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De lexico-semantiche representatie van woorden in het mentale
lexicon**

Wang, Y.

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References

- Ahmad, I., Ansari, F., & Dey, U. (2012). A review of emg recording technique. *International Journal of Engineering Science and Technology*, 4(2), 530–539.
- Anderson, J. R. (1983). A spreading activation theory of memory. *Journal of Verbal Learning and Verbal Behavior*, 22(3), 261–295. [https://doi.org/10.1016/S0022-5371\(83\)90201-3](https://doi.org/10.1016/S0022-5371(83)90201-3)
- Aveledo, F., & Athanasopoulos, P. (2016). Second language influence on first language motion event encoding and categorization in spanish-speaking children learning l2 english. *International Journal of Bilingualism*, 20(4), 403–420. <https://doi.org/10.1177/1367006915609235>
- Bakurov, I., Buzzelli, M., Schettini, R., Castelli, M., & Vanneschi, L. (2022). Structural similarity index (ssim) revisited: A data-driven approach. *Expert Systems with Applications*, 189, 116087. <https://doi.org/10.1016/j.eswa.2021.116087>
- Barr, D. J., Levy, R., Scheepers, C., & Tily, H. J. (2013). Random effects structure for confirmatory hypothesis testing: Keep it maximal. *Journal of memory and language*, 68(3), 255–278.
- Bates, D., Mächler, M., Bolker, B., & Walker, S. (2014). Fitting linear mixed-effects models using lme4. *arXiv preprint arXiv:1406.5823*.
- Bates, D. (2007). Linear mixed model implementation in lme4. *Manuscript, University of Wisconsin*, 15, 5–2.
- Binder, J. R., Desai, R. H., Graves, W. W., & Conant, L. L. (2009). Where is the semantic system? a critical review and meta-analysis of 120 functional neuroimaging studies. *Cerebral Cortex*, 19(12), 2767–2796. <https://doi.org/10.1093/cercor/bhp055>
- Blackford, T., Holcomb, P. J., Grainger, J., & Kuperberg, G. R. (2012). A funny thing happened on the way to articulation: N400 attenuation despite behavioral interference in picture naming. *Cognition*, 123(1), 84–99. <https://doi.org/10.1016/j.cognition.2011.12.007>

- Boersma, P. (2007). Praat: Doing phonetics by computer.
- Bürki, A., Elbuy, S., Madec, S., & Vasishth, S. (2020). What did we learn from forty years of research on semantic interference? a bayesian meta-analysis. *Journal of Memory and Language*, 114, 104125. <https://doi.org/10.1016/j.jml.2020.104125>
- Cabeza, R., & Nyberg, L. (2000). Imaging cognition ii: An empirical review of 275 pet and fmri studies. *Journal of Cognitive Neuroscience*, 12(1), 1–47. <https://doi.org/10.1162/08989290051137585>
- Caramazza, A. (1997). How many levels of processing are there in lexical access? *Cognitive Neuropsychology*, 14(1), 177–208. <https://doi.org/10.1080/026432997381664>
- Collins, A. M., & Loftus, E. F. (1975). A spreading-activation theory of semantic processing. *Psychological Review*, 82(6), 407–428. <https://doi.org/10.1037/0033-295X.82.6.407>
- Collins, A. M., & Quillian, M. R. (1970). Facilitating retrieval from semantic memory: The effect of repeating part of an inference. *Acta Psychologica*, 33, 304–314. [https://doi.org/10.1016/0001-6918\(70\)90142-3](https://doi.org/10.1016/0001-6918(70)90142-3)
- Costa, A., Strijkers, K., Martin, C., & Thierry, G. (2009). The time course of word retrieval revealed by event-related brain potentials during overt speech. *Proceedings of the National Academy of Sciences*, 106(50), 21442–21446. <https://doi.org/10.1073/pnas.0908921106>
- De Zubizaray, G. I., McLean, M., Oppermann, F., Hegarty, A., McMahon, K., & Jescheniak, J. D. (2018). The shape of things to come in speech production: Visual form interference during lexical access. *Quarterly Journal of Experimental Psychology*, 71(9), 1921–1938. <https://doi.org/10.1080/17470218.2017.1367018>
- Debruille, J. B., Ramirez, D., Wolf, Y., Schaefer, A., Nguyen, T. V., Bacon, B. A., & Brodeur, M. (2008). Knowledge inhibition and n400: A within- and a between-subjects study with distractor words. *Brain Research*, 1187, 167–183. <https://doi.org/10.1016/j.brainres.2007.10.021>
- Dell, G. S. (1986). A spreading-activation theory of retrieval in sentence production. *Psychological Review*, 93(3), 283–321. <https://doi.org/10.1037/0033-295X.93.3.283>
- Dell, G. S. (2013). Cascading and feedback in interactive models of production: A reflection of forward modeling? *The Behavioral and Brain Sciences*, 36(4), 351. <https://doi.org/10.1017/S0140525X12002531>
- Dell, G. S., & O’Searghda, P. G. (1992). Stages of lexical access in language production. *Cognition*, 42, 1–3.
- Delorme, A., & Makeig, S. (2004). Eeglab: An open source toolbox for analysis of single-trial eeg dynamics including independent component analysis. *Journal of Neuroscience Methods*, 134(1), 9–21. <https://doi.org/10.1016/j.jneumeth.2003.10.009>

- Freedman, D., & Lane, D. (1983). A nonstochastic interpretation of reported significance levels. *Journal of Business Economic Statistics*, 1(4), 292–298. <https://doi.org/10.1080/07350015.1983.10509354>
- Ganushchak, L. Y., Christoffels, I. K., & Schiller, N. O. (2011). The use of electroencephalography in language production research: A review. *Frontiers in Psychology*, 2, Article 208. <https://doi.org/10.3389/fpsyg.2011.00208>
- Gauvin, H. S., McMahon, K. L., Meinzer, M., & De Zubicaray, G. I. (2019). The shape of things to come in speech production: A functional magnetic resonance imaging study of visual form interference during lexical access. *Journal of Cognitive Neuroscience*, 31(6), 913–921. <https://doi.org/10.1162/jocn.a.01382>
- Glaser, W. R. (1992). Picture naming. *Cognition*, 42(1-3), 61–105.
- Greenham, S. L., Stelmack, R. M., & Campbell, K. B. (2000). Effects of attention and semantic relation on event-related potentials in a picture-word naming task. *Biological Psychology*, 55(2), 79–104. [https://doi.org/10.1016/S0301-0511\(00\)00070-3](https://doi.org/10.1016/S0301-0511(00)00070-3)
- Hagoort, P., & Brown, C. M. (2000). Erp effects of listening to speech compared to reading: The p600/sps to syntactic violations in spoken sentences and rapid serial visual presentation. *Neuropsychologia*, 38(11), 1531–1549. [https://doi.org/10.1016/S0028-3932\(00\)00053-1](https://doi.org/10.1016/S0028-3932(00)00053-1)
- Hagoort, P., Brown, C., & Groothusen, J. (1993). The syntactic positive shift (sps) as an erp measure of syntactic processing. *Language and Cognitive Processes*, 8(4), 439–483.
- Hedeker, D., Du Toit, S. H. C., Demirtas, H., & Gibbons, R. D. (2018). A note on marginalization of regression parameters from mixed models of binary outcomes. *Biometrics*, 74(1), 354–361. <https://doi.org/10.1111/biom.12707>
- Huang, C. R., Chen, K. J., & Gao, Z. M. (1998). Noun class extraction from a corpus-based collocation dictionary: An integration of computational and qualitative approaches. In B. K. T'sou, T. B. Y. Lai, S. W. K. Chan, & W. S.-Y. Wang (Eds.), *Quantitative and computational studies of chinese linguistics* (pp. 339–352). City University of Hong Kong.
- Huang & Schiller, N. O. (2021). Classifiers in mandarin chinese: Behavioral and electrophysiological evidence regarding their representation and processing. *Brain and Language*, 214, 104889.
- Humphreys, G. W., & Forde, E. M. (2001). Hierarchies, similarity, and interactivity in object recognition: “category-specific” neuropsychological deficits. *Behavioral and Brain Sciences*, 24(3), 453–509.
- Hutchison, K. A. (2003). Is semantic priming due to association strength or feature overlap? a microanalytic review. *Psychonomic Bulletin & Review*, 10, 785–813. <https://doi.org/10.3758/BF03196544>

- Indefrey, P. (2011). The spatial and temporal signatures of word production components: A critical update. *Frontiers in Psychology*, 2, Article 255. <https://doi.org/10.3389/fpsyg.2011.00255>
- Indefrey, P., & Levelt, W. J. (2004). The spatial and temporal signatures of word production components. *Cognition*, 92(1–2), 101–144. <https://doi.org/10.1016/j.cognition.2002.06.001>
- Kappenman, E. S., & Luck, S. J. (2012). Erp components: The ups and downs of brainwave recordings. In *The oxford handbook of event-related potential components* (pp. 1–30). Oxford University Press.
- Krott, A., Medaglia, M. T., & Porcaro, C. (2019). Early and late effects of semantic distractors on electroencephalographic responses during overt picture naming. *Frontiers in Psychology*, 10, Article 696. <https://doi.org/10.3389/fpsyg.2019.00696>
- Kuha, J. (2004). Aic and bic: Comparisons of assumptions and performance. *Sociological Methods & Research*, 33(2), 188–229. <https://doi.org/10.1177/0049124103262065>
- Kutas, M., & Federmeier, K. D. (2011). Thirty years and counting: Finding meaning in the n400 component of the event-related brain potential (erp). *Annual Review of Psychology*, 62, 621–647. <https://doi.org/10.1146/annurev.psych.093008.131123>
- Kutas, M., & Hillyard, S. A. (1980a). Event-related brain potentials to semantically inappropriate and surprisingly large words. *Biological Psychology*, 11(2), 99–116. [https://doi.org/10.1016/0301-0511\(80\)90046-0](https://doi.org/10.1016/0301-0511(80)90046-0)
- Kutas, M., & Hillyard, S. A. (1980b). Reading senseless sentences: Brain potentials reflect semantic incongruity. *Science*, 207(4427), 203–205. <https://doi.org/10.1126/science.7350657>
- Kutas, M., & Hillyard, S. A. (1984). Brain potentials during reading reflect word expectancy and semantic association. *Nature*, 307(5947), 161–163. <https://doi.org/10.1038/307161a0>
- La Heij, W., Mak, P., Sander, J., & Willeboordse, E. (1998). The gender-congruency effect in picture-word tasks. *Psychological Research*, 61(3), 209–219.
- Lakoff, G. (1986). Classifiers as a reflection of mind. In *Noun classes and categorization* (pp. 13–51). John Benjamins.
- Levelt, W. J. (1999). Models of word production. *Trends in Cognitive Sciences*, 3(6), 223–232. [https://doi.org/10.1016/S1364-6613\(99\)01319-4](https://doi.org/10.1016/S1364-6613(99)01319-4)
- Levelt, W. J., Roelofs, A., & Meyer, A. S. (1999). A theory of lexical access in speech production. *Behavioral and Brain Sciences*, 22(1), 1–38. <https://doi.org/10.1017/S0140525X99001776>
- Lewis, F., Butler, A., & Gilbert, L. (2011). A unified approach to model selection using the likelihood ratio test. *Methods in Ecology and Evolution*, 2(2), 155–162. <https://doi.org/10.1111/j.2041-210X.2010.00063.x>
- Linguistics Institute of Chinese Academy of Social Sciences. (2011). *Xinhua dictionary* (, version 11). Commercial Press.

- Liu, S., Mei, H., Williams, A., & Cotterell, R. (2019, June). On the idiosyncrasies of the Mandarin Chinese classifier system. In J. Burstein, C. Doran, & T. Solorio (Eds.), *Proceedings of the 2019 conference of the north American chapter of the association for computational linguistics: Human language technologies, volume 1 (long and short papers)* (pp. 4100–4106). Association for Computational Linguistics. <https://doi.org/10.18653/v1/N19-1415>
- Lo, S., & Andrews, S. (2015). To transform or not to transform: Using generalized linear mixed models to analyse reaction time data. *Frontiers in Psychology*, 6, Article 1171. <https://doi.org/10.3389/fpsyg.2015.01171>
- Luo, R., Xu, J., Zhang, Y., Zhang, Z., Ren, X., & Sun, X. (2019). Pkuseg: A toolkit for multi-domain chinese word segmentation. *arXiv preprint arXiv:1906.11455*.
- Lupker, S. J. (1979). The semantic nature of response competition in the picture-word interference task. *Memory & Cognition*, 7(6), 485–495. <https://doi.org/10.3758/BF03198265>
- Lupker, S. J., & Katz, A. N. (1981). Input, decision, and response factors in picture-word interference. *Journal of Experimental Psychology: Human Learning and Memory*, 7(4), 269. <https://doi.org/10.1037/0278-7393.7.4.269>
- Mack, C. A. (2016). From data to decisions: Measurement, uncertainty, analysis, and modeling che 379/384, the university of texas at austin.
- Mahon, B. Z., Costa, A., Peterson, R., Vargas, K. A., & Caramazza, A. (2007). Lexical selection is not by competition: A reinterpretation of semantic interference and facilitation effects in the picture-word interference paradigm. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 33(3), 503.
- Matheson, H. E., & Barsalou, L. W. (2018). Embodiment and grounding in cognitive neuroscience. *The Stevens' handbook of experimental psychology and cognitive neuroscience*, 357–383.
- McRae, K., Cree, G. S., Seidenberg, M. S., & McNorgan, C. (2005). Semantic feature production norms for a large set of living and nonliving things. *Behavior Research Methods*, 37(4), 547–559. <https://doi.org/10.3758/BF03192726>
- McRae, K., De Sa, V. R., & Seidenberg, M. S. (1997). On the nature and scope of featural representations of word meaning. *Journal of Experimental Psychology: General*, 126(2), 99–130. <https://doi.org/10.1037/0096-3445.126.2.99>
- Menéndez, M. L., Pardo, J. A., Pardo, L., & Pardo, M. C. (1997). The jensen-shannon divergence. *Journal of the Franklin Institute*, 334(2), 307–318.
- Miozzo, M., & Caramazza, A. (2003). When more is less: A counterintuitive effect of distractor frequency in the picture-word interference paradigm.

- Journal of Experimental Psychology: General*, 132(2), 228–252. <https://doi.org/10.1037/0096-3445.132.2.228>
- Mognon, A., Jovicich, J., Bruzzone, L., & Buiatti, M. (2011). Adjust: An automatic eeg artifact detector based on the joint use of spatial and temporal features. *Psychophysiology*, 48(2), 229–240. <https://doi.org/10.1111/j.1469-8986.2010.01061.x>
- Navarrete, E., & Costa, A. (2005). Phonological activation of ignored pictures: Further evidence for a cascade model of lexical access. *Journal of Memory and Language*, 53(3), 359–377. <https://doi.org/10.1016/j.jml.2005.05.001>
- Nielsen, F. (2020). On a generalization of the jensen–shannon divergence and the jensen–shannon centroid. *Entropy*, 22(2), 221.
- Oppenheim, G. M., Dell, G. S., & Schwartz, M. F. (2010). The dark side of incremental learning: A model of cumulative semantic interference during lexical access in speech production. *Cognition*, 114(2), 227–252. <https://doi.org/10.1016/j.cognition.2009.09.007>
- Osterhout, L., & Holcomb, P. J. (1992). Event-related brain potentials elicited by syntactic anomaly. *Journal of Memory and Language*, 31(6), 785–806. [https://doi.org/10.1016/0749-596X\(92\)90039-Z](https://doi.org/10.1016/0749-596X(92)90039-Z)
- Pellegrino, J. W., Rosinski, R. R., Chiesi, H. L., & Siegel, A. (1977). Picture-word differences in decision latency: An analysis of single and dual memory models. *Memory & Cognition*, 5(4), 383–396. <https://doi.org/10.3758/BF03197377>
- Peterson, R. R., & Savoy, P. (1998). Lexical selection and phonological encoding during language production: Evidence for cascaded processing. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 24(3), 539–557. <https://doi.org/10.1037/0278-7393.24.3.539>
- Popov, S., Miceli, G., Ćurčić-Blake, B., & Bastiaanse, R. (2020). The role of semantics and repair processes in article-noun gender disagreement in Italian: An ERP study. *Brain and Language*, 206, 104787. <https://doi.org/10.1016/j.bandl.2020.104787>
- Qian, Z., & Garnsey, S. (2015). An ERP study of syntactic anomaly processing in Mandarin sentences. *Proceedings of the Annual Meeting of the Cognitive Science Society*, 37.
- Reilly, J., Shain, C., Borghesani, V., Kuhnke, P., Vigliocco, G., Peelle, J. E., & Vinson, D. (2024). What we mean when we say semantic: Toward a multidisciplinary semantic glossary. *Psychonomic Bulletin & Review*, 1–38. <https://doi.org/10.3758/s13423-024-02556-7>
- Roelofs, A. (1992). A spreading-activation theory of lemma retrieval in speaking. *Cognition*, 42(1–3), 107–142. [https://doi.org/10.1016/0010-0277\(92\)90041-F](https://doi.org/10.1016/0010-0277(92)90041-F)
- Roelofs, A. (1993). Testing a non-decompositional theory of lemma retrieval in speaking: Retrieval of verbs. *Cognition*, 47(1), 59–87. [https://doi.org/10.1016/0010-0277\(93\)90062-Z](https://doi.org/10.1016/0010-0277(93)90062-Z)

- Roelofs, A. (1996). Computational models of lemma retrieval. In T. Dijkstra & K. D. Smedt (Eds.), *Computational psycholinguistics: Ai and connectionist models of human language processing* (pp. 308–327). Taylor & Francis.
- Rose, S. B., Aristei, S., Melinger, A., & Abdel Rahman, R. (2019). The closer they are, the more they interfere: Semantic similarity of word distractors increases competition in language production. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 45(4), 753–763.
- Rosinski, R. R., Golinkoff, R. M., & Kukish, K. S. (1975). Automatic semantic processing in a picture-word interference task. *Child development*, 247–253.
- Sá-Leite, A. R., Haro, J., Comesaña, M., & Fraga, I. (2021). Of beavers and tables: The role of animacy in the processing of grammatical gender within a picture-word interference task. *Frontiers in Psychology*, 12, Article 661175. <https://doi.org/10.3389/fpsyg.2021.661175>
- Schiller, N. O. (2025, August). *Grammatical gender in bidialectal speakers of swiss and standard german* [Submitted].
- Schiller, N. O., & Alario, F.-X. (2023). Chapter 1. models of language production and the temporal organization of lexical access. In *Bilingualism through the prism of psycholinguistics: In honour of albert costa* (pp. 28–53). John Benjamins Publishing Company.
- Schiller, N. O., & Caramazza, A. (2003). Grammatical feature selection in noun phrase production. evidence from german and dutch. *Journal of Memory and Language*, 48(1), 169–194.
- Schriefers, H. (1993). Syntactic processes in the production of noun phrases. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 19(4), 841.
- Severens, E., Van Lommel, S., Ratnckx, E., & Hartsuiker, R. J. (2005). Timed picture naming norms for 590 pictures in dutch. *Acta Psychologica*, 119(2), 159–187. <https://doi.org/10.1016/j.actpsy.2005.01.002>
- Smith, S. M., & Nichols, T. E. (2009). Threshold-free cluster enhancement: Addressing problems of smoothing, threshold dependence and localisation in cluster inference. *NeuroImage*, 44(1), 83–98. <https://doi.org/10.1016/j.neuroimage.2008.03.061>
- Starreveld, P. A., & La Heij, W. (2004). Phonological facilitation of grammatical gender retrieval. *Language and Cognitive Processes*, 19(6), 677–711. <https://doi.org/10.1080/01690960444000061>
- Stefanovic, M. (2000). *The category of animacy, a semantic feature hierarchy?* [Doctoral dissertation, University of Toronto]. <https://tspace.library.utoronto.ca/handle/1807/14638>
- Tai, J. H.-Y. (1994). Chinese classifier systems and human categorization. In W. S.-Y. Wang, M. Y. Chen, & O. J. Tzeng (Eds.), *In honor of william s-y wang: Interdisciplinary studies on language and language change* (pp. 479–494). Pyramid Press.

- Vieth, H. E., McMahon, K. L., & De Zubicaray, G. I. (2014). Feature overlap slows lexical selection: Evidence from the picture-word interference paradigm. *Quarterly Journal of Experimental Psychology*, 67(12), 2325–2339.
- Vigneau, M., Beaucousin, V., Hervé, P. Y., Duffau, H., Crivello, F., Houde, O., & Tzourio-Mazoyer, N. (2006). Meta-analyzing left hemisphere language areas: Phonology, semantics, and sentence processing. *NeuroImage*, 30(4), 1414–1432. <https://doi.org/10.1016/j.neuroimage.2005.11.002>
- Visalli, A., Montefinese, M., Viviani, G., Finos, L., Vallesi, A., & Ambrosini, E. (2024). Lmeeg: Mass linear mixed-effects modeling of eeg data with crossed random effects. *Journal of Neuroscience Methods*, 401, 109991. <https://doi.org/10.1016/j.jneumeth.2023.109991>
- Wang, Chen, Y., & Schiller, N. O. (2019). Lexico-syntactic features are activated but not selected in bare noun production: Electrophysiological evidence from overt picture naming. *Cortex*, 116, 294–307. <https://doi.org/10.1016/j.cortex.2018.05.014>
- Wang & Schiller, N. O. (in press). The neurolinguistics of classifiers. In S. N. O. & K. T. (Eds.), *Oxford handbook of gender and classifiers* (pp. XXX–XXX). Oxford University Press.
- Wang, Witteman, J., & Schiller, N. O. (2024). The role of animacy in language production: Evidence from bare noun naming. *Quarterly Journal of Experimental Psychology*. <https://doi.org/10.1177/1747021824128>
- Wang, Witteman, J., & Schiller, N. O. (2025). Activation of classifiers in word production: Insights from lexico-syntactic probability distributions. *Language, Cognition and Neuroscience*, 1–15.
- Welham, S. J., Gezan, S. A., Clark, S. J., & Mead, A. (2014). *Statistical methods in biology: Design and analysis of experiments and regression*. CRC Press.
- Wikipedia. (2024). Wikipedia database dump.
- Woodman, G. F. (2010). A brief introduction to the use of event-related potentials in studies of perception and attention. *Attention, Perception, & Psychophysics*, 72, 2031–2046.
- Wu, Y., & Bodomo, A. (2009). Classifiers determiners. *Linguistic Inquiry*, 40(3), 487–503.
- Zeger, S. L., Liang, K.-Y., & Albert, P. S. (1988). Models for longitudinal data: A generalized estimating equation approach. *Biometrics*, 44, 1049–1060. <https://doi.org/10.2307/2531734>
- Zhan, M., & Levy, R. P. (2018). Comparing theories of speaker choice using a model of classifier production in mandarin chinese. *Association for Computational Linguistics*.
- Zhang, G., Garrett, D. R., & Luck, S. J. (2024). Optimal filters for erp research i: A general approach for selecting filter settings. *Psychophysiology*. <https://doi.org/10.1111/psyp.14531>