

## The Identification of some Specific Meanings in Infant Vocalization

In her experiment, SHERMAN<sup>1</sup> collected some empirical data that led her to the conclusion that the situational content of preverbal infant vocalizations cannot be recognized by graduate students in psychology, medical students and nurses. The cries used by SHERMAN were actual vocalizations obtained in the course of the experiment, in situations of hunger, dropping the infant towards the table, restraint of the face of the infant towards the table, and sticking with a needle. The infants varied in age from three to seven days. They could not be seen by the subjects who were asked to try to identify the situations in which the cries were obtained.

By our preliminary studies, we found some evidence that the negative results of SHERMAN – extensively referred to in various textbooks – could possibly be disconfirmed by using recorded vocalizations typical to the situations of birth, pain, hunger, and pleasure, and by giving these response categories in advance to the subjects (multiple choice technique).

After our first experimentations on the subject, we constructed a magnetic tape consisting of 24 selected vocal responses that seemed, by an auditory analysis, to be typical for the four situations: six birth vocalizations (obtained during the first 5 min of the life of the child), six pain vocalizations (recorded when vaccinations were administered, from two weeks to eight months of age), six hunger cries (recordings were made about 4 h after previous mealtime, from babies one week to eight months of

age), and six pleasure cries (obtained after meal from babies 4–8 months old). All material used was obtained from normal children and normal deliveries. In every type of vocalization, attempts were made to eliminate other emotional states than the main one. The mean length of the vocalizations was 12.3 sec, the shortest one being 5.0 sec and the longest one 17.7 sec. The vocalizations were on the test tape in random order. For more details about our vocalization material, see WASZ-HÖCKERT et al.<sup>2–4</sup>.

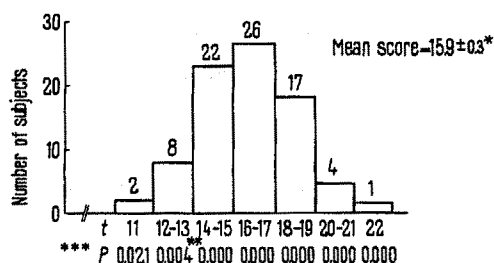
Our first trial sample tested by the material described above consisted of 80 trained nurses, aged 23–37 years. No one had children of her own, and some had been working with children after having completed their training. The ordinary split-half reliability coefficient (corrected for the entire test) was computed to be 0.67.

The Figure shows the distribution of the nurses according to how many correct choices they made. The *p*-values are binomial probabilities for at least the corresponding *t*-value to be obtained by mere chance. The average nurse in our sample made 16 right choices out of 24, the corresponding chance probability being as small as 0.00002. Even the poorest score could be obtained only in two cases out of a hundred by chance. Thus, the identification of the vocalizations was not complete. On the average, however, 67% were identified.

**Résumé.** Un test de type du choix multiple montre que les infirmières peuvent reconnaître d'après une bande magnétique la signification des émissions vocales préverbaux répondant à des situations données (naissance, douleur, faim, plaisir) chez les enfants de moins de 8 mois. Chez les 80 infirmières testées l'aptitude moyenne à l'identification fut de 67%. Nos études portant sur d'autres groupes humains seront publiées plus tard.

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Distribution of 80 nurses according to their total scores. *t* = total score, or number of correct choices.

\* 0.3 = Standard error of the mean. \*\* interpolated.

$$*** P = \sum_{t=1}^{24} \binom{24}{t} 0.25^t 0.75^{24-t}.$$

## The Effects of Radiation on Enzymes in Tissue Cultures

One of the tasks of the experimental biologist is to correlate the effect of radiation *in vivo* and *in vitro*. Experiments *in vivo* are complicated by the fact that in the animal there are several cell types, each having a different radio-sensitivity; tissue cultures therefore have the great advantage of being constituted of a cell population that can be considered homogeneous.

Cells that have received sublethal doses of X-rays have survived and continued to multiply. We have investigated some morphological and biochemical aspects of sub-

lethally irradiated cells and non-irradiated cells to see whether differences are detectable between the two systems.

**Materials and Methods.** Rhesus monkey kidney cells obtained by trypsinization have been used throughout the experiments<sup>1</sup>.

**Irradiation.** The method of crystal violet uptake by the nuclei was used to check cell viability.

The cells, at a concentration of 500,000/ml in petri dishes, were irradiated with 300, 1000 and 3000 r. The

<sup>1</sup> M. SHERMAN, J. comp. Psychol. 7, 335 (1927).

<sup>2</sup> O. WASZ-HÖCKERT, V. VUORENKOSKI, E. VALANNE und K. MICHELSSON, Exper. 18, 583 (1962).

<sup>3</sup> O. WASZ-HÖCKERT, E. VALANNE, V. VUORENKOSKI, K. MICHELSSON und A. SOVIJÄRVI, Ann. Paediat. Fenn. 9, 1 (1963).

<sup>4</sup> O. WASZ-HÖCKERT, V. VUORENKOSKI, E. VALANNE und K. MICHELSSON, Rev. Mex. Pediatr., in press.