

PRELIMINARY EVIDENCE FOR EXISTENCE OF ORAL SEX IN A RURAL IGBO COMMUNITY IN SOUTHEAST NIGERIA

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ABSTRACT

There is debate regarding whether oral sex recurred over human evolution. We investigated the occurrence of oral sex (cunnilingus and fellatio) and other sexual activities among a rural Igbo community in south-east Nigeria. We found that giving and receiving oral sex was less common relative to other sexual activities in both men and women. Both sexes reported more frequent vaginal sexual intercourse (particularly ventro-ventral posture compared with dorso-ventral posture) in the past 10 days compared to oral sex. Taken together, our data suggests that vaginal sexual activities follow similar patterns that are documented in other parts of world and that oral sex occurred less frequently in this traditional society

Keywords: Evolution, human, Igbo people, oral sex

INTRODUCTION

Oral sex is a common sexual behavior in humans (McKay, 2004; Leichter et al., 2007; Santtila et al., 2008) and non-human animals (primates: Koyama, 1988; Palagi et al., 2004; Schurmann, 1982; short-nosed fruit bats: Tan et al., 2009; wolves: Fox, 1972). Previous research suggests that oral sex may be related to partner infidelity and to relationship/sexual satisfaction (Ashdown, Hackathorn, and Clark, 2011; Brody and Costa, 2009; Galinski and Sonnenstein, 2011; Santtila et al., 2008). Research on the evolutionary history of oral sex remains preliminary (Pham and Shackelford, 2014).

Current estimates suggest that the prevalence of extra-pair relationships is quite significant (Greiling and Buss, 2000; Platek and Shackelford, 2006; Shackelford et al., 2005). For example, Baker and Bellis (1995) reported that 17.5% of British women “double mated” (i.e., they copulated with two men within a brief time period) at some point during the first 50 copulations in their lifetimes. In a national survey in Britain, Johnson et al. (2001) found that 15% of the 16 – 24 year old women and 8% of 25 – 34 year-old women reported concurrent sexual relationships during the past year. As a result, 1–30% of children are fathered by extra-pair copulation (reviewed by Platek and Porter, 2012). Thornhill (2006) hypothesized that oral sex may be related to partner infidelity, in part because a man may detect the presence of other men’s semen near his partner’s genitals. Since Thornhill (2006), research has explored other possible evolutionary functions of oral sex, including oral sex as mate retention behavior, as a behavior to detect female fertility, and as a behavior to increase male sexual arousal and consequent ejaculate quality (reviewed in Pham and Shackelford, 2014).

Although hypotheses regarding evolutionary functions of oral sex in humans received some support (Pham et al. 2013a, b, c; Pham and Shackelford 2014; Sela, Shackelford, Pham, and Euler, 2015), its evolutionary origin remains unclear. Some researchers, for example, consider oral sex as evolutionarily novel (c.f. Mishra and Verma, 2015). Gallup, Burch and Petricone (2012) argued that hygiene standards were lower in our evolutionary past and that, consequently, the greater health risks associated with oral sex imposed selection pressures against its performance. One study conducted on traditional pre-industrial societies in central Africa showed that oral sex did occur, but not as frequently as in post-industrial societies (Hewlett and Hewlett, 2010). In contrast, ancient cave paintings depict humans participating in sexual acts that appear to resemble oral sex (Angulo and García, 2005).

The Evolutionary function of oral sex rely on that premise that the behavior recurred over human evolution (Pham and Shackelford, 2014). Most data on human behavior are obtained from samples drawn from developed countries. Thus, to investigate the evolutionary history of a behavior, it is important to determine whether the same patterns exist in environments that resemble ancestral environments, such as preindustrial societies (Scelza, 2013). Living conditions in preindustrial or traditional societies resemble the conditions of human ancestral environments (Kirchengast and Ruhli, 2013) and data obtained there may, therefore, greatly help us with understanding possible evolutionary origin of oral sex in humans. Data for testing this hypothesis are difficult to obtain due to the sensitive nature of the subject. In addition, traditional societies are disappearing or are becoming more modernized (Gutkind, 1970; Jones 2014) suggesting that there is urgent need to investigate this topic to better understand

its origin. In the present study, we do not directly test the evolutionary hypotheses. Rather, we gather preliminary sexual behaviour data from a preindustrial society to investigate the performance frequencies of oral sex, as self-reported by a small sample of men and women in a single small community in Nigeria. We investigated the frequency with which individuals perform oral sex over the past 10 days as a function of age – a correlate of partner infidelity (Atkins, Baucom and Jacobson, 2001). We also secured and analysed data on education level as an exploratory investigation.

METHODS

Sample

Participants were 66 males and 37 females aged 20 – 65 years from a rural Igbo community in Southeast Nigeria. Males ($M = 41.2$ yrs, $SE = 1.13$) were significantly older than females ($M = 35.4$ yrs, $SE = 1.51$) ($t(101) = 3.01$, $p = .003$). The Igbos are among the most populous ethnic group in Nigeria and inhabit five states of south-east Nigeria. We drew our sample from a single rural community (a village) and although the exact population of the community is not documented, we estimated that this village contained 120 households. We surveyed all the available women in the community at the time of the study and all those who volunteered to participate were included in the study. The community is located about 50 km from the city center. There is limited exposure to modern life within the community and no electricity is supplied to the area. There is no hospital facility and members of the community travel up to 15 km to access medical facilities at a nearby community. The major means of transport is by foot and motorcycles because of the poor conditions of the unpaved roads. The community is comprised mainly of farmers, the majority of whom live in farm houses built with local materials. Participants were predominantly subsistent farmers of extremely low economic status

Procedure

The research was carried out between September and December, 2014. Face-to-face interviews were conducted with participants after obtaining their verbal consent. The participants were approached individually at their homes and farms. Male researchers (Ike E. Onyishi and Chiedozie O. Okafor) interviewed males. Female research assistants interviewed females. The purpose of the interview was explained to them and those who indicated an interest in participating provided oral consent. They were then interviewed orally using the questionnaire as a guide. We thanked those who declined to participate in the study and proceeded to recruit and interview other volunteers. The questionnaire was used to collect information on whether the participant engaged in oral sex with an opposite sex person in past 10 days. All interviews were made in local Igbo language.

Measures

Measuring of frequency of sexual acts

Participants were asked basic demographic questions (gender, age), sexual orientation (all participants reported to be exclusive heterosexuals, which is similar to findings from Hewlett and Hewlett, 2010), employment ($n = 60$ reported to be unemployed), average monthly salary among those who were employed ($M = \$164.2$, $SE = 11.8$, $N = 43$), education level ([1] unspecified = 21%, [2] primary school = 30%, [3] high school = 38%, [4] university = 11%) and current relationship status (10% = single, 2% = dating, 83% = married /involved in a long-term relationship, 5% = separated/divorced). The mean education level of employed participants was significantly higher than the educational level of unemployed participants ($t(101) = 3.27$, $p = .001$). To mask the purpose of our research from participants (i.e., oral sex behaviors), we also asked participations about their performance of other sexual behaviors. We are not aware of any specific term for oral sex in Igbo language. Therefore, four of pictures were shown to participants that depicted vaginal sexual intercourse (ventro-ventral, dorso-ventral, Fig. 1a, b) and oral sex (cunnilingus and fellatio, Fig. 1c, d). We asked participants how many times they performed each of the depicted sexual acts during the past 10 days. We did not choose a time period shorter than 10 days because sexual activity can vary significantly between each day, and because the presence of menstrual bleeding—which typically lasts from three to five days (Office of Women's Health, 2014) can influence sexual activity We did not choose a time period longer than 10 days to avoid memory failures. Responses were categorized as 1 (never), 2 (1-2 times), 3 (3-4 times) and 4 (5 and more times). The presentation of pictures was randomized between participants.

ETHICS STATEMENT

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This research was approved by the Institutional Ethical Committee, Department of Psychology, University of Nigeria. All participants provided verbal consent to participate in this study. No written consent could be obtained because most of the participants were not literate and could not understand or sign the consent form. All consents were recorded with paper-and-pencil method. This consent procedure was approved by the Institutional Ethical Committee

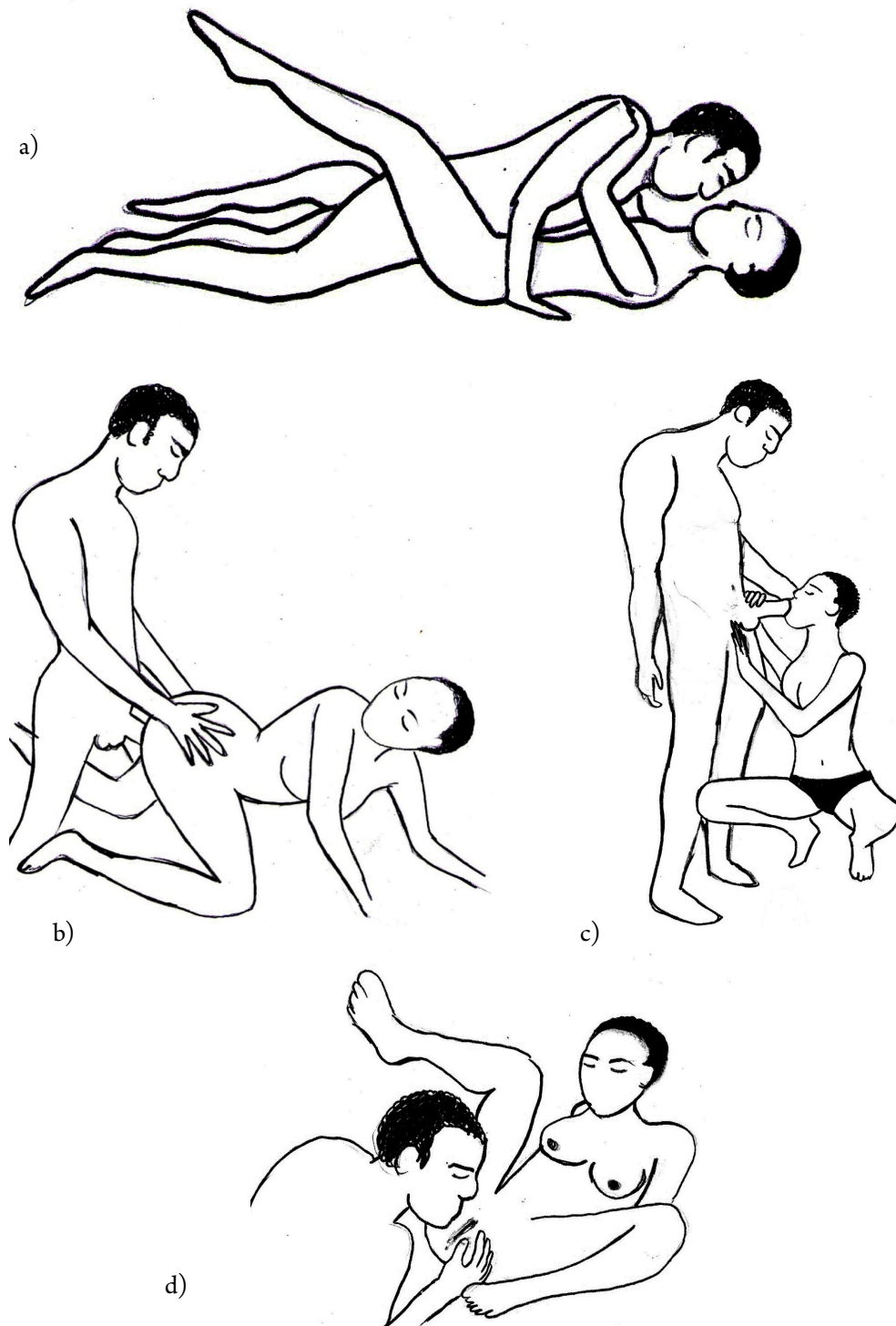


Figure 1: Self-made drawings used as research tool to investigate frequency of (a) dorso-ventral and (b) ventro-ventral vaginal sexual intercourse and (c) fellatio and (d) cunnilingus.

RESULTS

Main results

Occurrence of oral sex

A total of 88 % of males reported not performing cunnilingus, and 92 % of females reported not receiving cunnilingus during the past 10 days (Table 1). Similarly, 91 % of males did not receive fellatio and 81 % of females did not perform fellatio during past 10 days. We investigated whether there were differences in gender representation (i.e., ratio of men-to-women) between participants who did engage in oral sex versus participants who did not engage in oral sex. No differences were found (Fisher exact test, $p = .74$ and $.22$, respectively).

Table 1: Reported frequency of oral sex among the Igbo people in past 10 days. Numbers represent total number of times each act occurred.

Cunnilingus					
	Never	1-2	3-4	>5	Total
Males	58	5	1	2	66
Females	34	3	0	0	37
Fellatio					
Males	60	1	1	4	66
Females	30	4	2	1	37

Factors influencing occurrence of oral sex

A paired t -test showed that the summed score of oral sex ($M = 2.41$, $SE = 0.11$) was significantly lower than summed score of vaginal sex ($M = 3.96$, $SE = 0.17$) ($t(102) = 8.15$, $p < .001$). We conducted a multiple regression to predict oral sex from education, gender, and age ($R^2 = .11$, $F(3,99) = 4.24$, $p = .007$). Only education level ($\beta = .31$, $p = .01$), but not gender or age ($\beta = .03$ and $-.06$, $p = .78$ and $.65$) significantly predicted the frequency of oral sex (Fig. 2). We also entered into the regression model employment and/or relationship status, but neither variable significantly predicted the frequency of oral sex nor did it influence the overall results.

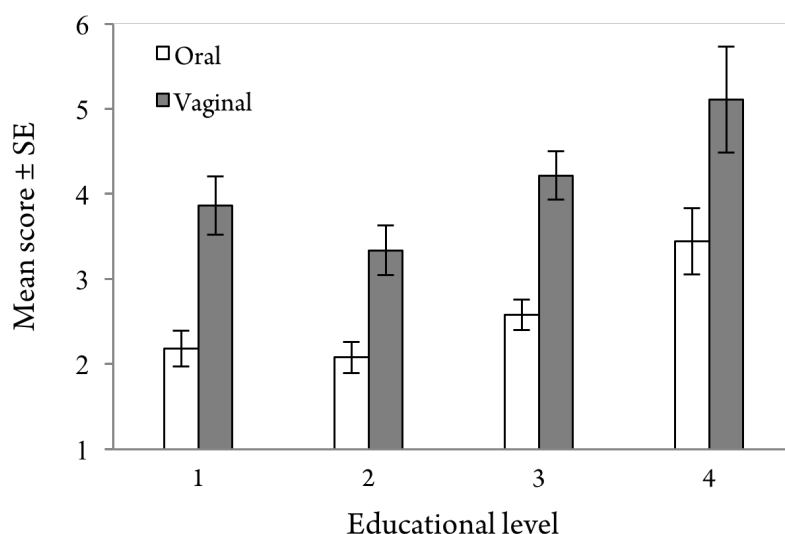


Figure 2: Reported number of sexual acts (oral and vaginal sexual intercourse) in past 10 days as a function of educational level. Meaning of mean scores is described in Methods.

Additional results

Frequency of other sexual acts

Occurrence of two common positions of vaginal sexual intercourse (ventro-ventral and dorso-ventral) was frequent among the Igbo people (Table 2). Only 23% of males and 32% of females reported that they did not engage in ventro-ventral position and 48% of males and 54% of females reported that they did engage in dorso-ventral position in past 10 days. We investigated whether there were differences in gender representation (i.e., ratio of men-to-women) between participants who engaged in ventro-ventral and dorso-ventral position versus those who did not engage in either of these positions during the past 10 days, and found no differences (Fisher exact test, $p = .35$ for ventro-ventral and $.68$ for dorso-ventral).

Factors influencing vaginal sexual intercourse

We conducted a multiple regression to predicted the frequency of vaginal sex from age, education, and gender ($r^2 = .13$, $F(3,99) = 5.31$, $p = .002$). We found that only age ($\beta = -.39$, $p = .002$), but not educational level or gender ($\beta = -.009$ and $-.16$, $p = .94$ and $.15$) predicted the frequency of vaginal sex. Inclusion of employment and/or relationship status was not significant in this multiple regression model and it did not influence results.

Table 2: Reported frequency of vaginal sexual intercourse (two positions) among the Igbo people in past 10 days. Numbers represent total number of times each act occurred.

Ventro-ventral					
	Never	1-2	3-4	>5	Total
Males	15	31	12	8	66
Females	12	13	6	6	37
Dorso-ventral					
Males	32	17	14	3	66
Females	20	10	5	2	37

DISCUSSION

Oral sex among the Igbo people

This study investigated the frequency with which the Igbo people engage in oral sex. We found that vaginal sexual intercourse occurs more frequently than oral sex among the Igbo people. These findings differ from adolescent populations in developed nations, in which adolescents report more frequent participation in oral sex than in penile-vaginal sex (Prinstein, Meade, and Cohen, 2003). The prevalence rates of sexual intercourse in the current study are similar to findings from other traditional societies (Hewlett and Hewlett, 2010). We secured performance frequencies of two penile-vaginal positions, which served as comparison groups against the performance frequencies of cunnilingus and fellatio. Similar to Hewlett and Hewlett (2010), we found that oral sex occurred less frequently than penile-vaginal sex. Consistent with arguments advanced by Hewlett and Hewlett, exposure to foreign culture(s) or media may be positively associated with engaging in oral sex—which may explain why education level significantly predicted oral sex in the current research. This study suggests that Igbo people show very similar patterns compared with traditional societies investigated by Hewlett and Hewlett (2010).

We asked participants which sexual behaviors they performed in the last 10 days to ensure that participants best remember the sexual behaviors they performed. The percentage of our participants who engaged in oral sex at least once in their life is likely profoundly greater than the percentage of those who engaged in that behavior during the past 10 days. Indeed, the relationship context (e.g., romantic relationship, casual sexual encounter) determines the likelihood that an individual performs oral sex and, therefore, individuals are more or less likely to perform oral sex at any given period of time across their lifespan (Backstrom, Armstrong, and Puentes, 2012).

Hygiene standards among the traditional Igbo societies seem low, as observed by the researchers who collected these data (Onyishi and Okafor). Indeed, water resources are scarce for this isolated traditional society. Such unsanitary conditions might lower the occurrence of oral sex, as suggested by Gallup, Burch and Petricone (2012). Prevalence rates of a behavior, however, do not necessarily suggest an evolutionary history of that behavior because even infrequent events can produce strong selection pressures when such events carry significant reproductive costs (Marczyk and Shackelford, 2010).

We found that the occurrence of oral sex was independent of age. If oral sex functioned as infidelity detection (Pham and Shackelford 2013a,b, c; Thornhill, 2006) or to assess female fertility and to accordingly adjust ejaculate quality (Cerdeña-Molina et al., 2013; Pham et al., 2013a,b), then it would be expected that its frequency is highest among young people. However, given that age is an imprecise measure of infidelity risk and conception risk, future research should use more precise measures such as tracking the occurrence of oral sex across the female ovulatory cycle.

Education level was positively associated with the frequency of oral sex, but not with the two postures of vaginal sex. Potentially, males visiting the capital city (an area that contains more exposure to foreign cultures and media) performed oral sex more than those who did not visit the city, which is similar to findings from Hewlett and Hewlett (2010). Hopcroft (2006) showed that intelligence is negatively correlated with the frequency of sex in humans. Perhaps that educated people receive more exposure to foreign cultures that subsequently expose them to the practice of oral sex (and, importantly, the widespread social acceptability of practicing oral sex). We suggest that the significant effect of education on oral sex occurrence could be linked to exposure to media and other sources of information on oral sex. It is likely that those who are educated especially up to college level are likely to have been exposed to pornography or literature on oral sex.

It has been hypothesized that vaginal scents vary across ovulatory cycle, and that these scents are most attractive to males during the female's fertile phase (Cerdeña-Molina et al. 2013; Doty, Ford, Preti, and Huggins, 1975). These findings suggest that oral sex may be related to gathering information about female fertility. Goodall (1971) for example, observed that male chimpanzees, our closest relatives, sometimes feel female genitalia with their hands and smell the vaginal scents on their hands to determine whether the female is fertile. Indeed, Cerdeña-Molina et al. (2013) found that men's testosterone increased when smelling odors produced by a woman at high fertility (relative to low fertility). Oral sex could be used to smell vaginal scents more effectively compared with fingers.

We found no sex differences in the frequency with which Igbos engage in oral sex. These non-significant sex differences are similar to other research that draws from samples from Western societies (Leichliter et al. 2007; Santtila et al., 2008). Although evolutionary drivers of oral sex in men and women may sometimes differ (see Pham and Shackelford 2014; Sela et al., 2015; Thornhill, 2006), the absence of sex differences in the current research are likely consequences of the small number of people reporting oral sex.

Additional results

To mask our primary research question (i.e., oral sex) from participants, we also asked participants about other sexual behaviors they performed during the past 10 days. For reportorial completeness, we also report on those variables. We documented similarities between the Igbo people and Western samples. Among Igbos, ventro-ventral position was more frequent than dorso-ventral position. Similarly, Kinsey et al. (1948) reported that 70% of North Americans used only ventro-ventral position during sexual intercourse. Ford and Beach (1951) similarly showed that ventro-ventral sexual position is the most frequently reported position across 185 societies. Thus, the primary sexual position used among Igbos are similar to other societies.

Limitations

A limitation of the current research concerns participant privacy. Because many participants were not literate, we were unable to administer written questionnaires and, therefore, participants reported their private sexual behaviors in a face-to-face interview. This non-private setting may have discouraged participants from divulging private information about their sexual behaviors, thereby producing an underestimate of the actual number of participants who do participate in oral sex. Indeed, the Igbo did not have a specific word for oral sex, which might suggest that sexual behaviors (including oral sex) are not part of typical conversations.

Conclusion

In conclusion, the current research is the first to provide sexual behaviour data on the rural Igbo community--a community with limited exposure to the developed world. Although our data do not allow for explicit tests of the evolutionary function of oral sex, our research does provide important preliminary data on evolved sexual psychology, given that our population is more similar to ancestral conditions than are post-industrial ecologies.

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REFERENCES

- Angulo, J., & García, M. (2005). *Sex in stone: Sexuality, reproduction, and eroticism in the Paleolithic epoch*. Madrid: Luzán, S.
- Ashdown, B. K., Hackathorn, J., & Clark, E. M. (2011). In and out of the bedroom: Sexual satisfaction in the marital relationship. *Journal of Integrated Social Sciences*, 2, 38–55.
- Atkins, D. C., Baucom, D. H., & Jacobson, N. S. (2001). Understanding infidelity: correlates in a national random sample. *Journal of Family Psychology*, 15(4), 735–749. DOI

- Backstrom, L., Armstrong, E. A., & Puentes, J. (2012). Women's negotiation of cunnilingus in college hookups and relationships. *Journal of Sex Research*, 49(1), 1–12. [DOI](#)
- Baker, R. R., & Bellis, M. A. (1995). *Human sperm competition*. London: Chapman & Hall.
- Brody, S., & Costa, R. M. (2009). Satisfaction (sexual, life, relationship, and mental health) is associated directly with penile-vaginal intercourse, but inversely with other sexual behaviour frequencies. *Journal of Sexual Medicine*, 6(7), 1947–1954. [DOI](#)
- Cerda-Molina, A. L., Hernández-López, L., de la O, C.E., Chavira-Ramírez, R., & Mondragón-Ceballos, R. (2013). Changes in men's salivary testosterone and cortisol levels, and in sexual desire after smelling female axillary and vulvar scents. *Frontiers in Endocrinology*, 4, 1–9. [DOI](#)
- Doty, R.L., Ford, M., Preti, G., & Huggins, G.R. (1975). Changes in the intensity and pleasantness of human vaginal odors during the menstrual cycle. *Science*, 190(4221), 1316–1318. [DOI](#)
- Ford C.S., & Beach F.A. (1951). *Patterns of Sexual Behavior*. Harper & Brothers, New York, USA.
- Fox, M. W. (1972). The social significance of genital licking in the wolf, *Canis lupus*. *Journal of Mammalogy*, 53(3), 637–640. [DOI](#)
- Galinsky, A. M., & Sonenstein F. L. (2011). The association between developmental assets and sexual enjoyment among emerging adults in the United States. *Journal of Adolescent Health*, 48(6), 610–615. [DOI](#)
- Gallup, G. G., Burch, R. L., & Petricone, L. R. (2012). Sexual conflict, infidelity and vaginal/ semen chemistry. In T. K. Shackelford & A. T. Goetz (Eds.), *Oxford handbook of sexual conflict in humans* (pp. 217–232). New York: Oxford University Press. [DOI](#)
- Goodall, J. L. (1971). *In the shadow of man*. Houghton Mifflin Harcourt, 1st edition.
- Greiling, H., & Buss, D. M. (2000). Women's sexual strategies: the hidden dimension of extra-pair mating. *Personality and Individual Differences*, 28(5), 929–963. [DOI](#)
- Gutkind, P. C. W. (Ed) (1970). *The passing of tribal man in Africa*. E. J. Brill, Netherlands.
- Hewlett B. S., & Hewlett, B. L. (2010). Sex and searching for children among aka foragers and ngandu farmers of central Africa. *African Study Monographs*, 31(3), 107–125. [DOI](#)
- Hopcroft, R.L. (2006). Sex, status, and reproductive success in the contemporary United States. *Evolution and Human Behavior*, 27(2), 104–120. [DOI](#)
- Johnson, A. M., Mercer, C. H., Erens, B., Copas, A. J., McManus, S., Wellings, K., Fenton, K. A., Korovessis, C., Macdowall, W., Nanchahal, K., Purdon, S., & Field, H. (2001). Sexual behaviour in Britain: partnerships, practices, and HIV risk behaviours. *Lancet*, 358, 1835–1842. [DOI](#)
- Jones, A. H. M. (2014). *The decline of the ancient world*. Routledge, New York, USA. [DOI](#)
- Kinsey, A., Pomeroy, W., & Martin, C. (1948). *Sexual behavior in the human male*. Philadelphia: W.B. Saunders.
- Kirchengast, S., & Rühli, F. (2013). Evolutionary medicine and its implications for endocrinological issues (e.g. menopause). *General and Comparative Endocrinology*, 186, 145–149. [DOI](#)
- Koyama, N. (1988). Mating behavior of ring-tailed lemurs (*Lemur catta*) at Berenty, Madagascar. *Primates*, 29(2), 163–175. [DOI](#)
- Leichliter, J. S., Chandra, A., Liddon, N., Fenton, K. A., & Aral, S. O. (2007). Prevalence and correlates of heterosexual anal and oral sex in adolescents and adults in the United States. *The Journal of Infectious Diseases*, 196(12), 1852–1859. [DOI](#)
- Marczyk, J. B., & Shackelford, T. K. (2010). A biased, incomplete perspective on the evolution of human mating systems: A review of Alan F. Dixson, *Sexual Selection and the Origins of Human Mating Systems*. *Evolutionary Psychology*, 8(1), 31–36. [DOI](#)

- Mishra A., & Verma, V. (2015). Oral sex and HPV: Population based indications. *Indian Journal of Otolaryngology and Head and Neck Surgery*, 67(Suppl 1), 1-7. [DOI](#)
- McKay, A. (2004). Oral sex among teenagers: Research, discourse, and education. *Canadian Journal of Human Sexuality*, 13, 201–203.
- Office of Women's Health (2014). *Menstruation and the menstrual cycle fact sheet*. Available at: <http://www.womenshealth.gov/publications/our-publications/fact-sheet/menstruation.html>. Retrieved 3 December 2015.
- Palagi, E., Paoli, T., & Tarli, S. B. (2004). Reconciliation and consolation in captive Bonobos (*Pan paniscus*). *American Journal of Primatology*, 62(1), 15–30. [DOI](#)
- Pham, M.N., & Shackelford, T.K. (2014). Human sperm competition: A comparative evolutionary analysis. *Animal Behavior and Cognition*, 1(3), 410–422. [DOI](#)
- Pham, M. N., & Shackelford, T. K. (2013a). Oral sex as infidelity-detection. *Personality and Individual Differences*, 54(6), 792–795. [DOI](#)
- Pham, M. N., & Shackelford, T. K. (2013b). Oral sex as mate retention behavior. *Personality and Individual Differences*, 55(2), 185–188. [DOI](#)
- Pham, M.N., Shackelford, T.K., Welling, L.L.M., Ehrkel, A.D., Sela, Y., & Goetz, A.T. (2013c). Oral sex, semen displacement, and sexual arousal: Testing the ejaculate adjustment hypothesis. *Evolutionary Psychology*, 11(5), 1130–1139. [DOI](#)
- Platek, S. M., & Porter, J. R. (2012). Sexual conflict and paternal resemblance: Insight from evolutionary cognitive neuroscience. In T. K. Shackelford and A. T. Goetz (Eds.), *Oxford handbook of sexual conflict in humans* (pp. 295–301). New York: Oxford University Press. [DOI](#)
- Platek, S. M., & Shackelford, T. K. (Eds.) (2006). *Female infidelity and paternal uncertainty: Evolutionary perspectives on male anti-cuckoldry tactics*. New York, USA: Cambridge University Press. [DOI](#)
- Prinstein, M. J., Meade, C. S., & Cohen, G. L. (2003). Adolescent oral sex, peer popularity, and perceptions of best friends' sexual behavior. *Journal of Pediatric Psychology*, 28(4), 243–249. [DOI](#)
- Santtila, P., Wager, I., Katarina, W., Harlaar, N., Jern, P., Johansson, A., Varjonen, M., & Sandnabba, N. K. (2008). Discrepancies between sexual desire and sexual activity: Gender differences and associations with relationship satisfaction. *Journal of Sex and Marital Therapy*, 34(1), 29–42. [DOI](#)
- Scelza, B. A. (2013). Choosy but not chaste: multiple mating in human females. *Evolutionary Anthropology*, 22(5), 259–269. [DOI](#)
- Schurmann, C. (1982). Mating behaviour of wild orang-utans. In L. E. M. de Boer (Ed.), *The orang-utan: Its biology and conservation* (pp. 269–284). The Hague, Netherlands: Junk Publishers.
- Sela, Y., Shackelford, T. K., Pham, M. N., & Euler, H. A. (2015). Do women perform fellatio as a mate retention behavior? *Personality and Individual Differences*, 73, 61–66. [DOI](#)
- Shackelford, T. K., Pound, N., & Goetz, A. T. (2005). Psychological and physiological adaptations to sperm competition in humans. *Review of General Psychology*, 9(3), 228–248. [DOI](#)
- Tan, M., Jones, G., Zhu, G., Ye, J., Hong, T., Zhou, S., Zhang, S., Zhang, L. (2009). Fellatio by Fruit Bats Prolongs Copulation Time. *PLoS ONE*, 4(10), e7595. [DOI](#)
- Thornhill, R. (2006). Foreword: Human sperm competition and women's dual sexuality. In T. K. Shackelford & N. Pound (Eds.), *Sperm competition in humans: Classic and contemporary readings* (v-xix). New York: Springer.