

References

- Abercrombie G, Curry AC, Dinkar T et al (2023) Mirages. On anthropomorphism in dialogue systems. EMNLP 2023—2023 conference in emperor methods national language processing proceedings, pp 4776–4790. <https://doi.org/10.18653/v1/2023.emnlp-main.290>
- Abreu F, Pika S (2022) Turn-taking skills in mammals: a systematic review into development and acquisition. Front Ecol Evol. <https://doi.org/10.3389/fevo.2022.987253>
- Albuquerque N, Resende B (2023) Dogs functionally respond to and use emotional information from human expressions. Evol Hum Sci 5:1–10. <https://doi.org/10.1017/ehs.2022.57>
- Albuquerque N, Guo K, Wilkinson A et al (2016) Dogs recognize dog and human emotions. Biol Lett 12:20150883. <https://doi.org/10.1098/rsbl.2015.0883>
- Albuquerque N, Savalli C, Cabral F, Resende B (2021) Do emotional cues influence the performance of domestic dogs in an observational learning task? Front Psychol 12:1–13. <https://doi.org/10.3389/fpsyg.2021.615074>
- Andics A, Gábor A, Gácsi M, Faragó T, Szabó D, Miklósi A (2016) Neural mechanisms for lexical processing in dogs. Sci 353(6303):10301–11032. <https://doi.org/10.1126/science.aaf3777>
- Archer J (1997) Why do people love their pets? Evol Hum Behav 18:237–259. [https://doi.org/10.1016/S0162-3095\(99\)80001-4](https://doi.org/10.1016/S0162-3095(99)80001-4)
- Aumer K, Erickson M, Krizizke J et al (2022) Pet attitudes predicting preferences for pets over people. Pet Behav Sci 13:16–31. <https://doi.org/10.21071/pbs.vi13.13473>
- Bálint A, Faragó T, Dóka A et al (2013) ‘Beware, I am big and non-dangerous!’—Playfully growling dogs are perceived larger than their actual size by their canine audience. Appl Anim Behav Sci 148:128–137. <https://doi.org/10.1016/j.applanim.2013.07.013>
- Bálint A, Faragó T, Miklósi Á, Pongrácz P (2016) Threat-level-dependent manipulation of signaled body size: dog growls’ indexical cues depend on the different levels of potential danger. Anim Cogn 19:1115–1131. <https://doi.org/10.1007/s10071-016-1019-9>
- Bálint A, Szabó Á, Andics A, Gácsi M (2023) Dog and human neural sensitivity to voicelikeness: a comparative fMRI study. Neuroimage. <https://doi.org/10.1016/j.neuroimage.2022.119791>
- Basten S (2009) Voluntary childlessness and being Childfree. Growth (Lakeland), pp 1–23
- Bastos APM, Rossano F (2023) Soundboard-using pets? Interact Stud Soc Behav Commun Biol Artif Syst 24:311–334. <https://doi.org/10.1075/is.22050.pin>
- Bastos APM, Evenson A, Wood PM et al (2024a) How do soundboard-trained dogs respond to human button presses? An investigation into word comprehension. PLoS ONE 19:e0307189. <https://doi.org/10.1371/journal.pone.0307189>
- Bastos APM, Houghton ZN, Naranjo L, Rossano F (2024b) Soundboard-trained dogs produce non-accidental, non-random and non-imitative two-button combinations. Sci Rep 14:28771. <https://doi.org/10.1038/s41598-024-79517-6>
- Bauer EB, Smuts BB (2007) Cooperation and competition during dyadic play in domestic dogs, *Canis familiaris*. Anim Behav 73:489–499. <https://doi.org/10.1016/j.anbehav.2006.09.006>
- Belin P, Zilbovicius M, Crozier S et al (1998) Lateralization of speech and auditory temporal processing. J Cogn Neurosci 10:536–540. <https://doi.org/10.1162/089892998562834>
- Belovicova K, Bogi E, Csatosova K, Dubovicky M (2017) Animal tests for anxiety-like and depression-like behavior in rats. Interdiscip Toxicol 10:40–43. <https://doi.org/10.1515/intox-2017-0006>

- Bleicher N (1963) Physical and behavioral analysis of dog vocalizations. *Am J Vet Res* 24:415–427
- Blouin DD (2013) Are dogs children, companions, or just animals? understanding variations in people's orientations toward animals. *Anthrozoos* 26:279–294. <https://doi.org/10.2752/175303713X13636846944402>
- Boë LJ, Heim JL, Honda K, Maeda S (2002) The potential Neanderthal vowel space was as large as that of modern humans. *J Phon* 30:465–484. <https://doi.org/10.1006/jpho.2002.0170>
- Bögels S, Levinson SC (2017) The brain behind the response: insights into turn-taking in conversation from neuroimaging. *Res Lang Soc Interact* 50:71–89. <https://doi.org/10.1080/08351813.2017.1262118>
- Bognár Z, Szabó D, Deés A, Kubinyi E (2021) Shorter headed dogs, visually cooperative breeds, younger and playful dogs form eye contact faster with an unfamiliar human. *Sci Rep* 11:9293. <https://doi.org/10.1038/s41598-021-88702-w>
- Booth M (2013) Mo: The talking dog. CreateSpace Independent Publishing Platform
- Boroditsky L (2001) Does language shape thought? Mandarin and English speakers' conceptions of time. *Cogn Psychol* 43:1–22. <https://doi.org/10.1006/cogp.2001.0748>
- Boros M, Magyari L, Török D et al (2021) Neural processes underlying statistical learning for speech segmentation in dogs. *Curr Biol* 31:5512–5521.e5. <https://doi.org/10.1016/j.cub.2021.10.017>
- Boros M, Magyari L, Morvai B et al (2024) Neural evidence for referential understanding of object words in dogs. *Curr Biol* 34:1750–1754.e4. <https://doi.org/10.1016/j.cub.2024.02.029>
- Bradshaw JL, Rogers LJ (1993) The evolution of lateral asymmetries, language, tool use, and intellect. Academic Press
- Bräuer J, Eichentopf D, Gebele N et al (2024) Dogs distinguish authentic human emotions without being empathic. *Anim Cogn* 27:60. <https://doi.org/10.1007/s10071-024-01899-x>
- Bray EE, Gnanadesikan GE, Horschler DJ et al (2021a) Early-emerging and highly heritable sensitivity to human communication in dogs. *Curr Biol* 31:3132–3136.e5. <https://doi.org/10.1016/j.cub.2021.04.055>
- Bray EE, Gruen ME, Gnanadesikan GE et al (2021b) Dog cognitive development: a longitudinal study across the first 2 years of life. *Anim Cogn* 24:311–328. <https://doi.org/10.1007/s10071-020-01443-7>
- Brenowitz EA (2021) Taking turns: the neural control of birdsong duets. *Proc Natl Acad Sci* 118:2–4. <https://doi.org/10.1073/pnas.2108043118>
- Bretherton I, Beeghly M (1982) Talking about internal states: the acquisition of an explicit theory of mind. *Dev Psychol* 18:906–921. <https://doi.org/10.1037/0012-1649.18.6.906>
- Briefer EF (2018) Vocal contagion of emotions in non-human animals. *Proc R Soc B Biol Sci*. <https://doi.org/10.1098/rspb.2017.2783>
- Briefer EF (2020) Coding for 'dynamic' information: vocal expression of emotional arousal and valence in non-human animals. In: Aubin T, Mathevon N (eds) Coding strategies in vertebrate acoustic communication. Springer, Cham, pp 137–162
- Bryant DA, Dunham AE, Overall KL (2018) Roles for referential focus in effective and efficient canine signaling: do pet and working dogs differ? *J Vet Behav* 27:55–66. <https://doi.org/10.1016/j.jveb.2018.07.005>
- Butterfield ME, Hill SE, Lord CG (2012) Mangy mutt or furry friend? Anthropomorphism promotes animal welfare. *J Exp Soc Psychol* 48:957–960. <https://doi.org/10.1016/j.jesp.2012.02.010>
- Byrne M, Horschler DJ, Schmitt M, Johnston AM (2023) Pet dogs (*Canis familiaris*) re-engage humans after joint activity. *Anim Cogn* 26:1277–1282. <https://doi.org/10.1007/s10071-023-01774-1>
- Catala A, Mang B, Wallis L, Huber L (2017) Dogs demonstrate perspective taking based on geometrical gaze following in a Guesser-Knower task. *Anim Cogn* 20:581–589. <https://doi.org/10.1007/s10071-017-1082-x>
- Cavalli CM, Dzik V, Carballo F, Bentosela M (2016) Post-conflict affiliative behaviors towards humans in domestic dogs (*Canis familiaris*). *Int J Comp Psychol* 29:1–13. <https://doi.org/10.46867/IJCP.2016.29.00.03>
- Cavalli CM, Carballo F, Bentosela M (2018) Gazing behavior during problem solving tasks in domestic dogs. A critical review. *Dog Behav* 4:23–44. <https://doi.org/10.4454/db.v4i3.68>
- Chan AM, Dykstra AR, Jayaram V et al (2014) Speech-specific tuning of neurons in human superior temporal gyrus. *Cereb Cortex* 24:2679–2693. <https://doi.org/10.1093/cercor/bht127>
- Clark G, Henneberg M (2017) *Ardipithecus ramidus* and the evolution of language and singing: an early origin for hominin vocal capability. *HOMO J Comp Hum Biol* 68:101–121. <https://doi.org/10.1016/j.jchb.2017.03.001>
- Clavel C, Faur C, Martin JC et al (2013) Artificial companions with personality and social role. In: Proceedings of 2013 IEEE Symposium on Computational Intelligence for Creativity and Affective Computing CICAC 2013—2013 IEEE Symposium Series on Computer Intelligence SSCI 2013, pp 87–95. <https://doi.org/10.1109/CICAC.2013.6595225>
- Cohen JA, Fox MW (1976) Vocalizations in wild canids and possible effects of domestication. *Behav Processes* 1:77–92. [https://doi.org/10.1016/0376-6357\(76\)90008-5](https://doi.org/10.1016/0376-6357(76)90008-5)
- Colbert-White EN, Corballis MC, Fragaszy DM (2014) Where apes and songbirds are left behind: a comparative assessment of the requisites for speech. *Comp Cogn Behav Rev* 9:99–126. <https://doi.org/10.3819/ccbr.2014.90004>
- Cooney G, Mastroianni AM, Abi-Esber N, Brooks AW (2020) The many minds problem: disclosure in dyadic versus group conversation. *Curr Opin Psychol* 31:22–27. <https://doi.org/10.1016/j.copsyc.2019.06.032>
- Cooper JJ, Ashton C, Bishop S et al (2003) Clever hounds: Social cognition in the domestic dog (*Canis familiaris*). *Appl Anim Behav Sci* 81:229–244. [https://doi.org/10.1016/S0168-1591\(02\)00284-8](https://doi.org/10.1016/S0168-1591(02)00284-8)
- Csányi V (2001) Bukfenc és Jeromos: hogyan gondolkodnak a kutya? Vince K.
- Cuaya LV, Hernández-Pérez R, Boros M et al (2022) Speech naturalness detection and language representation in the dog brain. *Neuroimage* 248:118811. <https://doi.org/10.1016/j.neuroimage.2021.118811>
- Curtis V, De BM, Aunger R (2011) Disgust as an adaptive system for disease avoidance behaviour. *Philos Trans R Soc B Biol Sci* 366:389–401. <https://doi.org/10.1098/rstb.2010.0117>
- Custance D, Mayer J (2012) Empathic-like responding by domestic dogs (*Canis familiaris*) to distress in humans: an exploratory study. *Anim Cogn* 15:851–859. <https://doi.org/10.1007/s10071-012-0510-1>
- Déaux ÉC, Clarke JA, Charrier I (2015) Aggressive bimodal communication in domestic dogs, *Canis familiaris*. *PLoS ONE* 10:e0142975. <https://doi.org/10.1371/journal.pone.0142975>
- Demartsev V, Strandburg-Peshkin A, Ruffner M, Manser M (2018) Vocal turn-taking in meerkat group calling sessions. *Curr Biol* 28:3661–3666.e3. <https://doi.org/10.1016/j.cub.2018.09.065>
- Demirbas YS, Ozturk H, Emre B et al (2016) Adults' ability to interpret canine body language during a dog-child interaction. *Anthrozoos* 29:581–596. <https://doi.org/10.1080/08927936.2016.1228750>
- Dror S, Miklósi Á, Sommese A et al (2021) Acquisition and long-term memory of object names in a sample of gifted word learner dogs. *R Soc Open Sci*. <https://doi.org/10.1098/rsos.210976>
- Dror S, Sommese A, Miklósi Á et al (2022) Multisensory mental representation of objects in typical and gifted word learner

- dogs. *Anim Cogn* 25:1557–1566. <https://doi.org/10.1007/s10071-022-01639-z>
- Dror S, Miklósi Á, Fugazza C (2024) Dogs with a vocabulary of object labels retain them for at least 2 years. *Biol Lett* 20:1–6. <https://doi.org/10.1098/rsbl.2024.0208>
- Dunn EA (2011) Talking animals: a literature review of anthropomorphism in children's books
- Duranton C, Range F, Virányi Z (2017) Do pet dogs (*Canis familiaris*) follow ostensive and non-ostensive human gaze to distant space and to objects? *R Soc Open Sci*. <https://doi.org/10.1098/rsos.170349>
- Eliades SJ, Miller CT (2017) Marmoset vocal communication: behavior and neurobiology. *Dev Neurobiol* 77:286–299. <https://doi.org/10.1002/dneu.22464>
- Emery NJ (2000) The eyes have it: the neuroethology, function and evolution of social gaze. *Neurosci Biobehav Rev* 24:581–604
- Fant G (1960) Acoustic theory of speech production. Mouton & Co., The Hague
- Faragó T, Pongrácz P, Miklósi Á et al (2010a) Dogs' expectation about signalers' body size by virtue of their growls. *PLoS ONE* 5:e15175. <https://doi.org/10.1371/journal.pone.0015175>
- Faragó T, Pongrácz P, Range F et al (2010b) 'The bone is mine': affective and referential aspects of dog growls. *Anim Behav* 79:917–925. <https://doi.org/10.1016/j.anbehav.2010.01.005>
- Faragó T, Andics A, Devecseri V et al (2014a) Humans rely on the same rules to assess emotional valence and intensity in conspecific and dog vocalizations. *Biol Lett* 10:20130926. <https://doi.org/10.1098/rsbl.2013.0926>
- Faragó T, Gácsi M, Korcsok B, Miklósi Á (2014b) Why is a dog-behaviour-inspired social robot not a doggy-robot? *Interact Stud* 15:224–232. <https://doi.org/10.1075/is.15.2.11far>
- Faragó T, Townsend SW, Range F (2014c) The information content of wolf (and dog) social communication. In: Witzany G (ed) *Biocommunication of animals*. Springer, Netherlands, pp 41–62
- Faragó T, Takács N, Miklósi Á, Pongrácz P (2017) Dog growls express various contextual and affective content for human listeners. *R Soc Open Sci* 4:170134. <https://doi.org/10.1098/rsos.170134>
- Ferrario A, Termini A, Facchini A (2024) Social Misattributions in Conversations with Large Language Models. *arXiv Prepr* 1–28
- Fischer J, Hammerschmidt K (2011) Ultrasonic vocalizations in mouse models for speech and socio-cognitive disorders: insights into the evolution of vocal communication. *Genes Brain Behav* 10:17–27. <https://doi.org/10.1111/j.1601-183X.2010.00610.x>
- Fitch WT (2000a) The evolution of speech: a comparative review. *Trends Cogn Sci* 4:258–266
- Fitch WT (2000b) The phonetic potential of nonhuman vocal tracts: comparative cineradiographic observations of vocalizing animals. *Phonetica* 57:205–218. <https://doi.org/10.1159/000028474>
- Fitch WT, Reby D (2001) The descended larynx is not uniquely human. *Proc R Soc B Biol Sci* 268:1669–1675. <https://doi.org/10.1098/rspb.2001.1704>
- Fitch WT, de Boer B, Mathur N, Ghazanfar AA (2016) Monkey vocal tracts are speech-ready. *Sci Adv* 2:e1600723–e1600723. <https://doi.org/10.1126/sciadv.1600723>
- Friederici AD (2017) *Language in our brain: the origins of a uniquely human capacity*. MIT Press, Cambridge
- Fugazza C, Moesta A, Pogány Á, Miklósi Á (2018) Presence and lasting effect of social referencing in dog puppies. *Anim Behav* 141:67–75. <https://doi.org/10.1016/j.anbehav.2018.05.007>
- Fugazza C, Andics A, Magyar L et al (2021a) Rapid learning of object names in dogs. *Sci Rep* 11:1–11. <https://doi.org/10.1038/s41598-021-81699-2>
- Fugazza C, Dror S, Sommese A et al (2021b) Word learning dogs (*Canis familiaris*) provide an animal model for studying exceptional performance. *Sci Rep* 11:1–9. <https://doi.org/10.1038/s41598-021-93581-2>
- Fugazza C, Temesi A, Coronas R et al (2023) Spontaneous action matching in dog puppies, kittens and wolf pups. *Sci Rep* 13:1–11. <https://doi.org/10.1038/s41598-023-28959-5>
- Gábor A, Kaszás N, Faragó T et al (2022) The acoustic bases of human voice identity processing in dogs. *Anim Cogn*. <https://doi.org/10.1007/s10071-022-01601-z>
- Gácsi M, Miklósi Á, Varga O et al (2004) Are readers of our face readers of our minds? Dogs (*Canis familiaris*) show situation-dependent recognition of human's attention. *Anim Cogn* 7:144–153. <https://doi.org/10.1007/s10071-003-0205-8>
- Gácsi M, Györi B, Miklósi Á et al (2005) Species-specific differences and similarities in the behavior of hand-raised dog and wolf pups in social situations with humans. *Dev Psychobiol* 47:111–122. <https://doi.org/10.1002/dev.20082>
- Gácsi M, Györi B, Virányi Z et al (2009a) Explaining dog wolf differences in utilizing human pointing gestures: selection for synergistic shifts in the development of some social skills. *PLoS ONE* 4:e6584. <https://doi.org/10.1371/journal.pone.0006584>
- Gácsi M, Kara E, Belényi B et al (2009b) The effect of development and individual differences in pointing comprehension of dogs. *Anim Cogn* 12:471–479. <https://doi.org/10.1007/s10071-008-0208-6>
- Gácsi M, McGreevy PD, Kara E, Miklósi Á (2009c) Effects of selection for cooperation and attention in dogs. *Behav Brain Funct*. <https://doi.org/10.1186/1744-9081-5-31>
- Gaunet F (2008) How do guide dogs of blind owners and pet dogs of sighted owners (*Canis familiaris*) ask their owners for food? *Anim Cogn* 11:475–483. <https://doi.org/10.1007/s10071-008-0138-3>
- Gaunet F (2010) How do guide dogs and pet dogs (*Canis familiaris*) ask their owners for their toy and for playing? *Anim Cogn* 13:311–323. <https://doi.org/10.1007/s10071-009-0279-z>
- Gaunet F, Deputte BL (2011) Functionally referential and intentional communication in the domestic dog: effects of spatial and social contexts. *Anim Cogn* 14:849–860. <https://doi.org/10.1007/s10071-011-0418-1>
- Gerencsér L, Pérez Fraga P, Lovas M et al (2019) Comparing interspecific socio-communicative skills of socialized juvenile dogs and miniature pigs. *Anim Cogn* 22:917–929. <https://doi.org/10.1007/s10071-019-01284-z>
- Gergely A, Topál J, Dóka A, Miklósi Á (2014) Dogs are able to generalize directional acoustic signals to different contexts and tasks. *Appl Anim Behav Sci*. <https://doi.org/10.1016/j.applanim.2014.04.005>
- Gergely A, Gábor A, Gácsi M et al (2023) Dog brains are sensitive to infant- and dog-directed prosody. *Commun Biol* 6:859. <https://doi.org/10.1038/s42003-023-05217-y>
- Gogoleva SS, Volodin IA, Volodina EV et al (2009) Kind granddaughters of angry grandmothers: the effect of domestication on vocalization in cross-bred silver foxes. *Behav Process* 81:369–375. <https://doi.org/10.1016/j.beproc.2009.04.007>
- Gogoleva SS, Volodina EV, Volodin Ia et al (2010) The gradual vocal responses to human-provoked discomfort in farmed silver foxes. *Acta Ethol* 13:75–85. <https://doi.org/10.1007/s10211-010-0076-3>
- Goldstone RL, Hendrickson AT (2010) Categorical perception. *Wiley Interdiscip Rev Cogn Sci* 1:69–78. <https://doi.org/10.1002/wcs.26>
- Gosnell R (2002) *Scooby-Doo*. Warner Bros
- Greenebaum J (2004) It's a dog's life: elevating status from pet to "fur baby" at yappy hour. *Soc Anim* 12:117–135. <https://doi.org/10.1163/1568530041446544>

- Hare BA, Ferrans M (2021) Is cognition the secret to working dog success? *Anim Cogn* 24:231–237. <https://doi.org/10.1007/s10071-021-01491-7>
- Hare BA, Brown M, Williamson C, Tomasello M (2002) The domestication of social cognition in dogs. *Science* 298:1634–1636. <https://doi.org/10.1126/science.1072702>
- Hauser MD, Chomsky N, Fitch WT (2002) The faculty of language: what is it, who has it, and how did it evolve? *Science* 298:1569–1579. <https://doi.org/10.1126/science.298.5598.1569>
- Heberlein MTE, Turner DC, Range F, Virányi Z (2016) A comparison between wolves, *Canis lupus*, and dogs, *Canis familiaris*, in showing behaviour towards humans. *Anim Behav* 122:59–66. <https://doi.org/10.1016/j.anbehav.2016.09.023>
- Heesen R, Fröhlich M (2022) Revisiting the human “interaction engine”: comparative approaches to social action coordination. *Philos Trans R Soc B Biol Sci*. <https://doi.org/10.1098/rstb.2021.0092>
- Higaki F, Faragó T, Pogány Á et al (2025) Sound quality impacts dogs’ ability to recognize and respond to playback words. *Sci Rep* 15:1–14. <https://doi.org/10.1038/s41598-025-96824-8>
- Holland KE, Mead R, Casey RA et al (2022) Why do people want dogs? A mixed-methods study of motivations for dog acquisition in the United Kingdom. *Front Vet Sci*. <https://doi.org/10.3389/fvets.2022.877950>
- Huber A, Barber ALA, Faragó T et al (2017) Investigating emotional contagion in dogs (*Canis familiaris*) to emotional sounds of humans and conspecifics. *Anim Cogn* 20:703–715. <https://doi.org/10.1007/s10071-017-1092-8>
- Jack KM, Lenz BB, Healan E et al (2008) The effects of observer presence on the behavior of *Cebus capucinus* in Costa Rica. *Am J Primatol* 70:490–494. <https://doi.org/10.1002/ajp.20512>
- Jarvis ED (2019) Evolution of vocal learning and spoken language. *Science* 366:50–54. <https://doi.org/10.1126/science.aax0287>
- Jégh-Czinege N, Faragó T, Pongrácz P (2019) A bark of its own kind – the acoustics of ‘annoying’ dog barks suggests a specific attention-evoking effect for humans. *Bioacoustics*. <https://doi.org/10.1080/09524622.2019.1576147>
- Johnson HM (1912) The talking dog. *Science* 35:749–751
- Kaminski J, Nitzschner M (2013) Do dogs get the point? A review of dog-human communication ability. *Learn Motiv* 44:294–302. <https://doi.org/10.1016/j.lmot.2013.05.001>
- Kaminski J, Riedel J, Call J, Tomasello M (2005) Domestic goats, *Capra hircus*, follow gaze direction and use social cues in an object choice task. *Anim Behav* 69:11–18. <https://doi.org/10.1016/j.anbehav.2004.05.008>
- Kaminski J, Schulz L, Tomasello M (2012) How dogs know when communication is intended for them. *Dev Sci* 15:222–232. <https://doi.org/10.1111/j.1467-7687.2011.01120.x>
- Kastovsky D (1977) Word-formation, or: at the crossroads of morphology, syntax, semantics, and the lexicon. *Folia Linguist* 10:1–34. <https://doi.org/10.1515/flin.1977.10.1-2.1>
- Katayama M, Kubo T, Yamakawa T et al (2019) Emotional contagion from humans to dogs is facilitated by duration of ownership. *Front Psychol* 10:1–11. <https://doi.org/10.3389/fpsyg.2019.01678>
- Kätsyri J, Förger K, Mäkääinen M, Takala T (2015) A review of empirical evidence on different uncanny valley hypotheses: support for perceptual mismatch as one road to the valley of eeriness. *Front Psychol* 6:1–16. <https://doi.org/10.3389/fpsyg.2015.00390>
- Knapert J (1978) Myths and legends of the Congo. Nairobi
- Konok V, Korcsok B, Miklósi Á, Gácsi M (2018) Should we love robots? – The most liked qualities of companion dogs and how they can be implemented in social robots. *Comput Human Behav* 80:132–142. <https://doi.org/10.1016/j.chb.2017.11.002>
- Korcsok B, Faragó T, Ferdinandy B et al (2020) Artificial sounds following biological rules: a novel approach for non-verbal communication in HRI. *Sci Rep* 10:7080. <https://doi.org/10.1038/s41598-020-63504-8>
- Korcsok B, Faragó T, Ferdinandy B et al (2024) People follow motivation-structural rules when they react to synthesised sounds. *Sci Rep* 14:1–14. <https://doi.org/10.1038/s41598-024-68165-5>
- Korhonen T (2019) *Anthropomorphism and the aesopic animal fables*. Springer, Berlin
- Kubinyi E (2025) The link between companion dogs, human fertility rates, and social networks. *Curr Dir Psychol Sci*. <https://doi.org/10.1177/096372142511318284>
- Kubinyi E, Pongrácz P, Miklósi Á (2010) Can you kill a robot nanny?: Ethological approach to the effect of robot caregivers on child development and human evolution. *Interact Stud* 11:214–219. <https://doi.org/10.1075/is.11.2.06kub>
- Kuhl PK, Meltzoff AN (1996) Infant vocalizations in response to speech: vocal imitation and developmental change. *J Acoust Soc Am* 100:2425–2438. <https://doi.org/10.1121/1.417951>
- Kulik V, Reyes LD, Sherwood CC (2023) Coevolution of language and tools in the human brain: an ALE meta-analysis of neural activation during syntactic processing and tool use. In: Calvey T, de Sousa AA, Beaudet A (eds) *Progress in brain research: from fossils to mind*. Elsevier, Amsterdam, pp 93–115
- Larson G, Fuller DQ (2014) The evolution of animal domestication. *Annu Rev Ecol Syst* 45:115–136. <https://doi.org/10.1146/annurev-ecolsys-110512-135813>
- Larson G, Karlsson EK, Perri A et al (2012) Rethinking dog domestication by integrating genetics, archeology, and biogeography. *Proc Natl Acad Sci U S A* 109:8878–8883. <https://doi.org/10.1073/pnas.1203005109>
- Leavens DA, Hopkins WD (1999) The whole-hand point: the structure and function of pointing from a comparative perspective. *J Comp Psychol* 113:417–425. <https://doi.org/10.1037/0735-7036.113.4.417>
- Leavens DA, Russell JL, Hopkins WD (2005) Intentionality as measured in the persistence and elaboration of communication by chimpanzees (*Pan troglodytes*). *Child Dev* 76:291–306. <https://doi.org/10.1111/j.1467-8624.2005.00845.x>
- Lehoczki F, Andics A, Kershenbaum A et al (2023) Genetic distance from wolves affects family dogs’ reactions towards howls. *Commun Biol* 6:129. <https://doi.org/10.1038/s42003-023-04450-9>
- Lehoczki F, Pérez Fraga P, Andics A (2024) Family pigs’ and dogs’ reactions to human emotional vocalizations: a citizen science study. *Anim Behav*. <https://doi.org/10.1016/j.anbehav.2024.05.011>
- Lenkei R, Faragó T, Bakos V, Pongrácz P (2021) Separation-related behavior of dogs shows association with their reactions to everyday situations that may elicit frustration or fear. *Sci Rep* 11:1–13. <https://doi.org/10.1038/s41598-021-98526-3>
- Lesch R, Fitch WT (2024) The domestication of the larynx: the neural crest connection. *J Exp Zool B Mol Dev Evol* 1:1–32. <https://doi.org/10.1002/jez.b.23251>
- Levinson SC (2006) Cognition at the heart of human interaction. *Discourse Stud* 8:85–93. <https://doi.org/10.1177/1461445606059557>
- Levinson SC (2019) *Human language*. The MIT Press
- Levinson SC, Holler J (2014) The origin of human multi-modal communication. *Philos Trans R Soc B Biol Sci* 369:20130302. <https://doi.org/10.1098/rstb.2013.0302>
- Levinson SC, Torreira F (2015) Timing in turn-taking and its implications for processing models of language. *Front Psychol* 6:1–17. <https://doi.org/10.3389/fpsyg.2015.00731>
- Lieberman P, Crelin ES (1972) On the speech of Neanderthal man. In: *The speech of primates*. De Gruyter, pp 76–100

- Lingle S, Wyman MT, Kotrba R et al (2012) What makes a cry a cry? A review of infant distress vocalizations. *Curr Zool* 58:698–726
- Liszkowski U, Brown P, Callaghan T et al (2012) A prelinguistic gestural universal of human communication. *Cogn Sci* 36:698–713. <https://doi.org/10.1111/j.1551-6709.2011.01228.x>
- MacLean EL, Hare BA (2018) Enhanced selection of assistance and explosive detection dogs using cognitive measures. *Front Vet Sci*. <https://doi.org/10.3389/fvets.2018.00236>
- Malavasi R, Huber L (2016) Evidence of heterospecific referential communication from domestic horses (*Equus caballus*) to humans. *Anim Cogn* 19:899–909. <https://doi.org/10.1007/s10071-016-0987-0>
- Marshall-Pescini S, Colombo E, Passalacqua C et al (2013) Gaze alternation in dogs and toddlers in an unsolvable task: evidence of an audience effect. *Anim Cogn*. <https://doi.org/10.1007/s10071-013-0627-x>
- Marshall-Pescini S, Rao A, Virányi Z, Range F (2017) The role of domestication and experience in “looking back” towards humans in an unsolvable task. *Sci Rep* 7:1–7. <https://doi.org/10.1038/srep46636>
- Marx A, Lenkei R, Pérez Fraga P et al (2021a) Occurrences of non-linear phenomena and vocal harshness in dog whines as indicators of stress and ageing. *Sci Rep* 11:4468. <https://doi.org/10.1038/s41598-021-83614-1>
- Marx A, Lenkei R, Pérez Fraga P et al (2021b) Age-dependent changes in dogs’ (*Canis familiaris*) separation-related behaviours in a longitudinal study. *Appl Anim Behav Sci*. <https://doi.org/10.1016/j.applanim.2021.105422>
- Massenet M, Anikin A, Pisanski K et al (2022) Nonlinear vocal phenomena affect human perceptions of distress, size and dominance in puppy whines. *Proc R Soc B Biol Sci* 289:42023. <https://doi.org/10.1098/rspb.2022.0429>
- McElligott AG, O’Keeffe KH, Green AC (2020) Kangaroos display gazing and gaze alternations during an unsolvable problem task: Gazing kangaroos. *Biol Lett*. <https://doi.org/10.1098/rsbl.2020.0607>
- Meints K, Brelsford V, De Keuster T (2018) Teaching children and parents to understand dog signaling. *Front Vet Sci* 5:1–14. <https://doi.org/10.3389/fvets.2018.00257>
- Mendl M, Neville V, Paul ES (2022) Bridging the gap: human emotions and animal emotions. *Affect Sci* 3:703–712. <https://doi.org/10.1007/s42761-022-00125-6>
- Merola I, Prato-Previde E, Marshall-Pescini S (2011) Social referencing in dog-owner dyads? *Anim Cogn*. <https://doi.org/10.1007/s10071-011-0443-0>
- Meyer I, Forkman B, Fredholm M et al (2022) Pampered pets or poor bastards? The welfare of dogs kept as companion animals. *Appl Anim Behav Sci*. <https://doi.org/10.1016/j.applanim.2022.105640>
- Miklósi Á, Soproni K (2006) A comparative analysis of animals’ understanding of the human pointing gesture. *Anim Cogn* 9:81–93. <https://doi.org/10.1007/s10071-005-0008-1>
- Miklósi Á, Topál J (2013a) What does it take to become “best friends”? Evolutionary changes in canine social competence. *Trends Cogn Sci* 17:287–294. <https://doi.org/10.1016/j.tics.2013.04.005>
- Miklósi Á, Topál J (2013b) What does it take to become ‘best friends’? Evolutionary changes in canine social competence. *Trends Cogn Sci* 17:287–294. <https://doi.org/10.1016/j.tics.2013.04.005>
- Miklósi Á, Polgárdi R, Topál J, Csányi V (1998) Use of experimenter-given cues in dogs. *Anim Cogn* 1:113–121
- Miklósi Á, Polgárdi R, Topál J, Csányi V (2000) Intentional behaviour in dog-human communication: an experimental analysis of “showing” behaviour in the dog. *Anim Cogn* 3:159–166. <https://doi.org/10.1007/s100710000072>
- Miklósi Á, Kubinyi E, Topál J et al (2003) A simple reason for a big difference. *Curr Biol* 13:763–766. [https://doi.org/10.1016/S0960-9822\(03\)00263-X](https://doi.org/10.1016/S0960-9822(03)00263-X)
- Miklósi Á, Pongrácz P, Lakatos G et al (2005) A comparative study of the use of visual communicative signals in interactions between dogs (*Canis familiaris*) and humans and cats (*Felis catus*) and humans. *J Comp Psychol* 119:179–186. <https://doi.org/10.1037/0735-7036.119.2.179>
- Miklósi Á, Korondi P, Matellán V, Gácsi M (2017) Ethorobotics: a new approach to human-robot relationship. *Front Psychol* 8:1–8. <https://doi.org/10.3389/fpsyg.2017.00958>
- Moore BL, Connor RC, Allen SJ et al (2020) Acoustic coordination by allied male dolphins in a cooperative context. *Proc R Soc B Biol Sci*. <https://doi.org/10.1098/rspb.2019.2944>
- Morgan TJH, Uomini NT, Rendell LE et al (2015) Experimental evidence for the co-evolution of hominin tool-making teaching and language. *Nat Commun* 6:4–11. <https://doi.org/10.1038/ncomms7029>
- Mori M (1970) The uncanny valley. *Energy* 7:33–35
- Mori M (2012) The uncanny valley: the original essay by Masahiro Mori. *IEEE Robot Autom Mag* 12:98–100
- Mota-Rojas D, Mariti C, Zdeinert A et al (2021) Anthropomorphism and its adverse effects on the distress and welfare of companion animals. *Animals Revisio* (In revision)
- Müller CA, Schmitt K, Barber ALA, Huber L (2015) Dogs can discriminate emotional expressions of human faces. *Curr Biol* 25:601–605. <https://doi.org/10.1016/j.cub.2014.12.055>
- Naderi S, Miklósi Á, Dóka A, Csányi V (2001) Co-operative interactions between blind persons and their dogs. *Appl Anim Behav Sci* 74:59–80. [https://doi.org/10.1016/S0168-1591\(01\)00152-6](https://doi.org/10.1016/S0168-1591(01)00152-6)
- Nassau RH (2019) Where animals talk: west African folk lore tales: enchanting animal communication in west African folklore. Good Press
- Nawroth C, Brett JM, McElligott AG (2016a) Goats display audience-dependent human-directed gazing behaviour in a problem-solving task. *Biol Lett*. <https://doi.org/10.1098/rsbl.2016.0283>
- Nawroth C, Ebersbach M, von Borell E (2016b) Are domestic pigs (*Sus scrofa domestica*) able to use complex human-given cues to find a hidden reward? *Anim Welf* 25:185–190. <https://doi.org/10.7120/09627286.25.2.185>
- Nilsson E (2020) Vocalisation and turn-taking in interspecies communication between dogs and humans
- Nowicki S, Searcy WA (2014) The evolution of vocal learning. *Curr Opin Neurobiol* 28:48–53. <https://doi.org/10.1016/j.conb.2014.06.007>
- Okanoya K (2015) Evolution of song complexity in Bengalese finches could mirror the emergence of human language. *J Ornithol* 156:65–72. <https://doi.org/10.1007/s10336-015-1283-5>
- Olney A (2013) Symbolic, Indexical, and iconic communication with domestic dogs. *HumanaMente J Philos Stud* 8:79–98
- Passalacqua C, Marshall-Pescini S, Barnard S et al (2011) Human-directed gazing behaviour in puppies and adult dogs, *Canis lupus familiaris*. *Anim Behav* 82:1043–1050. <https://doi.org/10.1016/j.anbehav.2011.07.039>
- Peelle JE (2012) The hemispheric lateralization of speech processing depends on what “speech” is: a hierarchical perspective. *Front Hum Neurosci* 6:1–4. <https://doi.org/10.3389/fnhum.2012.00309>
- Pepperberg IM (2006) Cognitive and communicative abilities of Grey parrots. *Appl Anim Behav Sci* 100:77–86. <https://doi.org/10.1016/j.applanim.2006.04.005>
- Pérez Fraga P, Gerencsér L, Lovas M et al (2021) Who turns to the human? Companion pigs’ and dogs’ behaviour in the unsolvable task paradigm. *Anim Cogn* 24:33–40. <https://doi.org/10.1007/s10071-020-01410-2>

- Petetta F, Ciccocioppo R (2021) Public perception of laboratory animal testing: historical, philosophical, and ethical view, pp 1–8. <https://doi.org/10.1111/adb.12991>
- Pingle T (2024) Reasons contributing to free-roaming dog populations and their effects on society
- Plotsky K, Rendall D, Chase K, Riede T (2016) Cranio-facial remodeling in domestic dogs is associated with changes in larynx position. *J Anat* 228:975–983. <https://doi.org/10.1111/joa.12452>
- Pongrácz P (2017) Modeling evolutionary changes in the information transfer - effects of domestication on the vocal communication of dogs (*Canis familiaris*). *Eur Psychol* 22:219–232. <https://doi.org/10.1027/1016-9040/a000300>
- Pongrácz P, Lugosi CA (2024) Cooperative but dependent-functional breed selection in dogs influences human-directed gazing in a difficult object-manipulation task. *Animals* 14:1–19. <https://doi.org/10.3390/ani14162348>
- Pongrácz P, Molnár C, Miklósi Á, Csányi V (2005) Human listeners are able to classify dog (*Canis familiaris*) barks recorded in different situations. *J Comp Psychol* 119:136–144. <https://doi.org/10.1037/0735-7036.119.2.136>
- Pongrácz P, Molnár C, Miklósi Á (2010) Barking in family dogs: an ethological approach. *Vet J* 183:141–147. <https://doi.org/10.1016/j.tvjl.2008.12.010>
- Pongrácz P, Szapu JS, Faragó T (2019) Cats (*Felis silvestris catus*) read human gaze for referential information. *Intelligence* 74:43–52. <https://doi.org/10.1016/j.intell.2018.11.001>
- Pongrácz P, Dobos P, Zsilák B et al (2024) ‘Beware, I am large and dangerous’—human listeners can be deceived by dynamic manipulation of the indexical content of agonistic dog growls. *Behav Ecol Sociobiol*. <https://doi.org/10.1007/s00265-024-03452-9>
- Popper K (2005) The logic of scientific discovery. Routledge
- Pougnault L, Levréro F, Leroux M et al (2022) Social pressure drives “conversational rules” in great apes. *Biol Rev* 97:749–765. <https://doi.org/10.1111/brev.12821>
- Pratchett T (1990) Moving pictures. Victor Gollancz
- Ramos D, Ades C (2012) Two-item sentence comprehension by a dog (*Canis familiaris*). *PLoS ONE* 7:e29689. <https://doi.org/10.1371/journal.pone.0029689>
- Ramos D, Mills DS (2019) Limitations in the learning of verbal content by dogs during the training of object and action commands. *J Vet Behav* 31:92–99. <https://doi.org/10.1016/j.jveb.2019.03.011>
- Range F, Virányi Z (2014) Tracking the evolutionary origins of dog-human cooperation: the “canine cooperation hypothesis.” *Front Psychol* 5:1–10
- Rault JL, Bateson M, Boissy A et al (2025) A consensus on the definition of positive animal welfare. *Biol Lett*. <https://doi.org/10.1098/rsbl.2024.0382>
- Rendall D, Owren MJ, Ryan MJ (2009) What do animal signals mean? *Anim Behav*. <https://doi.org/10.1016/j.anbehav.2009.06.007>
- Rial LA, Cavalli CM, Dzik MV, Bentosela M (2024) Third-party affiliation in domestic dogs during and after a human conflict. *Ethology*. <https://doi.org/10.1111/eth.13522>
- Riecke L, Formisano E, Sorger B et al (2018) Neural entrainment to speech modulates speech intelligibility. *Curr Biol* 28:161–169. e5. <https://doi.org/10.1016/j.cub.2017.11.033>
- Riedel J, Schumann K, Kaminski J et al (2008) The early ontogeny of human-dog communication. *Anim Behav* 75:1003–1014. <https://doi.org/10.1016/j.anbehav.2007.08.010>
- Salomons H, Smith KCM, Callahan-Beckel M et al (2021) Cooperative communication with humans evolved to emerge early in domestic dogs. *Curr Biol* 31:3137–3144.e11. <https://doi.org/10.1016/j.cub.2021.06.051>
- Salzen EA (1998) Emotion and self-awareness. *Appl Anim Behav Sci* 57:299–313. [https://doi.org/10.1016/S0168-1591\(98\)00104-X](https://doi.org/10.1016/S0168-1591(98)00104-X)
- Salzinger K, Waller MB (1962) The operant control of vocalization in the dog. *J Exp Anal Behav* 5:383–389. <https://doi.org/10.1901/jeab.1962.5-383>
- Savalli C, Ades C, Gaunet F (2014) Are dogs able to communicate with their owners about a desirable food in a referential and intentional way? *PLoS ONE*. <https://doi.org/10.1371/journal.pone.0108003>
- Savalli C, Resende B, Gaunet F (2016) Eye contact is crucial for referential communication in pet dogs. *PLoS ONE* 11:e0162161. <https://doi.org/10.1371/journal.pone.0162161>
- Sax B (2017) Animals in folklore. Oxford Handb Anim Stud. Oxford Univ Press, New York, pp 456–473
- Saygin AP, Cicekli I, Akman V (2000) Turing test: 50 years later. *Minds Mach* 10:463–518. <https://doi.org/10.1023/A:1011288000451>
- Scandurra A, Pinelli C, Fierro B et al (2020) Multimodal signaling in the visuo-acoustic mismatch paradigm: similarities between dogs and children in the communicative approach. *Anim Cogn*. <https://doi.org/10.1007/s10071-020-01398-9>
- Schaffer M (2009) One nation under dog: adventures in the new world of Prozac-popping puppies, dog-park politics, and organic pet food. Macmillan
- Schassburger RM (1993) Vocal communication in the timber wolf, *Canis lupus*, Linnaeus: structure, motivation, and ontogeny. In: Dehnhard M, Hofer H (eds) *Advances in ethology*. Paul Parey Publishers, Berlin
- Schlittmeier SJ, Liebl A (2015) The effects of intelligible irrelevant background speech in offices – cognitive disturbance, annoyance, and solutions. *Facilities* 33:61–75. <https://doi.org/10.1108/F-05-2013-0036>
- Schmidt KL, Cohn JF (2001) Human facial expressions as adaptations: evolutionary questions in facial expression research. *Am J Phys Anthropol* 116:3–24. <https://doi.org/10.1016/j.bjbi.2008.05.010>
- Schünemann B, Keller J, Rakoczy H et al (2021) Dogs distinguish human intentional and unintentional action. *Sci Rep* 11:1–9. <https://doi.org/10.1038/s41598-021-94374-3>
- Serpell JA (2021) Commensalism or cross-species adoption? A critical review of theories of wolf domestication. *Front Vet Sci* 8:1–10. <https://doi.org/10.3389/fvets.2021.662370>
- Silva RJ, Tamburic S (2022) A state-of-the-art review on the alternatives to animal testing for the safety assessment of cosmetics. *Cosmet* 9:90. <https://doi.org/10.3390/cosmetics9050090>
- Sinisalchi M, D’Ingeo S, Fornelli S, Quaranta A (2018) Lateralized behavior and cardiac activity of dogs in response to human emotional vocalizations. *Sci Rep* 8:1–12. <https://doi.org/10.1038/s41598-017-18417-4>
- Soproni K, Miklósi Á, Topál J, Csányi V (2001) Comprehension of human communicative signs in pet dogs (*Canis familiaris*). *J Comp Psychol* 115:122–126. <https://doi.org/10.1037/0735-7036.115.2.122>
- Starling MJ, Branson N, Cody D et al (2014) Canine sense and sensibility: tipping points and response latency variability as an optimism index in a canine judgement bias assessment. *PLoS ONE*. <https://doi.org/10.1371/journal.pone.0107794>
- Steckenfinger SA, Ghazanfar AA (2009) Monkey visual behavior falls into the uncanny valley. *Proc Natl Acad Sci U S A*. <https://doi.org/10.1073/pnas.0910063106>
- Steele J, Ferrari PF, Fogassi L (2012) From action to language: comparative perspectives on primate tool use, gesture and the evolution of human language. *Philos Trans R Soc Lond B Biol Sci* 367:4–9. <https://doi.org/10.1098/rstb.2011.0295>
- Stout D, Chaminade T (2012) Stone tools, language and the brain in human evolution. *Philos Trans R Soc Lond B Biol Sci* 367:75–87. <https://doi.org/10.1098/rstb.2011.0099>

- Surányi K, Gábor A, Somogyi R et al (2024) Individual level recognition of familiar human speakers in dogs. *Anim Behav*. <https://doi.org/10.1016/j.anbehav.2024.10.030>
- Suzuki TN, Wheatcroft D, Griesser M (2020) The syntax–semantics interface in animal vocal communication. *Philos Trans R Soc B Biol Sci* 375:20180405. <https://doi.org/10.1098/rstb.2018.0405>
- Szánthó F, Miklósi Á, Kubinyi E (2017) Is your dog empathic? Developing a dog emotional reactivity survey. *PLoS ONE* 12:1–16. <https://doi.org/10.1371/journal.pone.0170397>
- Taylor MM (2018) From sentiment to sagacity to subjectivity: dogs and genre in nineteenth-century British literature. The University of Iowa
- Taylor AM, Reby D, McComb K (2009) Context-related variation in the vocal growling behaviour of the domestic dog (*Canis familiaris*). *Ethology* 115:905–915. <https://doi.org/10.1111/j.1439-0310.2009.01681.x>
- Taylor AM, Reby D, McComb K (2010) Size communication in domestic dog, *Canis familiaris*, growls. *Anim Behav* 79:205–210. <https://doi.org/10.1016/j.anbehav.2009.10.030>
- Taylor AM, Reby D, McComb K (2011) Cross modal perception of body size in domestic dogs (*Canis familiaris*). *PLoS ONE* 6:e17069. <https://doi.org/10.1371/journal.pone.0017069>
- Téglás E, Gergely A, Kupán K et al (2012) Dogs' gaze following is tuned to human communicative signals. *Curr Biol* 22:209–212. <https://doi.org/10.1016/j.cub.2011.12.018>
- Thalmann O, Shapiro B, Cui P et al (2013) Complete mitochondrial genomes of ancient canids suggest a European origin of domestic dogs. *Science* 342:871–874. <https://doi.org/10.1126/science.1243650>
- Tomasello M (2016) What did we learn from the ape language studies. In: Bonobos. Oxford University Press
- Topál J, Miklósi Á, Csányi V, Dóka A (1998) Attachment behavior in dogs (*Canis familiaris*): a new application of Ainsworth's (1969) strange situation test. *J Comp Psychol* 112:219–229. <https://doi.org/10.1037/0735-7036.112.3.219>
- Topál J, Byrne RW, Miklósi Á, Csányi V (2006) Reproducing human actions and action sequences: “Do as I Do!” in a dog. *Anim Cogn* 9:355–367. <https://doi.org/10.1007/s10071-006-0051-6>
- Topál J, Miklósi Á, Gácsi M et al (2009) The dog as a model for understanding human social behavior. *Adv Study Behav* 39:71–116. [https://doi.org/10.1016/S0065-3454\(09\)39003-8](https://doi.org/10.1016/S0065-3454(09)39003-8)
- Topál J, Miklósi Á, Sümegei Z, Kis A (2010) Response to Comments on “Differential sensitivity to human communication in dogs, wolves, and human infants.” *Science* 329:142–142. <https://doi.org/10.1126/science.1184152>
- Trut LN (1999) Early canid domestication: the Farm-Fox experiment. *Am Sci* 87:160. <https://doi.org/10.1511/1999.2.160>
- Trut LN, Oskina IN, Kharlamova AV (2009) Animal evolution during domestication: the domesticated fox as a model. *BioEssays* 31:349–360. <https://doi.org/10.1002/bies.200800070>
- Turing AM (1980) Computing machinery and intelligence. *Creat Comput* 6:44–53
- Udell MAR, Dorey NR, Wynne CDL (2009) What did domestication do to dogs? A new account of dogs' sensitivity to human actions. *Biol Rev Camb Philos Soc* 85:327–345. <https://doi.org/10.1111/j.1469-185X.2009.00104.x>
- Vande Velde V (1998) Smart dog. Harcourt Brace, New York
- Vilà C, Wayne RK (1999) Hybridization between wolves and dogs. *Conserv Biol* 13:195–198. <https://doi.org/10.1046/j.1523-1739.1999.97425.x>
- Virányi Z, Topál J, Gácsi M et al (2004) Dogs respond appropriately to cues of humans' attentional focus. *Behav Processes* 66:161–172. <https://doi.org/10.1016/j.beproc.2004.01.012>
- Virányi Z, Gácsi M, Kubinyi E et al (2008) Comprehension of human pointing gestures in young human-reared wolves (*Canis lupus*) and dogs (*Canis familiaris*). *Anim Cogn* 11:373–387
- Vouloumanos A, Hauser MD, Werker JF, Martin A (2010) The tuning of human neonates' preference for speech. *Child Dev* 81:517–527. <https://doi.org/10.1111/j.1467-8624.2009.01412.x>
- Wallis LJ, Range F, Müller CA et al (2015) Training for eye contact modulates gaze following in dogs. *Anim Behav* 106:27–35. <https://doi.org/10.1016/j.anbehav.2015.04.020>
- Wiese E, Shaw T, Lofaro D, Baldwin C (2017) Designing artificial agents as social companions. *Proc Hum Factors Ergon Soc* 2017:1604–1608. <https://doi.org/10.1177/1541931213601764>
- Wilbrecht L, Nottebohm F (2003) Vocal learning in birds and humans. *Ment Retard Dev Disabil Res Rev* 9:135–148. <https://doi.org/10.1002/mrdd.10073>
- Williams C, Howard B (2008) Bolt. Walt disney animation studios
- Wise J, Kushman J (1984) Pet ownership by life group. *J Am Vet Med Assoc*. <https://doi.org/10.2460/javma.1984.185.06.687>
- Włodarczyk J, Harrison J, Kruszona-Barełkowska SL, Wynne CDL (2024) Talking dogs: the paradoxes inherent in the cultural phenomenon of soundboard use by dogs. *Animals* 14:1–14. <https://doi.org/10.3390/ani14223272>
- Wolff P, Holmes KJ (2011) Linguistic relativity. *Wiley Interdiscip Rev Cogn Sci* 2:253–265. <https://doi.org/10.1002/wcs.104>
- Yong MH, Ruffman T (2014) Emotional contagion: dogs and humans show a similar physiological response to human infant crying. *Behav Processes* 108:155–165. <https://doi.org/10.1016/j.beproc.2014.10.006>
- Zeng Y, Baciadonna L, Davies JR et al (2024) Bottlenose dolphins (*Tursiops truncatus*) display gaze alternation and referential communication in an impossible task. *Heliyon* 10:e33192. <https://doi.org/10.1016/j.heliyon.2024.e33192>
- Zhang L, Needham KB, Juma S et al (2021) Feline communication strategies when presented with an unsolvable task: the attentional state of the person matters. *Anim Cogn* 24:1109–1119. <https://doi.org/10.1007/s10071-021-01503-6>
- Zsiga EC (2024) The sounds of language: an introduction to phonetics and phonology. Wiley, Berlin
- Zuberbühler K, Bickel B (2022) Transition to language: from agent perception to event representation. *Wiley Interdiscip Rev Cogn Sci* 13:1–7. <https://doi.org/10.1002/wcs.1594>