Preadolescent Development: Case Studies in Twins

RICHARD A. FRANK, M.D., a AND DONALD J. COHEN, M.D. b

aClinical Fellow in Psychiatry, Harvard Medical School, and Resident in Psychiatry, McLean Hospital, Belmont, Massachusetts; bProfessor of Pediatrics, Psychiatry, and Psychology, Yale University School of Medicine and the Child Study Center, New Haven, Connecticut

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The authors studied eight sets of healthy twins, ranging in physical maturity from prepubertal to late pubertal, and their parents, to assess psychological changes in early adolescence. A phase-specific psychosocial regression correlates with the biological onset of puberty. We present preliminary findings related to twinship, parental reactions, and longitudinal development, based on detailed case studies. Parents experienced increased conflict, detachment, and pride in response to their twins' psychosocial development at puberty. The more advanced child in a pair tended to lead in all spheres of adjustment—school success, heterosexual interest, peer friendships, and independent behavior. Although the more advanced child began to break away from his twin, in general the twin relationships remained close. Differences in personality traits and rate of psychosocial development within a twinship tended to remain consistent or to become accentuated. They were occasionally narrowed but rarely reversed from early childhood through early adolescence. Some of the differences were fostered by dissimilar patterns of identifying with the parents.

Since Hartmann's research of 1934–35 [1], good use has been made of twin studies to illustrate, test, and generate hypotheses about human development [2,3] and psychoanalytic psychology. Pairs of twins reared in the same family experience a generally similar environment, and identical twins share the same genetic endowment. These constancies form a relatively controlled background against which change in other variables stands out.

The twin relationship leads naturally to comparisons throughout childhood, so that parents of twins can frequently recall the vicissitudes of small differences in developmental pace and style. Personality differences in older twins may be traced to early, unpredictable physiologic differences (e.g., in birth weight), transitory discrepancies in skills, and differential identifications and interactions with mothers and fathers [1,4,5,6,7,8,9]. Because the closeness of a twinship is comparable to a parent-child relationship, twin studies can add to our knowledge of normal and pathological patterns of separation and individuation [3,10].

The present investigation was part of an integrated series of studies of twin development, including intensive, longitudinal studies of a cohort of twins from gestation through childhood and large-scale epidemiological studies of social and

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Address reprint requests to: Donald J. Cohen, M.D., Child Study Center, 333 Cedar Street, New Haven, CT 06510.

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biological influences on children's development [6,7,11,12,13]. In this investigation, a small group of normal twins and their parents were interviewed and tested. The major goal of the study was to develop hypotheses and instruments for the longitudinal cohort and to better describe the developmental phase of preadolescence, the transition from late childhood into adolescence.

Preadolescence coincides with the biological phase just prior to and during the observable onset of puberty. It is, thus, a period of neuroendocrine and somatic instability. Until recently relatively neglected in comparison to adolescence proper, preadolescence is receiving increasing attention as investigators seek to move beyond speculation in defining the psychosocial, somatic, and neuroendocrinological changes common to preadolescents, and the interrelationships among these changes [14,15,16,17,18,19,20,21].

In an earlier, companion paper, we reported evidence from our twin cohort that preadolescence is, indeed, a unique phase of adjustment, characterized by lowered self-esteem, sensitivity to parental authority, anxiety about the opposite sex, and frequent minor emotional upsets [22]. In short, there appears to be a phase-specific, phase-limited regression in personality structure. The present paper focuses on the roles played by twinship, parental reactions, and earlier development in the preadolescent transition of these twins. Examination of these variables may shed light on the social and life-historical context of preadolescence. It may also extend our knowledge of twinship maturation beyond the childhood years.

METHODS

Population

The eight sets of twins were healthy, between nine and 15 years of age and living with both parents (refer to Table 1). All families were middle class by income and parents' occupations. Zygosity was assigned using Cohen's questionnaire method, which discriminates between identical (monozygotic, MZ) and fraternal (dizygotic, DZ) twinships using mothers' judgments of physical similarity and of twin confusion by family and strangers [23,24]. Physical examination (all twins) and blood typing by 22 antigens (three twinships) confirmed the questionnaire results.

PROCEDURE

Mothers and fathers were interviewed jointly, and each parent completed a series of questionnaires.1,2 Each child was interviewed separately, examined physically, and completed a series of self-descriptive questionnaires and standardized tests.3 Pubertal maturation stage was rated according to Tanner's classification adapted by Root [36,37,38,39]4

The population was divided into four puberty subgroups by averaging each child's Tanner stage for genitals (boys) or breasts (girls) with stage for pubic hair: prepuberty (PP, average stage 1); early puberty (EP, stage 1½ to 2); midpuberty (MP, stage 2½

1Informed consent was obtained from parents and children.
2Twin Development During the First Years of Life; Recent Family Changes; Behavior Problems; Behavior Changes in Preadolescence; Childhood Personality Scale, Parents' Report [25,26,27]; Pregnancy, Delivery, and First Month of Life; and Father's Report on Pregnancy [12].
3Wechsler Intelligence Scale for Children—Revised, selected items [28]; Self-Image Questionnaire for Adolescents [29]; Self-esteem Inventory [30]; Locus of Control Scale [31]; Tasks of Emotional Development Test [32,33]; Moral Judgment Interview, Heinz Story, Form AIII [34,35].
4For table of Tanner staging criteria, see Frank and Cohen, 1979 [22].
to 3) and late puberty (LP, stage 4). Each twin pair was concordant for subgroup. Twinship characteristics are detailed in the table.

**RESULTS**

**Twin Relationships**

*Children’s view.* While all MZ’s agreed that being a twin is special, at least one in every pair of DZ’s disagreed, because they and their twin were not look-alikes and people did not recognize them as twins. Disagreement in a pair may have reflected the greater readiness of one twin to begin separating from the other, as in Set 4 of DZ girls:

- It’s interesting. The teacher says, “I never knew you were a twin.” It would be more fun if we were identical. We could fool people (F, 12:0, EP)
- Not much [is special]. We’re nothing the same. We’re all opposite. She has blue eyes, I have brown. She makes stuff, I do tougher stuff. (F, 12:0, EP)

In fact, the latter girl was clearly more interested in visiting friends away from her home.

Younger twins felt the uniqueness of the twinship lay in the physical resemblance. They said, “You're different,” or “People notice.” Older twins observed, “You stick together when you're in trouble,” “You're never lonely.” In line with the adolescent trend toward deeper relationships and self-examination, the focus seemed to shift from appearance attracting the attention of outsiders to mutual companionship within the twinship itself. Until LP, all children felt that the level of activity shared with their twin had been unchanging or actually increasing. Even in LP, when more discrete choices of friends allowed for more separate activity, the twin relationship remained strong. Closeness and mutual support did not interfere noticeably with ability to differentiate themselves as individuals. Not yet proficient in describing personality, they readily described differences in terms of appearance and interests.

*Parents’ view.* Although parents believed their twins were still close, they recognized the increasing complexity of the twin relationship at this stage. The EP girls in Set 4 were fighting more over each other’s property even as common friends and “girlish interests” drew them closer together. Parents of three sets noticed one child making a stronger effort than the other to be independent of his twin. In Set 2 of EP boys, only one twin wanted his own room and liked to do projects alone. He was tired of his brother leaning on him for help with homework and was not as upset as
his twin brother when invited to go places without his twin. At the same time, he was becoming more aware of his brother's feelings; he warned him not to wear the same shirt to school every day for fear of embarrassment. These boys wanted to dress as individuals and to pick their own friends, yet they would still present a united front to parents, protect each other from punishment, even sleep in the same bunk bed in cold weather. Discordant roles developing earlier in childhood continued to determine the broad outlines of their twin relationship in preadolescence. The more independent boy continued to lead in school success and social sophistication. His brother continued to be stronger and more agile. Each was still helping the other with his specialty.

In two DZ and two MZ sets, there were no major differences in developmental maturity between twins. In three DZ sets in which differences were obvious, parents saw one twin as leading in all four areas of adjustment: school performance, independence and adult behavior, peer socialization, and heterosexual interest. In the one MZ set in which differences were clear, one twin led in three areas, while school performance was equal. Thus, either both twins were roughly matched, or one twin tended to lead across all major tasks of development. In no case did one twin clearly lead in some tasks and lag in others. Twins' self-rating on psychological tests agreed with parents' observations.

Parents of two older sets emphasized the lagging twin's attempts to catch up developmentally and to balance a lopsided twin relationship. The MP boy in Set 6 had been so dominated by his twin sister as a toddler that he was sent to nursery school alone to allow him to gain confidence. He finally began to fight back at age ten, but only at age 13 had he succeeded in dampering her domination. The EP boy in Set 7 who had always lagged behind was described by his mother as a changed person:

He will now stand up more against his brother. He's more self confident . . . This is the biggest change in either one . . . School has brought him around. (Mo. of DZ boys, 13:2, EP)

As much as they welcomed these changes, the same parents could not ignore the broad gaps that remained. The dominating girl in Set 6 was still seen as leading:

She has changed; she's becoming more of a young lady. She's able to enjoy a joke with us, give compliments . . . He still acts like a little boy. (Mo. of MSDZ, 13:0, MP)

The boy in Set 7 who was gaining self-confidence still had a long way to go:

He's stressed because he's always trying to keep up in everyday affairs . . . He's always trying harder to achieve the same thing. (Mo. of DZ boys, 13:2, EP)

Differences in coping ability during the transition into early adolescence seemed a natural result of pre-existing differences in childhood personality development. For example, in two twinships in which heterosexual interest was clearly discordant, parents indicated that the leading twin had more interest even in prepubertal years. In no case was a general developmental lead reversed, so that the twin who coped better in latency now fell behind. The leading twin was more confident, autonomous, and socially sophisticated, always a step or two ahead. As one mother summarized, "Where his brother would say, 'I have a headache,' he says, 'I need an aspirin.'"
PARENTAL CONCERNS

When pubertal children became more aggressive and emotionally labile, they might call forth angry, conflicted, or bewildered responses from their parents:

When she cries it may be a really bad hurt, or even faking. You don't know . . . When we're upset she doesn't try to palliate . . . She's a great questioner. She has to ask everything repeatedly, like “Who's coming to the dinner party tonight?” . . . It's exasperating. (Mo. and Fa. of DZ girls, 12:0, EP)

They ignore their father at times, say if they're excited about a telephone call. He then prefers K (eight-year-old daughter) who will always say hello and initiate contact. (Mo. of MZ girls, 12:5, MP)

Compared to earlier childhood, preadolescence posed more complex issues, to which parents brought differing backgrounds and attitudes. Most mothers and fathers agreed on fundamentals of limit-setting and discipline, but when they did not, the problems could be exacerbated. The parents of the EP girls in set 3 were at odds over their twins' erratic behavior. Father, raised in a "liberal" household, explained:

I tend to take the blame for their actions and moody temperament . . . I feel guilty if I punish them. But I boil over first, physically put them in their room and give them a swat. (Fa. of DZ girls, 12:0, EP)

Mother, whose own parents “accepted no lip,” came to a different conclusion about the twins' disobedience: “They deserve punishment!” These two parents with their differing perspectives could analyze the same situation in very different ways. Once when one twin wanted to accompany her mother in the car, she claimed she had finished her homework. That night she was caught in bed using a flashlight to complete her assignment. Mother felt she should be punished for lying; father thought her lucubration proved how conscientious she really was.

Parents expressed concern about maturational issues as well as upsetting behavior. Academic work became more important as children left elementary school. Physical and psychosocial maturation at this stage created new problems. Parents mentioned acne and overweight as physical problems interfering with their children's self-image and confidence in socializing. The parents of PP Set 1 wondered if their twin boys were “too immature.” They believed other boys the same age to be more worldly and interested in girls. On the other hand, parents of pubertal twins, especially of girls, felt justified in protecting their child from "wild" or "pseudo-mature" youngsters in the neighborhood or school who might influence them to grow up too quickly or to contravene family morals:

I'm afraid of their peers who are prematurely tough and old, who use bad language . . . They come home and say, “This one smokes, that one said a four-letter word.” . . . I feel I have to keep them closer to home; the neighborhood has changed since I was brought up here. (Mo. of MZ girls, 12:5, MP)

The girls at their old school were advancing too quickly . . . They went steady with boys, out to parties. We didn't like it. The twins avoided these girls after school and became somewhat isolated. (Mo. of MZ girls, 14:10, LP)
Parents who saw one of their boys as a habitual "follower" feared he might accept drugs from older boys in junior high school just to please them.

Although most parents saw signs of their children's developing interest in the opposite sex, their range of reactions reflected considerable variability in recognition, acceptance, and participation in this newly maturing area. A few parents and children seemed to collude in denying any interest:

They're in an all girls' school now, so there's not much contact. They may meet boys downtown by chance . . . when they're older they'll know how to handle it . . . They don't care about it. They say, "What could I do with a boy if I went out now?" . . . Their activities keep them too busy. (Mo. of MZ girls, 14:10, LP)

This mother did not know until participating in the study that her daughters had discussed the "facts of life" extensively with an older sister at the age of 11 years. A mother of younger girls was very aware of her daughters' interest in boys and sexual development:

They ask when will we start to menstruate. This year they call attention to developed girls; they tell us what the boys say about developed girls in school. They're anxious to move ahead. (Mo. of DZ girls, 12:0, EP)

Concerned that their school's introduction was insufficient, this mother taught a sex education class for children in her twins' age group.

Both sets of girls happened to be obviously discordant for sexual development. The lagging twin's reaction seemed to differ as a function of parental attitude. In the more denying family, the lagging twin said she was happy to start her periods later, not to be bothered, even though her sister called her "a boy." In the more accepting family, the lagging twin was curious and asked her mother when she would start to develop. But even parents' expressed interest could not guarantee open communication. Several parents who presented talks or books met with little overt curiosity. Parents could only begin a process of exploration that might continue more freely in their youngsters' discussions with peers and in their private thoughts.

Despite all these concerns, parents continued to enjoy their children in preadolescence and early adolescence. The youngsters' ability to reason and to act in more grown-up ways helped compensate for new problems and difficulties. Parents found more satisfaction in the twins' accomplishments and in their growing sense of responsibility as members of the family and of society.

**CLINICAL STUDIES**

The following clinical studies of twinships in their family contexts highlight the impact of several variables on the preadolescent transition. These variables include prior developmental strengths and weaknesses, the twin relationship, identifications with parents, and parental attitudes and reactions.

**Set 2 MZ boys/Age 11:8 years/Puberty Stage 1**

Repeated bouts of colic and of otitis disrupted the sleep of these boys during their first year of life and put great demands on their mother. Robert (Twin 2B) was born 500 grams heavier than Randall (Twin 2A) and thereafter maintained a slight edge in weight and in height. He developed slightly more rapidly and was seen by his mother
as the more cuddly, happy, and even-tempered infant. In early childhood Robert continued to be more warm and sociable, whereas Randall was more independent.

Although both twins were seeking more autonomy in prepuberty, to a certain extent the early personality differences were preserved. Robert was more openly affectionate and even-tempered, Randall, more self-contained and given to outbursts, especially against his younger sister. Both boys were extremely bright. They were leaders in school who succeeded in whatever tasks they tackled. Randall was somewhat more dextrous and creative, Robert more patient with extended "brainwork." At age 11, Randall was more explicit about his desire to separate from his twin and his parents. His constant display of humor and his fantasies of omnipotence may have helped in this separation movement to compensate for his being the smaller twin. His cooler, more witty, more erratic demeanor seemed modeled after his father, who, in turn, felt closer to him because of the resemblance. At the same time, Randall harbored more resentment when father's anger turned upon the twins. Although Randall may have identified more with his father and Robert with his mother, neither twin presented a distinctly more masculine or feminine character.

The parents described the twins as reasonable, enjoyable boys whose physical and social maturation was delayed relative to other children their age. More anxious about future adolescent problems than about present immaturity, they continued to shelter the twins from activities beyond the home. This whole pattern of development, including the parenting style, recapitulated the parents' own histories, thereby contributing to their identification with the twins. The parents looked upon brains, agility, and enthusiasm for sports as the twins' resources to offset their small stature and social reticence. The boys agreed, at least superficially, for they saw themselves as confident and capable. Their close twin relationship helped bolster confidence by giving credence to their chosen activities. If both boys played games with younger children instead of "hanging out" away from home, they could more easily ignore the deviance of their behavior from peer group norms. Having younger rather than older siblings (sister 10, brother 5) also could have reinforced the tendency to extend childhood and to deny preadolescent behavior.

Set 3  

DZ boys/Age 11:9 years/Puberty stage 2

Mark (Twin 3A) was born 300 grams heavier than Michael (3B). His weight advantage continually increased, especially from five to nine years. By preadolescence his weight was recognized as a serious problem by everyone in the family; he felt he was ugly and fat. To make matters worse, he had been the shorter twin since early childhood.

Mark had been the happier, more tranquil baby. He was precocious in motor activity but lagged in speech. In childhood and early puberty these early tendencies were the basis for continued differentiation in character. Mark became the more sociable and empathic boy, the baby of the family. At age 11½, he was far more attached to his parents and close to the oldest sister, a bright, maternal, twenty-one-year-old. Michael became the more independent, intelligent, verbal, and creative boy. He was paired with the seventeen-year-old sister, an athletic, extroverted girl.

The social concerns of early puberty seemed to highlight Mark's deficiencies. His self-esteem was low, and he was anxious, accident-prone, and likely to sulk or cry when upset. He was an open book to the family, whereas Michael made more use of fibs and secrecy. Michael excelled in school, whereas Mark fell below average. Michael alone showed readiness to separate from his twin and his parents, and he
reacted to family encroachments with temperamental outbursts. He has always felt comfortable playing with girls, whereas Mark had not. At age eleven, Michael began to emulate his older brother, age thirteen, who had started to date and dress up. Mark was not openly concerned with dating, but envied his older brother’s recent success in losing weight. Since the older brother was concerned with his own masculine image, he preferred the more physical twin, Mark.

With his greater physical strength, his retiring temperament and his preference for manual work, Mark seemed to take after his father. With his verbal aptitude and relative extroversion, Michael resembled his mother more closely. The twins’ complementary roles thus were linked to differences in child-parent identification patterns.

**Set 4**

**DZ girls/Age 12:0 years/Puberty stage/Twin A, 2/Twin B, 1 1/2**

Slightly heavier at birth, Carol (Twin 4A) always maintained a small lead in weight and stature. She was always more physically sound, more coordinated, more regular in sleeping and eating habits. Her sister, Cindy (4B) crawled and walked first, but Carol’s physical prowess—her strength, dancing, and acrobatics—made her the “center of attention.” During infancy Carol babbled more and was more even-tempered. Her general developmental lead continued into early childhood. At that time Cindy’s strengths in social relations became apparent; she was the less fearful and more empathic twin.

While developing faster, Carol was always more sensitive to stressful situations, exemplified by her tearfulness when first entering school. Her reactions to early puberty were much more noticeable than Cindy’s and more problematic to her parents. She changed from the “model daughter” to a stubborn, irritable, sometimes disobedient girl. Compared to Cindy she showed less affection toward her parents and more resentment, particularly when they intervened with orders or advice. Her academic performance declined as her conscientiousness about school work yielded to concerns about friends and physical appearance. She put more emphasis than Cindy on differences between the twins, calling her twin artistic and herself “tougher.”

It was difficult to determine whether Cindy’s preadolescence was smoother because she coped better with emerging tasks or because she avoided them by means of superficial adaptation. There were several areas of contrast. Cindy showed less desire to visit friends, but she had slept at her friends’ houses, whereas Carol had always wanted to return home. Cindy was less concerned about jewelry, clothes, and makeup, but she had a boyfriend and Carol did not. Cindy took over the role of model daughter, cooperating and taking things in stride. Although her sister was considered slightly more intelligent, Cindy began to receive higher grades as a result of her consistent work, artistic creativity, and likable nature.

During this phase (age 11–12), Carol’s physical pubertal development had been obvious for several months, while Cindy had not changed noticeably. But this discordance did not seem to be entirely responsible for Carol’s more uneven course. While less aggressive, Cindy was more inner-directed and flexible, using her social skills to attract others. Carol was quick-tempered, more exacting, and aggressively anxious to succeed in growing up. Cindy’s temperament tended to match her father’s, while Carol’s more closely matched her mother’s. These long-term personality differences, fostered by contrasting identifications with the parents, seemed to be important determinants of the twins’ different behavior styles in early puberty.
DISCUSSION

Parental Reactions

In contrast to parents of preschoolers [26], parents of pubertal children believed they should withdraw when displeased with them. The new ideal of detachment probably represents an attempt to avoid conflict with youngsters who may be more often moody or belligerent, as well as a realization that more independence at this stage is an appropriate stimulant to personal growth. Parents’ tendency to see relatively more problems and childish behavior in opposite sex children suggested either unclear norms about opposite sex behavior or anxiety about carefully observing and interacting with opposite sex pubertal youngsters. Although strains appeared in family relationships, open communication did not break down. Parents continued to offer, and children to accept, firm guidance and warm support.

In agreement with the hypothesis of child developmentalists [18,40,41], strong family ties appeared to be an essential ingredient in the smooth mastery of psychosocial tasks. When parents do not serve as attractive models and nurturant helpers, adolescents are thought to seek peer support more urgently and uncritically, with the risk of over-conformity and antisocial behavior [18,42]. The present study served to emphasize the interdependence of strong family ties and well-socialized peer group behavior; in the social network of these families, there were few seriously antisocial youngsters to serve as contrasting models to parents. In response to the Kohlberg Moral Judgment Interview [38], the children, especially girls, clearly showed their pessimism about the possibility of successfully defying social conventions. While the peer group supports steps to independence and minor acts of defiance of parental rules, its values tend to reflect parental values unless the social structure of the whole community is in serious disarray [40,41,43].

Separation and Individuation

Striving for autonomy and a satisfying sense of individuality is a lifelong process that assumes progressively different features during each new developmental stage [10,44]. In early to midpuberty this striving was represented by a growing sense of sexual and aggressive potency, an increasing level of activity outside the home, and a developing sense of self as separate from the family. The social matrix of peer group activities, special friendships, and relationships with older siblings provided opportunities for experimentation with more autonomous and less childish roles. Such role opportunities combined with increasing tendencies to introspection and self-evaluation contributed to the elaboration of a distinctive inner life, although not to the same extent as in late adolescence.

Investigators of twin development have stressed the interference of the strong intra-twin bond with normal progress toward autonomy and mature interpersonal relations [2,45,46,47,48,49,50,51]. Factors said to favor a strong bond or “twinning reaction” include simultaneous passage through developmental phases, mutual gratification, defenses against hostile impulses, perceived physical and psychological similarity, and an environment that makes minimal distinctions between twins [1,48,49].

The present study suggested that close, active relationships between normal twins continue into the pubertal years. At the same time, the first obvious movements toward twin separation are seen in the expression of individual interests and in preference for solitary or group activities that exclude one twin. Ample evidence was
provided that twin resemblance is a much more significant developmental influence for MZ twins than for DZ's. Parents tended to perceive MZ twins developing as a unit, particularly during the first years of life. Even at preadolescence both parents and children described MZ twins as considerably more concordant than same-sex DZ's in personality and behavior. The higher concordance of MZ's may reflect the strong psychosocial effects of resemblance on parents and twins, as well as the initial genetic contribution to physical and psychological similarity. It helps explain why separation seemed to proceed more readily in DZ sets. During EP and MP, differences in pubertal maturation rate also contributed to greater separation in DZ sets, as the more physically and socially advanced twin was drawn to new interests and activities.

**Lines of Development**

*Origins of personality differences within twinships.* Parents' reports confirmed the importance of differences at birth and in early life for individual development suggested by earlier studies [1,4,5,6,8]. In the one twinship (Set 6) in which birth weights differed by more than 25 percent, the heavier twin retained a consistently large lead in growth, school success, and sociability, as the research of Babson and Phillips [52] would predict. Early life developmental shifts or reversals were also noted, as in two sets (3 and 4) in which the lighter, less robust infant matured more quickly or became the more vocal and sociable twin, a course previously described by Gifford et al. [8].

The development of distinctive individual personalities was favored when each twin was linked more closely to a different parent, a pattern common in two DZ sets but also found in one of three MZ sets. Kolb [9] has termed this pattern "everted," as opposed to "inverted" identification, which is characterized by a stronger intra-twin bond and a sense of self based less on the individual and more on the twin unit. The "everted" pattern seemed logically adaptive in reducing competition for the same parental sources of gratification. Another probable consequence suggested here is the magnification of small constitutional or transitory developmental differences into larger and more stable differences in character, although not necessarily along the traditional masculine-feminine line singled out by some investigators [1,9].

*Continuity of developmental trends.* In general, twins were equally advanced (four sets) or else one twin was further advanced along all lines of development (three sets). The prevalence of these twinship types supports a stage theory of development, in which fairly close correspondence among growth rates on the various developmental lines is the norm [53]. Roles of "leading" and "lagging" twin established in early childhood remained consistent through the preadolescent transition, perhaps stabilized by the complementarity of roles allowing each twin to stand out and secure attention as an individual [50]. The observed developmental consistency lends support to the assertion that the greater the success in latency tasks of ego autonomy, the smoother the psychological adjustment to increased drives at the onset of puberty [15,54].

When different patterns of adjustment appeared relatively suddenly at preadolescence in a twinship without a prior history of clear developmental discordance (Sets 2 and 4), the significance of the differences was less easily explained. They might have arisen from transitory responses to transitory differences in physical maturation, or from manifestations of long-term differences in character structure that remained unnoticed until exposed by the biological and psychosocial forces of early puberty.
APPENDIX

Abbreviations used in the text:

MZ  monozygotic (identical twin)
DZ  dizygotic (fraternal twin)
twin A  firstborn twin
twin B  secondborn twin
M  male
F  female
mo.  mother
fa.  father
PP  prepuberty
EP  early puberty
MP  middle puberty
LP  late puberty

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