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Family planning under social competition

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Competition is an essential part of evolution. Animals compete over resources as food, partners and breeding sites. Individuals with characteristics that enable them to outcompete others and gain access to vital resources will be able to produce more offspring and thereby contribute more to future generations. Experimental research on great tits (*Parus major*) showed that the family size that parents raise can negatively affect their future survival probability in areas with high competitive pressure. The hypothesis was formulated that family size may negatively affect the competitive ability of parents in later life. Under competition it may thus be more favourable for parents to raise smaller families. The focus of our research was to experimentally test this hypothesis in a great tit nest box population. We manipulated family size by reducing or enlarging broods, relative to a control group. Next, we measured parental competitive ability both in winter and in the following spring by experimentally increasing the level of competition for vital resources as winter food, winter roosting boxes and breeding boxes. We found evidence that the manipulated family size had a negative effect on the probability of parents to 1) claim food in winter and 2) claim deeper breeding boxes which were safer from nest predation during the next spring. This evidence is consistent with the hypothesis that family size negatively affects the competitive ability of parents. This work contributes our understanding of how social mechanisms, such as competition, can shape individual reproductive behaviour. This knowledge is essential to predict how animals will respond to changes in their ecological environment.