Kin influences on fertility: a framework and a review

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Introduction

Reproduction in our species is a social process. Women require help to raise offspring successfully to independence, suggesting kin should cooperate to improve one another's reproductive success. However, family members do not always have the same strategic considerations. Here we use a study of kin influences on fertility to develop a theoretical framework for why kin should be cooperative or competitive, and explore this framework using a review of the existing literature on this topic.

Framework

Our framework includes 3 hypotheses:
1) the cooperative breeding hypothesis: this states that women can’t raise children alone without the input of other family members
Prediction for fertility: fertility will be higher in the presence of kin

2) the local resource competition hypothesis: this states that family members who share a resource base may compete over limited local resources
Prediction: fertility will be lower in the presence of kin

3) The sexual conflict hypothesis: husbands and wives, and by extension their kin, do not always have the same reproductive interests
Prediction: women’s fertility will be higher in the presence of affinal kin

Methods

We searched the published literature for all articles which had statistically correlated some measure of kin availability with some measure of fertility, and have compiled a database of 481 kin effects from 140 articles. Of these, 214 were significant at p<0.05.

Figures 2-4 show results of modified vote counting including all effects regardless of significance, but results are similar if only significant effects are considered.

Figure 1 – Proportion of effects in the dataset that represent each outcome measure and each kin category, N= 481.

Results

Direction of effects depend on kin relationship

Figure 2 – Proportion of all effects that are pro-natal by kin category, with 95% CIs

Kin effects depend on fertility metric

Figure 3 – Proportion of effects that are pro-natal by kin category and fertility metric, with 95% CIs

Kin less pro-natal when presence measured as co-residence rather than vital status

Figure 4 – Proportion of effects that are pro-natal by kin category and fertility metric, with 95% CIs

Conclusions

We find some support for each hypothesis:
1) Parents and in-laws are most pro-natal in terms of reducing inter-birth intervals, suggesting they might provide direct help that allows faster progression to next birth.
2) Parents and in-laws are more likely to be anti-natal when they are co-resident rather than when their presence is operationalised by vital status, suggesting local resource competition.
3) In-laws are more likely than parents to expedite first births, suggesting conflicts of interest between the former and reproductive aged women.