Let (Y, Y') designate a random variable having a bivariate normal distribution with means 0, variances 1, and correlation ρ_{12}. Then the limiting distribution of $a(S_{n1} - E\{S_{n1}\}) + b(S_{n2} - E\{S_{n2}\})$ is the distribution of $aY + bY'$ for all a, b. If we knew that $(S_{n1} - E\{S_{n1}\}, S_{n2} - E\{S_{n2}\})$ had a limiting distribution, say the distribution of a random variable (Z, Z'), then it would follow that the linear compound would have the distribution of $aZ + bZ'$. But this means that the random variable $aY + bY'$ is equivalent to $aZ + bZ'$ for all a, b. By Cramér [5], p. 105, this implies that the random variables (Z, Z') and (Y, Y') are equivalent. If a limiting distribution did not exist for

$$(S_{n1} - E\{S_{n1}\}, S_{n2} - E\{S_{n2}\}),$$

then we could extract on n two subsequences which have limiting distributions that are different. This contradicts the statement that the limiting distribution must be that of (Y, Y'). This proves the limiting normality when the correlation approaches a limit.

If $\lim_{n \to \infty} \rho_{n12}$ does not exist, then we can extract on n two subsequences with different limits. Then, by the argument above, the two subsequences of random variables would have limiting normal distributions which are different. This implies that the original sequence of random variables does not have a limiting distribution. The proof is completed.

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ABSTRACTS OF PAPERS

(Abstracts of papers presented at the Princeton meeting of the Institute, April 20–21, 1956)

1. On Certain Stabilities of Sample Survey Response, (Preliminary Report),

David Rosenblatt, American University, (By Title).

In economic and demographic surveys, studies of reporting behavior are sometimes undertaken through reinterviews of identical respondents using a similar or more intense mode of inquiry. Stability of response is examined in the light of cross-tabulation data on first vs. second response. Assume: (1) there exist response observables $\alpha_1, \cdots, \alpha_r$, cryptostates $\beta_1, \cdots, \beta_L$, generally unobservable, which may, but need not, correspond to response observables; (2) $L \times r$ stochastic matrices Φ_1, Φ_2, respectively, giving for each