Confirmation of Relationship Between Temperature and the Conception and Birth of Schizophrenics

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Abstract

Reanalysis of the data of a previous study, using the methodology of another previous study, provided mutual support and strengthened credulence for the inference that schizophrenics tend to be born in colder months and conceived in warmer months.

The present research is based upon two previous investigations that indicate schizophrenics tend to be born in the cooler months of the year. The study by Templer et al. (1978) also found that schizophrenics tend to be conceived in warmer months. There was a significant tendency for these birth-temperature and conception-temperature correlations to be greater in cooler localities. These birth-temperature and conception-temperature correlations were also generally larger in European than American localities. The authors contended that their findings were congruent with both a harmful temperature influence and a genetic morphism explanation. The former is that some sort of unfavorable biological condition or event promotes the development of schizophrenia. The latter position (Huxley et al., 1964) is that schizophrenia is associated with a robustness so that more schizophrenic-to-be infants can survive illness.

The article by Torrey et al. obtained the ratio of schizophrenic births to births in the general population for each of the 12 months for 19 states divided into three regions: New England, Midwest, and South. There was a total of 23 months that had a significantly greater number of schizophrenic births than expected by chance for the total of 228 months (19 states X 12 months). Eleven instances would have been expected to show significance by chance. The months showing significant differences were usually in winter and spring. The authors discussed the results in regard to particular states and regions, but appropriately did not make conclusive statements with respect to locality. An inspection of their Table 2 would seem to indicate that confident generalizations in this regard would not be warranted.

The starting point of the present project focuses upon the methodological limitations

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of the two above investigations. The Temp-ler et al. study assumed that the inter-month variation in birth of the general population is minimal in comparison with the variation in schizophrenic groups. Although the results of that study are consistent with results of previous studies, in addition to being internally consistent with respect to meaningful patterns, one cannot be certain about the correctness of this assumption.

The inferences from the Torrey et al. study are limited because the number of subjects for various states varies tremendously in a fashion that is not systematically related to populations (e.g., the Missouri data having 53 times the number of schizophrenics re corded in New Hampshire). This is probably associated with the different criteria for selection of schizophrenics used by the states, e.g., number in residence, number of admissions, number of active cases, and number of unduplicated cases. Since Torrey et al. focus upon significant differences in making comparisons, in spite of the fact that the larger the N the greater the probability of statistical significance, both inter-state and inter-regional comparisons are of doubtful meaning.

In the present study, the Templer et al. method of comparing rankings was applied to the Torrey et al. data, specifically the 228 schizophrenic/general population birth ratios for the 19 states and the 12 months. For each of these states, the ratios were ranked and correlated with temperature rank of month as in the Templer et al. study. Temperature rank of month was also correlated with rank of conception ratios. (The Torrey et al. study did not employ the conception variable.) The present investigators correlated the rank of the birth-temperature correlations with January temperature and the rank of the birth-conception correlations with the July temperatures, as was done in the Templer et al. research.

Table 1 presents the average January temperature, the average July temperature, the temperature of month-schizophrenic birth ratio rank order correlation, and the temperature of month-schizophrenic conception ratio rank order correlation for each of the 19 states. It is apparent that, as in the Templer et al. study, all of the birth-temperature correlations that are significant or approach significance are negative, and all of the conception-temperature correlations that are significant or approach significance are positive.

Six of the nine states with median or above conception-temperature correlations have July temperatures at or below the median; and four of the 10 states with below median conception-temperature correlations have at or below median July temperatures ($x2=1.35$, $p<.30$). Seven of the 10 states with birth-temperature correlations at or above the median (in a negative direction) have at or below median January temperatures; and three of the nine states with below median birth-temperature correlations have at or below median January temperatures ($x2=2.57$, $p<.15$). It is apparent that as in the Templer et al. previous study, there are inverse relationships between the correlations and temperatures of locality, but these relationships are less strong and not significant. Perhaps this is a function of the data being for only U.S. states, whereas the Templer et al. study also used foreign countries.

The rank order correlation coefficient between rank of birth correlations in Table 1 and rank of number of significant birth ratios for each state in the Torrey et al. study is .48 ($p<.025$, 1-tailed). Since there is a 26-year span for each state, the number of significant conception ratios for any state may be regarded as the same as number of significant birth ratios. The comparable conception correlation is .50 ($p<.025$, 1-tailed). Thus even with the vastly different number of schizophrenics included for different states in the Torrey et al. study, the findings in regard to inter-state comparisons are reasonably similar to findings produced by applying the Templer et al. method to the same data. And, the fact that the use of ratios of schizophrenic births to general population births produced the same temperature-birth and temperature-conception patterns as in the Templer et al. study suggests that the comparatively small general population birth rate variability assumption of the Templer et al. study is

tenable. In general, it appears that our reanalysis of data presented in the Torrey et al. article gives reassurance about the methodological uncertainties of both studies. Thus there is now even stronger evidence of a negative relationship between number of schizophrenic births and temperature of month and a positive relationship between number of schizophrenic conceptions and temperature of month.

TABU1

MEAN JANUARY TEMPERATURES, MEAN JULY TEMPERATURES, AND CORRELATIONS OF MONTHLY TEMPERATURE WITH BIRTH AND CONCEPTION

				CONCEPTION
STATE	F JANUARY	FJULY	RHO	BKT H'
MAINE	21	68	.10	-.33
NEW HAMPSHIRE	21	69	-.28	.09
MASSACHUSETTS	29	72	.62*"	-.41
RHODE ISLAND	29	71	-.04	.01
CONNECTICUT	27	74	.43*	-.34
ILLINOIS	25	75	.51**	-.52
WISCONSIN	22	71	.67""	-.21
MINNESOTA	15	74	.48**	-.10
MISSOURI	33	81	.83****	-.45
TEXAS	55	83	.38	-.17
ARKANSAS	37	82	.05	-.45
MISSISSIPPI	49	83	.15	-.33
ALABAMA	46	80	-.02	-.08
KENTUCKY	33	77	.49**	-.34
WEST VIRGINIA	37	76	-.29	.21
VIRGINIA	42	78	.13	-.31
NORTH CAROLINA	42	79	.49"	.25
SOUTH CAROLINA	48	81	.52"	.06
GEORGIA	45	79	.03	-.02
KY	<.10 <.05			
"p	<.01 <.001			
"P *"P				

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