



## Childhood sexual interactions with other children are associated with lower preferred age of sexual partners including sexual interest in children in adulthood

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### ABSTRACT

Associations between childhood sexual interactions with other children, and preferred and actual age of sexual partners, as well as adults' sexual interest in children, were explored in a sample of 1312 Finnish male twins. Experience of sexual interaction with other children was associated with lower minimum age of preferred and actual sexual partners in adulthood. In addition, such interactions were connected to an increased likelihood of adults' sexual interest in children under the age of 16 years. None of the participants who reported no such interactions had sexual interest in children in adulthood. In addition, the presence of a female co-twin was associated with higher levels of childhood sexual interactions and lower minimum age of preferred and actual sexual partners. Finally, the extent of childhood sexual interactions was not affected by genetic factors, suggesting that the identified association represents true environmental causation. Experiences of childhood physical and sexual abuse were positively related to the extent of the childhood sexual interactions with other children. The results support the role of conditioning in the development of sexual age preferences.

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### 1. Introduction

Sexual victimization of children has received considerable attention from researchers. This study focuses on the issue of male sexual interest in children, and how it is affected by childhood experiences of sexual interactions with other children. A number of different explanatory models have been proposed for the occurrence of sexual interests in children (for a review, see Finkelhor and Araji, 1994). However, there is a relative lack of clear empirical evidence for any of these models. Some have emphasized the emotional aspects of the attraction to children, arguing that pedophiles due to emotional immaturity fail to perceive themselves as adults, and therefore seek to relate to children (Bell and Hall, 1971). In a similar vein, pedophiles have been suggested to have low self-esteem and feelings of social inadequacy, and therefore to seek intimacy with children to obtain feelings of power and superiority. Engaging in sexual activities with children has also been seen as a result of adult sexual interest being blocked. In the current study, we aimed to test the sexual arousal model of adults' sexual interest in children in a sample of male twins.

Both observational and retrospective studies of child sexual behavior suggest that many individuals have their initial sexual experiences with other children with the proportions varying from a third to a half depending on the behavior (Davies et al., 2000; Larsson and Svedin, 2002a,b; Sandnabba et al., 2003; Santtila et al., 2005). According to the sexual arousal model (see Seto, 2007), some individuals may associate the features of their child partners in these interactions (e.g. body build, lack of pubic hair, absence of secondary sexual characteristics) with the sexual pleasure they experience. Such associations may then be reinforced through orgasms and masturbatory activity. Normally, these early age preferences are later adjusted by experiences with older, similar-age peers. However, according to the sexual arousal model, for some individuals such preferences linger on into adulthood. Direct and generally supportive experimental evidence for the effects of conditioning on sexual arousal in humans has been found (Hoffmann et al., 2004; Lalumière and Quinsey, 1998; O'Donohue and Plaud, 1994). A number of factors could influence this process – for example, the extent of the sexual interactions and whether they are experienced with same-sex or opposite-sex partners. A higher level of interactions might condition the sexual age preferences to a greater extent than lower levels. Furthermore, assuming that most individuals have a heterosexual bias when born (for a review of genetic effects on sexual orientation, see Hyde, 2005), interactions with opposite-sex children might be more frequent and more

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influential for the majority of individuals. The sample studied here consisted of twin pairs, allowing us to investigate the effects of the availability of an opposite-sex (as opposed to same-sex) child by looking at how the sex of the co-twin affected the extent of sexual interactions with other children. If experiences with an opposite-sex child are more influential, the presence of an opposite-sex co-twin could also be associated with the current preferred age of sexual partners of the participants. In a twin sample, the social effect of having an opposite-sex twin pair is confounded with the pre-natal effects on the androgenisation. Humans fetuses, like most mammalian species, are androgenised as a result of the secretion of androgens (male sex hormones) regulating the expression of male characteristics. The presence of a female co-twin has been suggested to interfere with this process. If relevant neural brain structures do not masculinize, the result is believed to be attraction to men (Dorner et al., 1991), which would result in an effect opposite to the one hypothesized here.

Finally, sexual and physical abuse may increase sexualized behavior in children (Santtila et al., 2005). Abuse experiences have also been related to an increased risk of sexual interest in children (Van Wijk et al., 2006; Santtila et al., submitted for publication), suggesting that the association between abuse experiences and later sexual interest in children could be mediated by any increases in sexual interactions with other children caused by the abuse experiences. Also, an association between childhood sexual interactions with other children and adult sexual interests might reflect the effects of the general level of sexual desire on both variables. Therefore, we also controlled for the possibility of the eventual association being explained by the general level of sexual desire.

We explored the associations between sexual interactions with other children prior to age 12 and preferred and actual age of sexual partners in adulthood among a population-based sample of male twins. We also investigated whether such interactions would be associated with current adults' sexual interest in children. However, there might be genetic reasons for differences between children in engaging in sexual activities with other children (e.g. extravert children could be overrepresented among these children). If the same genetic differences also underlie adult differences in preferred age of sexual partners, the association between the level of sexual interactions in childhood and later preference for younger sexual partners would not establish a causal relation between the two variables. Instead, both would be explained by genetically determined interindividual differences that create a correlation between the two. Consequently, we tested for possible genetic effects on the extent of sexual interactions with other children. Such effects have previously been observed by Långström et al. (2002) for problematic masturbatory behavior. We also investigated how the sex of the participants' co-twin affected their sexual age preferences. Also, we tested for the role of sexual desire in explaining the association between childhood sexual interactions with other children and adult sexual interest in children. Finally, we conducted analyses relating experiences of sexual and physical abuse to the extent of sexual interactions with other children and adults' sexual interest in children. The following hypotheses were formulated:

- (1) More sexual interactions with other children during childhood are associated with lower minimum age of preferred and actual sexual partners.
- (2) More sexual interactions with other children during childhood are associated with an increased likelihood of sexual interest in children in adulthood.
- (3) The presence of a female co-twin increases the scope of sexual interactions in childhood.
- (4) The presence of a female co-twin is associated with lower minimum age of preferred and actual sexual partners and increased sexual interest in children in adulthood.

- (5) Sexual desire mediates the association between childhood sexual interactions with other children and adult sexual interest in children.
- (6) Experiences of sexual and physical abuse are associated with a broader scope of sexual interactions with other children.
- (7) Effects of sexual and physical abuse on adults' sexual interest in children are mediated by the associations between abuse experiences and sexual interactions with other children.

## 2. Methods

### 2.1. Sample ascertainment

The analyses presented in this study were based on 1312 male twins. Their mean age was 37.6 (S.D. = 3.0; range 33–43) years. There were 298 monozygotic (MZ) twins, 439 dizygotic (DZ) twins with a male co-twin, 297 DZ twins with a female co-twin, and 48 twins whose zygosity could not be determined unequivocally. There were 91 full MZ twin pairs and 110 full DZ twin pairs. All respondents were included in the model fitting analyses even if they did not form part of a full twin pair excluding the 48 twins for whom zygosity could not be determined.

Participants comprised all male respondents who had responded to the instruments used in the present study from the first data collection (in 2005) of the Genetics of Sex and Aggression (GSA) Sample targeting 33- to 43-year-old twins, whose addresses were obtained from the Finnish population registry. Twin pairs were sampled beginning from 33-year-old twins and progressing towards older twins until a final sample of 5000 twin pairs (10,000 individuals) had been identified. The participants were guaranteed complete anonymity. Questionnaires were finally returned by 3604 respondents resulting in an overall response rate of 36%. The response rate was lower for male (27%) respondents. Zygosity was determined using questionnaire items completed by the twins (Sarna et al., 1978). Previous studies have shown that this kind of method of zygosity determination is 95% accurate when compared with blood typing analyses (Eisen et al., 1989). The research plan was approved by the Ethics Committee of the Department of Psychology at Åbo Akademi University. Further information on the data collection can be obtained from Varjonen et al. (2007).

### 2.2. Instruments

#### 2.2.1. Sexual interaction in childhood

The nine items (Table 1) used to measure sexual interaction with other children were developed on the basis of Larsson and Svedin (2002b). Participants indicated whether they had engaged in these with other children before the age of 12 years. They were also asked to indicate whether they had engaged in the interactions with their twin sibling, with another child or both. For the analyses, we collapsed the variables into one: whether there had been sexual interactions with any other child, including the co-twin.

#### 2.2.2. Preferred and actual age of sexual partners

The participants were asked to indicate the age groups of persons (1) they had felt sexual attraction towards and thought about in their sexual fantasies, (2) they had thought about while masturbating, and (3) with whom they had had sexual activity during the last 12 months. The response categories were the following: 0–6, 7–12, 13–15, 16–19, 20–25, 26–30, 31–35, 36–40, 41–50, 51–60, >61 years. For each of the three questions, the respondents were free to choose as many categories as they wished. Four variables were derived from these responses to be used in the present study. The first three variables reflected the middle point of the lowest age category that the respondents had chosen for each of the three questions (preferred minimum age of targets of sexual interest and fantasies, masturbatory activity, and actual sexual behavior). Second, a dichotomous variable reflecting adults' sexual interest in children was calculated. The participants were assigned to the sexual interest in children group if they had chosen any of the age categories 0–6, 7–12, or 13–15 for any of the three variables.

#### 2.2.3. Sexual desire

Sexual desire was measured using a revised version of Section III from the Derogatis Sexual Functioning Inventory (DSFI; Derogatis and Meisaratos, 1979). The original

**Table 1**

Percentage present, standardized item discrimination parameters (factor loadings)  $\beta$ , and proportion of variance explained by the latent factor,  $R^2$ , for sexual interaction with other children (9 items)

No.	Item	%	$\beta$	$R^2$
1	Another child touched my genitals	22.3	1.00	1.00
2	I touched the genitals of another child	23.1	0.96	0.92
3	I put/tried to put my penis in another child's mouth, vagina or anus.	7.5	0.86	0.73
4	Another child tried to/put his penis into my mouth or anus.	3.5	0.85	0.72
5	Showed my genitals to another child.	47.2	0.78	0.61
6	Imitated intercourse with another child.	22.3	0.76	0.57
7	Talked about sex with another child.	58.2	0.66	0.43
8	Watched porn pictures with another child.	40.0	0.56	0.31
9	Kissed and hugged another child.	53.9	0.48	0.23

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