Sexual abuse, pubertal timing, and subjective age in adolescent girls: a research note

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Abstract  This study investigated whether sexually abused adolescent girls were more likely than non-abused girls to have experienced early pubertal maturation and to feel older than their peers (i.e. to have an older subjective age). The sample (ranging in age from 12 to 19 years) consisted of 22 sexually abused girls who were referred by clinical agencies or who identified themselves on a questionnaire as sexually abused. The abused sample was matched on several demographic variables to 22 non-abused girls attending school. All girls completed questionnaires measuring their subjective age and age at menarche (pubertal timing). Sexually abused girls were more likely to be early matures than were non-abused girls; they also felt significantly older than did their non-abused chronological age mates. Future research should consider further the empirical links among pubertal timing, subjective age, and sexual abuse.

Sexual abuse is a significant social problem affecting up to 30% of women by the age of 18 (Elliott & Briere, 1995; Finkelhor et al., 1990; Gorey & Leslie, 1997). A national survey in Canada found that 18% of young women aged 13–16 years reported having experienced sexual abuse (Holmes & Silverman, 1992). The experience of sexual abuse in childhood is often associated with a number of difficulties in adolescence, such as substance use, running away, school problems, eating disorders, and promiscuity (Browne & Finkelhor, 1986; Finkelhor, 1990; Kendall-Tackett et al., 1993; Runtz & Briere, 1986). Although sexual abuse is related to a wide variety of poor developmental outcomes, little is understood about the mechanisms that may mediate the experience of sexual abuse and these outcomes. One such mechanism might be early maturation among sexually abused girls.

Recently, for example, Putnam and Trickett (1993) suggested that the chronic stress of sexual abuse may influence hormonal processes that are operating during the pubertal period, perhaps resulting in an earlier onset of puberty than would otherwise have occurred. This suggestion follows from theoretical arguments, put forth by Belsky et al. (1991), that exposure to stress might stimulate an earlier onset of puberty, which in turn is linked to alcohol abuse, truancy, delinquency, earlier dating and sexual activity, and eating problems in adolescent girls (Caspi et al., 1993; Graber et al., 1994; Stattin & Magnusson, 1990). The link between stress and earlier pubertal maturation has received

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some support, at least when father absence was considered as a stressor (Moffitt et al., 1992; Surbey, 1990). We are unaware of any research, however, examining the link between sexual abuse and the timing of puberty. Therefore, this research first sought to examine whether sexual abuse was associated with earlier menarche.

This research also examined whether sexual abuse was associated with an older subjective age. Subjective age, or how old one feels relative to same-age peers, is an index of phenomenological maturity (Galambos et al., 1997; Montepare & Lachman, 1989). Subjective age may play a complex role in adolescent development, as an older subjective age is linked with higher levels of problem behaviours and more involvement with deviant peers in adolescent girls (Galambos et al., 1997). With respect to sexually abused adolescents, clinicians have noted that victims of sexual abuse often describe themselves as feeling older than they actually are (Friedrich, 1991; Kaufman & Wohl, 1992). No research has yet validated this clinical observation. Therefore, a second goal of this study was to examine whether there is an empirical relation between sexual abuse and an older subjective age.

A third goal of this study was to examine whether pubertal timing moderated the relation between sexual abuse and subjective age. Specifically, given that some sexually abused girls might not experience earlier maturation, it could be that subjective age is older only among sexually abused girls who have also experienced earlier maturation. The combination of sexual abuse with early maturation might be most strongly linked with an older subjective age. Thus, our study asked whether sexual abuse and pubertal timing (i.e. early menarche) would interact in predicting subjective age.

Method
Participants

The participants in this study were 44 adolescent girls between the ages of 12 and 19 years who were sampled from three outpatient clinical agencies in two western Canadian cities (Victoria, British Columbia and Calgary, Alberta) and from six public schools in Victoria, BC. Twenty-two of these adolescents were identified as having been sexually abused: 12 girls were referred by the clinical agencies and 10 girls from the school sample were included in this group on the basis of having indicated that they had received counselling for sexual abuse.²

For the clinically referred girls, sexual abuse was defined as sexual contact between a child and an offender (usually an adult) when the child was being used for the purpose of the sexual stimulation of the offender. Sexual abuse was self-defined within the sample of girls from the schools.³ Twenty-two non-abused participants were drawn from among a remaining group of 218 adolescents from the school sample and were matched with the sexually abused participants on the following self-reported characteristics: chronological age, current living situation, parental marital status, parental socioeconomic status (SES) (measured by the 1981 Socioeconomic Index for Occupations in Cananda; Blishen et al., 1987), and family size.

The average age of participants in the total sample was 16.5 years. Forty-three percent were living with both biological parents, 23% with a single parent, 27% with a parent and a step-parent, and 7% with other relatives or on their own. Most participants (59%) came from a small family with only one or no siblings. For 75% of participants, the highest level of education of their parents was completed high school, while close to one quarter of the teens’ parents had completed a college or university degree. Parents
of the adolescents were employed in occupations consistent with a working-to middle-class socioeconomic background (e.g. daycare worker, janitor, secretary, police officer, social worker).

The sexual abuse history of the agency participants revealed that the majority of these girls (67% or 8 out of 12 girls) had experienced abuse by a family member, with the most frequent perpetrator being either a father or step-father (33%). Nine of the girls had been abused by an adult, one by a babysitter, and 2 had been sexually assaulted by a peer at least two years older than herself; 8 had been abused by more than one offender. The average age of the victim at the onset of the sexual abuse was 8.6 years. In 42% of the abuse situations, the girls had experienced forced intercourse and in 5 out of the 8 cases (63%) where this information was available, the abuse was of prolonged duration (over at a period of at least one year).

Procedure

Participants were recruited in the clinical agencies and the schools through letters describing the “Youth and Family Relations Study” and that were addressed to the adolescents’ parents and taken home by the adolescent. Potential agency participants were initially informed of the study by their counsellors, who distributed letters to be taken home; for the clinical sample, the study was described as an examination of how “sexually abused adolescents feel about themselves”. In the schools, the first author attended the classrooms of the students and distributed similar letters; for this sample, the study was described as exploring “how adolescents view themselves and their families and how different life experiences may impact on these views”.

Adolescents who were interested in participating and who had obtained consent from their parent(s) completed a 30- to 40-minute anonymous questionnaire either during class time at their school or at the clinical agency where they were seeking counselling for sexual abuse. Questionnaires given to the two groups of participants were identical except that the control group did not receive any questions related to sexual abuse. Testing sessions at the clinical agencies were done individually to protect the privacy of the participants while testing sessions at the schools occurred in groups of about 20–25 students.

Variables assessed for all participants in this study included: demographic information, past and present counselling experiences, pubertal timing, and subjective age. The questionnaire for the clinical agency participants also included a measure devised by the researchers to record information about their sexual abuse experiences. The presentation of the individual measures was counterbalanced in order to vary the position of central variables and to prevent the abuse measures from occurring either at the end or the beginning of the clinical agency questionnaire, due to the sensitive nature of these questions.

Measures

Sexual abuse. Participants at the clinical agencies were asked to fill out a brief assessment of their sexual abuse experiences that was derived from two established sexual abuse scales—DiTomasso and Routh (1993) and Finkelhor (1979). The 10 abuse items of the scale were taken from Finkelhor’s (1979) Childhood Sexual Experiences Survey and were adapted to suit a younger reader. The items include sexual events such as exposure, sexual touching, fondling, and intercourse. Following each item, a set of
two scales appeared that were adapted from DiTomasso and Routh's (1993) Sexual Abuse Scale. These assessed the level of distress experienced (ranging from 1 = 'not very distressing' to 3 = 'very distressing') and the degree of force used (ranging from 1 = 'forced' to 3 = 'not forced') in connection with each of the 10 events. Also recorded for each event was the frequency with which the event occurred with the main perpetrator, and the age of the victim when the event first occurred. In addition, participants were asked to answer two brief questions regarding their disclosure of the abuse.

**Pubertal timing.** The age at onset of menarche item from the Pubertal Development Scale (PDS) (Petersen, *et al.*, 1988) was used to measure pubertal timing. The PDS is a well-established and widely used self-report measure of pubertal development. Participants were divided into early, on-time, and late pubertal maturation categories based on the reported age of onset of menarche. Onset of menarche at age 11 or younger was considered early maturation; menarcheal age 12–13 was considered on-time; and menarcheal onset at age 14 and older was considered late maturation (cf. Dubas & Petersen, 1993; Feldman & Elliott, 1990). As only one participant was a late maturer, she was included in the on-time group.

**Subjective age.** Subjective age was measured with a 7-item scale (Montepare & Lachman, 1989; Montepare, *et al.*, 1989). Participants were asked to respond to statements such as ‘Compared to most girls my age I feel _’ and ‘Compared to most girls my age I look _’. Response options ranged on a 7-point scale from a lot younger than my age (1) to the age I am (4) to a lot older than my age (7). This measure has been found to be appropriate and reliable for use with an adolescent population (Montepare *et al.*, 1989). Mean scores were calculated; a mean score over 4 indicated that the adolescent felt older than her present age. Subjective age and pubertal timing were inversely correlated, with earlier maturers having older subjective ages; however, the correlation ($r = -0.26$) was not significant.

**Results**

Preliminary analyses were conducted to determine if the sexually abused and non-abused groups differed on any of the matching variables after matching had been carried out. Chi-square analysis revealed that the two groups did not differ significantly on age [$\chi^2(5) = 1.43$, $p = 0.92$], father’s or mother’s SES [$\chi^2(1) = 0.12$, $p = 0.72$], $\chi^2(1) = 0.62$, $p = 0.42$], parental marital status [$\chi^2(5) = 5.05$, $p = 0.41$], current living situation [$\chi^2(6) = 7.99$, $p = 0.24$], and family size [$\chi^2(2) = 1.15$, $p = 0.56$].

**Sexual abuse and pubertal timing**

To determine whether sexually abused girls were more likely to be early maturers, a $\chi^2$ analysis was carried out which compared the proportion of sexually abused and non-abused girls in the two pubertal timing groups (early versus on-time/late maturation; see Table 1). This $\chi^2$ was significant [$\chi^2(1) = 4.36$, $p = 0.03$]. Sexually abused girls were more likely to be early maturers than were their matched non-abused counterparts, and 11 of the 14 girls (79%) who were early maturers had also been sexually abused. A smaller proportion (11 out of 25) of the girls who were on-time/late
maturers were from the sexually abused group. Although sexually abuse girls were equally likely to be either early maturing or on-time/late maturing, non-abused girls were predominantly (82%) on-time/late maturing. The average age of onset of menarche in the non-abused group was 12.5 years, which is consistent with that found in normative samples; however, menarche began a full year earlier among the sexually abused girls (11.2 years).

**Sexual abuse and subjective age**

The mean score for subjective age in the entire sample ($M = 4.84$) indicated that, in general, these girls rated themselves as feeling older than their chronological age. In order to determine whether sexually abused girls differed from non-abused girls on subjective age, a one-way analysis of variance (ANOVA) was conducted. Sexually abused girls reported feeling significantly older ($M = 5.2$) than did their non-abused counterparts [$M = 4.5$; $F(1, 41) = 4.43, p = 0.02$] despite the fact that the two groups were matched on chronological age.

**Pubertal timing as a moderator of the relation between sexual abuse and subjective age**

Two hierarchical multiple regression (MR) analyses were conducted to determine whether pubertal timing acts as a moderator of the relationship between sexual abuse and subjective age (see Table 2). In the first MR predicting subjective age, sexual abuse (SA) was entered on step one, pubertal timing (PT) was entered on step two, and the

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### Table 1. Number of girls by sexual abuse status and pubertal timing category

<table>
<thead>
<tr>
<th>Sexual abuse status</th>
<th>Pubertal timing</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Early</td>
<td>On-time</td>
</tr>
<tr>
<td>Abused</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Non-abused</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>25</td>
</tr>
</tbody>
</table>

*Note. $\chi^2(1) = 4.36, p < 0.05.$*

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### Table 2. Hierarchical regressions predicting subjective age from sexual abuse and pubertal timing

<table>
<thead>
<tr>
<th>Order of entry</th>
<th>$B$</th>
<th>$\beta$</th>
<th>$R^2$ change</th>
<th>Total $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sexual abuse status (SA)</td>
<td>0.82</td>
<td>0.44*</td>
<td>0.19*</td>
<td></td>
</tr>
<tr>
<td>2. Pubertal timing (PT)</td>
<td>−0.12</td>
<td>−0.06</td>
<td>0.00</td>
<td>0.20</td>
</tr>
<tr>
<td>3. SA × PT</td>
<td>−0.22</td>
<td>−0.20</td>
<td>0.00</td>
<td>0.20</td>
</tr>
<tr>
<td>1. Pubertal timing (PT)</td>
<td>−0.49</td>
<td>−0.26</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>2. Sexual abuse status (SA)</td>
<td>0.76</td>
<td>0.41*</td>
<td>0.13*</td>
<td>0.20</td>
</tr>
<tr>
<td>3. PT × SA</td>
<td>−0.22</td>
<td>−0.20</td>
<td>0.00</td>
<td></td>
</tr>
</tbody>
</table>

*Note. The values for $R^2$ change do not add up across the three steps in both analyses due to rounding error. $N = 34$. $B =$ unstandardized coefficient. $\beta =$ standardized coefficient. * $p < 0.05.$*
two-way interaction term (SA × PT) was entered on step three. In the second analysis, the order of entry of pubertal timing and sexual abuse was reversed, so that PT was entered on step one and SA was entered on step two; PT × SA was entered on step three. Both regressions revealed significant main effects for sexual abuse, with sexual abuse accounting for 19% of the variance in subjective age in the first regression and 13% of the variance when pubertal timing was controlled. There were no significant main effects for pubertal timing and no significant interactions. Sexual abuse was, therefore, a significant predictor of adolescent girls’ subjective maturity but this relationship was not moderated by pubertal timing.

Discussion
This study focused on three research questions. First, we predicted that we would find evidence of earlier pubertal maturation among sexually abused girls, relative to non-abused girls. This hypothesis was supported; the group of sexually abused girls reported a significantly earlier age of menarche than did the matched control group of non-abused girls. This finding is congruent with the recent suggestion that there might be a link between the trauma of sexual abuse and earlier maturation (Putnam & Trickett, 1993). Such a connection could operate through the effect of stress on the balance of hormones in the endocrinological system and specifically on gonadal hormones which regulate the timing and progression of puberty (Putnam & Trickett, 1993). Of course, because this was a correlational study, we are not able to conclude that sexual abuse caused, or even preceded, the onset of pubertal maturation. It is possible that earlier pubertal maturation, or the processes that regulate it, might have had an influence on the occurrence of sexual abuse. Moreover, it might be the case that a third variable or set of variables (e.g. earlier family conflict or stress) is responsible for both sexual abuse and earlier pubertal maturation (cf. Belsky et al., 1991).

Second, we predicted that the group of sexually abused girls would feel older than their non-abused counterparts. This hypothesis was confirmed and validates clinical observations that victims of sexual abuse often describe feeling as if they had lost their childhood. Victims of sexual abuse suffer ‘traumatic sexualization’ in which they learn about sexuality long before their peers and long before they are developmentally ready to fully deal with and assimilate these experiences (Finkelhor & Browne, 1985). Given that other research has linked an older subjective age with higher levels of problem behaviour such as substance use, school misconduct, disobedience to parents, and antisocial behaviour (Galambos et al., 1997), this research points to the possibility that an older subjective age among sexually abused girls might play a role in accounting for demonstrated links between sexual abuse and the multiple behavioural and psychological problems experienced by abused girls. Robbed of their childhood and of the opportunity to develop emotional maturity, an older subjective age among sexually abused girls might immerse them too early in ‘adultlike’ (but risky) activities such as smoking, drinking, and sexual intercourse. Again, because our research was correlational, these observations are speculative, and should be explored in further research.

Third, we predicted that there would be an interaction between sexual abuse and pubertal timing such that sexually abused girls who matured earlier than their peers would have the oldest subjective ages. In fact, pubertal timing did not moderate the effect of sexual abuse on subjective age. Sexual abuse was a significant predictor of subjective age, regardless of age at menarche. The lack of a moderating effect of age at menarche might be a consequence of the fact that most of the sexually abused girls had
experienced earlier menarche and the sample size was small, thereby limiting the power to test this effect. Future research with a larger sample and more variability in age at menarche might provide a more adequate test of this hypothesis.

Despite the limitations of a small sample size, a correlational design that was not longitudinal, and its restriction to girls, this study suggests that future research should examine further the links among sexual abuse, pubertal timing, and subjective age—and their conjoint influences on problem behaviours in adolescents. Do pubertal timing and/or subjective age play a role in the processes by which sexual abuse leads to behavioural and psychological problems? Longitudinal research that considers this question would provide a fuller understanding of how the trauma of sexual abuse plays out in adolescents' lives.

Acknowledgements

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Notes

1. An earlier version of this paper was presented at the meeting of the Society for Research on Adolescence, Boston, MA, March 1996.
2. $T$-tests and $\chi^2$ analyses indicated that no group differences on any demographic characteristics existed between sexually abused participants from the clinical agencies and those from the school sample. Similarly, these two subgroups did not differ significantly on subjective age or pubertal timing.
3. Because disclosures of sexual abuse had not been specifically solicited, but were volunteered spontaneously, no descriptive information regarding these abuse experiences was available.
4. School participants were not asked any questions about sexual abuse, although as noted previously, several of the students voluntarily disclosed a history of sexual abuse in the context of questions requiring about counselling history. Therefore the 10 students who indicated a history of sexual abuse had either currently or recently received counselling for sexual abuse.
5. The scales for the distress and force questions were changed from the original version so that the third point for each read 'not very distressing' rather than 'agreeable' and 'not forced' rather than 'voluntary'. These changes were made to make the scale more readable for a younger age group and to remove any possibility that the wording might appear value laden.

References


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