

# Exposure to Mother's Pregnancy and Lactation in Infancy is Associated with Sexual Attraction to Pregnancy and Lactation in Adulthood

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## ABSTRACT

**Introduction.** Several theories, including psychodynamic theories, sexual imprinting and early conditioning have been formulated to explain sexual development. Empirical data, however, remain insufficient for a thorough evaluation of these theories.

**Aim.** In this study, we test the hypothesis that a critical period exists for the acquisition of sexual preferences, as suggested by empirical findings in birds and mammals (sexual imprinting).

**Methods.** An Internet questionnaire was used.

**Main Outcome Measures.** We gather data from individuals with a sexual preference for pregnant and/or lactating women, under the hypothesis that pregnancy or lactation may become sexually attractive in adulthood following an exposure to pregnant or lactating women in infancy.

**Results.** We find that these preferences are more common in older siblings, i.e., in individuals who have been exposed to more maternal pregnancy and lactation. This result is independent of respondent and sibling sex. In addition, only maternal pregnancies and lactations experienced between 1.5 and 5 years of age are associated with the preferences.

**Conclusions.** We discuss our findings in relation to theories of sexual development and to earlier reports of birth order effects on sexual behavior. We suggest that this age range may constitute a sensitive period for the acquisition of sexual preferences. **Enquist M, Aronsson H, Ghirlanda S, Jansson L, and Jannini EA. Exposure to mother's pregnancy and lactation in infancy is associated with sexual attraction to pregnancy and lactation in adulthood. J Sex Med 2011;8:140–147.**

**Key Words.** Sexual Imprinting; Sexual Development; Sexual Stimuli; Paraphilia; Fetishism; Birth Order; Exposure to Pregnancy and Lactation

## Introduction

Theories of sexual development [1–4] have hypothesized many possible causes of sexual preferences, ranging from genetic determinants [5,6], to interactions between innate and environmental factors [7,8], to individual experiences [9–12]. These hypotheses have been difficult to test empirically for practical and ethical reasons. Here we report on a questionnaire study designed to investigate whether two specific sexual prefer-

ences, for pregnant and for lactating women, are associated with exposure to pregnant or lactating women early in an individual's life.

The study is inspired by studies of sexual development in animals. A major finding of such studies is that the acquisition of sexual preferences occurs predominantly during a restricted time period early in life. Such sexual imprinting has been extensively documented in birds [13] as well as in some mammal species [14,15]. Although later experiences can influence sexual behavior [16],

imprinted preferences often dominate [13,15]. In humans, sexual imprinting has been suggested to contribute to the development of both common and rare preferences, including intercultural diversity in sexual practices [17–19] and paraphilias [20–22]. A few studies, prompted by sexual imprinting theory or Freudian theory, have reported correlations between an individual's preferences and parental characteristics [23–30], but results have often been hampered by methodological difficulties (see Materials and Methods section). In addition, there is so far no evidence of a critical period during which exposure to a particular stimulus can cause a specific sexual preference in adulthood.

Sexual imprinting is usually demonstrated by exposing animals to a specific stimulus early in life and then showing that the stimulus elicits sexual behavior when the animal reaches sexual maturity [13]. For instance, goats who are raised by sheep mothers become sexually responsive to sheep rather than to goats [15]. Our study follows similar logic, but rather than manipulating children's experiences we must rely on "natural experiments." That is, we try to identify a sexual preference in adults that can plausibly be linked to childhood exposure to a specific stimulus. The sexual imprinting hypothesis predicts that adults with the preference have a higher probability of childhood exposure. To test this hypothesis, the preference studied should fulfill two requirements. First, it must be possible ascertain whether the individual has been exposed to the stimulus in childhood, precluding a reliance on the recall of very early experiences. Ideally, the exposure should cover only a part of childhood, and it should be possible to estimate when it occurred. Second, it must be possible to find individuals lacking the exposure. Previous studies have not considered these requirements, by studying sexual preferences for characteristics such as eye color that are permanent (precluding identification of a critical period) and/or very common in the population (confounding the source of exposure). In this study, we determine the likelihood of exposure to maternal pregnancy or lactation in adults who have a preference for pregnant and/or lactating women. These preferences satisfy the aforementioned requirements. Exposure to maternal pregnancy and lactation is limited in time, and it can be inferred easily asking individuals their own age and their siblings' age without relying on early memories. Maternal (as opposed to non-maternal) pregnancy and lactation were chosen because the

mother has such a prominent role in the child's life that, were imprinting to occur, it would likely involve the mother.

## Methods

We obtained data through an Internet questionnaire, which we advertised in newsgroups (e.g., alt.sex.fetish and alt.sex.fetish.breastmilk) and Yahoo! discussion groups (e.g., *Lactaters* and *Pregnant Ladies*). Individuals participating in these communities often describe themselves as "fetishists," which typically indicates a strong sexual interest but need not meet criteria for a clinical diagnosis of fetishism [31]. Our message invited individuals with the two preferences to take the survey. The questionnaire asked for the respondent's age, sex, whether the respondent is sexually attracted by lactating and/or pregnant women, and at what age the respondent became aware of these preferences. It also asked for the sex and age of each sibling, and whether the sibling is a full sibling or not (half-sibling or adopted child). The introduction to the questionnaire stated that we were conducting academic research on sexuality. The survey ran from October 24, 2003 to October 14, 2009. In February, 2005, we revised it to gather some additional information, e.g., months of birth of respondents and their siblings, in addition to years of birth. See Appendix for the complete questionnaire.

Internet surveys are increasingly used for research on human sexual behavior because they allow to gather a large sample, even for rare traits, and because anonymity encourages respondents to freely express themselves about their sexual interests [31–35]. However, they may also suffer from sampling biases and deliberately inaccurate reporting [35–38]. Our experimental design considerably reduces the problem of sampling biases because it is not based on estimating and comparing population frequencies. Instead, we rely on the fact that, under the null hypothesis that early exposure does not influence sexual development, individuals with the preferences should be equally frequent in all birth orders. The sexual imprinting hypothesis, on the other hand, predicts that individuals with the preference should preferentially appear in early birth orders, i.e., have more younger siblings than expected by chance. In a family with two children, for example, only the older child has been exposed to the mother's pregnancy and/or lactation. A statistically significant skew of respondent's birth order distribution, in the direction of early birth

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