The Effects of Pubertal Timing and Pubertal Tempo in Depressive Symptoms of Boys and Girls

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Development’s Tortoise and Hare: Pubertal Timing, Pubertal Tempo, And Depressive Symptoms in Boys and Girls

In the article “Development’s Tortoise and Hare: Pubertal Timing, Pubertal Tempo, And Depressive Symptoms in Boys and Girls” researchers Jane Mendle, Jeanne Brooks-Gunn, K. Paige Harden, and Julia A. Graber investigated if and how pubertal tempo and pubertal timing predicted depressive symptoms over a 4-year period in a sample of children from the New York City area public schools. While much is known about pubertal timing, considerably less is known about pubertal tempo, and how it affects adolescents in psychosocial adjustment; this study was designed to develop a broader knowledge of pubertal tempo.

The researchers hypothesized that rapid pubertal tempo might be associated with psychological difficulties. A faster than average developmental tempo might demand a rapid adjustment to biological and social milestones; this would create strong reactions from parents, peers, and adults. On the other hand a slower developmental development might be less noticed by parents, peers, and adults; this is referred to as the maturation compression hypothesis. To test this maturation compression hypothesis the researchers assessed three different components: that there are significant individual differences in both pubertal timing and tempo, that pubertal timing and pubertal tempo each independently predict the development of depressive symptoms, and that the effects of pubertal timing and tempo on the development of depressive symptoms differ across gender.

The participants in this study were drawn from New York City public schools. Schools were selected based on a high level of ethnic diversity, and a location in
working- and middle-class neighborhoods in Queens, Brooklyn, and Yonkers. Flyers about the study were handed out to girl in the school when they were in third grade, during 1995-1996, and to boys when they were in fourth grade, during 2001-2002. The grade difference between girls and boys was intentional because of the later arrival of puberty in adolescent boys. Mother of 100% of the girls, and 99% of the boys reported English was spoken at home, but approximately 14% reported another language, usually Spanish, was spoken at home as well.

The study consisted of four assessments; one of which was completed during a home visit at the beginning of the study. During the home visit mothers completed an interview, and provided information in demographic variables, family composition, family medical and psychological history, children’s temperament, behavior, and emotional states. All four of the assessments used pencil-and-paper questionnaires. Children received a gift, and mothers were paid $60 at base line, and $75 in subsequent years for participation. Initially for girls follow-up assessments were scheduled for 6-month intervals, but due to the time intensive nature of the assessments, and the consequential loss of participation subsequent assessments were conducted at 1-year intervals; for boys follow-up assessments were annual.

Children gave their birth date during the first assessment so an exact age could be calculated, and in each follow-up assessment mothers reported family characteristics, child ethnicity, their own education and occupational status, and the education and occupational status of any other parent/caregiver in the household. The researchers then created a measure of family socioeconomic status using these responses based on the Hollingshead scale. In all four assessments mothers were given schematic drawings
representing the five Tanner stages of pubertal maturation and asked to circle the figure that looked most like their child; if a mother did not know the child’s pubertal status the child then completed the ratings. Participants also completed a CDI adapted from the Beck Depression Inventory.

The analyses were all modeled using the program Mplus, and full information maximum likelihood was used to account for missing data. Nested models were compared with each other using the chi-square difference test. Three tests were conducted: latent growth models of pubertal development in boys and girls to estimate pubertal timing and tempo, dual LGM of puberty and depressive symptoms, and multiple-group LGM of gender differences. The first test was to establish that participants exhibited individual differences in pubertal timing and pubertal tempo; the researchers controlled race/ethnicity variables. The researchers then used dual LGMs to test the relation among pubertal timing, pubertal tempo, and symptoms of depression in the second test. The third test examined if the relations of pubertal timing and tempo with depressive symptoms differed from boys and girls.

The results of test 1 confirmed there are significant individual differences in the tempo of pubertal development (Mendle, Brooks-Gunn, Harden, & Graber, 2010). The test also indicated that African American girls had significantly earlier pubertal timing than European American girls, but did not have faster pubertal tempo. For boys no ethnicity: Hispanic, African American, or European American, was significantly different in pubertal timing or pubertal tempo. The results of test 2 showed that boys with early pubertal timing did not experience the reduction in depressive symptoms other boys their age experienced. The test also showed that in boys the relation of pubertal tempo with
depressive symptoms was significantly greater than that of pubertal timing (Mendle et al., 2010). In addition, test 2 found early maturing girls experienced higher average levels of depressive symptoms during preadolescence, consistent with previous research findings; rapid maturing girls demonstrated no worse outcomes. There were no effects of ethnicity on either level or change in depressive symptoms in girls. Test 3 indicated that the relative impact of pubertal timing and pubertal tempo significantly differed across boys and girls (Mendle et al., 2010).

This study found there is a significant difference in the cause of depressive symptoms in girls and boys (Mendle et al., 2010). Early maturing girls are found to have a higher level of depressive symptoms in adolescence, but for boys pubertal tempo had a higher effect on depressive symptoms. This finding supports the maturation compression hypothesis the researchers proposed at the beginning of the study. The researchers also admit to having limitations in the study; due to the fact that little research has been done on pubertal tempo, and there has been inconsistency in findings, the researchers suggest the study be considered a preliminary exploration. Another drawback to the study was the small sample size, and consequential attrition. Because study of pubertal tempo requires analysis of subtle changes, and some participants were inconsistent in participation of assessments, worry of validity of findings is present. The researchers used growth curve modeling with FIML to account for missing data, but admit this might have compromised data findings. Finally, mothers personally reported pubertal status based on the Tanner stages drawings, and their reports might not have been accurate.

The study “Development’s Tortoise and Hare: Pubertal Timing, Pubertal Tempo, And Depressive Symptoms in Boys and Girls” was designed to analyze how both
pubertal timing and pubertal tempo effects adolescent depressive symptoms. Currently this study is one of the first to analyze variability other than pubertal timing at puberty, and strengthens the understanding of a need for more research to be done on pubertal tempo in future studies.
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