

# ABILITY, MONTH OF BIRTH AND CLIMATIC TEMPERATURE

J. E. ORME

Chief Clinical Psychologist, Middlewood Hospital, Sheffield.

It has regularly been reported that subnormal births are relatively more frequent in winter and spring. Varying hypotheses have been made according to what is considered to be the important time and why. The main possibilities variously suggested have been the time of conception, particular periods of embryonic development, the time of birth, and the first weeks of life after birth. Whatever the explanation, it has to account, directly or indirectly, for the obvious association with climatic changes, particularly temperature.

Berglund (1967) found a seasonal variation in birth among backward subjects but not in those of normal intelligence. A lack of a seasonal variation in the ability of normal subjects has been reported by other workers but it has been suggested (Orme 1965) that the effect might not be readily detectable in the normal range due to the properties of the normal curve of distribution. It would appear that there is a seasonal variation in the births of schizophrenics which follows the same pattern as that reported for subnormals (Dalen 1975). But it is possible this finding only reflects that schizophrenics have a lower level of ability than the general population (Orme 1963).

Previous work by the present writer (Orme 1965) had contrasted level of ability and season of birth. The present study, with a larger sample, looks at the 12 months separately. The sample consisted of subjects routinely assessed for the presence or degree of intellectual subnormality. With a general population mean of 100 IQ (and a standard deviation of 15), then of the total 713 with an IQ of less than 70, 229 had an IQ in the 55-69 IQ range, 230 in the 40-54 IQ range and 254 less than 40 IQ. These ranges are of course the standard deviation ranges in the subnormal range of ability.

The table lists the incidence of birth for each month in the total less than 55 IQ range given as a percentage of the total in each month with an IQ less than 70. The yearly cycle of incidence of IQs less than 55 is clearly inversely related to the monthly mean climatic temperature yearly cycle. The correlation between the two is  $r = -0.81$  ( $P < 0.01$ ).

**Monthly climatic temperatures and percentage of births <55 IQ.**

	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.
Mean monthly temp. °C.	43.6	40.7	38.9	39.2	41.7	46.0	51.6	57.3	60.6	60.0	56.0	49.4
Births <55 IQ in each month as a percentage of monthly births <70 IQ.	69.6	71.2	84.1	74.1	67.1	75.8	58.8	61.9	63.3	58.2	64.4	67.7

$r$  between mean monthly temperature and monthly percentage births <55 IQ =  $-0.81$  ( $P < 0.01$ )

This data confirms that among those with IQs less than 55, winter births are over represented and summer births are under represented. There is a close association between the yearly temperature cycle and the monthly incidence of birth in this sample. Furthermore, the association, whatever its precise nature, therefore appears to be one that occurs throughout pregnancy and is not confined to one particular point or episode in pregnancy.

The present sample contains subjects with a varied, often unknown, aetiology for their subnormality. This variety would support the view that the climatic factor discussed here is one that contributes to any person's level of ability rather than one causally related to subnormality. But as discussed elsewhere (Orme 1965), it is only at distances 2 or probably 3 standard deviations from the mean that the monthly (seasonal) difference in frequency effect becomes an appreciable proportion of the total frequency in that IQ range. In the mentally handicapped, as here, this accounts for the common finding of an excess of winter (and possibly spring) births. Similarly, it might be that among the very bright, summer births show an excess of births (Orme 1965).

#### References

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