

Processing costs of substituting Dutch idiomatic expressions with emojis

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References

Introduction and Theoretical Background

- People use emojis to convey emotion, express irony, and soften tone of messages [1].
- There are processing costs when words are substituted by emojis, resulting in longer reading times [2,3,5,8].
- Emojis are speculated not to be processed in the same way as words or images [2,3].
- Theories diverge as to how idioms are processed [9,10,11,13].
- The Compositional Hypothesis [13] predicts that elements of the idiom are bound together in the mental lexicon. One element would prime the others, facilitating retrieval.

Methodology

- Self-paced reading task (SPR) divided in reading blocks for better legibility. [14]
- Done online
- Stimuli composed of 36 sentences with and without emojis and idioms.

Condition	With emoji (WIE/WE)	Without emoji (WI/W)
Idiom Conditions: WIE / WI	/Een dagje vrij?/ Dat klinkt me als 🦉💡! / We kunnen naar/ het park gaan. (A free day? / This sounds like music to my ears! We can go to the park.)	/Een dagje vrij?/ Dat klinkt me als muziek in de oren!/ We kunnen naar/ het park gaan.
Idiom Conditions: WIE / WI	/Ik slaagde erin 🐷🚿/ maar besteedde uren / aan de oefening. (I managed to wash the pig, but spent hours /on the exercise.)	/Ik slaagde erin het varkentje te wassen, / maar besteedde uren/ aan de oefening.
Word Conditions: WE / W	/Ik ben zo bang voor 🦇/ ik kan geen /enkele grot bezoeken. (I'm so scared of bats/, I can't/ visit any caves.)	/Ik ben zo bang voor vleermuizen,/ ik kan geen/ enkele grot bezoeken.

**Stimuli developed with the help of another student, who dropped out of the project before the statistical analysis was concluded.

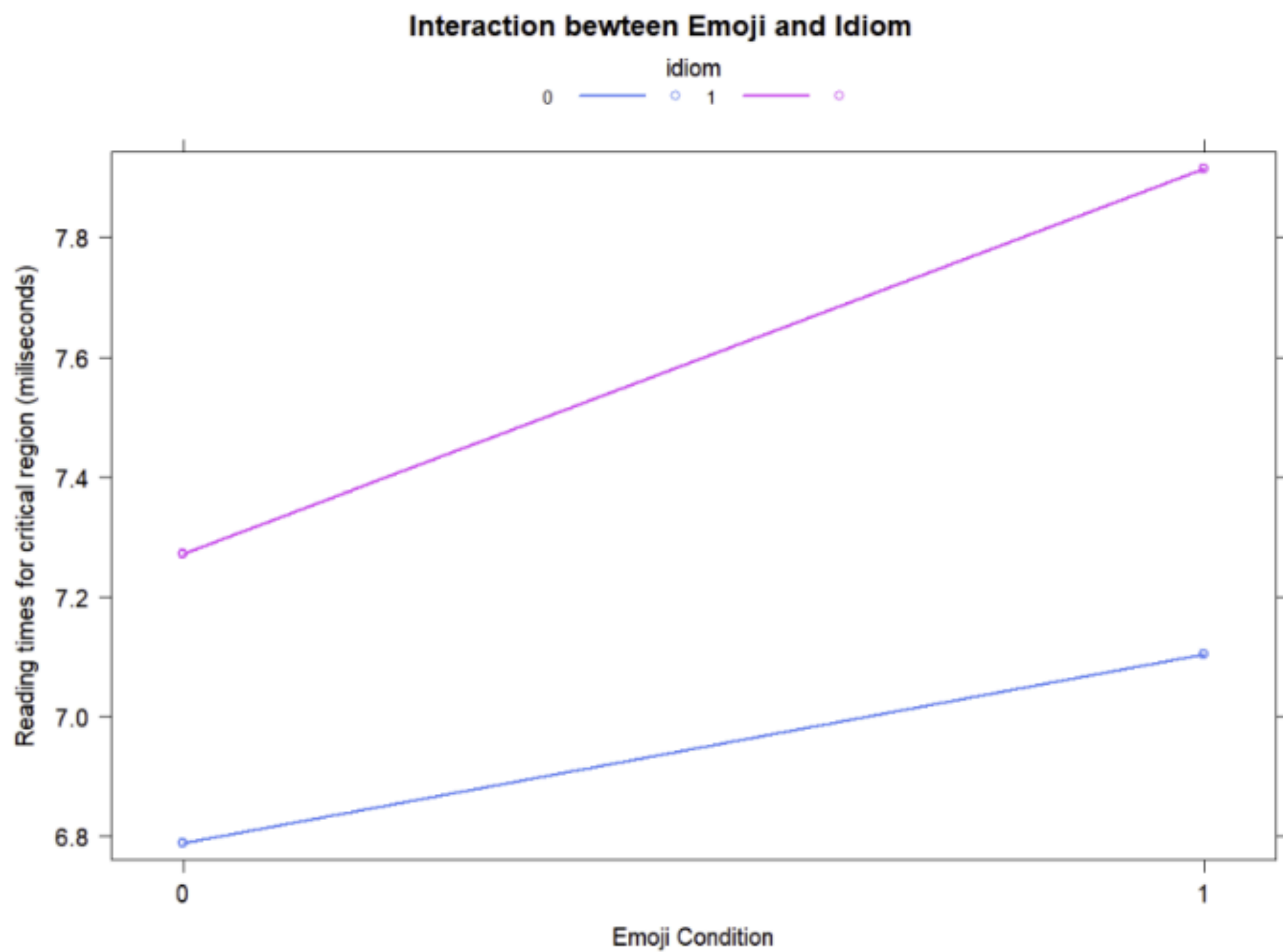
Hypothesis and Predictions

- Emojis would not produce activation of the complete lexical representation.
- Emojis would prime elements of the idiom, just as words do.
- Processing would go from emoji straight to idiom, thus access would be faster.

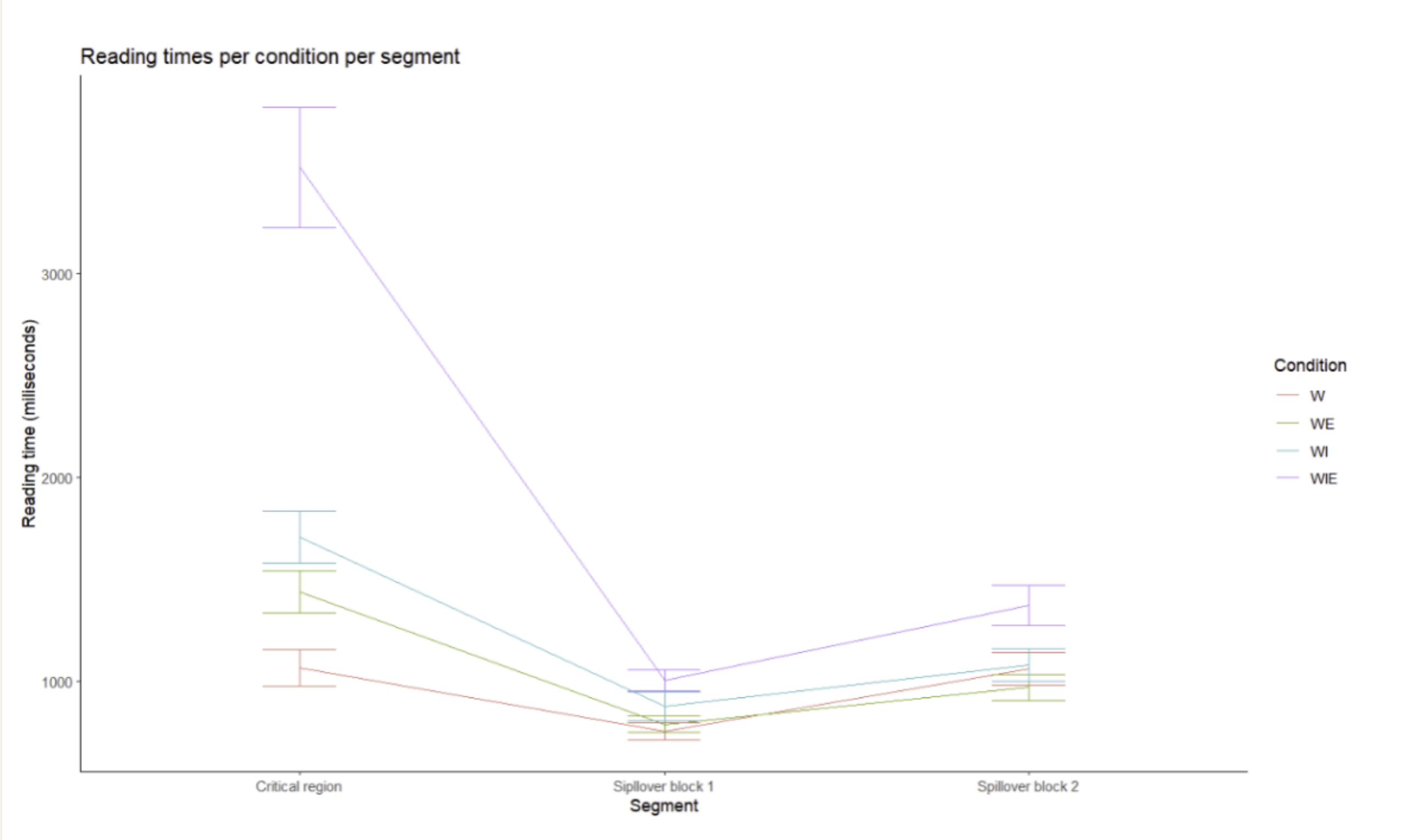
<div><div>PARTICIPANTS</div><div>32 volunteer native speakers of Dutch, 22–84 years old (mean age = 38.47, SD=18.69).</div></div>	<div><div>RESULTS</div><div>Reading times were influenced significantly by emojis at $\beta=1.06$(SE=.008, p-value=0.000000007015), idioms at $\beta=1.09$(SE=.009, p-value=0.000000000223), and their interaction at $\beta=1.03$(SE=.01, p-value=0.00131). Age and trail number were also significant with $\beta=1.01$(SE=.0004, p-value=0.00402), respectively $\beta=.99$(SE=.0001, p-value=0.000005445292).</div></div>	<div><div>FUTURE DIRECTIONS & LIMITATIONS</div><div><ul style="list-style-type: none">Post-experiment surveys to measure participant familiarity with idioms.Only last words of idioms replaced by emojis, after [4].Confound: stimuli predominantly textual. Future solution: Sentences composed predominantly by emojis with only one written word.</div></div>
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Discussion

- Higher processing costs for emojis replacing words, in line with previous studies [2, 3, 5, 8]. This does not imply comprehension cost, in line with [5].
- Emojis are not processed like images or words.
- Longer reading times might be caused by the conventional form of idioms, in line with [6] and [7].
- Longer reading times in older adults might be caused by stimuli dense in ideas, after [12].



Reading times for the critical region, i.e. the one that contained the emojis, are plotted to demonstrate the effects of adding an emoji (from 0 to 1) and an idiom (from 0 to 1) to the sentences.



Participants reading times per segment of text, in all 4 conditions.

Conclusion

Replacing words with emojis involves processing costs (i.e. longer reading times), reading times being also influenced by age or trial number.

Charts

