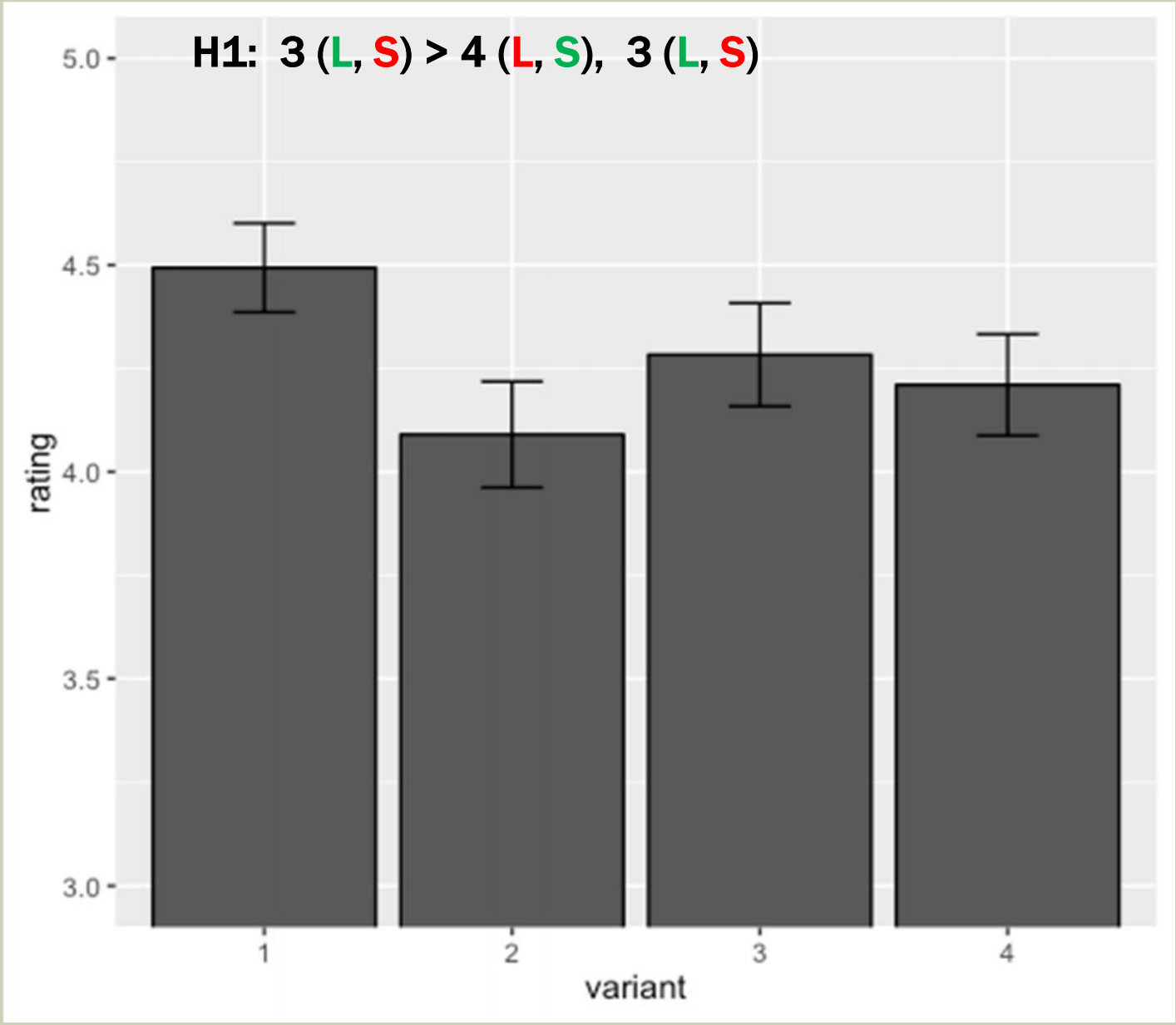

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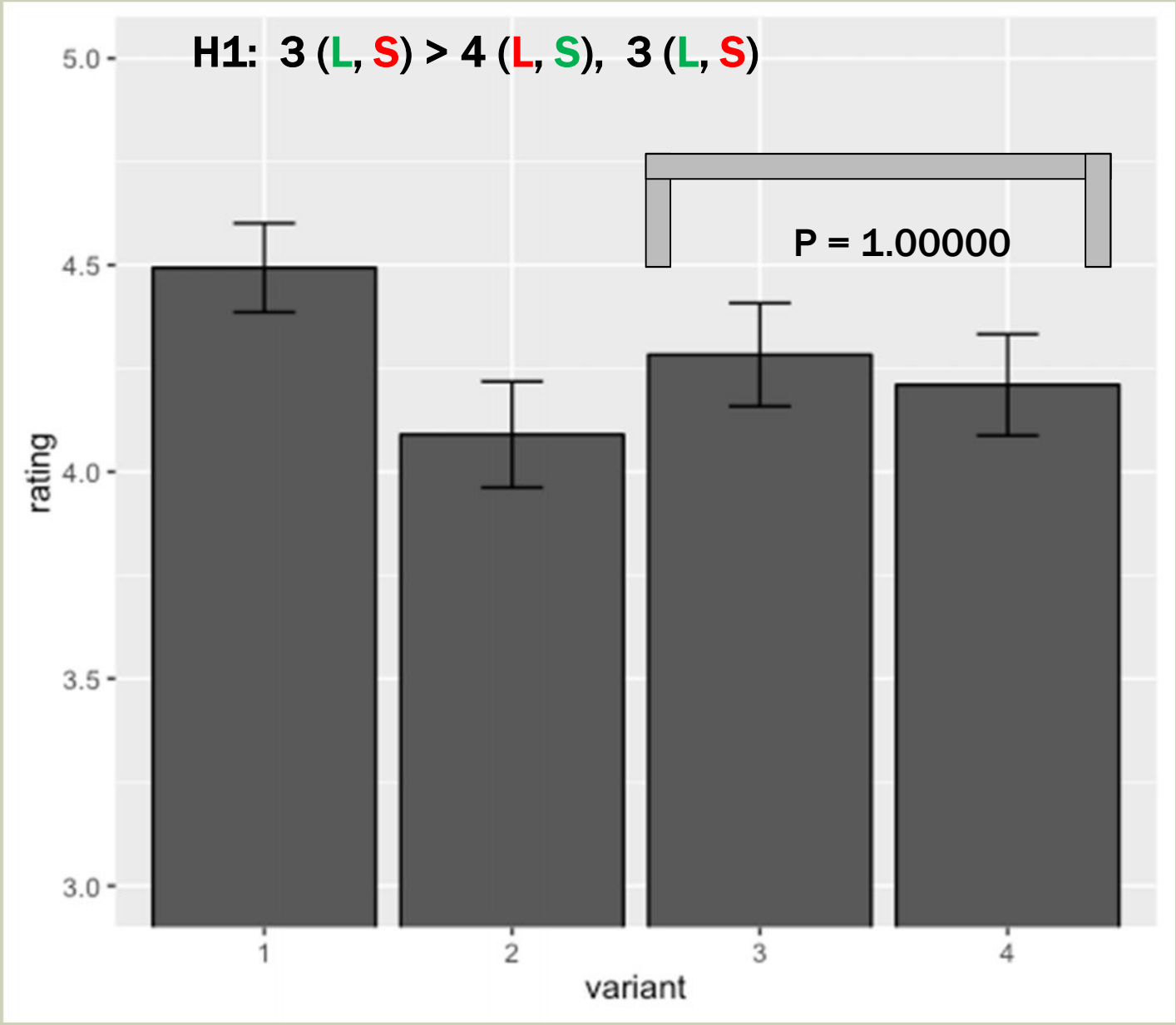

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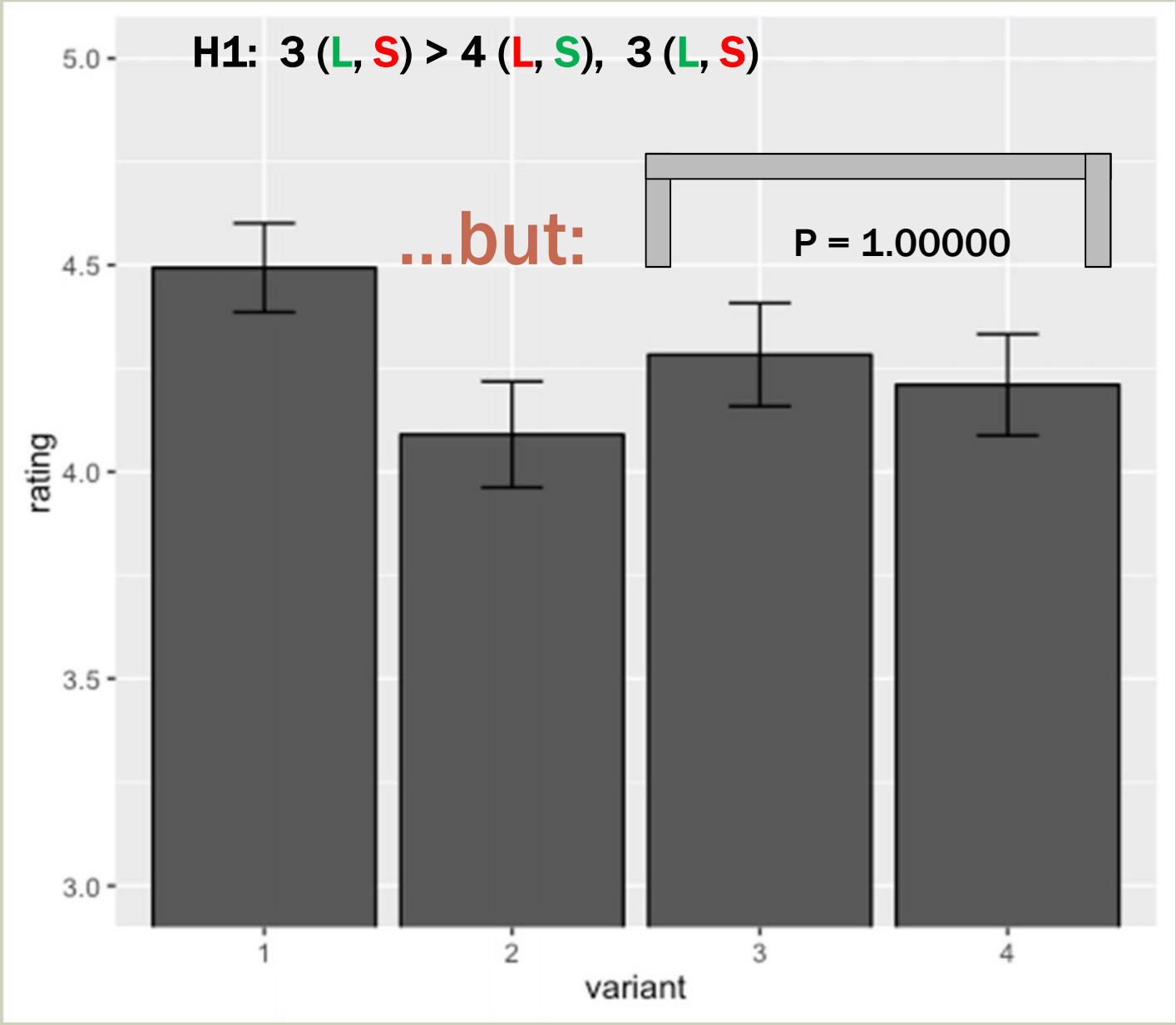


Figure 2: Mean ratings and error bars for the 4 prosodic error versions

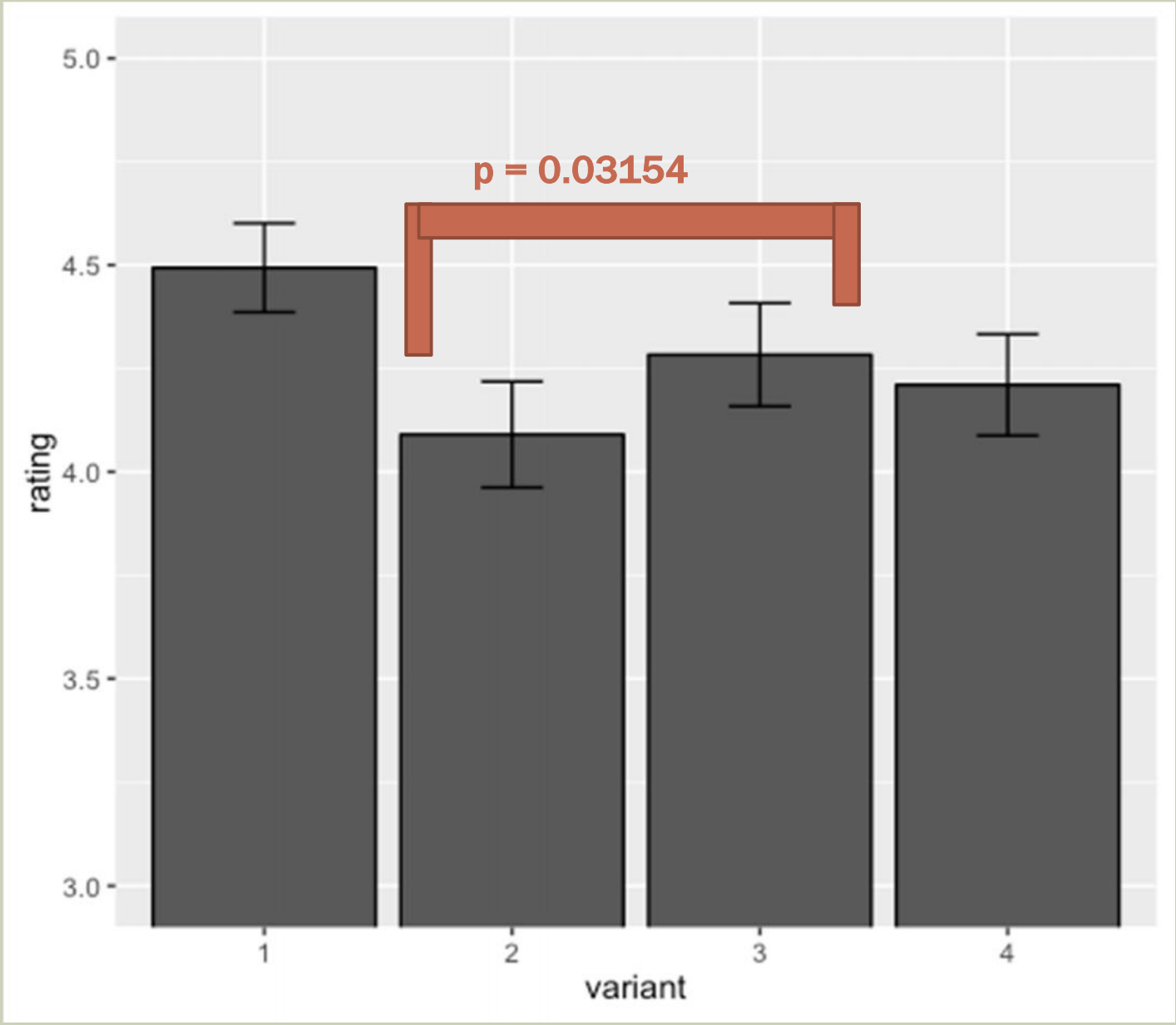


Figure 2: Mean ratings and error bars for the 4 prosodic error versions

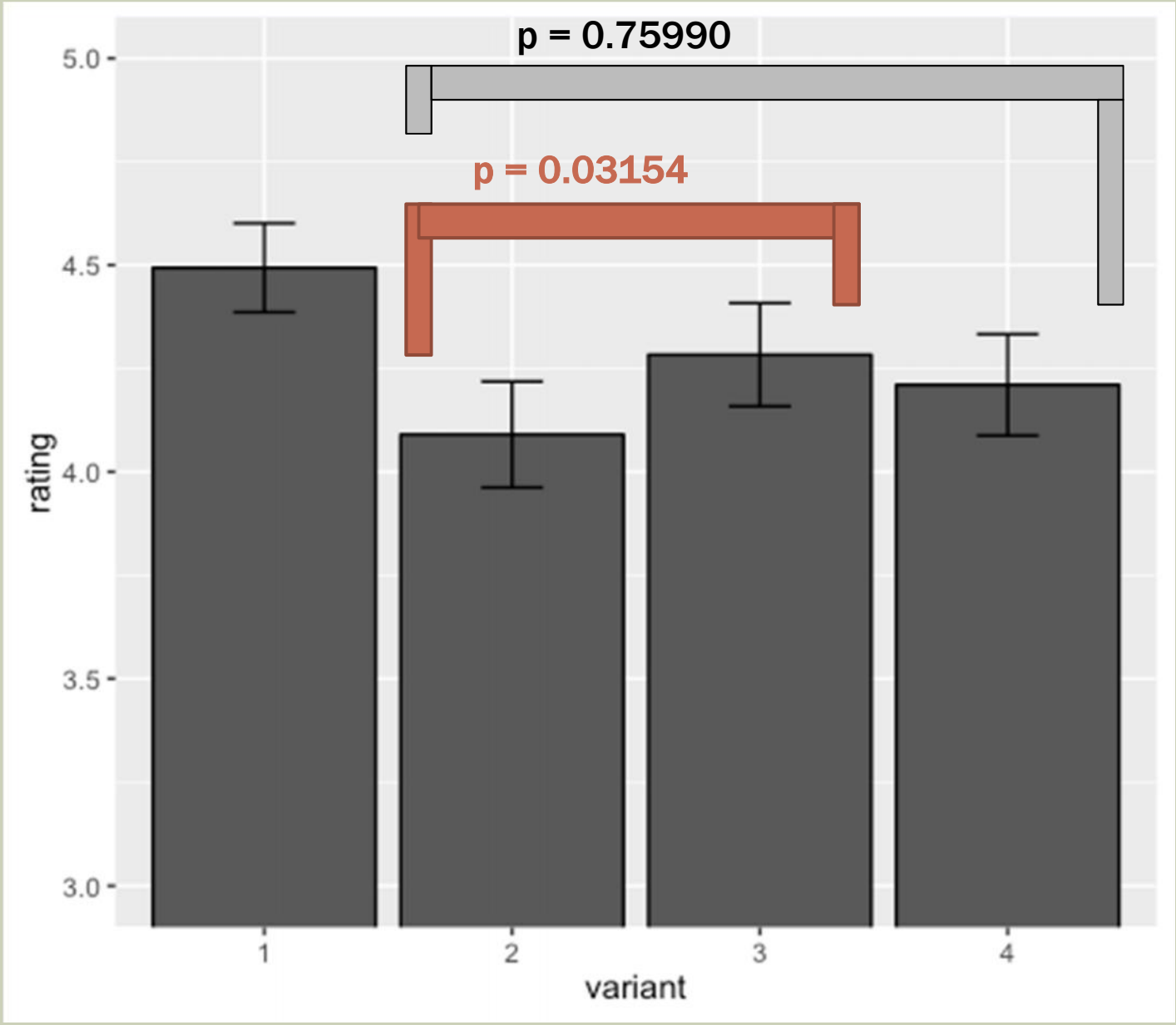


Figure 2: Mean ratings and error bars for the 4 prosodic error versions

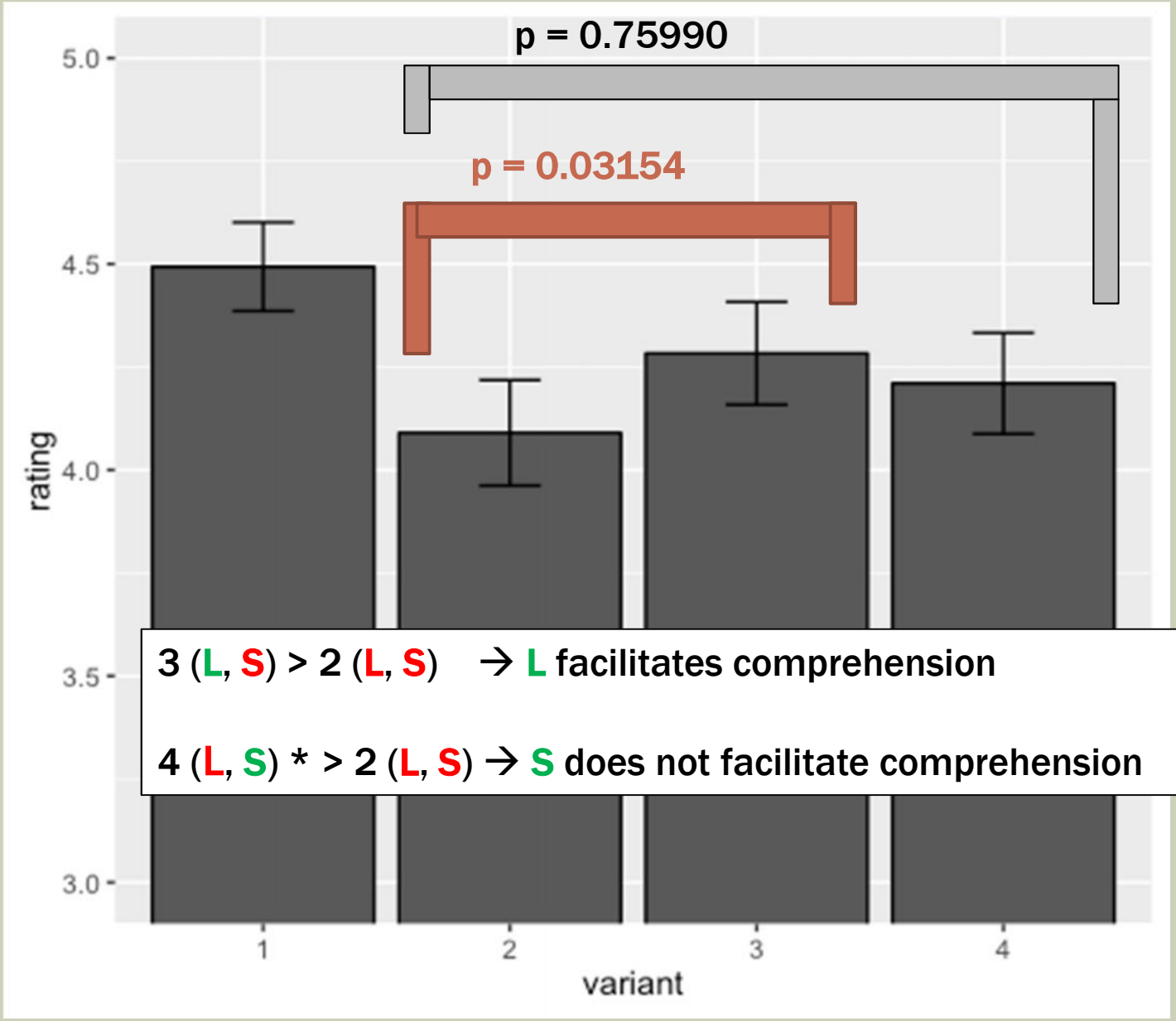
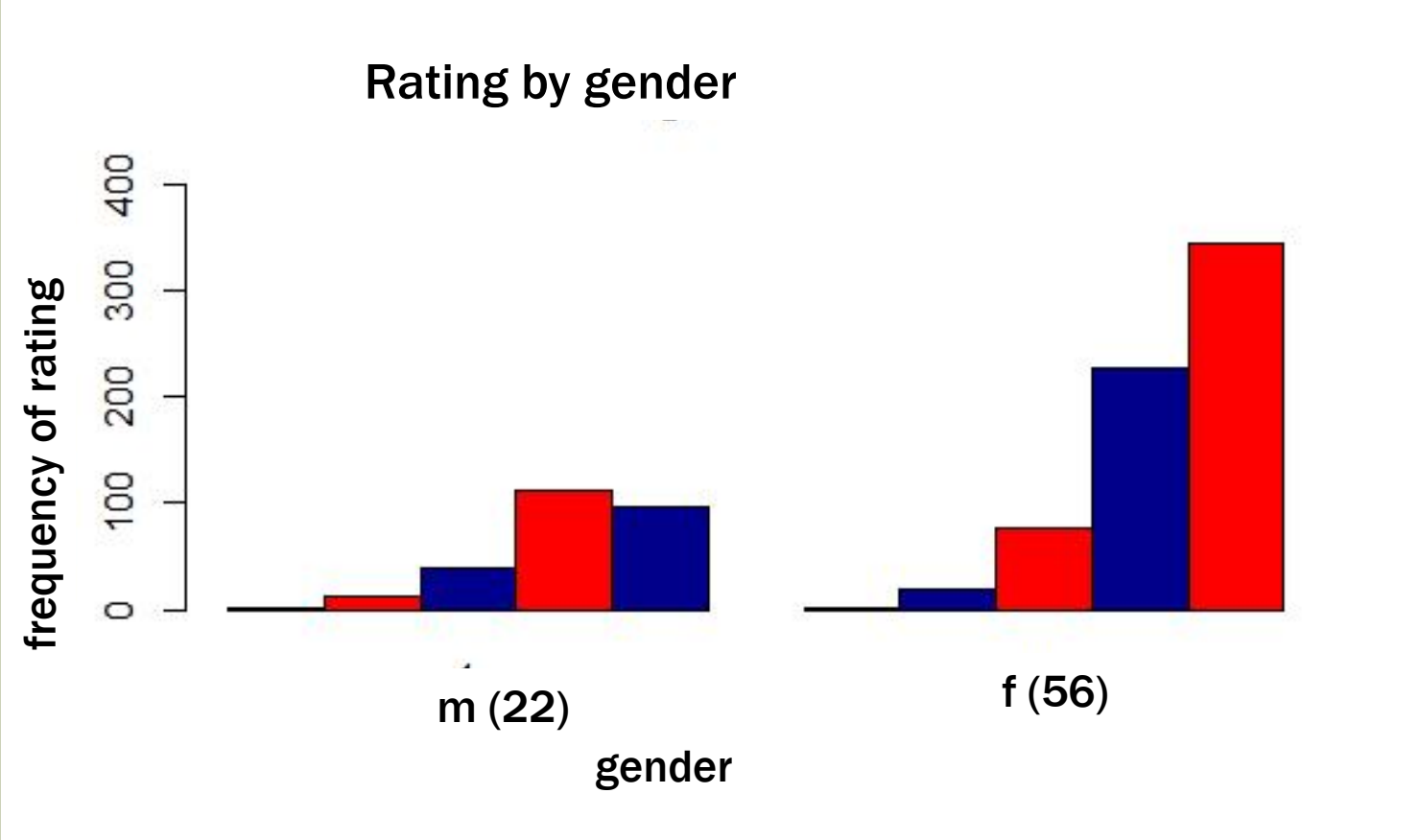


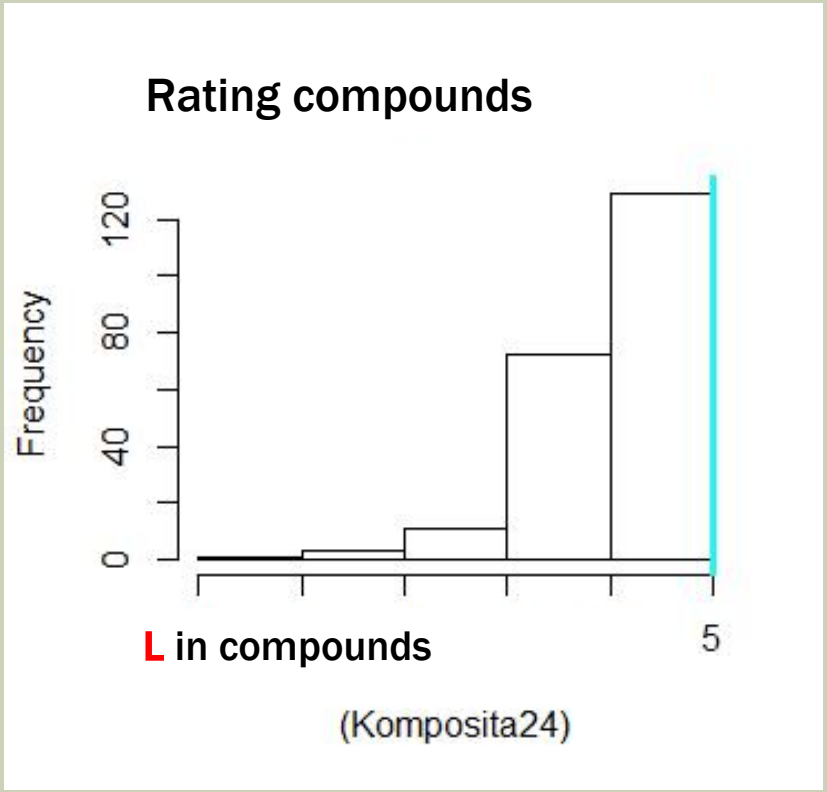
Figure 2: Mean ratings and error bars for the 4 prosodic error versions

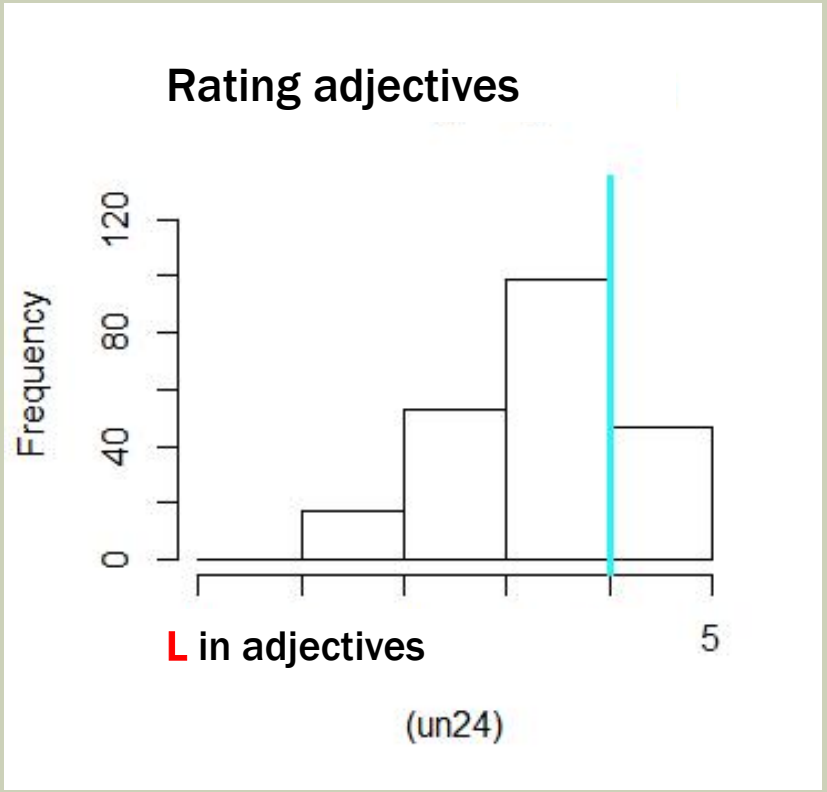
RESULTS GENDER

Kruskal-Wallis Test: *H=33.5, df = 3, p=p=3.784e-05*



RESULTS WORD CLASS





DISCUSSION

- Prosody influences comprehensibility
- Measuring comprehensibility?
- Lexical stress training > sentence accent training
- Gender, word class → different samples!

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RESULTS

Kruskal-Wallis Test: *H=33.5, df = 3, p=2,663e-07*

Post-hoc Dunn-test with Bonferroni-correction

	1 CLS, CSA	2 ICLS, ICSA	3 CLS, ICSA
2	1.5e-07	-	-
3	0.03262	0.03154	-
4 ICLS, CSA	0.00032	0.75990	1.00000

RESULTS

Kruskal-Wallis Test: *H=33.5, df = 3, p=2,663e-07*

Post-hoc Dunn-test with Bonferroni-correction

	1 CLS, CSA	2 ICLS, ICSA	3 CLS, ICSA
2	1.5e-07	-	-
3	0.03262	0.03154	-
4 ICLS, CSA	0.00032	0.75990	1.00000

H2

RESULTS

Kruskal-Wallis Test: *H=33.5, df = 3, p=2,663e-07*

Post-hoc Dunn-test with Bonferroni-correction

	1 CLS, CSA	2 ICLS, ICSA	3 CLS, ICSA
2	1.5e-07	-	-
3	0.03262	0.03154	-
4 ICLS, CSA	0.00032	0.75990	1.00000

RESULTS

Kruskal-Wallis Test: *H=33.5, df = 3, p=2,663e-07*

Post-hoc Dunn-test with Bonferroni-correction

	1 CLS, CSA	2 ICLS, ICSA	3 CLS, ICSA
2	1.5e-07	-	-
3	0.03262	0.03154	-
4 ICLS, CSA	0.00032	0.75990	1.00000

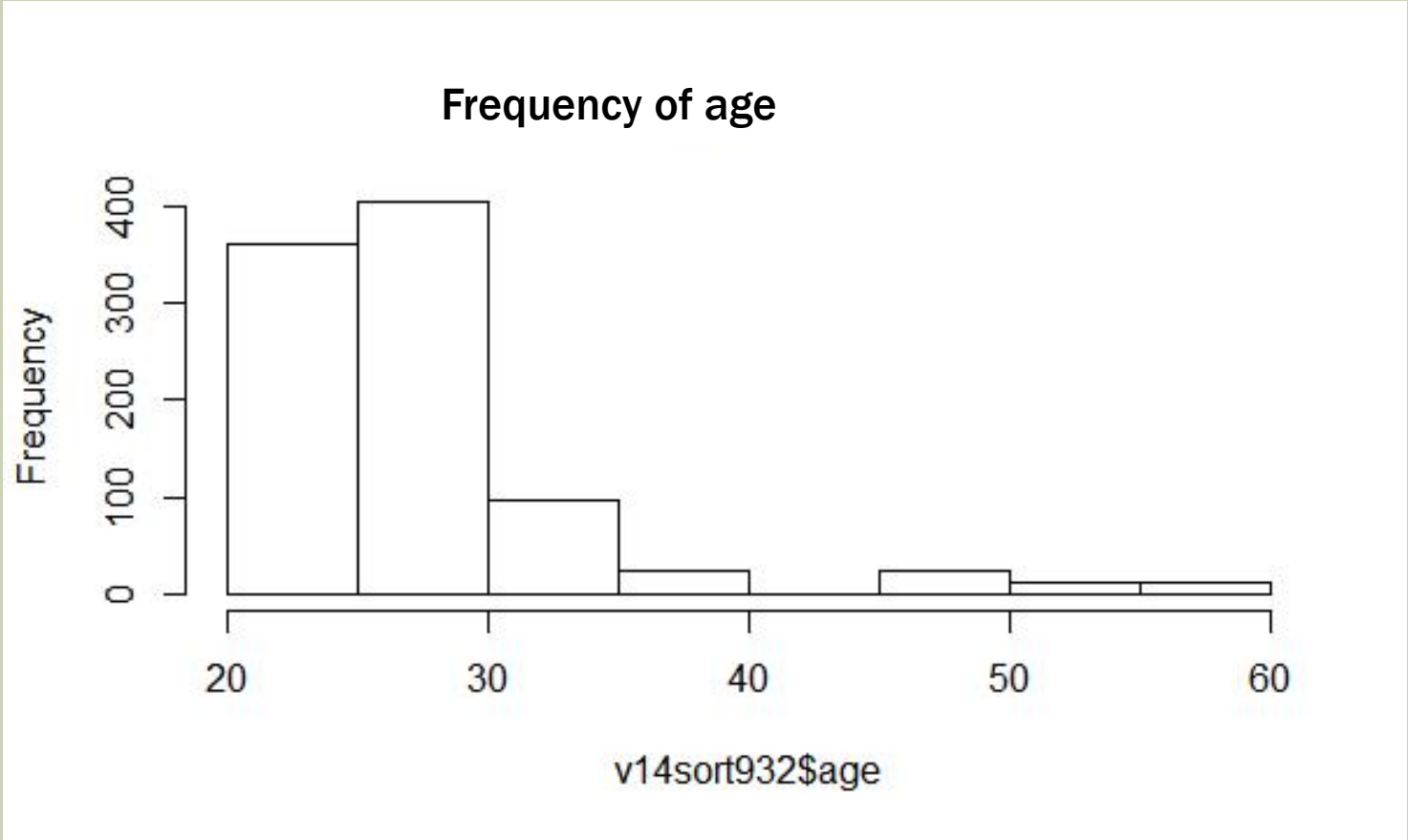
CLS, ICSA > ICWS, ICSA

RESULTS

Kruskal-Wallis Test: *H=33.5, df = 3, p=2,663e-07*

Post-hoc Dunn-test with Bonferroni-correction

	1 CLS, CSA	2 ICLS, ICSA	3 CLS, ICSA
2	1.5e-07	-	-
3	0.03262	0.03154	-
4 ICLS, CSA	0.00032	**0.75990**	1.00000


Frequency of age
Frequency
0
100
200
300
400
20
30
40
50
60
v14sort932$age

HYPOTHESES

lexical stress

- subdivide (Field 2005)
- distinctive (specifying) function (Cutler 2005)
- word retrieval/lexical access (Cutler 2005, Field 2005, Van Donselaar et al. 2005, Aitchison 2012)

sentence accent

- information structure, focus (Akker & Cutler 2003, Avesani et al. 2015,Ho Kwan Ip, Cutler 2016)
- more content recalled (Hahn 2004: 201).
- speaker appraisal (Hahn 2004, Busà & Stella 2012).

RESULTS

Kruskal-Wallis Test: *H=33.5, df = 3, p=2,663e-07*

Post-hoc Dunn-test with Bonferroni-correction

	1 CLS, CSA	2 ICLS, ICSA	3 CLS, ICSA
2	1.5e-07	-	-
3	0.03262	0.03154	-
4 ICLS, CSA	0.00032	**0.75990**	1.00000

***ICLS, CSA > ICLS, ICSA**

RESULTS

Kruskal-Wallis Test: *H=33.5, df = 3, p=2,663e-07*

Post-hoc Dunn-test with Bonferroni-correction

	1 CLS, CSA	2 ICLS, ICSA	3 CLS, ICSA
2	1.5e-07	-	-
3	0.03262	0.03154	-
4 ICLS, CSA	0.00032	**0.75990**	1.00000

***ICLS, CSA > ICLS, ICSA**

*** H3**

RESULTS

Kruskal-Wallis Test: *H=33.5, df = 3, p=2,663e-07*

Post-hoc Dunn-test with Bonferroni-correction

	1 CLS, CSA	2 ICLS, ICSA	3 CLS, ICSA
2	1.5e-07	-	-
3	0.03262	0.03154	-
4 ICLS, CSA	0.00032	0.75990	**1.00000**

RESULTS

Kruskal-Wallis Test: *H=33.5, df = 3, p=2,663e-07*

Post-hoc Dunn-test with Bonferroni-correction

	1 CLS, CSA	2 ICLS, ICSA	3 CLS, ICSA
2	1.5e-07	-	-
3	0.03262	0.03154	-
4 ICLS, CSA	0.00032	0.75990	**1.00000**

***CLS, ICSA > ICLS, CSA**

RESULTS

Kruskal-Wallis Test: *H=33.5, df = 3, p=2,663e-07*

Post-hoc Dunn-test with Bonferroni-correction

	1 CLS, CSA	2 ICLS, ICSA	3 CLS, ICSA
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3	0.03262	0.03154	-
4 ICLS, CSA	0.00032	0.75990	**1.00000**

***CLS, ICSA > ICLS, CSA**

*** H1**

HYPOTHESES

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- word retrieval/lexical access (Cutler 2005, Field 2005, Van Donselaar et al. 2005, Aitchison 2012)

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- speaker appraisal (Hahn 2004, Busà & Stella 2012).

HYPOTHESES

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- subdivide (Field 2005)
- distinctive (specifying) function (Cutler 2005)
- word retrieval/lexical access (Cutler 2005, Field 2005, Van Donselaar et al. 2005, Aitchison 2012)

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- information structure, focus (Akker & Cutler 2003, Avesani et al. 2015,Ho Kwan Ip, Cutler 2016)
- more content recalled (Hahn 2004: 201).
- speaker appraisal (Hahn 2004, Busà & Stella 2012).

H1: Incorrect lexical stress has worse consequences for comprehensibility than incorrect sentence accent.