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## The Universal Threat and Temptation of Extradynamic Affairs

Buunk, Abraham P.; Dijkstra, Pieterneel; Massar, Karlijn

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ABRAHAM P. BUUNK, PIETERNEL DIJKSTRA, AND KARLIJN MASSAR

**INTRODUCTION**

Although virtually all married individuals expect their spouses to have sex only with them (Treas & Giessen, 2000), fantasizing about extramarital sex is extremely common. Hicks and Leitenberg (2001), for instance, found that no less than 87 percent of their respondents (98 percent of men, 80 percent of women) reported having had extradidyadic sexual fantasies in the previous two months. In a substantial number of cases such fantasies are translated into actual extradidyadic sexual involvement, including one-night stands, passionate love affairs, mate exchange, flirting, and sex with prostitutes. Overall, such activities are considered infidelity, although its definition depends in part on how the parties involved define it (Drigotas, Safstrom, & Gentilia, 1999; Moller & Vossler, 2015). Nevertheless, when disclosed, in general any type of sexual or erotic involvement outside a committed relationship is considered a betrayal of one's partner, evoking – usually intense – feelings of jealousy.

In recent years, technological changes have added new dimensions to the dynamics of extradidyadic sexual involvement. The rapid growth of cellular phones has made it easier to conduct affairs without spouses noticing, and due to the Internet it has become much easier for people to engage in all kinds of extradidyadic sexual and erotic involvement (Mileham, 2007), including meeting new partners and engaging in sexualized conversations or sexual behaviors, with or without a webcam (e.g., Young, Griffin-Shelley, Cooper, O'Mara, & Buchanan, 2000). In the present chapter we discuss the norms with respect to extradidyadic sex, the incidence of extradidyadic sexual involvement, the factors associated with such involvement, the effects it has on the individual and the primary relationship, the determinants of jealousy, and the therapeutic handling of extradidyadic involvement and jealousy.

**EXTRADYADIC SEX****Norms with Respect to Extradidyadic Sex**

Although during the “sexual revolution” of the 1970s, attitudes toward extramarital sex became in some countries somewhat more liberal, in the following decades in Western society attitudes have moved toward more disapproval of extramarital sex, especially among men (Thornton & Young-DeMarco, 2001). As a consequence, by the late 1990s about 70 percent (Christopher & Sprecher, 2000) to 90 percent of American men and women (Thornton & Young-DeMarco, 2001) said they believed that extramarital sex was always or almost always wrong. Even in relatively liberal Western European countries such as the Netherlands, attitudes have also become more restricted. For instance, in 1997 about 78 percent of Dutch respondents considered extradidyadic sex wrong (Sociaal en Cultureel Rapport, 1998). Similar percentages have been reported for China, where it was recently found that extramarital sex was completely unacceptable to 74 percent of women and 60 percent of men (Zhang, Parish, Huang, & Pan, 2012). In general, attitudes toward infidelity are more permissive among younger individuals, among the better educated and those from the upper-middle class, among persons who are less religious, among those living in urban areas, and among those holding liberal political orientations (see Buunk & Van Driel, 1989). Recent research shows that most people consider cybersex (describing the sexual act typically while masturbating), hot chatting (a type of erotic talk that moves beyond light-hearted flirting), and viewing pornography on the Internet all as acts of betrayal and adultery (Whitty, 2003).

Despite the general disapproval of extradidyadic sexual involvement all over the world, a double standard has been, and still is, quite common, i.e., a stronger tendency to condemn extradidyadic sex engaged in by women than

extradyadic sex engaged in by men. A review by Mackey and Immerman (2001) of 216 cultures showed that extramarital sex by husbands is permitted much more than the same behavior by wives. Even today in many cultures, a wife's adultery is viewed as an act allowing the cuckolded husband to exact revenge upon the guilty parties. For example, in a study on 1,957 honor killings in Pakistan over the period 2004–2007, extramarital relations of the wife were the reason in 95 percent of the cases (Nasrullah, Haq, & Cummings, 2009). Even among Arab American immigrants in the United States, 48 percent of the women and 23 percent of the men approve of a man slapping a sexually unfaithful wife, with 18 percent of the women even approving a man killing his wife if she were to have an affair (Kulwicksi & Miller, 1999). As an indirect reflection of the double standard, whereas men who commit adultery tend to assume that this is something that most men do, women who commit adultery tend to view their behavior as rare, and to feel in a negative sense unique (Boon, Watkins, & Sciban, 2014; Van den Eijnden, Buunk, & Bosveld, 2000).

### Incidence of Extradyadic Sex

Despite the widespread disapproval of extradyadic sex, it does occur in many marriages. In an early review, Thompson (1983) concluded that the probability that at least one partner in a marriage will have an extramarital relationship lies somewhere between 40 percent and 76 percent. However, studies in more recent and representative samples suggest that only between 22 percent to 25 percent of men and 11 percent to 15 percent of women have ever engaged in extramarital sex (Allen et al., 2005), although the difference between the sexes in the rates of infidelity seems to be decreasing among younger individuals (e.g., Brand, Markey, Mills, & Hodges, 2007). In many cases an extramarital affair happens only once or twice in the lifetime of the individual involved, and according to Allen et al. (2005), at a given moment in time, only between 1.5 percent and 4 percent of married people are involved in extramarital affairs. There is within and across cultures a large variety in the incidence of extradyadic sex. In general, extradyadic sex seems to occur more often in dating and cohabiting than in marital relationships (e.g., Treas & Giesen, 2000), whereas in gay relationships, extradyadic sex seems more common, and in lesbian relationships less common, than in heterosexual relationships (e.g., Blumstein & Schwartz, 1983). In addition, a higher lifetime incidence of extramarital sex is found among blacks, remarried individuals, those in the highest and lowest education categories, those in urban areas, and those low in religiosity (Burdette, Ellison, Sherkat, & Gore, 2007; Christopher & Sprecher, 2000; Pezzella & Vlahos, 2014). Furthermore, extramarital sex is more prevalent in African than in Asian and Western countries. For example, estimates of extramarital sex in the past year range from 38 percent for men and 19 percent for women in Guinea Bissau (e.g., Caraël, Cleland,

Deheneffe, Ferry, & Ingham, 1995), to 11 percent for men and 4.5 percent for women in China (Zhang et al., 2012). The incidence of extramarital sex seems especially low in Muslim countries, probably due to the severe sanctions on this behavior (Adamczyk & Hayes, 2012).

### Correlates and Determinants of Extradyadic Sex

**Biological basis.** In a majority of monogamous species, so-called *extra-pair copulations* are a common occurrence. Only 10 percent of the species of monogamous birds are sexually faithful to their partners (Fisher, 2012). More than among women, among men the inclination to engage in extradyadic sex seems a relatively autonomous motive that is to some extent independent of the state of the primary relationship (see also Buss & Schackelford, 1997; Schmitt et al., 2012). In general, from an evolutionary point of view, it seems obvious that among men an inclination to engage in extradyadic sex might have evolved to sire offspring with other partners, but it seems less obvious if and why such an inclination would have evolved at all among women. However, according to Buss (2005), extradyadic sex may have various reproductive benefits for women, including obtaining better genes, especially when one is not married to a physically attractive man; obtaining resources; ascertaining one has a “back up” mate in the case one's relationship goes awry; or finding a better mate than the current one (cf. Fisher, 2012). Interestingly, a study among twins by Zietsch, Westberg, Santtila, and Jern (2015) showed that among men as well as among women there was a strong genetic component to the occurrence of extradyadic sex during the past year, explaining about half of the variance, which for women was linked to variants of the vasopressin gene (a gene that fosters trust, empathy, and pair bonding).

**Mental health.** There is some evidence that individuals who engage in extradyadic sex are often characterized by lower levels of well-being and mental health (e.g., Sheppard, Nelson, & Andreoli-Mathie, 1995), and this seems to apply in particular to women. In a study among couples in their first year of marriage, Buss and Schackelford (1997) found that in general, the personality characteristics of wives were predictors of their susceptibility to infidelity; especially wives low in conscientiousness, high in narcissism or psychoticism, or suffering from an histrionic personality disorder (Apt & Hurlbert, 1994) seemed inclined to be unfaithful. The personality characteristics that seem to predispose men to extradyadic sex seem different. For instance, Egan and Angus (2004) found that males who had had extradyadic sex were higher in social dominance than females who had had extradyadic sex.

**Attachment.** Attachment style has been associated with extradyadic activities as well. While there is some evidence

that an anxious-ambivalent attachment style is associated with a tendency to be unfaithful (e.g., Gangestad & Thornhill, 1997), it seems that a dismissing or avoidant style plays a larger role, which is understandable given the low inclination to commit oneself that is characteristic for this style. Indeed, in many regions of the world, a dismissing attachment style correlates, albeit weakly, with self-descriptions of being adulterous and unfaithful (Schmitt & Jonason, 2015). In a similar vein, in a series of experimental studies, DeWall et al. (2011) found that individuals high in dispositional avoidant attachment had more permissive attitudes toward infidelity, exhibited an attentional bias toward attractive alternative partners, were more interested in meeting alternative partners, and engaged in more infidelity over time.

**Attitudes toward sexuality.** Not surprisingly, extradyadic sex is more prevalent among individuals with a positive attitude toward sexuality, probably in part because such an attitude reflects a stronger sex drive and its concomitant higher level of testosterone (Fisher, 2012). For example, Seal, Agostinelli, and Hannet (1994) found that, when asked to imagine themselves in a series of social interactions with an attractive opposite-sex stranger, those high in sociosexuality were more willing to pursue the relationship with the stranger. In addition, in a large sample spanning four decades of questioning, Wright, Bae, and Funk (2013) found that women who consumed pornography had more positive attitudes toward, and were more likely to have engaged in, extramarital sex. Interestingly, there is evidence that pornography may in fact *foster* involvement in extramarital sex, maybe because it enhances the desire to engage in extramarital sex and lowers the threshold to do so. That is, a longitudinal study using panels from the General Social Survey showed that pornography consumption during the past year was associated with more positive attitudes toward extramarital sex, controlling for such attitudes assessed two years earlier and other possible confounds (Wright, Tokunaga, & Bae, 2014).

**Relationship factors.** In general, a low satisfaction with and a low commitment to the relationship have been found to be important determinants of extradyadic sexual involvement, or of the willingness to be involved in an extradyadic relationship (Buunk & Bakker, 1997; Drigotas et al., 1999; Treas & Griesen, 2000). Nevertheless, important sex differences appear in the relational characteristics fostering extradyadic sexual involvement. While among men, adultery often seems to stem especially from feelings of sexual deprivation in the primary relationship, among women especially emotional dissatisfaction with the relationship has been related to adultery (e.g., Atkins et al., 2001; Cheng & Smith, 2015). For example, Omarzu, Miller, Schultz, and Timmerman (2012) found that adultery among men was more motivated by the desire for additional sexual encounters, curiosity, and sensation seeking, and among women more by

the desire for additional emotional connection or validation from others. A study in China showed that men's infidelity was more responsive to sexual dissatisfaction with his primary partner while women's was more responsive to deficits in love (Zhang et al., 2012).

### Effects of Extradynamic Sex

While extradyadic sex may have a very high reward potential for those who engage in it, including stimulating sex, personal growth, self-discovery, and the joys of courtship (Buunk, 1980), it may have a number of serious negative consequences. First, because extradyadic sex often happens without a condom (e.g., Dew, Brubaker, & Hays, 2006), individuals engaging in extradyadic sex run the risk of getting infected with STDs and of infecting their partners (e.g., Buunk & Bakker, 1997; Pulerwitz, Izazola-Licea, & Gortmaker, 2001), which is a particularly risky for women of adulterous spouses as STDs are much more easily transmitted from males to females than vice versa, and an infected woman is far more likely to be rendered infertile than an infected man (e.g., Mackey & Immerman, 2001).

A second negative effect of extradyadic sex is the undermining of the marital bond (e.g., Charny & Parnass, 1995) due to violation of trust in the marital relationship or to the fact that the adulterous spouse finds a new partner that he or she prefers to the current one. In fact, the adulterous spouse may specifically be looking for a new partner. Previti and Amato (2004) found that divorce proneness predicts engaging in extramarital sex, and vice versa. In any case, worldwide, adultery has been a major cause of divorce (e.g., Allen & Atkins, 2012; Betzig, 1989; Buss, 1994). In a longitudinal study spanning seventeen years, De Maris (2013) found that the risk of disruption associated with the occurrence of extramarital sex – whether of the husband, wife or both – was nearly four times as high as in marriages without such problems. As noted by De Maris, “Regardless of how satisfactory the marriage had been, how long the couple had been married, how disapproving of divorce the respondent was, whether the advice of third parties had been solicited, or whether there were young children in the household, the damaging effect of EMS was the same” (p. 1494).

## JEALOUSY

### Defining and Describing Jealousy

Jealousy is aroused when a person is threatened with the loss of an important relationship to a rival, and may involve feelings such as fear, suspicion, distrust, anxiety, anger, betrayal, rejection, threat, and loneliness (e.g., Buunk & Dijkstra, 2004). Although jealousy may occur in different types of relationships, such as the relationships with friends and colleagues (e.g., Buunk, Aan't Goor & Solano, 2010), jealousy is mostly evoked in the context of

a romantic triad, in response to actual or suspected extra-dyadic involvement by one's partner, including nowadays contacting or communicating intimately with potential rivals on the Internet and social media (e.g., Dijkstra et al., 2010). According to the so-called sociometer hypothesis (Leary & Baumeister, 2000) self-esteem tracks social rejection, with suspected or actual infidelity being an important potential social rejector (Shackelford, 2001). Several authors have therefore suggested that the effect of infidelity of one's partner on jealousy is mediated by an individual's self-esteem. For example, DeSteno, Valdesolo, and Bartlett (2006) suggested that jealousy functions to restore and protect both the individual's self-esteem as well as the valued relationship by inducing behaviors aimed at reducing the perceived threat, such as calling one's partner to make sure where he or she is or derogating the rival in conversations with others.

From an evolutionary perspective, jealousy among humans has its roots in part in mate guarding. Mate guarding among males has evolved because it is essential to guarantee paternity certainty: males who did not allow their mates to mate with other males were evidently reproductively more successful than males who did not pay attention to their mates' extra-pair copulations (e.g., Alberts, Altmann, & Wilson, 1996). In his now-classic review, Murdock (1967) noted that only 4 out of 849 societies did not show any sign of male mate guarding, i.e., keeping close tabs of their mates, sometimes even when they are urinating or defecating. Females may also engage in mate guarding for a number of reasons, such as preventing infection with an STD and the loss of resources provided due to the male partner's investment in other women. Illustrative is a finding by Burbank (1987), who surveyed 137 societies in the Human Relations Area File and concluded that men were the single most frequent reason for female–female fights (121 out of 297 fights for which reasons were recorded). Nevertheless, considerable cultural differences appear in the frequency and intensity of mate guarding. For example, in cultures where parents control the mate choice of their offspring, mate guarding is much more common (Buunk & Castro Solano, 2012).

Although jealousy is a universal emotion, the stimuli that elicit jealousy may vary considerably between individuals and cultures. For example, in some cultures kissing is much more likely to evoke jealousy than in others, whereas in other cultures petting is a particularly salient jealousy-inducing event (Buunk & Hupka, 1987). Nonetheless, when looking at the themes that individuals from different cultures mention when asked to describe a jealousy-evoking event, four common dominant themes emerge: fear of or actual infidelity, violated expectations concerning a partner's time and commitment, a partner paying attention to a rival through social media, and loss of self-esteem due to a partner paying attention to a rival (Zandbergen & Brown, 2015). Thus, although individuals from different cultures may differ in the degree to which specific elicitors evoke jealousy, these elicitors all seem to

reflect the same underlying threats to the relationship and self-esteem. Although in a number of cultures it is acceptable for individuals – especially men – to have multiple sexually committed relationships, women in these relationships often experience jealousy and a sense of competition over their spouses' attention and resources (e.g., Tabi, Doster, & Cheney, 2004).

## Types of Jealousy

**Normal versus more clinical forms of jealousy.** Beginning with the work of Freud (1950), in the clinical literature a distinction has been made between normal or rational jealousy stemming from a realistic threat to the relationship, and abnormal, pathological, or morbid jealousy aroused in the absence of such a threat. Relatedly, within social psychology two typologies have been proposed that distinguish between three types of jealousy. Pfeiffer and Wong (1989) made a distinction between *emotional* jealousy that entails feelings such as fear, anger, insecurity, and sadness; *cognitive* jealousy that consists of paranoid thoughts and worries about the behavior of one's partner; and *behavioral* jealousy that involves jealous actions such as spying on one's partner or rummaging through his or her belongings. In a similar vein, Buunk (1991, 1997) made a distinction between *reactive* jealousy, a direct response to an actual relationship threat, for instance, when one's partner is flirting or having sex with someone else; *anxious* jealousy, which refers to an active cognitive process in which the individual generates images of his or her partner becoming sexually or emotionally involved with someone else and experiences feelings of anxiety, suspicion, worry, distrust, and upset; and *possessive* or *preventive* jealousy, which is similar to mate guarding and refers to the considerable effort jealous individuals can go to in order to prevent contact of their partners with a third person, such as opposing their partners' contact with opposite-sex individuals. Both Pfeiffer and Wong's and Buunk's typology take into account that jealousy may not only occur in response to an actual threat to the relationship, but also in the absence of such a threat.

**Sexual versus emotional jealousy.** Over the past decades much attention has been paid to another typology of jealousy, i.e., the distinction between sexual and emotional jealousy. Because from an evolutionary perspective men have over the course of evolution faced the problem of paternity confidence, and women of securing partners' investment of resources, one would predict that male jealousy would be specifically focused upon the sexual aspects of partners' extramarital activities, and female jealousy on the emotional involvement of partners with rivals (e.g., Bjorklund & Shackelford, 1999; Buss et al., 2000). From the perspective of paternity confidence, for a man, *any* act of intercourse of his partner with a third person is a potential threat to his reproductive success. In contrast, for a woman, an act of intercourse by her partner will

especially be a threat when the investment of the partner in the relationship is in jeopardy. Indeed, when the partner has been unfaithful a number of times while maintaining his commitment, a woman may, under some conditions, adapt to her partner's infidelity (see, e.g., Buunk, 1995). To test the gender difference predicted by evolutionary psychologists, Buss et al. (1992) developed a research paradigm in which participants are presented with dilemmas, in which they have to choose sexual or emotional unfaithfulness as the most upsetting event. Buss et al. found indeed that more men than women selected sexual infidelity as the most upsetting event, whereas more women than men reported emotional infidelity as the most upsetting event. This pattern of results has since then been replicated several times across cultures, and for conventional as well as online infidelity (e.g., Buss et al., 1999; Buunk et al., 1996; Dunn & McLean, 2015; Groothof, Dijkstra, & Barelds, 2009). Remarkably, in Sweden as well as in Norway, among the most egalitarian societies in the world, strong sex differences in response to emotional and sexual infidelity were found (Bendixen, Kennair, & Buss, 2015a; Walum, Larsson, Westberg, Lichtenstein, & Magnusson, 2013). Contradictory to what a learning perspective would predict – that is, an attenuation of the differences between men and women in the domain of jealousy – an evolutionary perspective holds that in these societies sex differences might be expressed to a larger degree, due to expected larger paternal investments. Bendixen, Kennair, and Buss (2015a) argued that as men's investment in childrearing increases, for women the costs of losing these investments to another woman and for men the costs of paternal uncertainty also increase.

While findings with the paradigm developed by Buss et al. (1999) have been questioned (e.g., DeSteno & Salovey, 1996; Harris, 2002), assuming that most gender differences would disappear when actual infidelity experiences and responses on continuous measures (rather than forced-choice dilemmas) would be considered, a recent meta-analysis by Sagarin et al. (2012) shows that across forty-five independent samples, the gender differences emerge on continuous measures and in response to experienced infidelities. Indeed, sex differences have been found in studies using different methods, such as reaction times (Schützwohl, 2005), or audio records of partner interrogations in the face of an actual infidelity threat (Kuhle, 2011). In addition, twin research suggests that both types of jealousy have a strong genetic component (Walum et al., 2013). Nevertheless, when there is *no* risk of conception – such as when infidelity between an opposite-sex partner occurs with a same-sex rival – the differences in jealousy tend to disappear (e.g., Harris, 2002; Sagarin, Becker, Guadagno, Nicastle, & Millevoi, 2003). Several other factors may moderate the gender difference in emotional versus sexual jealousy. For example, the gender difference has been found to be attenuated when controlling for variables such as personal experiences as a victim or

perpetrator of infidelity (e.g., Bendixen, Kennair, Ringheim et al., 2015b; Tagler, 2010), attachment style (Burchell & Ward, 2011; Levy & Kelly, 2009), participant age (IJzerman et al., 2014), and women's use of hormone-based birth control (Geary, DeSoto, Hoard, Sheldon, & Cooper, 2001).

### Correlates and determinants of jealousy personality characteristics

In line with the notion that the interference of a rival may particularly negatively affect an individual's self-esteem, self-esteem is the most widely examined personality characteristic in jealousy research. While some studies have found lowered self-esteem and increased jealousy to be related especially among women (e.g., Buunk, 1997; Peretti & Pedowski, 1997), in general, in both sexes jealousy is accompanied by lowered self-esteem (e.g., Fussell & Stollery, 2012; Stieger, Preyss & Voracek, 2012). In addition, there is consistent evidence for a positive association between jealousy and neuroticism, with neurotic individuals overall experiencing more jealousy (e.g., Dijkstra & Barelds, 2008; Tassy & Winstead, 2014). This may be related to the fact that both individuals with low self-esteem and neurotic individuals are in general relatively sensitive to social stress (e.g., Jacobs et al., 2011; Koval & Kuppens, 2012). Although numerous other personality variables have been related to jealousy, most of these variables have been examined only in one or two isolated studies. Only few scholars have systematically examined the relation between jealousy and personality characteristics by means of well-established personality questionnaires. For instance, both Buunk (1997) and Dijkstra and Barelds (2008) related jealousy to personality measured by the Dutch Personality Questionnaire (Luteijn, Starren, & Van Dijk, 2000), and found jealousy to increase as individuals were more neurotic, socially anxious, rigid, hostile, and lower in self-esteem. Dijkstra and Barelds also related jealousy to personality as measured by the Five Factor Personality Inventory (Hendriks, Hofstee, & De Raad, 1999), and found negative relations between jealousy on the one hand, and emotional stability (the opposite of neuroticism), autonomy and extraversion on the other hand.

**Attachment.** Attachment theory suggests that individuals with a disrupted attachment history are more likely to interpret extradyadic sexual behavior of their spouse in terms of abandonment, and will therefore have a lower threshold for jealousy. Few studies have examined the relationship between adult jealousy and attachment history in terms of objective indicators, such as the separations from a parent during childhood. Using the scales developed by Buunk (1997), Van Brummen-Girigori, Buunk, Dijkstra, and Girigori (2016) found that on Curaçao, a Caribbean island where many children grow up without a father in the home, women who were abandoned by their fathers during childhood reported

significantly more anxious and preventive jealousy than females who grew up in the presence of their fathers. Many other studies have shown that individuals with an insecure attachment style are more jealous than individuals with a secure attachment style (e.g., Miller et al., 2014), independent of the influence of personality characteristics such as self-esteem and neuroticism (Buunk, 1997). In particular, individuals with an anxious-ambivalent attachment style have been found to experience greater jealousy (e.g., Fleuriet, Cole, & Guerrero, 2014; Marazitti et al., 2010), including jealousy aroused by a partner's use of Facebook (e.g., Hudson et al., 2015). As a consequence, such individuals tend to closely monitor their partners' activities on Facebook (e.g., Muise, Christofides, & Desmarais, 2014; Marschall et al., 2013). As an anxious-ambivalent attachment style implies a "clinging" to the relationship out of fear of losing the partner, the link between this style and jealousy seems self-evident. Less self-evident is the fact that also avoidantly attached individuals are often relatively jealous. A possible explanation is that such individuals *are* actually quite dependent on their partners, but feel that they are not meeting the needs of their partners by their distant attitude, and are therefore concerned with losing them.

**Relationship variables.** Probably the most studied relationship variable in relation to jealousy is relationship satisfaction or quality. Those satisfied with their relationship may be expected to respond with jealousy to relationship threats because for these individuals losing their partners to a rival would pose a greater cost than for those who are not very satisfied with their relationship. Consistent with this line of reasoning several studies indeed found that as individuals are more satisfied with their relationship, they are more jealous (e.g., Rydell & Bringle, 2007). There are, however, also studies that have found the reverse, showing that, as individuals are less satisfied with their relationship, they experience more jealousy (e.g., Gatzeva & Paik, 2011; Elphinston, Feeney, Noller, Connor, & Fitzgerald, 2013). This negative relation between jealousy and relationship satisfaction can be explained by the fact that jealousy may also lead to negative relational outcomes, such as relationship conflict and domestic violence (e.g., Kar & O'Leary, 2013). Because many studies examining the association between jealousy and relationship satisfaction did not examine different types of jealousy, Barelds and Dijkstra (2007) looked at the association between the three types of jealousy distinguished by Buunk (1997) and relationship satisfaction. They showed that reactive jealousy was positively linked to relationship satisfaction, whereas anxious jealousy was negatively associated with relationship satisfaction (see also Barelds & Dijkstra, 2006). Preventive jealousy was not consistently associated with relationship satisfaction. Virtually identical results were found by Dandurand and Lafontaine (2014): cognitive jealousy as defined by Pfeifer and Wong (1989) – a type of jealousy similar to anxious

jealousy in Buunk's (1997) typology – was negatively associated with couple satisfaction, whereas emotional jealousy – a type of jealousy similar to reactive jealousy in Buunk's typology – showed a positive association with relationship satisfaction. Behavioral jealousy – a type of jealousy very similar to preventive jealousy in Buunk's typology – was not related to couple satisfaction. According to Barelds and Dijkstra, reactive jealousy is often perceived as a sign of love and commitment, showing that one is motivated to maintain the relationship, whereas anxious (or cognitive) jealousy is usually perceived as a sign of mistrust and uncertainty stemming from relationship problems.

**Rival characteristics.** By definition, jealousy implies the presence of an imagined or actual rival. Overall, a rival who possesses qualities that are believed to be important to the opposite sex or to one's partner tends to evoke more feelings of jealousy than a rival who does not possess those qualities (e.g., DeSteno & Salovey, 1996; Dijkstra & Buunk, 1998). In general, men and women report comparable amounts of jealousy as their rivals possess more self-relevant attributes, such as intelligence, popularity, athleticism, and certain professional skills (e.g., DeSteno & Salovey, 1996; Rustemeyer & Wilbert, 2001). However, given the sex differences in mate preferences, with physical attractiveness more valued by men, and status- and dominance-related characteristics more valued by women, from an evolutionary psychological perspective one would expect women to feel more jealous than men when their rival surpasses them on bodily and facial attractiveness, and men to feel more jealous than women when their rival possesses status- and dominance-related characteristics. Research has repeatedly established that these sex differences in rival characteristics that evoke jealousy do occur (e.g., Dijkstra & Buunk, 1998, 2002; Yarab & Allgeier, 1999), and that they occur in different cultures (Buss, Shackelford, Choe, Buunk, & Dijkstra, 2000; Buunk, Solano, Zurriaga, & González, 2011). Moreover, the evaluation of rival characteristics seems such a basic process that it may be perceived outside cognitive awareness. For example, in a study focusing on rivals' bodily features, Massar and Buunk (2009) used a subliminal priming procedure to expose participants to silhouettes of bodies that were either attractive – for women, a waist-to-hip ratio (WHR) of 0.7 and for men, a shoulder-to-hip ratio (SHR) of 1.4 – or unattractive – for women, a WHR of 0.9 and for men, a SHR of 1.2. The results showed that even though participants indicated not being aware of the content of the primes, their jealousy was influenced: both men and women responded with the most jealousy after being exposed to the attractive body shapes.

Interestingly, in a study among young people in Iraqi Kurdistan (Buunk & Dijkstra, 2015), exactly the same types of rival characteristics that evoke jealousy were found as in the Netherlands (Dijkstra & Buunk, 2002).

However, although the level of jealousy was higher in Kurdistan than in the Netherlands, in contrast to the Dutch, among the Kurdish men and women did *not* differ in which characteristics evoked most jealousy. A possible explanation for this lack of gender differences is that the overall high level of jealousy overruled the effect of specific rival characteristics.

**Body characteristics.** In general, tall men and women of medium height have the highest mate value and are considered the most attractive. For example, in speed-dating experiments tall men and women of medium height receive the most positive responses from the opposite sex (Stulp, Buunk, Kurzban, & Verhulst, 2013). It seems self-evident that individuals with a high mate value will feel they have less to fear from rivals. Indeed, Buunk, Park, Zurriaga, Klavina, and Massar (2008) found that as men were taller, they were less jealous, whereas average-height women reported lower levels of jealousy than short as well as tall women (see also Buunk et al., 2009). Objective differences in height are related not only to jealousy but also to subjective beliefs about one's body: when individuals believe their body is less attractive, they tend to be more jealous (e.g., Ambwani & Strauss, 2007).

**Hormones.** There is evidence that hormones are related to jealousy. Geary, DeSoto, Hoard, Skaggs, Sheldon, and Cooper (2001) showed that among women, jealousy correlated with estrogen concentration assessed in the second week of the cycle. Cobey et al. (2012) found that in both single and partnered women, jealousy varied as a function of menstrual phase, with higher levels of jealousy reported when women were fertile than when they were non-fertile. An explanation for this is that, given the importance of male investment, protection, and provisioning during and after pregnancy (for a review, see Geary, 2005), the risk of losing, or not receiving, the necessary investment from one's mate would be especially threatening for women when they are fertile. Consequently, women will be especially keen at preventing the involvement of their partners with other women.

While there is thus far no evidence that testosterone is associated with jealousy, prenatal exposure to male hormones seems to be clearly associated with jealousy. Such exposure affects the second-to-fourth digit ratio (2D:4D), with masculinity associated with a lower and femininity with a higher ratio. Park, Wieling, Buunk, and Massar (2008) found that men with more feminine 2D:4D ratios were most jealous in response to dominant rivals, whereas women with more masculine 2D:4D ratios were most jealous in response to physically attractive rivals.

### **COPING WITH A PARTNER'S EXTRADYADIC INVOLVEMENT**

Coping with a partner's extradyadic involvement may not be limited to deliberate, conscious attempts to modify the threat but may also consist of unconscious instinctive

reactions to a jealousy event. Coping strategies may include all the cognitive, emotional, or behavioral activities that result from a jealousy-evoking event and that are aimed at modifying the perception of the threat, or the actual threat, to one's relationship (see also Buunk & Dijkstra, 2000). Probably the most prevalent coping strategies are those aimed at mate retention. Buss, Shackelford, and McKibbin (2008) distinguished nineteen tactics that individuals may engage in when jealous, varying from innocuous romantic gestures, such as enhancing one's appearance to please one's partner, to harbingers of violence, such as physically threatening one's rival. More than women, men tend to use the mate retention tactics of resource display, submission, and debasement, and intra-sexual threats to retain their mates, whereas, more than men, women tend to use the mate retention tactics of appearance enhancement and verbal signals of possession (Buss & Shackelford, 1997). Mate retention tactics may include acts of aggression against a rival or a mate. In general, men are more likely to use violence to prevent their partners from becoming unfaithful (e.g., Kaighobadi, Shackelford & Goetz, 2009). Actual homicide statistics, for instance, show that about a third to half of the women who get killed, are killed by their current or former partners. Of the men, in a typical year only 3 percent of those who get killed die at the hand of a female lover (Buss, 2005). Nevertheless "women of all classes react with jealous rage when they discover their husbands are cheating" (Buss, 2005, p. 69). In a large study of 13,670 men who killed their wives, of the cases on which some information was available, the most frequently mentioned reason was a lover's triangle.

In addition to these nineteen mate retention tactics other categories also have been distinguished, for example avoidance of the spouse, reappraisal of the situation, and communication with the partner, in particular confronting the partner about the jealousy event (Buunk, 1982; McIntosh & Matthews, 1992). In the case of a relationship breakup due to a rival or romantic rejection, jealous individuals may also engage in stalking and unwanted pursuit (Davis, Ace, & Andra, 2002; Tassy & Winstead, 2014). Relatively new is the phenomenon of cyberstalking, the repeated pursuit of an individual using electronic or Internet-capable devices. Like "regular" stalking, cyberstalking occurs most often in the context of ex-partner relationships, with most victims being female and the majority of the perpetrators being male. In general, individuals who stalk their ex-partners as a coping mechanism for jealousy share many of the same characteristics, such as emotional volatility, attachment dysfunction, and high rejection to sensitivity (e.g., Kamphuis, Emmelkamp, & De Vries, 2004; Patton, Nobles, & Fox, 2010). Finally, to cope with the emotional consequences of jealousy, men are especially likely to resort to alcohol consumption, which may then increase the risk for intimate partner violence (e.g., Foran & O'Leary, 2008; Knox, Breed, & Zusman, 2007).



To cope more effectively with the aftermath of extradyadic sex and the jealousy that may be its consequence, couples may seek relationship counseling or therapy, especially when they are motivated to continue the primary relationship. Well-established therapies for couples seeking help following infidelity are cognitive-behavioral couples' therapy (CBCT) and emotion-focused couples' therapy (EFCT). CBCT builds on skills-based interventions of behavioral couples' therapy, targeting couples' communication and behavior exchange by directing partners' attention to the explanations they construct for each other's behavior and to expectations and standards they hold for their own relationship and for relationships in general (Baucom et al., 2015). In CBCT couples may work, for instance, at establishing relationship boundaries, and at coping with negative emotions by means of time-out and venting techniques. EFCT aims to restore the safety of the emotional connection between partners that is often damaged following infidelity, and to foster forgiveness of the transgression (e.g., Johnson, 2005). Both treatment approaches have been found to successfully enhance couples' well-being and relationship satisfaction in the case of infidelity (e.g., Menesis & Greenberg, 2011). However, an important condition for couple therapy to work is that the affair is disclosed: couples who seek couple therapy but keep their affairs a secret do not benefit from treatment (Marin, Christensen, & Atkins, 2014).

## CONCLUSION

The temptation to engage in extradyadic sex and the tendency to respond with jealousy to such behavior by one's partner are interrelated and universal phenomena that are part of our human evolutionary heritage. Even more so, there is now evidence for a genetic basis of the inclination to engage in extradyadic sex. Nevertheless, there is considerable variation across individuals, relationships, situations, and cultures in the likelihood that one will become involved in extradyadic sex, and in the likelihood that one will exhibit various forms of jealousy. While infidelity of women was throughout history subject to many more restrictions than that of men, in recent years women have begun to catch up with men in terms of their involvement in extradyadic affairs. The awareness of the potential negative effects that extradyadic relationships may have upon the primary relationship finds its expression in a virtually universal normative disapproval of extradyadic sex. Ironically, the potential fury of jealousy also causes most affairs to be covert, which accentuates the aversive consequences following disclosure. Jealousy will, even among individuals who aim to have a sexually liberal lifestyle, reliably surface when an extradyadic sexual affair is disclosed or discovered. In general, women seem to respond with more jealousy to an emotional attachment of their spouse to a third person, and men seem to respond with more jealousy to a sexual attachment of their spouse to a third person. Although having potentially destructive

consequences, jealousy may basically be viewed as a response aimed at protecting the relationship, and, from an evolutionary perspective, one's reproductive opportunities, including preventing infertility due to contracting a STD through a partner's extradyadic sexual behavior. Although technological changes such as cellular phones and the Internet may increase the options for engaging in various forms and degrees of extradyadic sexual and erotic involvement, given the deeply rooted motivations that underlie jealousy as well as adulterous tendencies, it would be unrealistic to expect that any interventions or cultural changes will ever eliminate the problems these tendencies may generate in intimate relationships.

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