The following abstracts are from the 1st Conference held 21-24 May 1986 at Grenada, organized by the Spanish Group of the Biometric Society.

4634 M. D. PAZ-CABALLERO and J. MUÑIZ, Biological Models of Basic Psychological Processes: Evoked Potentials and Reaction Time.

This paper is a critical review of recent results on the relationships between some basic biological processes and psychometric intelligence. Two indices of basic processes were analyzed: evoked potentials and reaction time. Upon review of results obtained by other researchers, it can be said that definitive conclusions have not been formulated. We propose a new and integrative line of research in which we try to join cognitive and correlational paradigms.

4635 P.Z. ARIAS, (Universidad de Complutense, Madrid, Spain), Statistical Diagnostic of Dystrophies by Means of Echography.

At birth, some children bear organic lesions due to nutrition probblems during gestation. These children are called dystrophic. In this work a method for prediction of dystrophy is given by considering transformation of certain variables obtained by echography. We use stepwise discriminant analysis and stepwise logistic regression. After comparing the results obtained by applying both techniques, the classification functions of the discriminant analysis appears as the best method in this problem. More precisely, by this method, according to the jackknifed classification, the average of well-classified children is 91.8% when normal, 92.9% when dystrophic.

4636 P. JIMENEZ-VALES and C. SANTISTEBAN-REQUENA, (Universidad Complutense, Madrid, Spain) The Optimum in Problems of Diagnosis with Efficiency Functions of Exponential Type.

The main goal of this paper consists in the election of a n-dimensional vector η, defined as "Diagnostic vector" which goodness in predicting the clinical diagnostic is estimated by so-called "eficacy function" $Q(\eta, \eta_0)$ where η is a characteristic vector of the individual properly diagnosed.

4637 J.V. PRUÑONOSA and I. PORTILLO, (Comunidad de Madrid, Spain), Suggestions for Data Analysis in Public Health.

Some of the difficulties encountered in statistical analysis of public health data are described, and flexible global models are suggested here, even at the cost of reducing their mathematical power. The methodology is developed in a case of geographical zonation for primary health care aims. A cluster-like algorithm is constructed such that, on the basis of transport data (minimizing the displacement effort either to or from the center of the zone), involves sociodemographic variables as correctors. Finally, simple statistical methods, such as X^2 test and Bayes formula, are applied to the solution of problems associated to the sanitary description of a zone.

4638 J.M. ALVAREZ, M.J. VALDERRAMA, E.M. TALAVERA and B. QUINTERO, (Universidad de Granada, Spain), An Iterative Algorithm for the Least-Squares Estimation of the Characteristic Parameters of EDA Complexes.

The EDA complexes play an important role in biomedical studies: pharmacology, biochemistry, cancer investigation, etc. Each EDA complex is characterized by means of two parameters: the stability constant K and the molar extinction constant E. So, the absorbance can be expressed as:

$$A = \tfrac{1}{2} E\,[a + d + 1/K - \sqrt{(a + d + 1/K)^2 - 4ad}]$$

where a and d are the acceptor and donor concentrations respectively.

In the laboratory, A may be determined from several values of a and d, and a least-squares adjustment can be performed for absorbance. However, a non- linear system is obtained in this way, and the parameters K and E can not be deduced.

Therefore, starting from values $K = K_1$ and $E = E_1$ previously calculated by means of the Benesi-Hildebrand method, a Taylor expansion of degree one is performed for the absorbance function A in a neighbourhood of (K_1, E_1), and the adjustment to the plane obtained conduces to new values of K and E. So, the procedure is repeated for these new values of K and E, until the difference between each parameter and its successive value is small enough.

4639 C. ARCE, (University of Santiago, Spain), Individual Decision Theory: An Approach.

A historical review of the investigation performed in the field of individual decision theory is offered with special attention to utility and subjective probability concepts because of its great relevance in current psychology. Specifically, the investigation reviews the validity of the axioms of the Savage SEU model and SEU maximization theorem. It concludes that the acceptance or no acceptance of this model probably depends more upon the experimental design and criteria used to accept or not accept it than on the model itself, the same conclusion reached by Rapoport & Wallsten (1972).

Likewise, other alternative theories as integration of the information model or probabilistic models are mentioned. Finally, it emphasizes the ecological validity of the multistage models at the same time as it underlines its methodological and empirical problems.

4640 J. OLLERO-HINOJOSA (Universidad de Granada) and H. RAMOS-ROMERO (Instituto de Bach, Cadiz), A Characterization of the Hypergeometric Distribution.

Let $H(N,X,n)$ denote the family of hypergeometric distribution. For a fixed value of parameters N and n, this family has been characterized by Skibinsky (1970), in terms of the way it behaves in relation to the mixture of distributions when the parameter X is a Binomial $B(N,p)$ distribution, for any p.

We have changed the distribution of the parameter X and, assuming it to be hypergeometric, have proved the following Theorem: Let $\{F_x\}$, $X: 0,1,\ldots,N$ be a family of distribution functions that assigns probabilities only to the integers $\{0,1,.,n\}$. This family is the family of the hypergeometrics $H(N, X, n)$ if and only if: (a) Its mixture when X follows a hypergeometric $H(N', X', N)$ distribution is the hypergeometric distribution $H(N', X', n)$. (b) The F_x do not depend on N'.

4641 M. RIOS, (Universidad de Barcelona, Spain), Test of Hypothesis in Order to Compare Linear Models Through the Rao Distance.

The Rao distance is used to construct a statistical test of hypothesis in order to compare two linear normal models from two samples of size N_1 and N_2.

Let $W = W_1 \times W_2$ be the parametric space associated with the models to compare. If we want to test if two models are equal, we may consider $w = (\alpha = (\beta, \beta) \in W)$ and define the following critical region as:

$$W_\epsilon = (y \in R^{N_1+N_2} / \delta(y) > A_\epsilon)$$

where

$$\delta(y) = d(\hat{\theta}, w) = inf.\ (d(\hat{\theta}, w) / \alpha \epsilon w),$$

and $\hat{\theta} = (\hat{\beta}_1, \hat{\beta}_2)$ is the maximum-likelihood estimation of the parameters $\beta_1 \epsilon W_1$, $\beta_2 \epsilon W_2$. A_ϵ is chosen in such a way that

$$\epsilon = P(\delta(y) > A_\epsilon / H_0); H_0 : \beta_1 = \beta_2 = \beta$$

where $\delta^2(y)$ is a X^2 distribution with m degrees of freedom, where m is the number of parameters of the models, if the distance is obtained via the Fisher information matrix.

The decision rule may be expressed as follows: if the sample belongs to W_ϵ we conclude the models are different; otherwise we conclude the models are equal.

4642 M.M FERNANDEZ, (Universidad de Extremadura), Nonstationary Markov Models for the Study of Sequences of States Dependent of Covariates.

In many biological and medical investigations frequently we have sequences of observations in which each observation has m possible outcomes (or states). When the response variate is in some way explainable by covariates, regression models are commonly used to analyze how the covariates relate to changes in state. In this work, the sequence of states is assumed to follow a Markov chain with nonstationary transition probabilities. Several models based in multiple logistic regression are proposed. Particular emphasis is given to models without interaction between covariates. The parameter vector is estimated by the maximum likelihood procedure, and in order to test the hypothesis that the transition probabilities are homogeneous, a likelihood ratio test is derived. Extensions which allow time-dependent covariates and rth-order Markov chains are presented.

4643 P.G. VILLARDON, (Universidad de Salamanca, España), The HJ-Biplot Represententation: Applications.

The HJ-Biplot is a simultaneous representation in the strict sense since it achieves the same quality of representation for both the rows and columns of a data matrix; it also provides the best β-barycentric plots (Galindo, 1985).

The method has been applied for the inspection of multivariate data matrices in medicine to study the clinical evolution of a group of patients affected by the Colza oil toxic syndrome and also to evaluate the risk of atopy in neonates. It has also been employed to study the socio-cultural factors influencing the decision to breast-feed instead of bottle-feed.

In herpetology, the HJ-biplot has been used to address the problem of classification of the Genus *Podarcis* in the Iberian Peninsula and North Africa and in animal ecology to study the biometric characteristics of *Philodromus cespitum* with respect to the habitat it lives in.

In all cases, clear advantages over the BIPLOT of GABRIEL have been demonstrated and, also over the factor analysis of correspondences proposed by Benzecri.

4644 F.J. MONTERO and H. NAVARRO, (Universidad Complutense, Spain), Time Series Analysis in Ecology: A Case Study.

This communication is concerned with the evolution of some climatic variables in a particular area of Spain. They have been considered in order to detect environmental perturbations. The initial data set analyzed in this paper are monthly mean temperature and monthly total rainfall since 1878, observed in the weather station of Retiro (Madrid). A stochastic difference equation has been fitted, following the Box-Jenkins approach. In addition, regression methods with trigonometric variables have been considered. The results obtained under adaptive estimation and other classical estimation procedures have been compared.

4645 E. GARCIA-CUETO and I. BARBERO, Neuroticism and P.G.R.

We present a pilot study to find out whether the measurement of physiological responses can be used as a test for the diagnosis of personality. A sample of 59 Psychology students (27 men and 32 women) has been used. The techniques for data treatment have been discriminant and factorial analyses.

The main conclusions are: (1) This kind of measurement can be used as a personality test. (2) This test has a high factorial validity, and (3) The test correctly classified 92% of the individuals.

4646 C.M. CUADRAS and A. ARCAS, (University of Barcelona), An Algorithm for the Construction of Additive Trees.

Let δ_{ij} be a distance on a finite set E with n elements. We want to fit δ_{ij} to d_{ij}, d_{ij} being an additive distance. That is d_{ij} verifies the additive inequality (or the four-points condition). Then E can be represented using an additive tree. The proposed algorithm has two parts. Using the UPGMA method, we fit δ_{ij} to u_{ij}, u_{ij} being an ultrametric distance. After that we consider $y_{ij} = \delta_{ij} - u_{ij}$ $(i \neq j)$ and the linear model $y_{ij} = \alpha_i + \alpha_j$. The α parameters are estimated employing a least-square criterion. Thus δ_{ij} can be fitted to the additive distance $d_{ij} = u_{ij} + \hat{\alpha}_i + \hat{\alpha}_j$.

4647 S. PEREZ BOADA and J.L. GONZALEZ ANDUJAR, (Madrid, Spain), Fish Growth: A Study of some Nonlinear Models.

The Von Bertalanffy model, $L_t = L_\infty(1-exp[-k(t-t_0)])$, where L_t represents the fish length at age t, L_∞ is the maximum theoretical length, k is the growth rate and t_0 the age for which $L_t = 0$, has been largely used in fish growth studies. The most common fitness procedure is that of Ford-Waldford and Dickie. In this paper, the poor performance of this procedure is pointed out when compared to a nonlinear models fitting program, using several experimental data sets from various species. Two alternative nonlinear models (logistic and Gompertz) are proposed because of their good results when fitted to the same data sets.

4648 R. CALVO HARO and S. PEREZ BOADA, (Madrid, Spain), Treatment of Covariates in Nonlinear Models.

A new methodology is presented to handle the case of covariates in nonlinear model problems. The goal of the analysis is the comparison of the curves of two or more groups of individuals under different treatments. For each treatment, the model can be written $y = f(x,\theta) + \epsilon$, where f is a nonlinear function, θ is the unknown parameter vector and ϵ is the random error. There is also a covariate Z which has influence on dependent variable y via some components of θ. The determination of such parameters as well as the introduction of the covariate in the model equation are explained. Two numerical examples are presented.

4649 J.L. GONZALEZ ANDUJAR and A. FERNANDEZ CANCIO, (Madrid, Spain), Matrix Approach of the Migration Phenomenon Using the Leslie Model.

A new model allowing the inclusion of the migration phenomenon into the Leslie model is presented. Migration is introduced by means of a regular Markov matrix. The long range population behaviour is analytically computed. A numerical example is presented showing the convergence of both analytical and simulation results.

4650 M.C. RUIZ DE VILLA and J. OCAÑA, Simulation of the Stepping-Stone Model by Means of Ecogen.

The ECOGEN is a general purpose finite simulation language based on Pascal and specially designed to facilitate simulation in population genetics and evolutionary ecology. In this first release it has a discrete-event orientation.

As an example of its "style" and capabilities, a program simulating some kind of "stepping-stone" migration model is presented, discussing the ECOGEN elements involved in it, some aspects of the implementation (now only implemented on an IBM 3083 running under VM/CMS and based in Pascal/VS), the system performance and needs.

4651 H. MARRERO and M. ECHEVARRIA, Methodological Considerations on the Evaluation of Learned Helplessness Induced by Cognitive Tasks.

To test the Learned Helplessness model the yoked triadic design has been employed both in animal and human investigation. The criticisms of Church (1964) to its use in animal studies made the authors of the Learned Helplessness theory admit the need to question the validity of the results obtained with this design. Learned mastery and facilitation effects, due to the learning of the task demonstrated in the escape group in studies with human subjects, have contributed to the need for finding a real control group. On the other hand, and instead of Seligman and col's advices, motivational and cognitive deficits continue being overlapped in most of the investigations. Human investigation is also in crises because of the impossibility to reproduce the inescapability and aversivity conditions as in animals studies.

4652 A. MELIAN and H. MARRERO, Impulsivity-Reflexivity Measure: Instruments and Statistical Methods.

There are two ways to measure the cognitive style impulsivity-reflexivity. Both measures are obtained through the same index (latency and mistakes). However, the Salkind and Wright (1977) measurement distinguish, for conceptual considerations, two independent dimensions: style and efficiency, which doesn't happen in Kagan's measurement. Furthermore, both measurements operationalize and explain the impulsivity-reflexivity in different ways: the first as a continous variable and the second as a discrete variable. The convenience of use of one or the other measurement has been discussed. Many authors suggest the combined use of both measurements. We add to this discussion by reporting some empirical data to this Conference.

4653 H. MARRERO and C. SAN LUIS, Double Task Technique: The Employment of Correlation as an Instrument of Interest to Control Priority.

The attention request in activities, are usually evaluated with the secondary task technique. This technique requires a concurrent performance of two tasks. The subject is asked to employ the attention need to solve satisfactorily the primary task. To solve the secondary task the subject must employ the rest of his attention. To guarantee the primarity, the subjects perform a version of the primary task without occurrence. If the achievement in this version doesn't differ, according to "*t*", from the concurrent version, it means that the subject has followed the primarity instructions. We believe that "*t*" isn't enough for that purpose, because it doesn't take into account the fact that the performance of each subject is or is not regular from one version to the other. Therefore, we suggest the use of correlation added to "*t*" in order to solve this deficiency.

4654 R. LOPEZ, I. OUTSCHOORN (Facultad de Medicina de la UAM, Spain) and C. NATTA, (Universidad de Columbia, U.S.A.), Methods to Establish Immune Response Patterns in Sickle Cell Anemia.

Our objective here is to establish some immune response patterns in patients with sickle cell anemia in basal conditions and after treatment with vitamin B-6.

We have studied the proportion in the I_gG total of every subclass for 9 patients and 41 controls. We have also analyzed these proportions for patients after treatment at different times (21 observations).

Statistical analysis of differences between three groups (control, patients without treatment and patients with treatment) were performed.

The variations after treatment in I_gG1, I_g $G3$ and I_gG4 were significant, but not in I_gG2. Then, we analyzed the relation between the subclasses with the partial correlation coefficients. For the subclasses I_gG1 and I_gG2 are very significant in all situations with the highest value in the patients with treatment.

Since specific antibody is often restricted to a single subclass of I_gG, the levels of I_gG2 subclass may be related to recurrent bacterial infections in these patients.

4655 R. GUIGÓ SERRA and J. OCAÑA REBULL, A Model for Larval Viability.

In correspondence with some simulation experiences where "larvae" or "preadults" (partitioned in a finite set of possible "genotype" or "phenotype" classes) were in competition for a finite resource (like space), a relatively general expression (which depends on the genotype) for their probability of survival to an adult stage has been derived. "Hard" and "soft" selection components are clearly reflected in it. Under some special conditions and when the number of competing larvae and the environmental capacity both tend to infinity (but their ratio or larval "density" tends to a finite constant) the formula becomes a double exponential, depending on the "hard" survival probability of each genotype, on its frequency and on the density. The possible use of the above results to the study of the evolutive significance of the "hard" and "soft" selection concepts is discussed.

4656 C. SANTISTEBAN, Estimation of Parameters in Latent Trait Models.

Recently psychometric mathematical models have been proposed to evaluate individual differences. The proposed models are concerned with the relationship between the test scores obtained and the underlying trait or ability involved in taking the tests. Logistic latent trait models for binary responses to a set of test items are considered with a view to estimating latent trait parameters $\theta=(\theta_1,\ldots,\theta_n)$ and item parameters $\beta=(\beta_1,\ldots,\beta_n)$ where β_j may be vector valued. The E.M. algorithm for computing maximum likelihood estimates proposed by Dempster et al. (1977) from incomplete data is illustrated.

4657 G. BUELA CASAL, (Colegio Universitario de Jaén) and J.A. CARROBLES, (Universidad Autónoma, Madrid), Evaluation of the Sleep-Wake Rhythm and the Level of Daily Activation.

Taking into account the influence of certain psychophysiological parameters on the sleep-wake rhythm we constructed a questionnaire which enables us to measure: the regularity of the sleep-wake rhythm, total sleep time, the exact moment when this occurs and the level of daily activation at different periods during the day. The measurement of these variables is achieved by means of various questions and scales.

In order to see the validity of the questionnaire, the results obtained through this questionnaire are contrasted with the scores recorded through external criteria, which as far as is known measure precisely the states with which we are dealing.

The external criteria used are pyschophysiological measurements. Here, two types of measurement are used. The first type corresponds to basic level measurements: blood pressure, conductance, DGR, and temperature. The second type corresponds to measurements of psychophysiological responses to stress stimuli.

4658 V. PONSODA and J. BOTELLA, (Universidad Autónoma, Madrid, Spain), Stimulus Information and Observing Responses.

This work aims to test if the informative value of each part of an image has or has not any influence on the rate of observations of this part which a subject made. We designed a task which requires the inspection of some parts of an image. We measured the informative value of each part in two ways: by applying the Shannon formulas and by decision theory methods. Finally we obtained that with some subjects the more informative value a part had, the more frequently this part was inspected. However, in some subjects the frequency of inspection doesn't closely depend on the informative value.

4659 M.C. BATANERO BERNABÉU, (Colegio Universitario de Jaén), and M. SÁEZ MONZÓN, F. GOIG DE ARRIAGA and E. LEÓN FELIÚ, (Hospital Provincial, Capitán Cortés de Jaén), Computer Based Management of Clinical Histories in Intraocular Lens Implants.

The rate of cataract surgery has increased considerably in the last years, primarily because of intraocular lens implants. The purpose of this paper is to present the computer based data management in a follow-up study of these patients.

Clinical histories have been organized in two files. The first is a random access file containing the basic data. The second is a sequential access file chained to the previous one and it contains a variable number of follow-up records for each patient. The software developed, which includes clinical history retrieval and elementary statistical analysis, has been implemented on an IBM personal computer and is flexible enough to allow the management of other types of clinical histories. Extensive use of graphics, including histograms, box and quantile plots have been made.

4660 A. GONZALEZ MUÑOZ and M.A. VILA MIRANDA, (Universidad de Granada), A New Approach to Represent Imprecise Measures: the Fuzzy Numbers.

In this paper we present the concept of fuzzy number as a tool to represent imprecise measures or quantitative properties. Fuzzy numbers can be seen as a mathematical model for a vaguely perceived or imprecisely defined quantitative piece of information. Several operations have been defined between such elements as well as some order relations. These allow comparisons of fuzzy numbers which is an interesting open problem.

To make clear the potential applications of the definitions and techniques a concrete problem of comparison is presented. Specifically, we make a ranking method between two treatments involving imprecise measures which appear as fuzzy numbers. A numerical example of the model is also presented. This one is referred to the academic progress of two groups of students.

4661 A. MARTÍN ANDRÉS and E. SANCHEZ-CANTALEJO, (Facultad de Medicina, Granada), Bioequivalence Test for Difference and Ratio of Means.

In pharmacology, one frequently has to show that the standard formulation of a drug is equivalent to a new formulation or form of administration. This usually involves comparision of two means by a test – a bioequivalence test – which ascribes as an alternative hypothesis the biological equivalence of both formulae. The difference between the means is within a previously given interval (the bioequivalence interval). For this purpose, the most powerful test used is that of Anderson and Hauck; but this test makes it impossible to accept bioequivalence when the sample difference falls outside the bioequivalence interval.

In the article, the authors modify the test to avoid the above circumstance, and 2 new tests are proposed – one based on Anderson and Hauck, and the other based on the above modification – to contrast bioequivalence when the bioequivalence interval is given as a function of the ratio – not the difference – of the means.

4662 A. MARTÍN ANDRÉS and M.J. BOLAÑOS CARMONA, (Facultad de Medicina, Granada), Conclusions of a Test and Bioequivalence Test.

In this article, the authors criticize the normal procedure of always concluding by accepting either the null hypothesis (H_o) or that of the alternative (H_i), especially in comparative experiments with one or two samples with biometric data. Their criticism is based on the fact that in the latter case, one must distinguish between "statistical" and "biological" significance, and in the former, the suitability of the sample size must be taken into consideration.

After reviewing the usual procedure of this (i.e. calculating the confidence intervals and finding the size of the sample, respectively), the authors propose a strategy based on the usual tests and on the formula for size which tend to accept H_o *(completely) (with no doubt)*, H_i with no doubt, or accept both, or enlarge the size of the test.

The procedure is applied to the case of bioequivalence tests, whose methodology is taken into account in the process.

4663 A. MARTÍN ANDRÉS and E. SANCHEZ-CANTALEJO, (Facultad de Medicina, Granada), The Test in Test Type Examinations.

When a test-type examination is carried out, each student is given a certain number of questions with two or more alternative answers, only one of which is correct. If incorrect answers are not penalized, the student answers all the questions giving one and only one answer. The usual criterion for deciding how much a student knows is based on ascribing a minimum quota, the same for all students, for the total number of correct answers.

In the article, the authors give a model that shows that this criterion is incorrect (because the variable to be used should be the sum of the proportions of correct answers, and because the quota should not be the same for all students), a test to check the model, a point estimation, two tests by interval for finding the student's level of knowledge, and three alternative tests for giving him marks. The same model can also be applied to the recognition of objects (Kim's game).

4664 A. MARTÍN ANDRÉS and J.D. LUNA DEL CASTILLO, (Facultad de Medicina, Granada), Randomization Test for Comparing Two Proportions.

When the n individuals in a sample are divided at random between two different treatments to be compared, the 2×2 table which appears when the individuals are classified as cured or not cured by each treatment should be analyzed by a randomization test.

Fisher's "exact" test and Ballatori's test are the only ones used for this purpose. In this article, the authors prove that the second of these two is based on too strong an assumption, equivalent to affirming that the two proportions of cures are equal to ½. Hence, the authors propose a new test, based on the hypothesis that any total number of cures is equally possible (instead of the assumption by Ballatori that any sequence of success/failure is equally possible). They show how the new test gives more significance than the other two when dealing with small samples, and, in large samples, more significance than Ballatori's test, and sometimes less, sometimes more than that of Fisher.

4665 A. MARTÍN ANDRÉS and J.D. LUNA DEL CASTILLO, (Facultad de Medicina, Granada), 2 × 2 Tables and Fisher's "Exact" Method.

The usual way of analyzing 2×2 tables, in the case of small samples, is the Fisher's "exact" method. In this article, the authors discuss the advantages of giving different tables for the one- and two-tailed tests, as well as those of including in any one of them the minimum error of significance P.

After analyzing the various, customary methods for constructing critical regions for a two-tailed test, the authors compare the different methods in accordance with the above criteria and considerations, in an easy-to-use format and occupying the minimum space, as they avoid repetition of the tables.

4666 L.M. DE CAMPOS, (Universidad de Granada), and M.J. BOLAÑOS, (Facultad de Medicina, Granada), Diagnostic Assessment Scheme Based on Conditional Fuzzy Measures.

By means of the Monotone Expectation functional, which is a generalization of the mathematical expectation for probabilities to fuzzy measures, the concept of conditional probability is extended to that of conditional fuzzy measure on a fuzzy set. In diagnosis problems, the use of conditional fuzzy measures enables us to modify, by experimental data, a prior fuzzy measure of the importance of the different subsets of symptoms given by the doctor. This scheme enables us to analyse problems of syndrome characterization, fit between the patient's clinical situation and its diagnostic, and assignment of each patient to that diagnostic pattern for which the best fit is obtained. This model is applied to the diagnostic discrimination of several cerebral tumors, and a high percentage of agreement with the specialist opinion is reached even for a sample size less than that necessary for the usual discriminant techniques.

4667 M.J. BOLAÑOS, (Facultad de Medicina, Granada), and L.M. DE CAMPOS, (Universidad de Granada), Fuzzy Measures and Integration: Application to the C.N.S. Tumors Valuation

The fuzzy sets and fuzzy measures theories are used in this report to set up a model of prognostic or diagnostic valuation assessment reflecting the subjectivity of the decision-maker (specialist).

Modelling the situation of a patient by means of a fuzzy subset of the set of the symptoms and using "integral" operators on fuzzy measures (Sugeno's Integral and Monotone Expectation), the authors establish a global assessment of the seriousness of the syndrome based on a fuzzy measure of the importance that each group of symptoms has on the arrival at a decision.

Applying the model to the prognosis of CNS tumors, the results obtained with probability and possibility measures in the prediction of survival and fit with the overall opinion of the specialist are improved with general fuzzy measures, and Monotone Expectation is shown to be better than Sugeno's Integral for discriminating the different clinical situations.

4668 A. BADOS-GARCIA and C. SANTISTEBAN-REQUENA, Contingency Contrasts and S.A.S. Evaluation in Computer-Assisted Reeducation.

The S.A.S. (Deaf Aid System) consequence has been evaluated through the introduction of computers in the system. The aim of the S.A.S. project has been to provide the phonoarticulatory organs a visual refeeding in the vocalic sound utterance.

In order to analyse the independence among the series produced in every vowel utterance by the individuals we have applied the INDEPENDENCE tests. This leads us to reject the hypothesis that the responser is produced contingently except for the letter u.

The relationship between the arrangement of success and failure series has been studied.

The individual differences with reference to the number and length of the series obtained in every letter in the sessions have been contrasted through non-parametric variance analysis. ■

Donald J. Slyman (Western North American Region) assisted in editing the abstracts for this issue.

REGION & GROUP NEWS

Australasian

An International Symposium on "Advances in Statistical Methods for Genetic Improvement of Livestock" is being held at the University of New England, Armidale, New South Wales from 16-20 February. The Symposium is directed at identifying problems and opportunities and at achieving advances, rather than at lengthy review. The invited addresses will range over the spectrum of statistical methods applicable to animal genetics and breeding. Nearly all the invited scientists are members of the Biometric Society and include Leo Dempfle (TU-Munich, Germany), Robert Elston (Louisiana State University, U.S.A.), Rohan Fernando (U.S.A.), J.L. Foulley (CNRZ-INRA, France), Daniel Gianola (University of Ilinois, U.S.A.), David Harville (Iowa State University, U.S.A.), Charles Henderson (Cornell University, U.S.A.), Bill Hill (University of Edinburgh, U.K.)B.W. Kennedy (University of Guelph, Canada), Nan Laird (Harvard University, U.S.A.), and Robin Thompson (ABRO, UK).

Bayesian statistics is beginning to make inroads to livestock improvement procedures; hence it is intended that the program cover both Bayesian and Non-Bayesian approaches to the design of experiments and of breeding programs, estimation of genetic parameters, prediction and estimation in both linear and non-linear models, selection and assortative