

SCHIZOPHRENIC SUB-DIAGNOSIS AND AGE AT MENARCHE

By

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NOT uncommonly, schizophrenia seems to arise in close connection with the puberal years. This is sometimes attributed to psychological or physiological stresses at puberty, but there is no really adequate understanding of the phenomenon. One cannot predict at all dependably which personality characteristics or which stresses will result in a schizophrenic breakdown near puberty.

The data of the present study touch obliquely on this problem of puberal susceptibility to schizophrenia. They suggest that a relationship exists between the type of schizophrenic breakdown a patient shows (i.e., schizophrenic sub-diagnosis) and at least one condition (chronological age) which obtained for that patient during puberty.

The chronological age at which puberty occurs may be physically, sociologically and psychologically quite important. It is possible, for instance, that a specific age of sexual development forces (or results from) a specific type of nervous system development. And it is fairly certain that in our society, with its age-norms for sexual behaviour,¹ early and late maturers face different problems in aspiring to the adult sexual role.

The data for the present study were obtained from standard admission records at three different mental hospitals.² Age at menarche was recorded for a substantial portion (1094 of 1768) of female schizophrenics. Four samples, composed of these females and 2193 male schizophrenics (all under age 40 at admission) were obtained as follows: (1) a complete sample of Caucasian schizophrenics admitted to the Colorado Psychopathic Hospital (Denver) during the years 1948–1956, (2) a similar sample admitted to Connecticut State Hospital (Middletown) during the years 1939–1952, (3) a random sample of Caucasian schizophrenics, drawn in different proportions for males and females, admitted to Rockland State Hospital (Orangeburg, New York) during the years 1932–1955, and (4) a complete sample of Negro schizophrenics admitted to Rockland State Hospital during the years 1932–1945 and 1948–1955.

For purposes of analysis, the schizophrenic diagnoses were broken down into three sub-categories: (a) an “acute-atypical” group, including the diagnoses catatonic, acute-undifferentiated, schizo-affective, mixed, and other types; (b) a “chronic” group including cases diagnosed as hebephrenic, simple, or chronic-undifferentiated; and (c) paranoid schizophrenics. Age at menarche in the females was trichotomized into an early group (menarche from age 8 to 12), a modal group (menarche at age 13), and a late group (menarche from 14 to 18). The three left-hand data columns of table I show, for each sample and overall, the number and proportion of female cases in each puberal age group falling into the three diagnostic categories; the extreme right column, for comparison, shows the proportions in each diagnostic category for the male samples. For the entire group, and within each sample as well, the diagnostic distribution

¹ For instance, heavy dating tends to be frowned upon in a twelve-year-old, but considered desirable by age sixteen or seventeen.

² The author wishes to express appreciation for the kind co-operation of these hospitals in making their records available.

TABLE I
Diagnostic Patterns as a Function of Age at Menarche and Sex of Subject

Schizophrenic Sub-diagnosis	Females with Menarche						Males	
	Before age 13		At age 13		After age 13		N	%
Sample:	N	%	N	%	N	%	N	%
RSH Negro								
Acute-atypical ...	26	70	15	60	20	57	79	59
Chronic ...	3	8	3	12	6	17	25	18
Paranoid ...	8	22	7	28	9	26	31	23
RSH Caucasian								
Acute-atypical ...	62	59	48	41	60	35	452	36
Chronic ...	10	10	30	26	39	22	311	25
Paranoid ...	32	31	39	33	74	43	485	39
Connecticut								
Acute-atypical ...	50	41	50	44	58	36	194	36
Chronic ...	29	24	30	26	53	33	175	33
Paranoid ...	42	35	34	30	51	31	165	31
Colorado								
Acute-atypical ...	26	35	21	37	21	28	52	19
Chronic ...	11	15	12	21	15	20	66	24
Paranoid ...	37	50	24	42	39	52	158	57
Total								
Acute-atypical ...	164	49	134	43	159	36	777	36
Chronic ...	53	16	75	24	113	25	577	26
Paranoid ...	119	35	104	33	173	39	839	38
Grand Total ...	336	100%	313	100%	445	100%	2193	100%

of the late-menarche females is different from that of the early-menarche females, and similar to that of the males; the pattern of females with menarche at age 13 seems to fall between those of the early and late menarche females. Males generally are somewhat older at puberty than females, and so it is tempting to suggest that the diagnostic similarities between late-menarche females and males may be related to their similar age at puberty.

In analysing the data, the similarity of each other group to the late-menarche females was examined. Separate chi-squares were computed for each diagnostic sub-group within the male sample and within the two earlier age-at-menarche female samples, using the late-menarche female proportions to estimate the expected values. Overall values were obtained by adding chi-squares over the four samples. The late-menarche females were found to have significantly more "chronic" diagnoses than the early-menarche females (chi-square = 21.7, d.f. = 4, $p < .001$). Correspondingly, the late-menarche females had fewer "acute-atypical" diagnoses than early-menarche females (chi-square = 18.4, d.f. = 4, $p = .001$). However, in spite of the large size of the male sample, which would tend to make even small differences statistically significant, no significant differences were found between the diagnostic distribution of males and that of late-menarche females. The smaller number of females with menarche at 13 also failed to differ significantly from the late-menarche females. Finally, there were no significant differences between any of the groups in proportion of paranoid diagnoses. (All these insignificant chi-squares were under 7, d.f. = 4, $p > .10$).

The obtained relationship between puberal age and diagnostic sub-type might result from a direct involvement of the puberal process in the development of schizophrenia, or it might be a reflection of some third factor which itself is related to both puberal age and schizophrenic sub-type. The present data are not sufficient to choose between these alternatives.

One might, for instance, conjecture that some personality characteristic such as introversion, perhaps because of attendant problems in interpersonal interaction, is more likely in patients with late puberty and in turn favours the "chronic" types of schizophrenia. Another possibility is that physical body type might relate to both psychiatric diagnosis (e.g., Rees, 1) and age at puberty (see Sheldon *et al.*, 2) producing a spurious relationship between these variables.³ Either of these hypotheses could conceivably account for differences between early- and late-menarche females. It is harder, however, to see just how they might mediate the great similarity between the diagnostic patterns of males and late-menarche females.

If, on the other hand, one tries to implicate puberty directly in the causation of schizophrenia, certain assumptions must be made. Puberty, being the universal experience it is, cannot be seen as sufficient cause for the rather rare condition of schizophrenia. Rather one might hypothesize that puberty provides a condition of especial host-susceptibility to some non-universal schizophrenogenic agent, and that it is the action of this agent upon the susceptible host which is critical in producing schizophrenia.

Secondly, although schizophrenia rarely occurs before puberty, it does not reach its maximum rate until at least some ten years after puberty. To reconcile this fact with the idea that schizophrenia may have its origins in puberty, one must posit a delaying action. One might, for instance, assume that schizophrenia is an abnormal development of the personality—or the central nervous system—which frequently *begins* in the puberal years, although it generally does not become severe enough to be clinically *manifest* until some years later.

Thus, although other interpretations cannot be ruled out, the present data can be interpreted as evidence that conditions (age in this case) prevailing during puberty may affect the type of psychotic breakdown a person will have. One might even go further and suggest that puberal conditions affect the type of schizophrenic breakdown because the schizophrenic process actually begins during puberty in many cases, although it does not reach clinical proportions until considerably later. However, although one can accept the possibility that a process initiated during puberty may not become manifest for several years (as the beard, for instance), it is difficult to assume a puberal origin for occurrences which are too far removed in time from puberty. Schizophrenia occurring in the late twenties or the thirties would not, intuitively, seem as likely to be of puberal origin as would earlier schizophrenia. Schizophrenia occurring in the teens, and perhaps even in the early twenties, would seem more likely to have started at puberty.

³ An attempt was made to examine the interaction between body-type, age at menarche, and diagnostic sub-type, using the examining physician's estimate of body-type as data wherever it was recorded. The results indicated that asthenics might well have later age at menarche than athletics or pyknics, but no clear or consistent relation between body-type and schizophrenic sub-type could be extracted (except for a slight excess of athletics among the paranoids). Thus, for these data, age at menarche related to diagnostic sub-type much more clearly than did body-type. Since, the body-type estimates were probably casually made and were irregularly reported, the failure here to relate body-type to schizophrenic subdiagnosis may only reflect inadequate data. However, it is possible, in view of these data, that puberal age might mediate the frequently-claimed relationship between asthenia and certain types of schizophrenia (1) (4), rather than the other way around.

Further analysis of the present data supports this intuitive expectation. Puberal age proved to relate significantly to schizophrenic sub-type *only* for those schizophrenics whose psychoses became manifest before age 25. Among schizophrenics with onset before 25, "chronic" diagnoses were more than twice as common in the late-menarche females (66 (37%) of 177 cases) as in the early-menarche females (26 (14%) of 180 cases). Chi-square for this difference is 23.4, d.f. = 1, $p < .001$. Among the schizophrenics with psychotic onset at 25 or later, however, "chronic" diagnoses occurred as often in early-menarche females (27 (17%) of 156 cases) as in late-menarche females (47 (17%) of 268 cases). Correspondingly, in the early-occurring schizophrenics, "acute-atypical" diagnoses were more common among early-menarche females (104 (58%) of 180 cases) than among late-menarche females (69 (39%) of 177 cases). Chi-square for this difference is 13.0, d.f. = 1, $p < .001$. And again, among late-onset schizophrenics there was little difference in proportion of "acute-atypical" diagnoses (60 (38%) of 156 early-menarche, and 90 (34%) of 268 late-menarche females had such diagnoses). The proportion of paranoid diagnoses did not show a significant relationship to age at menarche in either early- or late-occurring schizophrenic cases.

Freely interpreted, this finding might mean that many of the early-occurring, non-paranoid schizophrenias were actually initiated at some time near puberty, and that the form they took depended partly upon the conditions (age) that obtained for the subject during puberty. This is, tentatively, the investigator's preferred interpretation since it agrees with data previously published (3). However, the present data are open to a number of other explanations, as was suggested earlier. In any case, it is hoped that the relationship presented in this paper may serve to promote further interest in the puberal condition of schizophrenics.

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