

Subjectivity—unsound basis for craniosacral research

Dr. Northup: The article "The relationship of craniosacral examination findings in grade school children with developmental problems" (JAOA 77:760-76, June 1978) by John E. Upledger failed to meet the normal standards of research design necessary to a scientific paper.

The author expressed his own reservations as follows: "The weaknesses of the present categorization methods for the children's problems are recognized." "The author recognizes that the terms 'normal' and 'not normal' are not truly definable." "The unreliability of data obtained is recognized." "The validity of these data may be questionable."

The following are more quotations from the article: "Each motion variable of the craniosacral system was carefully tested and rated on a scale of 1 to 8." "The cranial rhythmic impulse" is described as being "perceived by the examiner" and then "rated on each side in terms of its severity." "The spine of the sacrum rested in the space between the examiner's third and fourth fingers" while tests for sacral flexion, sacral extension, and right and left torsion were performed. "The examiner's force was applied as symmetrically equal as possible."

In regard to the aforementioned statements, the examiner applied numerical values to purely subjective impressions. Later, these arbitrary numbers were used as the basis for computations. No reliable objective

conclusions can be drawn from such a process.

Further, "normal" and "not normal" children were so categorized by a classroom teacher's "suspicion" or a parent's "opinion," followed by "confirmation by an appropriate specialist"; the specialist could be in the field of psychology, motor coordination, or remedial education. Thus, there are parental subjective opinions combined with those of individuals from a variety of disparate fields. There is no attempt to establish reliability coefficients of the raters.

In the category of "behavior problems," there is no definition of the nature of the problems, which could be anything from thumb-sucking to school phobia to arson. If the children were "unmanageable," could the "problem" be poor management by the parents rather than a defect in the children? Was there alcoholism or a broken marriage or child abuse in the home? The article is devoid of such considerations. Dr. Upledger, himself, recognizes the "weaknesses of the present categorization methods for the children's problems."

Thus, the article combines figures derived from personal impressions of motion with uncoordinated personal opinions concerning behavior, and the figures occupy six full pages of JAOA. No justifiable conclusions can be drawn from the paper.

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Author's reply

Dr. Northup: Thank you for the opportunity to respond in this excellent forum to Dr. Steiner's letter. I have indeed shared some of his concerns. I have, however, become convinced that in the biomedical and behavioral disciplines, precise compliance with the dictates of experimental design (as used in the more exact sciences) is frequently, if not always, impossible. Strict adherence to experimental methods may require "inhumane" control. Research in the biosciences often is based on the erroneous assumption that the investigators are aware of all of nature's variables. I cannot agree that investigative work should be deferred until ideal circumstances are obtained.

The problems of developmentally impaired children are in the "here and now." If the craniosacral "therapeutic" seems efficacious, it should be used in the here and now. Every day of delay may inestimably compound the damage and affect the prognosis in a negative sense. Unlike many therapeutic modalities, the proper use of craniosacral manipulative treatment can have little or no untoward effect. It is aimed at the improvement of the craniosacral system's function. The treatment mobilizes this system so that the patient's inherent self-correcting mechanisms are better able to act.

Dr. Steiner states that our work "failed to meet the normal standards of research design." Implicit in this statement is the existence of *not-normal* standards of research design. I believe that the use of the terms

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"normal" and "not-normal" to describe research design by Dr. Steiner requires his subjective, albeit professional, judgment. He, therefore, has no right to criticize the use of these terms by educators, behavioral scientists, and other biomedical professionals, since this use is based on similar conditions—subjective, albeit professional, judgment related to a child's development in a school setting. Further, I cannot endorse the concept that parental opinion is to be disregarded. Perhaps no one has more valid information about a child than the parents. Professionals have but to listen and interpret.

The discipline of statistics properly applied can be and is a most valuable tool in the more inexact sciences. In the work which Dr. Steiner prudently questions, we have made full use of this tool. The analysis and calculations have been done by a fully qualified and expert professional in the field of statistics and research design, namely, Dr. Eric Gordon. Dr. Gordon has calculated the probabilities related to the transition of observed trend to truth.

I initially carried out an investigation (see JAOA 76:890-9, August 1977) of the reproducibility of quantified craniosacral findings with three other physician examiners. The same craniosacral examination rating scale and quantification method tested for that study were also used in the current work. The results obtained (using a double-blind experimental design) were subjected to statistical analysis by Dr. Gordon. It was determined that the quantification method for craniosacral examination in the hands of the principal investigator offered results that were reproducible by three other physician examiners. These facts support the concept that the human brain is not to be discounted as a reliable computer simply because we do not have dials on our foreheads and digital printouts in our eyes.

With this background in mind, the fair and critical reader must accept the fact that under *blind* conditions, 165 children described as *normal* by professional educators received a mean craniosacral score of 26.05; whereas the thirty-eight children described as *not normal* by professional educators for whatever reasons received a mean craniosacral score of 31.24. These results indicate a posi-

tive correlation or trend showing that those children judged as *not normal* by professional educators presented higher craniosacral scores when the examiner had no knowledge of which children had been judged as *not normal* by these educators. (None of the children in the study were suffering from obvious developmental or congenital abnormalities such as Down's syndrome, cerebral palsy, etc. That is, those children whom the examiner spotted as impaired were excluded from the study.)

Dr. Gordon then took into consideration the size of the sample, the mean scores, the standard deviation, and the standard errors. He then determined the probability and correlation coefficient from these data. His calculations indicated that the probability of the positive correlation obtained between the educator's opinion of *not normal* and the elevated craniosacral score was .000. This means that the chances are *less* than 1 in 1,000 that this observed agreement between the educator's opinion and the craniosacral examination scores did occur by chance.

The same procedure was carried out for all eight classifications of children, and it was found that significant positive correlations existed between elevated craniosacral examination scores and children diagnosed by professionals as having behavioral problems, learning disabilities, motor-speech problems, multiple problems, and histories of obstetrically complicated deliveries.

The chances for all of these classified children presenting high mean craniosacral examination scores by chance was less than 1 in 1,000, except in those children classified as having behavioral problems. Here the probability of a random chance agreement was 2 out of 1,000.

It is true that there is a rather obscure but nonetheless real opportunity that these data did occur purely by chance. The reader as well as the author must be aware of this possibility. However, it cannot be ignored that in this work, using these methods for whatever reasons, the positive correlations did in fact occur. Also, it must be considered that the observed trends, which were statistically tested and found to be significant at a less than 2 chances in 1,000 level, may, in fact, represent truth.

Schrödinger, the father of modern information theory as it relates to entropy, put forth the concept that the continuing existence of the very paper on which this response is written depends on statistically predictable subatomic particle interaction. The probability that the paper will disintegrate before the reader's eyes is infinitesimally small; however, it does exist. The probabilities of the correlations presented in our research have been carefully and correctly calculated. Conclusions have been drawn using these probabilities as a basis. The reader can place his informed wager on either side of the question once the probabilities are known.

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