



Corrigendum: The Gaze Communications Between Dogs/Cats and Humans: Recent Research Review and Future Directions

OPEN ACCESS

Edited and reviewed by:

Christian Nawroth,
Leibniz Institute for Farm Animal
Biology (FBN), Germany

*Correspondence:

Miho Nagasawa
nagasawa@carazabu.com

Specialty section:

This article was submitted to
Comparative Psychology,
a section of the journal
Frontiers in Psychology

Received: 23 December 2020

Accepted: 04 February 2021

Published: 01 March 2021

Citation:

Koyasu H, Kikusui T, Takagi S and
Nagasawa M (2021) Corrigendum:
The Gaze Communications Between
Dogs/Cats and Humans: Recent
Research Review and Future
Directions. *Front. Psychol.* 12:645366.
doi: 10.3389/fpsyg.2021.645366

Hikari Koyasu^{1,2}, Takefumi Kikusui¹, Saho Takagi^{1,2} and Miho Nagasawa^{1*}

¹ Laboratory of Human-Animal Interaction and Reciprocity, Azabu University, Kanagawa, Japan, ² Japan Society for the Promotion of Science, Tokyo, Japan

Keywords: dogs, cats, humans, gaze, interaction, communication, bond

A Corrigendum on

The Gaze Communications Between Dogs/Cats and Humans: Recent Research Review and Future Directions

by Koyasu, H., Kikusui, T., Takagi, S., and Nagasawa, M. (2020). *Front. Psychol.* 11:613512. doi: 10.3389/fpsyg.2020.613512

In the original article, there was a mistake in **Table 1** as published. The references for the entry “Looked alternately at the food and the owner when it could access the food” (section “social reference”) were incorrect. The corrected **Table 1** appears below.

The authors apologize for this error and state that this does not change the scientific conclusions of the article in any way. The original article has been updated.

TABLE 1 | Gaze communication between dogs/cats and humans.

Dogs	References	Cats	References
Response to human gaze			
Stole food less often	Call et al., 2003; Kaminski et al., 2013	Avoided the gaze of familiar human	Koyasu and Nagasawa, 2019
Obeded more commands of their owners	Schwab and Huber, 2006	Selected food from humans who looked at them	Ito et al., 2016
Fetches the toy that humans could see in the situation with two toys	Call et al., 2003		
Increased attention-getting behaviors	Ohkita et al., 2016		
Selected food from humans who looked at them	Gácsi et al., 2004		
Using human signals			
Used human pointing in the task of selecting one of two containers	Miklosi et al., 2005	Used human pointing in the task of selecting one of two containers	Miklosi et al., 2005
Used human gaze direction with pointing in the task of selecting one of two containers	Hare et al., 2002	Looked in the direction indicated by human gaze (with head movements)	Pongrácz et al., 2019
Looked in the direction directed by human gaze (with head movements)	Hare et al., 1998; Agnetta et al., 2000; Téglás et al., 2012; Met et al., 2014	Followed the container that humans visited in a situation with two food containers	Chijiwa et al., 2020
Followed the container that humans visited in a situation with two food containers	Chijiwa et al., 2020; Nagasawa et al., 2020		
Social reference			
Looked alternately at the food and the owner when it could access the food	Miklosi et al., 2005; Lazzaroni et al., 2020	Did not look alternately at the food and the owner when it could not access the food	Miklosi et al., 2005
Looked alternately at the strange object and the owner	Merola et al., 2012a,b	Looked alternately at the strange object and the owner	Merola et al., 2015
The role of gaze in bond formation			
Increased attention-getting behaviors in dogs, which function as attachment behaviors in response to human gaze	Ohkita et al., 2016	Eyeblink synchronization during mutual gazing	Koyasu et al., 2020
Dog owner's oxytocin secretion increased in response to the dog's gaze	Nagasawa et al., 2009		
An oxytocin-mediated positive loop of bond formation facilitated and modulated by gazing, like mother-infant	Nagasawa et al., 2015		
Eyeblink synchronization during mutual gazing	Koyasu et al., 2020		

REFERENCES

- Agnetta, B., Hare, B., and Tomasello, M. (2000). Cues to food location that domestic dogs (*Canis familiaris*) of different ages do and do not use. *Anim. Cogn.* 3, 107–112. doi: 10.1007/s100710000070
- Call, J., Bräuer, J., Kaminski, J., and Tomasello, M. (2003). Domestic dogs (*Canis familiaris*) are sensitive to the attentional state of humans. *J. Comp. Psychol.* 117:257. doi: 10.1037/0735-7036.117.3.257
- Chijiwa, H., Takagi, S., Arahori, M., Hori, Y., Saito, A., and Kuroshima, H. (2020). Dogs and cats prioritize human action: choosing a now-empty instead of a still-baited container. *Anim. Cogn.* doi: 10.1007/s10071-020-01416-w [Epub ahead of print].
- Gácsi, M., Miklósi, A., Varga, O., Topál, J., and Csányi, V. (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. doi: 10.1007/s10071-003-0205-8
- Hare, B., Brown, M., Williamson, C., and Tomasello, M. (2002). The domestication of social cognition in dogs. *Science* 298, 1634–1636. doi: 10.1126/science.1072702
- Hare, B., Call, J., and Tomasello, M. (1998). Communication of food location between human and dog (*Canis familiaris*). *Evol. Commun.* 2, 137–159. doi: 10.1075/eoc.2.1.06har
- Ito, Y., Watanabe, A., Takagi, S., Arahori, M., and Saito, A. (2016). Cats beg for food from the human who looks at and calls to them:

- ability to understand humans' attentional states. *Psychologia* 59, 112–120. doi: 10.2117/psysoc.2016.112
- Kaminski, J., Pitsch, A., and Tomasello, M. (2013). Dogs steal in the dark. *Anim. Cogn.* 16:385. doi: 10.1007/s10071-012-0579-6
- Koyasu, H., Goto, R., Takagi, S., Nakano, T., Nagasawa, M., and Kikusui, T. (2020). "Mutual synchronization of eyeblinks between dogs/cats and humans," in *Proceedings of the 80th Annual Meeting of the Japanese Society for Animal Psychology*, Suita.
- Koyasu, H., and Nagasawa, M. (2019). Recognition of directed-gaze from humans in cats. *Jpn. J. Anim. Psychol.* 69, 2–3.
- Lazzaroni, M., Marshall-Pescini, S., Manzenreiter, H., Gosch, S., Poibilová, L., and Darc, L. (2020). Why do dogs look back at the human in an impossible task? Looking back behaviour may be over-interpreted. *Anim. Cogn.* 23:427. doi: 10.1007/s10071-020-01345-8
- Merola, I., Lazzaroni, M., Marshall-Pescini, S., and Prato-Previde, E. (2015). Social referencing and cat-human communication. *Anim. Cogn.* 18, 639–648. doi: 10.1007/s10071-014-0832-2
- Merola, I., Prato-Previde, E., and Marshall-Pescini, S. (2012a). Dogs' social referencing towards owners and strangers. *PLoS One* 7:e47653. doi: 10.1371/journal.pone.0047653
- Merola, I., Prato-Previde, E., and Marshall-Pescini, S. (2012b). Social referencing in dog-owner dyads? *Anim. Cogn.* 15, 175–185. doi: 10.1007/s10071-011-0443-0
- Met, A., Miklósi, Á., and Lakatos, G. (2014). Gaze-following behind barriers in domestic dogs. *Anim. Cogn.* 17:1401. doi: 10.1007/s10071-014-0754-z
- Miklósi, A., Pongrácz, P., Lakatos, G., Topál, J., and Csányi, V. (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. doi: 10.1037/0735-7036.119.2.179
- Nagasawa, M., Kikusui, T., Onaka, T., and Ohta, M. (2009). Dog's gaze at its owner increases owner's urinary oxytocin during social interaction. *Horm. Behav.* 55, 434–441. doi: 10.1016/j.yhbeh.2008.12.002
- Nagasawa, M., Mitsui, S., En, S., Ohtani, N., Ohta, M., and Sakuma, Y. (2015). Oxytocin-gaze positive loop and the coevolution of human-dog bonds. *Science* 348, 333–336. doi: 10.1126/science.1261022
- Nagasawa, M., Mogi, K., Ohtsuki, H., and Kikusui, T. (2020). Familiarity with humans affect dogs' tendencies to follow human majority groups. *Sci. Rep.* 10:7119.
- Ohkita, M., Nagasawa, M., Kazutaka, M., and Kikusui, T. (2016). Owners' direct gazes increase dogs' attention-getting behaviors. *Behav. Process.* 125:96. doi: 10.1016/j.beproc.2016.02.013
- Pongrácz, P., Szapu, J. S., and Faragó, T. (2019). Cats (*Felis silvestris catus*) read human gaze for referential information. *Intelligence* 74, 43–52. doi: 10.1016/j.intell.2018.11.001
- Schwab, C., and Huber, L. (2006). Obey or not obey? Dogs (*Canis familiaris*) behave differently in response to attentional states of their owners. *J. Comp. Psychol.* 120:169.
- Téglás, E., Gergely, A., Kupán, K., Miklósi, Á., and Topál, J. (2012). Dogs' gaze following is tuned to human communicative signals. *Curr. Biol.* 22:209.

Copyright © 2021 Koyasu, Kikusui, Takagi and Nagasawa. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.