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The baby effect and young male syndrome: social influences on cooperative risk-taking in women and men

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Abstract

Parental investment theory predicts differences in risk-taking for females and males as a consequence of reproductive context, with females attempting to reduce risks in relation to their own offspring (here called the baby effect) and males taking more risks in competition with one another (young male syndrome). The experiment we report tests these predictions in a cooperative context by introducing the Social Balloon Analogue Risk Task—the Balloon Analogue Risk Task modified to include a social partner (adult male, adult female, or baby)—along with a commitment device in which participants choose among several possible social partners, with whom they will share their earnings. Results were consistent with the predictions of parental investment theory. Females did not change their levels of risk-taking when paired with adult males or females, but showed a strong reduction in risk when paired with babies. Consistent with previous research, males were strongly inclined to take more risks when paired with another male of the same age, but males showed no change in risk-taking when paired with a female of the same age or a child. The current work provides the first experimental evidence of gender differences in cooperative social risk-taking, as well as the first experimental evidence of a mediator of female risk-taking, i.e., babies.
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1. Introduction

Suppose you were out walking with a potential long-term mate, and the opportunity arose to take a bet with a street performer. Assuming you would share the winnings with your partner, do you take the bet? Now suppose, instead, that you were walking with a child when you encounter the street performer—do you take the bet? These scenarios are representative of many domains where risk-taking has social consequences. They further demonstrate that the social consequences may vary in terms of reproductive context, that is, whether the context involves a reproductive opportunity (or threat) or an instance of parental care. Though it is well accepted that, in many domains, men take more risks than women (e.g., Byrnes, Miller, & Schafer, 1999; Weber, Blais, & Betz, 2002), the exact reasons for this risk asymmetry are not well understood. Elegant efforts to explain these differences from an evolutionary perspective have been remarkably insightful (e.g., Baker & Maner, 2008, 2009; Daly & Wilson, 1994; Wang, Kruger, & Wilke, 2009; Wilson & Daly, 1985). Following this evolutionary approach, the current paper reports an experiment that extends these previous findings by testing two foundational predictions of parental investment theory (Trivers, 1972), in particular, that females will take fewer risks when in the presence of young children and that males will take more risks when paired with other males (even when these males are potential allies).

Parental investment theory (Trivers, 1972; Williams, 1975) attempts to explain how individuals should expend their resources to maximize their reproductive fitness. Noting that, across many species, one sex invests more (the 'limiting sex') and the other invests less, the theory explains that "Individuals of the sex investing less will compete among themselves to breed with members of the sex investing more, since an individual of the former can increase its reproductive success by investing successively in the offspring of several members of the limiting sex"

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(p. 141, Trivers, 1972). This statement lays out the two ideas central to understanding the evolution of risk-taking in humans. First, one sex (females) invests more in offspring and therefore has more to lose with the loss of any individual offspring. Second, the nonlimiting sex (males) should risk more (through competition and display) to maximize its reproductive opportunities with the limiting sex (i.e., females). Before describing our study, we discuss these evolutionary views on risk-taking individually and in more detail.

2. Parental care and female risk-avoidance

The central observation on which parental investment theory is based is that the sexes invest different amounts in offspring (Trivers, 1972). For humans, females invest more in their offspring than males. This is in part due to their higher parental investment during gestation and more limited opportunity for children in the future. But it is also because the female does not share the male's paternal uncertainty or the male's opportunity costs associated with seeking additional offspring with other individuals. In the presence of offspring, we predict that this will lead females to risk less than males, who do not share the same investment.

Evolutionary explanations are often based on this prediction of offspring-induced female risk-avoidance. As an example, Fessler, Pillsworth, and Flamson (2004) found that women are more sensitive to disgust and react more fearfully to situations that evoke anger in men. Providing an evolutionary explanation, Fessler et al. (2004) argued that the feeling of disgust in women signals the presence of potentially harmful influences (e.g., pathogens) that may threaten fetal development. In an experiment, they further demonstrated that women manipulated to feel disgusted expressed lower levels of risk-taking compared to women not manipulated. No such effect was found in men. Similar explanations for offspring-related risk-avoidance in females are quite common (e.g., Buss, 2004; Fetchenhauer & Buunk, 2005).

Several studies demonstrate additional indirect evidence of offspring-related risk-avoidance. Tangential evidence that females may have more reason to reduce risks associated with offspring is found in a study of parental grief following child mortality, where mothers were found to have significantly more negative feelings (e.g., despair, depression, and loss of appetite) than fathers (Schwab, 1996). This is consistent with the idea that females may perceive that they have more to lose with the loss of any individual offspring, and that postgestational parental care invested by females is thus a mechanism for reducing the risks to their offspring. More generally, Wang and colleagues (2009) have found that parents self-report lower likelihoods of engaging in risky behaviors associated with within- and between-group competition (but they do not report whether this effect was also mediated by gender). In this light, parental care can be interpreted as an offspring-related risk-avoidance policy, which—in the presence of young children—should lead to a greater reduction in risk-taking for females than males.

With respect to the present experiments, it is important to note that females may also benefit from caring for offspring that are not their own. In both birds and mammals, caregivers often benefit from experience, and this may be gained through the care of young that are not genetically related (Emlen, 1984). Accordingly, many animal societies demonstrate cooperative breeding, even among nonrelated individuals. Besides experience acquired through caregiving, many of these societies show clear evidence of reciprocity (Clutton-Brock, 2002), which can further aid females in raising their own offspring.

However, the benefit to males of caring for nonrelated offspring is not so apparent. Tests of the paternal resemblance hypothesis indicate that males, relative to females, are more discriminating in how they allocate parental investment—in particular, they prefer offspring that resemble themselves (Platek, Burch, Panyavin, Wasserman, & Gallup, 2002). This is consistent with the evolutionary hypothesis that males gain less from indiscriminate caregiving than females and should therefore be generally less interested in reducing risks associated with children. In sum, evolutionary theory leads to the prediction that females should be more risk-averse than males around young children—what we call *the baby effect*—but to our knowledge, this fundamental claim of parental investment theory has not yet been tested experimentally.

3. Reproductive competition and male risk-taking

In comparison with females, males often take more risks in both social and nonsocial contexts. Much of the evolutionary research on risk-taking has focused on explaining this observation. In particular, male risk-taking is at its height during the earliest reproductive years, before marriage (Wilson & Daly, 1985, 2001). One of the principle explanations for this rise in risk-taking is termed the *young male syndrome* (Wilson & Daly, 1985). The young male syndrome stems from the predictions of parental investment theory, which suggests that risky and violent behavior should be found most frequently among the sex with the most intense reproductive competition. Consistent with this idea, in a study of 690 homicidal conflicts in Detroit in 1972, Wilson and Daly (1985) were led to conclude that a "taste for risk…is primarily a masculine attribute, and is socially facilitated by the presence of peers in pursuit of the same goals." Notably, this taste for risk is significantly reduced among married men, but rises again among the divorced and widowed (Daly & Wilson, 2001).

The hypothesis that risk-taking is a competitive display for males is consistent with *costly signaling theory* (Bliege Bird, Smith, & Bird, 2001), stemming from the *handicap*

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