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Mate retention, semen displacement, and human sperm competition: a preliminary investigation of tactics to prevent and correct female infidelity[☆]

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Abstract

Sperm competition is the competition between the sperm of two or more males to fertilize a female's egg(s). We examined how men under a high recurrent risk of sperm competition might attempt to prevent and correct their partners' sexual infidelity. Three hundred and five males drawn from universities and surrounding communities rated their partner's physical attractiveness and personality characteristics (to assess their recurrent risk of sperm competition), and reported their use of tactics designed to prevent partner infidelity (mate retention tactics) and their use of specific copulatory behaviors arguably designed to displace the semen of rival men (semen-displacing behaviors). As hypothesized, men at a high recurrent risk of sperm competition were more likely to use mate retention tactics and to perform semen-displacing behaviors.

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1. Introduction

Competition between males to fertilize a female's egg(s) can occur before, during, and after copulation (Parker, 1970; Birkhead & Møller, 1998). When the sperm of two or more males simultaneously occupy the reproductive tract of a female and compete to fertilize her egg(s), sperm competition occurs (Parker, 1970). Sperm competition has been documented or inferred to exist in many species, ranging from molluscs (Baur, 1998) and insects (Simmons, 2001) to birds (Birkhead & Møller, 1992) and humans (Baker & Bellis, 1993a, 1993b; Gallup et al., 2003; Shackelford, 2003; Shackelford, Goetz, LaMunyon, Quintus, & Weekes-Shackelford, in press; Shackelford et al., 2002; Smith, 1984; Wyckoff, Wang, & Wu, 2000).

For species that practice social monogamy, the mating system in which males and females form long-term pair bonds but also pursue extra-pair copulations (e.g., most birds and humans), female sexual infidelity creates the primary context for sperm competition (Birkhead & Møller, 1992; Smith, 1984). Males of such species may have adaptations that decrease the likelihood that a rival male's sperm will fertilize his partner's egg(s)—adaptations that decrease the likelihood of being cuckolded, unwittingly investing resources in genetically unrelated offspring. Male sexual jealousy, for example, is one of the most widely researched human anti-cuckoldry adaptations. Male sexual jealousy is hypothesized to motivate men to deter a mate from a sexual infidelity or a permanent defection from the mateship, and to deter rivals from mate poaching (e.g., Buss, Larsen, Westen, & Semmelroth, 1992; Daly, Wilson, & Weghorst, 1982; Harris, 2003; Symons, 1979; White & Mullen, 1989). Others have described more specific adaptations that may combat sperm competition. Baker and Bellis (1993a), for example, demonstrated that men may have physiological adaptations that function to increase the likelihood that their sperm will out-compete rival sperm to fertilize their partner's egg(s). In a study of couples in committed, sexual relationships, Baker and Bellis (1993a) documented that, at the couple's next copulation, men inseminated more sperm when the couple had spent a lesser proportion of their time together since their last copulation. As the proportion of time together decreases, the likelihood of female infidelity increases, creating a higher risk of sperm competition (Baker & Bellis, 1993a, 1995). Inseminating more sperm following a separation may function to outnumber or "flush out" rival sperm that may be present in the reproductive tract of the female (Baker & Bellis, 1993a; Parker, 1970).

This temporally variable risk of sperm competition produces specific physiological responses apparently designed to "correct" any female sexual infidelity that might have occurred while the couple was separated. Some men, however, may be mated to women who *recurrently* place them at a high risk of sperm competition. Female physical attractiveness and certain personality characteristics that attract rival men, for example, may increase the likelihood of female sexual infidelity and, therefore, place her partner at a high recurrent risk of sperm competition. Because a woman's physical attractiveness indexes her reproductive value and fertility (Singh, 1993; Symons, 1979), physically attractive women are desired partners for long-term, short-term, and extra-pair mateships (Buss, 1989; Buss & Schmitt, 1993; Li, Bailey, Kenrick, & Linsenmeier, 2002; Regan, Levin, Sprecher, Christopher, & Cate, 2000). Accordingly, physically attractive women are more likely to have had men try to poach them away from their current partners (Schmitt & Buss, 2001), and men married to more physically attractive women devote more effort to retaining their mates (Buss & Shackelford, 1997).

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