

Physical Height in Pedophilic and Hebephilic Sexual Offenders

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Abstract Adult men's height reflects, not only their genetic endowment, but also the conditions that were present during their development *in utero* and in childhood. We compared the adult heights of men who committed one or more sexual offenses and who were erotically interested in prepubescent children (*pedophilic sexual offenders*; $n=223$), those who were erotically interested in pubescent children (*hebephilic sexual offenders*; $n=615$), and those who were erotically interested in adults (*teleiophilic sexual offenders*; $n=187$), as well as men who had no known sexual offenses and who were erotically interested in adults (*teleiophilic nonoffender controls*; $n=156$). The pedophilic and the hebephilic sexual offenders were significantly shorter than the teleiophilic nonoffender controls. The teleiophilic sexual offenders were intermediate in height between the nonoffenders and the pedophilic and hebephilic sexual offenders and not significantly different from any of the other groups. This suggests that—regardless of whatever psychological sequelae might also have followed from the conditions present during early development—pedophilic and hebephilic sexual offenders were subject to conditions capable of affecting their physiological development.

Keywords Anthropometry · Height · Morphometry · Pedophilia · Sexual abuse · Sex offenders · Phallometry

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Adult men's height reflects not only the genes they inherited, but also the conditions present during their *in utero* and childhood development, such as nutrition, pathogen exposure, and economic circumstances (e.g., Gunnell 2002; Silventoinen et al. 1999; Wadsworth et al. 2002). Suboptimal conditions during development yield lower than average rates of growth (e.g., Barker et al. 1993; Montgomery et al. 1997; Perri et al. 1997) and increase the risks of various health problems in adulthood (e.g., Lundberg 1993; Rahkonen et al. 1997; Smith et al. 1998). These associations explain the otherwise non-intuitive relationships between height and health: Adulthood height correlates negatively, for example, with risk of heart disease (Lundberg et al. 2002; Parker et al. 1998; Walker et al. 1989) and stroke (e.g., Hart et al. 1999; McCarron et al. 2000; Song et al. 2003), and positively with overall longevity (e.g., Elo and Preston 1992; Kemkes-Grottenthaler 2005). Height also correlates negatively with the risks of developing diseases of the nervous system, including schizophrenia (e.g., Brooksbank et al. 1970; Houston and Bloom 1975; Nopoulos et al. 1998) and Alzheimer's disease (e.g., Abbott et al. 1998; Beerli et al. 2005).

We refer to the hypothetical factors that increase the probability of developing an erotic interest in children as *pedophilogenic*¹ factors, and the above associations suggest that height may be helpful in identifying the pedophilogenic factors that were present during development. We have previously hypothesized (Blanchard et al. 2002) that some circumstance of pre- or perinatal life affects the development of the brain, yielding a constellation of neurobehavioral traits that includes pedophilia: MRI studies of brain structure show that pedophilic and nonpedophilic men differ neuroanatomically (Cantor et al. 2006a; Schiffer et al. 2007; Schiltz et al. 2007), and retrospective studies of relevant behaviors suggest that neuroanatomical differences were also present earlier in life. Relative to controls, pedophilic men more frequently failed grades in school or required placement in special education systems (Cantor et al. 2006b), more frequently suffered head injuries during childhood (Blanchard et al. 2002, 2003), and are approximately three times more likely to be non-right-handed (Cantor et al. 2004, 2005). Evidence that pedophiles differ from nonpedophiles in height would suggest that—regardless of whatever psychological sequelae might also have followed from early conditions—pedophilic males were subject to conditions capable of affecting their physiological development.

Two prior studies provided data on the heights of pedophilic and of nonpedophilic men (Mellan et al. 1969; Taylor et al. 1993). Both investigations reported their pedophilic group to be shorter than their nonpedophilic group, 1.7 in. (4.3 cm) in the case of Taylor et al. (1993) and 1.1 cm in the case of Mellan et al. (1969). Neither difference was statistically significant at $\alpha=0.05$, although we calculated the *p*-value for the Taylor sample from its reported means and standard deviations to have been $p=0.053$ (two-tailed). The group differences might not have achieved statistical

¹ Authors use *pedophilia* to refer to the erotic interest in prepubescent children (von Krafft-Ebing 1965), *hebephilia* to refer to the erotic interest in pubescent children (Glueck 1955), and *pedohebephilia* to refer to the superordinate category that includes them both (Freund et al. 1972). Thus, one might refer to factors that are pedophilogenic, hebephilogenic, or pedohebephilogenic; however, unless it turns out that the aforementioned erotic interests are produced by different factors, such a distinction is moot, and we choose, albeit arbitrarily, to apply the shorter and more intuitive construction, *pedophilogenic*, to refer to factors that increase the probability of developing either pedophilia or hebephilia.

significance due to insufficient power associated with sample size, 23 pedophiles in the case of Taylor et al. (1993) and 98 in the case of Mellan et al. (1969). Analyzing larger samples could be more effective in detecting any association between height and pedophilia. In order to revisit in a larger sample whether pedophilic and nonpedophilic men differ in height, we reviewed data archived in the clinical database of the Kurt Freund Laboratory.

Materials and Methods

The present investigation involves three erotic age-preferences: *Pedophilia* refers to erotic interest in prepubescent children (von Krafft-Ebing 1965), *hebephilia* refers to erotic interest in pubescent children (Glueck 1955), and *teleiophilia* refers to erotic interest in adults (Blanchard et al. 2000).

Participants

All study participants were recruited from the Kurt Freund Laboratory of the Centre for Addiction and Mental Health (Toronto, Ontario, Canada), which provides evaluation services to male patients referred as a result of illegal or clinically significant sexual behaviors or interests. The primary source of referrals to the facility is parole and probation officers, with physicians and lawyers providing others. As detailed in the following, the standard assessment at the Laboratory consists of a psychophysiological (phallometric) examination of the patients' erotic preferences, a semi-structured interview of their sexual history and interests, a review of supplementary psychiatric and legal documents supplied by the referral source, and a brief questionnaire that includes questions about the patients' height.

The files of 1,181 patients of the Kurt Freund Laboratory contained sufficient information for the present analyses and were classifiable into one of the four groups by the criteria stated later. All patients underwent assessment between 1995 (when the Laboratory began recording the last of the relevant variables) and November, 2006 (when data collection for the investigation ended). The sample had a mean age of 39.0 years ($SD=13.7$) and median age of 38 years. The median education level was high school graduation. Non-Caucasian patients were excluded from the sample to avoid the effects of racial differences in height.

Of the entire sample, 51.4% were known to have committed a sexual offense against one or more victims ages 11 or under, 31.1% against one or more victims ages 12–14, 14.0% against one or more victims ages 15–16, and 33.2% against one or more victims ages 17 or older; 13.2% of the sample had no known victims of any sexual offenses. These latter patients received assessments following charges of possession of child pornography or because of the patient's concern regarding his own sexual urges, etc. The sum of these percentages exceeded 100% due to some patients having victims in more than one age category. In the following analyses, no distinction was made between intrafamilial offenses (i.e., incest offenses) and extrafamilial offenses.

Measures

Phallometric Measurement of Erotic Gender–Age Preference

Blanchard et al. (2007) described the phallometric procedure and data handling techniques in detail. Briefly, a computer records an examinee's penile blood volume while the examinee observes a standardized set of stimuli that depict a variety of activities and persons of potential erotic interest to the examinee. Change in the examinee's penile blood volume (i.e., his degree of penile erection) indicates his relative erotic interest in each class of stimuli. Clinicians and researchers employ phallometry to quantify the erotic interests of sexual offenders against children (e.g., Howes 1995), and meta-analytic reviews indicate that penile reactions to stimuli depicting children are among the strongest predictors of sexual recidivism for child molesters (Hanson and Bussière 1998; Hanson and Morton-Bourgon 2005). The specific phallometric protocol in use at the Kurt Freund Laboratory over the course of the present investigation has already been shown to distinguish pedophilic from teleiophilic men (Blanchard et al. 2001).

The stimuli used in the phallometric test were audiotaped narratives presented through headphones and accompanied by slides. There were seven categories of narratives. They described sexual interactions with either female children, female pubescents, female adults, male children, male pubescents, or male adults, or erotically neutral (i.e., solitary, nonsexual) activities. The accompanying slides depicted nude models corresponding in age and sex to the topic of the narrative. The neutral narratives were accompanied by slides of landscapes. The data reduction process, also outlined by Blanchard et al. (2007), yielded seven category scores, one to reflect each of the six combinations of the age group and sex of the stimuli, plus the neutral category.

Sexual Offense History and Self-reported Erotic Interests

A standardized form was used by the phallometric laboratory staff to record each patient's history of sexual offenses. The coding of this information included each patient's numbers of victims ages 11 or younger, victims ages 12–14, victims ages 15–16, and victims ages 17 or older. The information came primarily from documents that accompanied the patient's referral, such as reports from police, probation, or parole officers. Some patients themselves reported additional information regarding offenses that were not included in their files and for which they had not been charged. During patients' sexological assessment, they were asked to rate their own erotic interests in females of six age categories (17 years or older, 15–16 years, 12–14 years, 11 years, 6–10 years, and 5 years or younger) and again, for males in the same six age categories. The patient rated each category on a Likert scale from 1 (*strongest erotic interest*) to 5 (*least erotic interest*).

Physical Height

On the day of their phallometric assessments, all patients of the Kurt Freund Laboratory complete a standard questionnaire of demographic and family back-

ground information. The questionnaire included a question regarding patients' height and permitted patients to respond with either metric or Imperial units. For purposes of analysis, all responses were converted into centimeters. A trained research assistant reviewed all questionnaires and queried patients who provided contradictory or obviously erroneous answers to any of the questions, including height.

Group Assignment

Patients were divided into four discrete groups for data analysis: pedophilic sexual offenders, hebephilic sexual offenders, teleiophilic sexual offenders, and teleiophilic nonoffender controls. Patients who committed one or more sexual offenses were categorized as *pedophilic sexual offenders* if they responded more to a prepubescent child category than to any other gender–age category on the phallometric test (i.e., he responded more to either the prepubescent males or the prepubescent females than to the pubescent or adult males or females). If the sexual offender lacked a valid phallometric test, he was categorized as being pedophilic if he admitted to greater sexual attraction to prepubescent boys or girls than to any other gender–age category. Patients were categorized as *hebephilic sexual offenders* by the analogous criteria regarding pubescent, rather than prepubescent, children.

Because teleiophilia is the most desirable classification both socially and in the courtroom, many pedophilic or hebephilic patients endeavor to achieve it in interviews and on phallometric testing (see Blanchard et al. 2001). Thus, the classification of a patient in one of the teleiophilic groups was made more stringent by the addition of a second criterion: The first criterion was analogous to that for the pedophilic and hebephilic categories—a greater response to adult males or adult females than to any other category on the phallometric test, or (lacking a valid phallometric test) the patient stated that he was more attracted to persons past their 17th birthday than to younger persons. The second criterion was that the patient lacked any history that might contradict his phallometric results or self-report (i.e., he lacked any known offenses against male or female victims under age 17, and he had never been charged for or admitted to possessing child pornography). Men who were teleiophilic by these criteria were categorized as *teleiophilic sexual offenders* if they had committed any known sexual offenses (against an adult), such as indecent exposure or sexual assault. Teleiophilic men with no known sexual offenses were classified as *teleiophilic nonoffender controls*; general sexology patients such as these undergo assessment at the Kurt Freund Laboratory for other sexological concerns, such as sexual orientation issues and so-called “sexual addictions.”

In this article, as with previous investigations from this facility (e.g., Cantor et al. 2004), the term *sexual offenses* includes charges, credible accusations, and self-disclosures of criminal sexual behavior. *Credible accusations* were defined by default; that is, they included all accusations excepting those that were made by an individual who stood to gain in some way from criminal charges against the accused, that had no corroborative evidence, and that were not voiced at the time the alleged offense(s) occurred. Only a small proportion of accusations were not considered credible; typical examples were allegations—not followed by criminal charges—from estranged spouses in custody-and-access disputes.

Results

The mean height of the sample ($N=1,181$) was 176.4 cm ($SD=7.53$ cm; range=144.8 cm to 203.2 cm). One additional subject was 126 cm in height ($z=-6.3$). In order to prevent his relatively extreme score from unduly influencing any group differences, the subject was deemed an outlier and excluded from analysis. If retained in the sample, the subject would have been categorized as a pedophilic sexual offender.

Table 1 provides mean (SD) physical heights of the sample, by patient category. The pedophilic sexual offenders were the shortest of the four groups, and the teleiophilic nonoffender controls, the tallest. The significance of the group differences in height were ascertained by two regression analyses. For each regression, patient height was multiply regressed onto a set of three dichotomous variables that represented subjects' membership in one of the four groups (i.e., group membership was "dummy coded;" Cohen et al. 2003). The first regression used the teleiophilic nonoffender controls as the reference category, and the second regression used the teleiophilic sexual offenders as the reference category.

The first regression revealed that patient height was significantly associated with group membership, $F(3, 1,177)=2.99$, $p=0.030$. Both the pedophilic sexual offenders and the hebephilic sexual offenders were significantly shorter than the teleiophilic nonoffender controls (Model 1 of Table 2). To account for any effects of age on physical height, patient age was forced into the regression equation. Age accounted for a significant amount of the remaining variance, $F\text{-change}(1, 1,176)=9.85$, $p=0.002$, and the regression equation remained significant, $F(4, 1,176)=4.72$, $p=0.0009$. The group differences in height, now accounting for subject age, changed very little (Model 2 of Table 2); both the pedophilic sexual offenders and the hebephilic sexual offenders were significantly shorter than the teleiophilic nonoffender controls.

The mean height of the teleiophilic sexual offenders was intermediate between that of the teleiophilic nonoffender controls on one hand and the pedophilic and the hebephilic sexual offenders on the other hand. To ascertain the significance of these differences, the second regression was run, using the teleiophilic sexual offenders as the reference category. The teleiophilic sexual offenders did not differ significantly from any of the other three groups (Table 3).

The mean height of Canadian men is 178 cm (Gilmore 1999). Each of the four patient groups was compared with that population value by t -tests for single samples. The teleiophilic nonoffender controls did not differ significantly from the

Table 1 Mean physical height by group

Group	<i>n</i>	Mean height	SD	95% Confidence interval	
				Lower bound	Upper bound
Teleiophilic nonoffenders	156	177.7	7.53	176.6	178.9
Teleiophilic sexual offenders	187	176.9	7.70	175.8	178.0
Hebephilic sexual offenders	615	176.1	7.24	175.5	176.7
Pedophilic sexual offenders	223	175.6	8.06	174.6	176.7

Table 2 Regression of physical height onto age and subject category—teleiophilic nonoffender controls as reference category

Effect	<i>B</i>	<i>SE_B</i>	β	<i>t</i>	<i>p</i>
Model 1					
Teleiophilic sexual offenders	-0.88	0.82	-0.04	-1.08	0.283
Hebephilic sexual offenders	-1.63	0.67	-0.11	-2.42	0.016
Pedophilic sexual offenders	-2.12	0.78	-0.11	-2.70	0.007
Model 2					
Teleiophilic sexual offenders	-0.88	0.81	-0.04	-1.09	0.277
Hebephilic sexual offenders	-1.54	0.67	-0.10	-2.29	0.022
Pedophilic sexual offenders	-2.00	0.78	-0.10	-2.56	0.011
Age	-0.05	0.02	-0.09	-3.14	0.002

N=1,181; *B* = unstandardized regression coefficient (for subject categories, these represent the differences in centimeters of height between the subject categories and the teleiophilic nonoffender reference category); *SE_B* = standard error of the unstandardized regression coefficient; β = standardized regression coefficient

population mean height, $t(155)=-0.42$, $p=0.67$. The hebephilic and pedophilic sexual offenders, however, were highly significantly different, $t(614)=-6.46$, $p<0.00001$, and $t(222)=-4.40$, $p=0.00002$, respectively. The teleiophilic sexual offenders were also significantly different from the population value, but less dramatically so, $t(186)=-2.01$, $p=0.046$.

Discussion

The present analyses found that pedophilic sexual offenders are approximately 2 cm shorter than nonoffender controls, a difference that was statistically significant both before and after covarying age. For perspective, it is useful to compare this deficit in height with those associated with other factors: Male offspring of mothers who smoked 20 cigarettes or more per day during their pregnancies are approximately 1.1 cm shorter in adulthood than are sons of mothers who did not smoke (Fogelman and Manor 1988). Men who were born into families with alcohol problems are 0.9

Table 3 Regression of physical height onto age and subject category—teleiophilic sexual offenders as reference category

Effect	<i>B</i>	<i>SE_B</i>	β	<i>t</i>	<i>p</i>
Model 1					
Teleiophilic nonoffenders	0.88	0.82	0.04	1.08	0.283
Hebephilic sexual offenders	-0.76	0.63	-0.05	-1.20	0.229
Pedophilic sexual offenders	-1.25	0.75	-0.06	-1.67	0.095
Model 2					
Teleiophilic nonoffenders	0.88	0.81	0.04	1.09	0.277
Hebephilic sexual offenders	-0.66	0.63	-0.04	-1.05	0.295
Pedophilic sexual offenders	-1.12	0.74	-0.06	-1.51	0.132
Age	-0.05	0.02	-0.09	-3.14	0.002

N = 1,181; *B* = unstandardized regression coefficient (for subject categories, these represent the differences in centimeters of height between the subject categories and the teleiophilic nonoffender reference category); *SE_B* = standard error of the unstandardized regression coefficient; β = standardized regression coefficient

cm shorter than controls (Silventoinen et al. 1999), and men with schizophrenia are 2.3–6.8 cm shorter than controls (Brooksbank et al. 1970; Houston and Bloom 1975; Nopoulos et al. 1988). This suggests that whatever conditions are present during the development of pedo- and hebephilic sexual offenders, those conditions are capable of influencing physiological development as strongly as some well-known influences on height.

The present findings are consistent with our previously explicated hypothesis that pedo- and hebephilic men were exposed to some condition during childhood or *in utero* that affected their brain development in a way that increased their risk of developing deviant erotic age-preferences as well as neuroanatomically relevant behavioral deficiencies (Blanchard et al. 2002, 2003; Cantor et al. 2004, 2005, 2006b). It is possible that the as yet unidentified pedophilogenic factor(s) are agents that interfere with growth in general. Poor nutrition, toxin exposure, and infections are all such potential factors. The suboptimal growth of one or more components of the brain manifests as an increased risk of developing pedophilia and the associated neurobehavioral characteristics, and the suboptimal growth of the body manifests as lesser stature. It therefore becomes relevant to future investigations to ascertain whether pedophilic men also show evidence of suboptimal or perturbed growth in other organ systems that are not intuitively associated with committing sexual offenses against children.

The present data do not isolate the developmental epoch(s) during which pedophilic sexual offenders failed to achieve normal growth. Lesser growth could have occurred *in utero*, during prepubertal childhood, or during the pubertal growth spurt that ends upon attaining adult height. Subnormal growth may also have occurred during multiple periods of development. One of the other correlates of pedophilia, handedness, is established very early in life; fetuses demonstrate hand preferences *in utero* (Hepper et al. 1991, 2005). This may emphasize the need to study conditions during the earlier periods of development for potentially pedophilogenic factors and underscore the importance of examining other characteristics that are set early in development.

The relevance of childhood conditions for increasing the subsequent propensity to molest children is not a new idea. Sexual offenders against children have long been reported to indicate that, during their childhoods, they experienced poor relationships with their parents, physical abuse, and sexual abuse (e.g., Gebhard et al. 1965; Hanson and Slater 1988; Mohr et al. 1964; Tingle et al. 1986; Weeks and Widom 1998). Theorists have generally interpreted these conditions with regard to their symbolic or imitative value to psychological development, however, rather than with regard to their potential association with physiological development. That is, theorists have posited that men commit sexual offenses against children either as a response to psychological conflicts induced by the earlier conditions or as an expression of a conditioned behavior (e.g., Glasser et al. 2001; Hall and Hirschman 1992; Marshall and Marshall 2000). An association between pedophilia and height, however, would suggest an entirely biological explanation: Pedophilia is one of several biological sequelae determined by biological factors acting early in development, and the excess of abusive experiences reported to occur in childhood is causally incidental, observed because the families that are unable to provide the conditions necessary for optimal physical growth are often the same families in

which abuse occurs. That is, despite the retrospective observation of psychosocial differences between pedophilic and nonpedophilic men, their erotic age-preferences were determined biologically, and the psychosocial correlates were not themselves pedophilogenic.

Although the present findings are consistent with that purely biological theory of the etiology of pedophilia, the data do not necessarily rule out causal contributions of nonbiological factors. It remains possible that the psychosocial factors increased the risk of developing pedophilia, whereas the biological factors reduced height. In this scenario, height would correlate with pedophilia again because the presence of poor biological conditions (partially) predicts the presence of poor psychosocial conditions. Also, it is possible that there exist multiple—perhaps independently operating—means of increasing the risk of developing pedophilia, some of which are biological and some of which are not (and some of which require both biological and nonbiological contributions). Moreover, biological and nonbiological factors may interact, such as by biological factors predisposing an individual to developing pedophilia by making him more sensitive to subsequent psychosocial experiences. Finally, the present data are correlational in nature and cannot by themselves prove the direction of causality. Considered in isolation, these data are consistent with a causal model in which lesser height increases a male's probability of developing an erotic attraction to shorter individuals, such as children.

A 2 cm difference in height does not in itself suggest any obvious implications for the clinical treatment of deviant erotic age-preferences. Evidence that pedo- and hebephilia relate to physical characteristics that are acquired early in life would nonetheless be consistent with the idea that erotic age-preference is immutable, analogous to men's orientation as hetero- or homosexual. Immutability of age orientation would reinforce the justification of clinicians' use of relapse prevention interventions to help pedophiles manage their sexual interests (Laws et al. 2000) and argue against the feasibility of converting pedophiles into nonpedophiles by helping them to resolve psychological issues, such as low self-esteem, as has been suggested (e.g., Marshall et al. 1997, 1999).

The present data were equivocal regarding the teleiophilic sexual offenders. Their mean height was not significantly different from that of the pedophilic or hebephilic sexual offenders. This suggests that poor growth is not specific to the development of deviant erotic age preferences, as one would expect from the aforementioned associations between physical height, health, and longevity. The height difference between the teleiophilic sexual offenders and the teleiophilic nonoffender controls was also nonsignificant, so these data cannot be said to support the conclusion that deficient height is a characteristic of sexual offenders in general. The mean heights of the four groups did, however, form an intuitive pattern, suggestive of an association between greater departure from normal height and greater behavioral pathology: The teleiophilic nonoffender controls were the tallest (nonsignificantly shorter than the mean for all Canadian men), followed by the teleiophilic sexual offenders (who differ from normal with regard to committing a sexual offense), followed by the hebephilic sexual offenders (who differ from normal both with regard to their committing a sexual offense as well as with regard to their erotic age preference), followed by the pedophilic sexual offenders (who differ from normal with regard to committing a sexual offense and with regard to an age preference that

is further removed from normal than are the age preferences of the hebephilic offenders). It is plausible that increasingly adverse conditions during development increase the probability of suboptimal growth as well as increasing the probability of developing one or more pathologies.

The data used for the present analyses were obtained by self-report and are therefore potentially subject to reporting error. There is no obvious motivation for patients willfully to misreport their height during a general assessment, however, and any extreme errors in reporting one's height would be noticed by the assessors. Notwithstanding those arguments, it would be worthwhile to measure subjects' heights directly. Although measuring the heights of subjects' parents would also be potentially useful, doing so is unrealistic: Meaningfully representative samples of parents of pedophilic men would be extremely difficult to assemble.

Height is only one physical indicator of the conditions present during development. The present finding suggests that it would be worthwhile to ascertain whether pedophilic men show other indicators of adverse earlier life conditions. Possibilities include birth weight, birth length, and the presence of minor physical anomalies (small malformations of the skin, such as nonsymmetric ears and webbing between the toes; Jones 1997). Because minor physical anomalies develop only before birth and are stable throughout life, they could further suggest that the pedophilogenic factors are present earlier rather than later in life. Also useful would be epidemiological analyses of the obstetric and pediatric records from men subsequently identifiable as pedo- or hebephilic.

We undertook the present investigation to help elucidate the causes of deviant erotic age-preferences. It is not clear from the present data, however, whether the present results specifically pertain to pedo- and hebephilia, or to all paraphilias, of which pedo- and hebephilia are merely two exemplars. That is, it is conceivable that a group of men with paraphilias other than pedophilia (such as exhibitionism) would also have been shorter than the teleiophilic nonoffender control group. To address this possibility, it would be useful for future studies to include both a group of paraphilic teleiophiles as well as a group of non-paraphilic teleiophiles.

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