

Parental Care and Homosexual Behaviour in Birds Article Critique

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Introduction

Geoff R. MacFarlane, Simon P. Blomberg, and Paul L. Vasey's 2010 article, "Homosexual Behaviour in Birds: Frequency of Expression Is Related to Parental Care Disparity Between the Sexes," examines a comparative evolutionary question rather than the behavior of one species. The authors ask whether same-sex sexual behavior is reported more frequently for the sex that contributes less to parental care and therefore may have more mating opportunities. The original critique correctly notes that the study uses published literature and statistical comparison, but it sometimes treats the findings as evidence that birds "prefer mating to parenting" and asks the analysis to identify one cause of homosexual behavior. That interpretation overstates what species-level comparative data can establish. A stronger critique should evaluate the authors' theoretical logic, operational definitions, literature-based dataset, phylogenetic methods, statistical association, reporting limitations, and the difference between a broad evolutionary pattern and an explanation of every same-sex interaction.

The Article's Research Problem

Same-sex sexual behavior has been documented across many animal taxa and in more than 130 bird species, but its forms and frequencies vary. MacFarlane et al. address an apparent evolutionary puzzle: behavior that is not immediately reproductive may nevertheless persist because it has several possible social, developmental, or sexual functions. Their specific hypothesis comes from parental-care sexual-conflict theory. If one sex contributes less to offspring care, individuals of that sex may experience more opportunities for additional sexual interactions. The authors therefore predict an association between sex-specific relative parental care and the reported frequency of same-sex behavior. This is a narrower and more testable proposition than asking why homosexuality exists in birds. The paper does not claim that parental care is the sole mechanism or that every same-sex interaction has the same function.

Terminology and the Unit of Analysis

The article uses "homosexual behaviour" in the terminology common in the animal-behavior literature of its period. It refers to observable same-sex courtship, mounting, pair bonding, or related sexual behavior, not necessarily to a stable human-like sexual orientation or identity. Care is also needed with terms such as monogamy and polygyny. Social mating systems describe pair or group

arrangements and do not guarantee exclusive sexual behavior. Most importantly, the unit of analysis is generally the species-sex combination, not the individual bird. The study asks whether species in which males provide relatively less care tend to report more male-male behavior, and whether a comparable relation appears for females. It cannot show that an individual bird reduces care because it engages in same-sex behavior or vice versa.

Theoretical Logic: Parental Care and Mating Opportunity

The theory begins with the unequal costs of reproduction. Eggs, incubation, provisioning, defense, and other forms of care may be divided differently between sexes and species. A sex released from a larger share of care may have more time or incentive to seek additional mating opportunities. If sexual motivation or social competition is expressed broadly, same-sex interactions may occur more frequently as well. The authors' prediction is therefore about opportunity and reproductive strategy, not a moral judgment that less-caring birds are irresponsible. The original critique should avoid anthropomorphic phrases such as "desire to assume parental responsibility." Evolutionary hypotheses describe patterns of behavior and selection pressures; they do not infer conscious duties comparable to human parenting.

Construction of the Comparative Dataset

The study synthesizes observations from published reports rather than conducting a new field experiment. This approach is appropriate for a question spanning many species because no research team could observe the complete behavioral repertoire of birds worldwide under identical conditions. Literature synthesis allows broad comparison and identifies patterns that may be invisible within one species. It also creates substantial measurement challenges. Species with conspicuous displays, colonial breeding, long research histories, or easy human access are more likely to have same-sex behavior reported. Rare, secretive, or poorly studied species may be coded as lacking evidence even when behavior occurs. The distinction between "not observed" and "absent" is therefore fundamental. A comparative database is only as complete and consistently coded as the literature from which it is built.

Measurement of Behavioral Expression

MacFarlane et al. distinguish the occurrence and frequency of forms of same-sex behavior reported in the literature. Frequency categories derived from qualitative descriptions can be useful when exact observational rates are unavailable, but they are vulnerable to uneven language. One author may call behavior "common," another may report several events without a denominator, and a third may omit the behavior entirely because it was outside the study question. Courtship, mounting, pair bonding,

and sexual coercion may also have different functions but become combined within a broad category. A strong critique should ask how coding rules handled ambiguous reports, captive observations, sex identification, and differences in observation effort. Reliability would be strengthened by independent coders and transparent resolution of disagreements.

Measurement of Relative Parental Care

Parental care is multidimensional. Incubation, brooding, feeding, nest building, territorial defense, and post-fledging care may be divided differently. Reducing those activities to a relative male or female contribution enables analysis across species, but it can hide important ecological distinctions. A male may provide little incubation yet extensive defense, while a female may contribute heavily at one stage and less at another. The quality of the care variable therefore depends on whether comparable activities and life-history stages were coded consistently. The theoretical prediction concerns freedom from reproductive investment, so the chosen measure should reflect time and energetic constraints rather than one highly visible task. This limitation does not invalidate the analysis, but it narrows the precision of the inference.

Why Phylogenetic Comparative Methods Matter

Species are not statistically independent observations in the ordinary sense. Closely related birds may resemble one another because they inherited traits from a common ancestor, not because one measured trait directly predicts another. A cluster of related species with similar care and sexual behavior could therefore create an inflated association. Phylogenetic comparative methods attempt to model this shared evolutionary history. The article's use of phylogenetically informed analysis is a major strength because it is more appropriate than treating every species as an unrelated data point. Nevertheless, the result depends on the phylogeny available at the time, the placement of species, and assumptions about how traits evolve. Modern avian phylogenies and additional behavioral records could test whether the pattern remains robust.

Statistical Association and What It Supports

The reported result is consistent with the authors' prediction: lower relative contribution to parental care by a sex is associated with more frequent reported same-sex behavior for that sex. In the noncaptive species summarized by the journal, female-female behavior was reported in fewer species than male-male behavior, and sex-specific care disparity helped explain part of the variation (MacFarlane et al., 2010). The analysis supports a comparative association after accounting for relatedness; it does not demonstrate a direct causal pathway. Relative care may correlate with mating system, sexual dimorphism, group density, adult sex ratio, display behavior, coloniality, or observation opportunity. Several of those variables could independently influence same-sex

interactions. The paper should therefore be read as evidence for one macroevolutionary pattern rather than experimental proof.

Strengths of the Article

The article has several important strengths. Its title states the proposed relation clearly, and the research questions are grounded in an explicit evolutionary theory. The authors move beyond anecdotal lists of unusual behavior and test a prediction across species. They analyze male and female patterns separately, which avoids treating “birds” as a single sex-neutral category. The use of phylogenetic methods addresses a central problem in comparative biology. The discussion also recognizes that same-sex behavior can have multiple explanations and should not automatically be considered an evolutionary paradox. By converting diverse natural-history records into testable comparative data, the study creates a platform for later research rather than presenting isolated observations as complete explanations.

Reporting Bias and Unequal Observation

The greatest limitation is likely the observation process. Same-sex behavior may be noticed when researchers can identify sex reliably and observe courtship at close range. It may be underreported because an investigator assumes that a pair is male-female, treats mounting as dominance, or considers the event irrelevant to the primary study. Male birds often have more visually distinct plumage or conspicuous displays in some taxa, which may make male-male behavior easier to identify. Female sexual behavior has historically received less research attention in many species. The reported difference between male and female occurrence may therefore combine biological variation with research practice. Future syntheses should include measures of observation effort, sexing certainty, and publication probability.

Heterogeneity of Same-Sex Behavior

A second limitation is the breadth of the dependent variable. Same-sex courtship can establish alliances, provide practice, signal dominance, reduce tension, respond to partner shortage, arise from mistaken recognition, or participate in enduring pair bonds. Mounting and pair bonding should not be assumed to share a single proximate mechanism. A species-level frequency category may also combine coercive and affiliative behavior, which have different consequences. The theoretical association with mating opportunity may fit some forms better than others. The article would be strengthened by separate analyses where the literature permits, although smaller samples would reduce statistical power. The heterogeneity should lead to more precise hypotheses rather than the conclusion that the topic cannot be studied comparatively.

Field Observation Versus Comparative Synthesis

The original critique proposes adding field experience, but one field study could not replace the paper's comparative design. The two approaches answer different questions. Comparative synthesis identifies broad associations across lineages. Detailed field research can examine proximate mechanisms, individual histories, reproductive outcomes, partner availability, and social context within a species. The strongest research program would use the comparative result to select contrasting species—for example, species with similar ecology but different care disparity—and then collect standardized behavioral data. Experimental manipulation may be possible for some variables, but ethical and practical limits apply. Methodological triangulation is more valuable than treating field observation as automatically superior to secondary data.

Alternative Explanations and Additional Covariates

Several alternatives deserve testing. Adult sex ratio can change the availability of opposite-sex and same-sex partners. Colonial breeding increases encounter rates and observer access. Sexual selection intensity, extra-pair mating, lekking, cooperative breeding, developmental stage at hatching, and social dominance may influence behavior and care. Environmental conditions can temporarily separate mates or disrupt breeding. Captivity can alter density and partner choice, which is why noncaptive evidence requires separate attention. Including too many correlated predictors in a limited dataset can create unstable models, so future work needs preregistered hypotheses, larger databases, and sensitivity analysis rather than uncontrolled statistical expansion.

Ethical and Interpretive Cautions

Animal same-sex behavior is sometimes used rhetorically in human political debates. The presence of a behavior in nature does not by itself determine whether a human practice is moral, and the absence of an exact animal analogue would not determine morality either. Conversely, researchers should not project human stigma onto animals by treating nonreproductive sexual behavior as defective. The scientific question concerns evolution, development, ecology, and social function. Clear terminology helps prevent both anthropomorphism and ideological misuse. A critique should evaluate evidence without implying that same-sex behavior makes birds less responsible parents or that one comparative pattern exhausts the diversity of animal sexuality.

Directions for Replication

A modern replication could update the species database, use a current avian phylogeny, separate behavioral forms, and record observation effort and sexing confidence. Researchers could preregister coding rules and have multiple reviewers independently extract data. Models could compare

presence, ordinal frequency, and continuous rates where available. Publication-bias analyses and robustness checks could test how many unreported observations would alter the result. Targeted field projects could then examine species predicted to be exceptions. Open data and code would allow other researchers to evaluate classifications and alternative phylogenetic assumptions. Such work would preserve the article's comparative insight while addressing the principal uncertainty: whether the published record accurately represents underlying behavior.

Conclusion

MacFarlane, Blomberg, and Vasey provide a theoretically informed comparative analysis showing that the sex contributing relatively less parental care tends to have more frequent reported same-sex behavior across birds. The study's broad dataset, sex-specific predictions, and phylogenetic methods are substantial strengths. Its findings should not be translated into the claim that individual birds choose mating instead of caring for offspring or that unequal care causes every same-sex interaction. Literature-based coding, unequal observation, broad behavioral categories, and correlated ecological traits limit causal interpretation. The article succeeds as a test of a macroevolutionary association and as a stimulus for more standardized field research. A balanced critique therefore accepts the importance of the pattern while keeping the conclusion proportional to the design.

References

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