

Food sharing and social bonds origin in young cockatiels (*Nymphicus hollandicus*)

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Introduction



In animal societies, **prosocial** behaviors that seem to involve **altruism** and/or **empathy** represent rare cases for investigating the underlying selection pressures and mechanisms.

Food-sharing is one of them: it implies a **benefit** for the recipient and a **cost** for the donor. It occurs largely in **birds** during courtship and parental care (between mates) and also outside reproductive period (between juveniles) → **build and strengthen bonds between kin and non kin**.

Psittacids and **corvids** form pair-bonds for life → Food-sharing may be an early indicator of **long-term pair-bond formation**.

In young **jackdaws** (*Corvus monedula*), food-sharing peaks in the 2-months period post-fledging and then continually **decreases**. Birds form exclusive relations with one affiliative partner and stop sharing food with others after 3 months (Kort *et al* 2006, von Bayern *et al* 2007).

What about cockatiels ?

Methods

Pre-tests: Affiliation and food preference tasks

Affiliation: Affiliative interactions such as **allopreening** and **proximity** (perching within 15 cm) between birds were recorded during 20 minutes sessions.

Food preference: We presented different types of food to the birds. We recorded the first aliment eaten and the time spent eating each type of food. A Principal Component Analysis (PCA) provided a rank of food preference. We kept **two types of food**: the most preferred and the second to last aliments.

Food-sharing experiment

2 types of food are tested : **fennel** (favourite food) and **carrot** during **12 sessions**. Each bird received **10 pieces of food per session**, 60 pieces of each food type per bird.

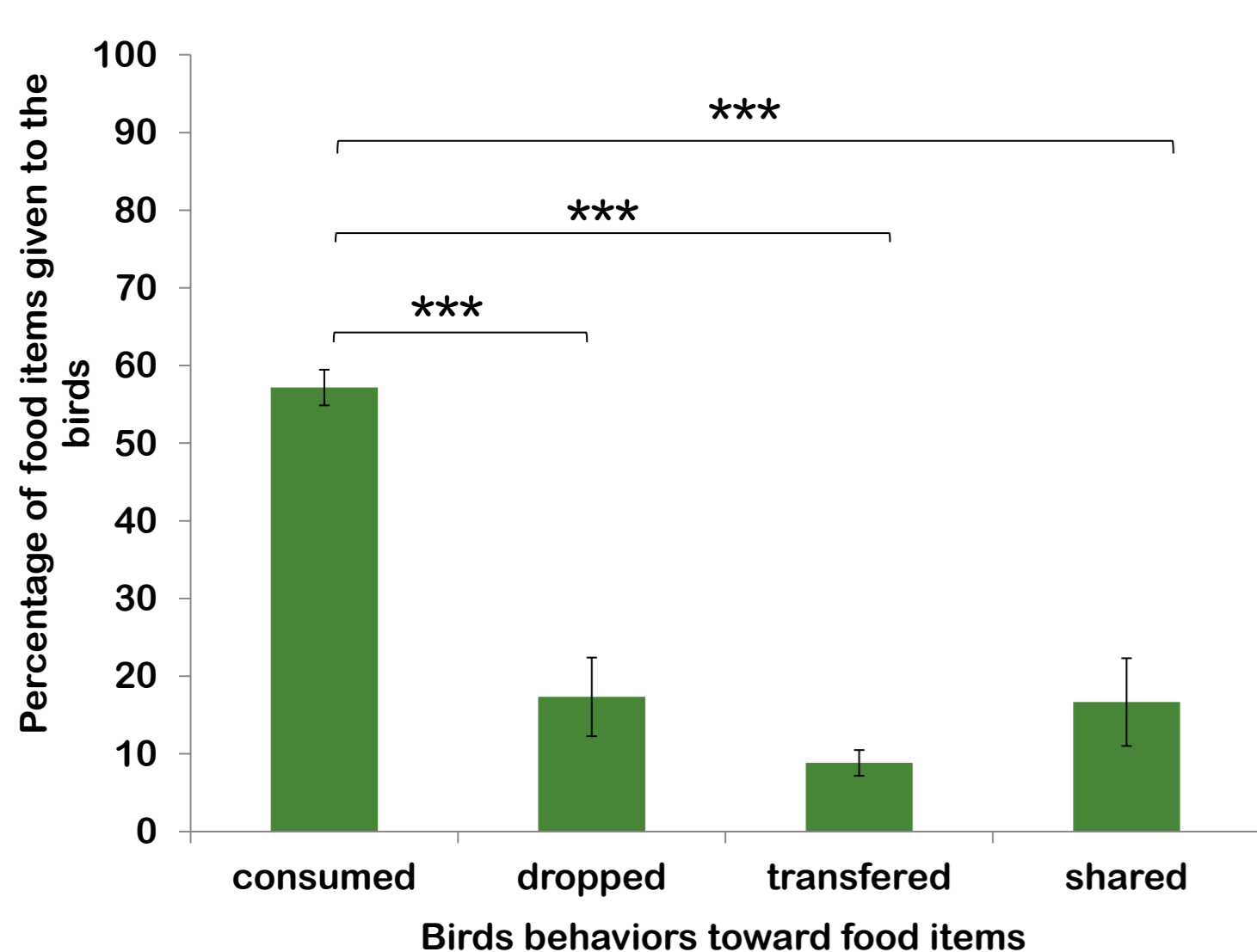
We recorded for every individual whether a food item was : **consumed**, **dropped**, **transferred** (the receiver takes all the food from the donor) or **shared** (the two birds eat from the same piece of food).

Interactions between food-sharing and other variables (affiliation and affinity between birds, sex, etc) have been assessed via a Generalized Linear Mixed Model (GLMM).

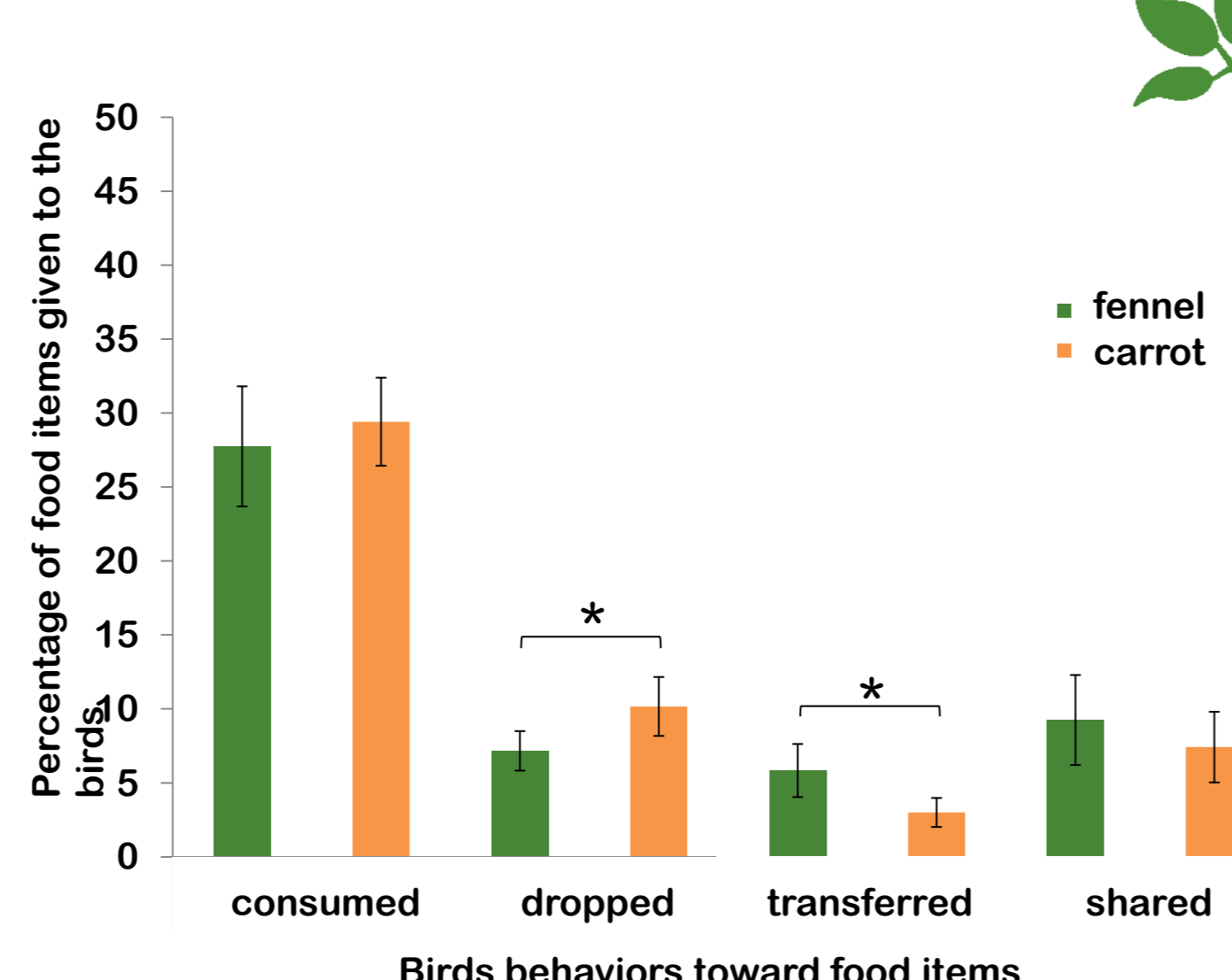


We tested 10 young cockatiels (*Nymphicus hollandicus*) from 2 groups (siblings and unrelated juveniles): 5 males and 5 females aged between 7 and 10 months.

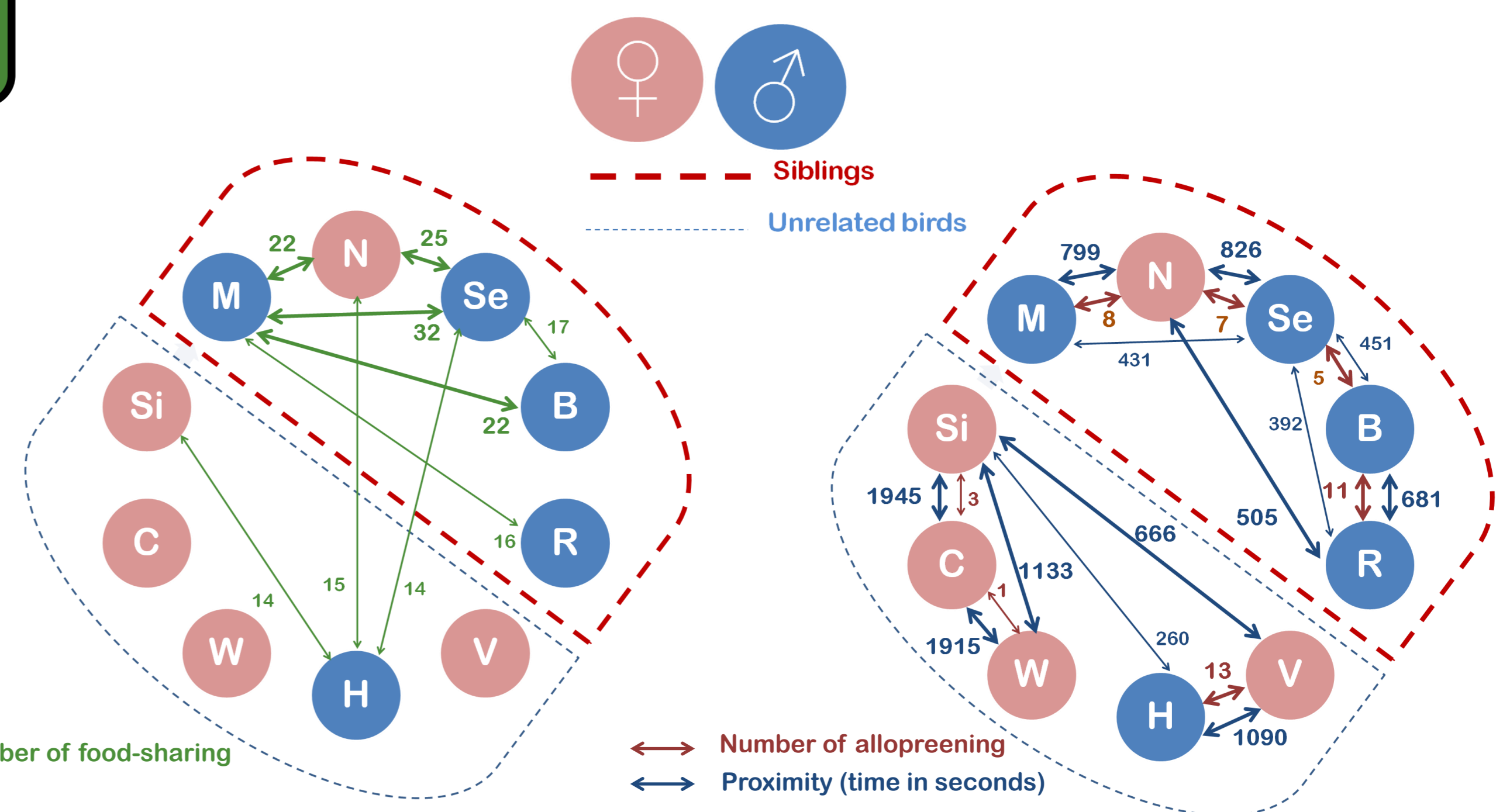
Results



17% of food items are shared. Birds eat food items alone significantly more than they drop, transfer or share them. No differences between the other conditions.



Effect of food type: Birds dropped more carrot than fennel items. They transferred more fennel than carrot.



Effect of affiliation: Food-sharing occurs more between siblings than between unrelated birds ($p < 0.05$).

Correlation between allopreening and proximity ($p < 0.001$). No allopreening and proximity between members of the two different groups.

→ No correlation between food-sharing and affinity.

Discussion

Contrary to jackdaws, **cockatiels still share food after 3 months of age and with different partners** → maybe linked to the time needed to establish **pair-bonds**. **Jackdaws:** during their first autumn (5-6 months)/ **cockatiels:** around 12-18 months.

More food-sharing occurred between **siblings** than unrelated birds → **kinselection**.

5 main dyads are observed via **affinity** and **proximity** (different from food-sharing dyads): **heterosexual** and **homosexual** associations within siblings and unrelated birds → Not exclusively predictive of pair-bonds formation.

Differences between cockatiels and jackdaws: **Different ecological conditions**.

Jackdaws: omnivorous & opportunistic + temperate climate zone/ **cockatiels:** granivores & frugivores + desert zone.

References

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