NEWSLETTER OF THE INTERNATIONAL STUDY GROUP FOR RESEARCH ON LEARNING PROBABILITY AND STATISTICS

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1. NOTES AND COMMENTS

I would like to thank those who contributed to this newsletter and who made it possible the bringing of new issues of interest to our group. Apart from our usual sections, I am including information about the ISI committee for women in statistics and about the current

statistical testing controversy among psychologists.

I consider it important that we periodically try to update the basic references concerning some specific research points. Joan Garfield's reference list about assessment in

statistics in vol 4 (2) of the newsletter and the section concerning statistical testing in this issue might be the starting point. Next July, I will include a basic set of

references on the topic "Subjective perception of randomness". Please, send me any reference you would like to include in this special section, as well as suggestions

for topics in which you are interested.

The newsletters are now available from the Journal of Statistics Education Information Services (http://www2.ncsu.edu/ncsu/pams/stat/info/infopage.html). This option could be useful for recovering past issues or for printing the newsletters more easily.

Please do not forget to keep me informed about your activities and publications. If there are any corrections or additions to the newsletter, please post them to all members on the list by using the e-mail address alias: stated_list@goliat.ugr.es

2. NEW MEMBERS

Mark A. Earley

Educational Research and Measurement

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Mark is currently working on his doctoral dissertation in statistics education at the postsecondary level. He is examining knowledge structures of introductory statistics

students and attempting to elicit the learner's viewpoint of learning statistics.

Melissa Mellissinos

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Melissa is a graduate student at San Diego State University, and is planning to study student thinking about distribution of data for her dissertation.

Roberto Meyer & Marta Debiaggi

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Roberto and Marta started in 1993 to establish a research group concerning the teaching of statistics and probability from the age of 8. The first period was oriented to the

consolidation of the group. Results include papers in local conferences, in service courses and workshops. This period finished with an experimental assessment of 13 years-olds

students in a public school at the town of Santo Tome. Two different factors were considered: a) learning statistics as a final step in students' research projects; b)

introducing computers as a teaching- learning tool. The first results are encouraging and they plan to present more complete results at Singapore. This year they have

submitted a project concerning the assessment of teaching and learning probability based on computers at the last courses of primary education.

Carlos Alberto Pergamo

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Carlos has worked at the CAECE, Technological National and UNS Universities. He is presently supervising some experiences concerning the training of mathematics teachers

in Argentina to develop the Ley Federal de Educacion, including some at distance courses, using technology. He teaches Mathematics and Mathematics Education at the

Instituto Superior de Formacion Docente, where he has organized several courses on teaching probability, statistics and combinatorics directed to future primary teachers.

Pamela Shaw

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Pamela is a lecturer in statistics and has been responsible for teaching the first year statistics course from across many areas of the University. However, at the moment she is teaching higher level courses. Her research interest is in tertiary students' interpretation and use of graphics in statistics.

Ron Smith

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Ron teaches mathematics education to primary teachers at both undergraduate and postgraduate levels. He has begun a PhD and is investigating teachers'change through a

professional development program which has probability as its mathematics context. Ron is also interested in innovative classroom strategies such as cooperative group work and integration of music and mathematics instruction in the primary school.

Ann-Lee Wang

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Her field is stochastic processes, though she is also interested in statistical education.

Four of her articles on statistical education, concerned with the use of Chinese games to teach probability theory, appeared in Teaching Statistics. Other articles, written in

Malay on the teaching of some aspects of statistics were published in the Proceedings of the Sixth and Seventh National Mathematical Symposiums, the Bulletin of the ISI

50th Session, and in Journal of Applied Statistics. She is currently interested in looking at ways to improve her teaching of introductory stochastic processes.

3. CHANGES IN E-MAIL ADDRESSES

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4. INFORMATION FROM MEMBERS

Note: Throughout the newsletter, members' names are highlighted in capital letters.

Joan GARFIELD, University of Minnesota is currently developing two research projects: one on exploring the role of simulations in developing statistical reasoning (with Bob DELMAS) and the other, working on cross-cultural translations on the Statistical Reasoning Assessment (SRA). She is now looking at scales for the SRA, both good one (correct reasoning) and ones that indicate

particular misconceptions. In the current study her Teaching Assistant Carol Liu is doing, she will compare scale scores for two

groups of students taking the SRA, one from the US and one from Taiwan.

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5. SUMMARIES OF PUBLICATIONS BY MEMBERS

BATANERO, C., Navarro-Pelayo, V., & GODINO, J. D. (1997). Effect of the implicit combinatorial model on combinatorial reasoning in secondary school pupils. _Educational Studies in Mathematics_, 32, 181-199.

Elementary combinatorial problems may be classified into three different combinatorial models (selection, partition and distribution). The main goal of this research was to

determine the effect of the implicit combinatorial model on pupils' combinatorial reasoning before and after instruction. When building the questionnaire, we also considered the combinatorial operation and the nature of elements as task variables. The analysis of variance of the answers from 720 14-15 year-old pupils showed the influence of the implicit combinatorial model on problem difficulty and the interaction of all the factors with instruction. Qualitative analysis also revealed the dependence of error types on task variables. Consequently, the implicit combinatorial model should be considered as a didactic variable in organising elementary combinatorial teaching.

FISCHBEIN, E. & Schnarch, D. (1997). The evolution with age of probabilistic, intuitively based misconceptions. _ Educational Studies in Mathematics_, 29, 97-105.

The purpose of this research was to investigate the evolution with age of probabilistic, intuitively based misconceptions. We hypothesized, on the basis of previous research with infinity concepts, that these misconceptions would stabilize during the convergence of the formal operation period. The responses to probability problems of students in Grades 5, 7, 9 and 11 and of prospective teachers indicated, contrary to our hypothesis, that some

misconceptions grew stronger with age, whereas other grew weaker. Only one misconception investigated was stable across ages. An attempt was made to find a theoretical explanation for this rather strange and complex situation.

ROMEU, J. L & Gascon, V. (1997). Minitab and pizza: A workshop experiment. _CIT97. Conference for Instructional Technologies_. May, 1997.

Getting non mathematics majors to become interested in a general statistics course is not easy. One has to go through interesting real life examples. But the corresponding statistical data analysis is also dragging and turns many students off. One way to overcome this is

with the use of statistical software (e.g. Minitab). But learning to use it effectively also takes time and effort, which we cannot afford to take away from class time. The present paper describes an experiment in implementing a Minitab/ statistics workshop for the general introductory course. How it was developed, and the results of a student survey, with their reactions, comments and suggestions for improvements, is described. Finally, a short statistical analysis comparing grade results of students who attended the workshop vs. those who did not, is presented and some general conclusions regarding the workshop effectiveness and recruitment/retention are derived.

MOORE, D. S.(In press). Bayes for beginners? Some reasons to hesitate.

MOORE, D. S (In press). Bayes for beginners? Some pedagogical issues.

Is it reasonable to teach the ideas and methods of Bayesian inference in a first statistics course for general students? This pair of papers argues that it is at best premature to do so. The first, to appear in The American Statistician with opposing views and a discussion, argues from data that Bayesian techniques are little used in practice and that Bayesians have not yet agreed on standard approaches to standard problem settings. The second, to

appear in a Festschrift for Shanti Gupta, comments on the pedagogical difficulties of Bayesian reasoning.

MOORE, D. S. (In press). New pedagogy and new content: The case of statistics. _International Statistical Review_.

This paper looks at the interplay between content, pedagogy, and technology in contemporary statistics teaching. The discussion that follows, by a quite varied

group of researchers, displays a perhaps surprising consensus on the general nature and content of a first statistics course.

OJEDA, A. M. (1996). Contextos, representaciones y la idea de probabilidad condicional. (Contexts, representations, and conditional probability). In F. Hitt (Ed.), _Investigaciones en Matematica Educativa_ (pp. 291-310). Mexico, D. F.: Grupo Editorial Iberoamerica.

Conditional probability appears in most secondary-level courses of probability, where some ideas of probability are introduced after descriptive statistics to establish a link

with inferential statistics. However, in practice the formative role of this concept is usually not taken into account. In addition, some biases in estimating conditional probabilities, which are difficult to eradicate, may difficult understanding inferential ideas and methods.

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6. RECENT DISSERTATIONS

Sanchez-Cobo, F. T. (1997). _Analisis de la exposicion teorica y de los ejercicios de

correlacion y regresion en los textos de Bachillerato_ (Analysis of theoretical presentation and exercises of correlation and regression in secondary school textbooks). Master Thesis. University of Granada. Supervisors: Antonio ESTEPA & Carmen BATANERO.

This study presents a research into the study of correlation and regression in secondary textbooks, which are fundamental for teaching in many countries, such as Spain, where they have a great influence in the practice of teaching. We have studied two main points from a sample of 21 Spanish textbooks: a) the theoretical presentation of the topic; and b) the exercises and problems presented to the students. As regards to theoretical presentation we

found that a formal approach and methodology do not facilitate the construction of mathematical knowledge. Relevant points such as the difference between correlation

and causality, the existence of two different regression lines, the influence of outliers in the value of the correlation coefficient, the determination coefficient, etc, are not sufficiently emphasized. Concerning the exercises presented in the textbooks, many of them only

require the students to perform computations from a data matrix, without any reference to the

context or variables from which the data were taken or to relevant research questions. Very few tasks asked the students to collect their own data or made reference to real data. There was a strong bias towards positive correlation or independence, without examples of negative correlation. The different types of covariation: unilateral causal dependence,

interdependence, indirect dependence, concordance and spurious correlation were not taken into account.

WERNER, J. S. (1995). _A study of the effects on statistical reasoning, skill and conceptual development, and attitude of students in an elementary statistics class

which is taught in a contextually and technologically rich environment_. Ph.D. Dissertation. Department of Curriculum and Instruction. Pennsylvania State University. Advisor:

M. Kathleen Heid

This study was an effort to identify and compare the effects of two different teaching

environments on statistical reasoning, conceptual and skill development, and attitudes and beliefs of elementary statistics students. The control class was taught using a formal, rule-driven approach to learning. The experimental class was taught in a contextually and technologically rich environment and was designed as a statistics working group with the instructor as group leader and the students as apprentices learning data analysis. This class used a single large database throughout the semester.

Data from this study suggest that it is possible to identify and categorize statistical reasoning used by elementary statistics students. Reliability of categorization by a panel of trained raters was 0.766. There was no significant difference between the two classes

in the frequency of use of the Categories of Naive/Statistical, Developing/Statistical, and

Functional/Statistical reasoning. In their interview transcripts the experimental group used significantly more episodes of reasoning for the Categories of Non- determinable and Arithmetical/Statistical reasoning, and the control group had a significantly higher frequency of use of the Category of Procedural/Statistical reasoning.

There was no significant difference between the two classes on the Garfield/Konold Reasoning Assessment either before or after the treatment. The control class scored

significantly higher on 5 of the 14 skills questions and on 1 of the 13 concept questions. The experimental scored better on 2 of the 13 concept questions. A series of four

interviews suggested that students from both classes built understanding around contextual experiences and that the nature of their learning was different. The evidence suggested that the experimental class interviewees reasoned more empirically; whereas, the control class interviewees exhibited a greater tendency to reason using formulas.

Statistical beliefs and attitudes were identified and classified from the interview transcripts. No differences between the two classes was apparent. The students in the experimental class demonstrated a holistic understanding of the components of statistical analysis. This was evidenced in the written reports of the results of individually- designed statistical analyses which were done as a final project by each member of the class.

7. OTHER PUBLICATION OF INTEREST

Ahn, W. K. (1996). Causal attribution as a search for underlying mechanisms: An explanation of the conjunction fallacy and the discounting principle. _Cognitive Psychology_, 31, 82-123.

We propose that causal attribution involves searching for underlying mechanism information (i.e., the processes underlying the relationship between the cause and the effect). This processing account can explain both the conjunction effect (i.e., conjunctive explanations being rated more probable than their components) and the discounting effect (i.e., the effect on one cause being discounted when another cause is already known to be true). When two explanations cohere with respect to a single mechanism, they would be judged to be more likely than a simple explanation that partly supports that mechanism.We present some experiments and discuss why the current results pose difficulties for previous attribution models.

Cerrito, P. B. (1994). Writing, technology and experimentation to explore the concepts of elementary statistics. _Mathematics and Computer Education_, 28(2), 141-153.

This papers reports on the curriculum changes in a course in elementary statistics using computer technology. A particular feature of the course is that it is data driven in that statistical concepts are often approached and developed through data sampling procedures and the use of computer software packages. Cooperative working through small projects teams, the use of current relevant data and the development of communication skills are seen as important features of the course.

Gigerenzer, G., & Hoffrage, U. (1995). How to improve bayesian reasoning without instruction: frequency formats. _Psychological Review_, 102(4), 684-703.

Is the mind, by design, predisposed against Bayesian inference? Previous research on base rate neglect suggests that the mind lack the appropriate cognitive algorithms. However, any claim against the existence of an algorithm, Bayesian or otherwise, is impossible to evaluate unless one specifies the information format in which it is designed to operate. The authors show that Bayesian algorithms are computationally simpler in frequency formats than in the probability formats used in previous research. Frequency formats correspond to the sequential way information is acquired in natural sampling. By analyzing several thousand solutions to Bayesian problems, the authors found that when information was presented in frequency formats, statistically naive participants derive up to 50% of all inferences by Bayesian algorithms. Non-Bayesian algorithm included versions of Fisherian and Neyman-Pearson inference.

Glaister, P. (1997). A generalized buffon problem. _Mathematics & Computer Education, 30(3), 248-254.

An extension of the classic needle problem of Buffon from the probability that a needle will cross a cruck in a floorboard to the case when dropped on square tiles. Futher generalizations and special cases are suggested.

Gutiel, G., & Gelman, S.A. (1997). Children's use of sample size and diversity information within basic-level categories. _Journal of Experimental Child Psychology_, 64, 159-174.

Category-based induction involves making decisions about some member(s) of a category based on information concerning other category members. Recent studies indicate that although adults make use of information concerning sample size and sample diversity when making category-based inductive judgment, children do not do so until age 8 or 9 and even then to only a limited degree. This research however, was conducted at the superordinate level of categorization and it is unclear if general difficulty with this category level may have masked children's ability to

use size and diversity, or if these results represent a more entrenched conceptual difficulty in using this information. Our results with 8 and 9 year-olds indicate that children's difficulty with this information is independent of category level and may base on preference for other strategies concerning category membership and perceptual similarities.

Ismael, J. (1996). What chances could not be. _British Journal for the Philosophy of Sciences, 47, 79-91.

The chance of a physical event is the objective, single- case probability that it will occur. In probabilistic physical theories like quantum mechanics, the chances of physical events play the formal role that the values of physical quantities play in classical (deterministic) physics and there is a temptation to regard them on the model of the latter as describing intrinsic properties of the system to which they are assigned. The author argues that this understanding of chances in quantum mechanics, despite being a part of the orthodox interpretation of the theory and the most prevalent view in the physical community, is incompatible with a very wide range of metaphysical views about the nature of chance. The options that remain are unlikely to be attractive to scientists and scientifically minded philosophers.

Jones, G. A., Langrall, C. W., Thornton, C. A., & Mogill, A. T. (1997). A framework for assessing and nurturing young children's thinking in probability. _Educational Studies in Mathematics_, 32, 101-125.

Based on a synthesis of the literature and observations of young children over two years, a framework for assessing probabilistic thinking was formulated, refined and validated. The major constructs incorporated in this framework were sample space, probability of an event, probability comparisons, and conditional probability. For each of these constructs, four levels of thinking, which reflected a continuum from subjective to numerical reasoning, were established. At each level, and across all four constructs, learning descriptors were developed and used to generate probability tasks.

The framework was validated through data obtained from eighth grade three children who served as case studies. The thinking of these children was assessed at three points over a school year and analysed using the problem tasks in interview settings. The results suggest that although the framework produced a coherent picture of children's thinking in probability, these was "static" in the system which generated inconsistencies within levels of thinking. These inconsistencies were more pronounced following instruction. The levels of thinking in the framework appear to be in agreement with levels of cognitive functioning postulated by Neo-Piagetian theorists and provide a theoretical foundation for designers of curriculum and assessment programs in elementary school probability.

Kareev, Y. (1995). Positive bias in the perception of covariation. _Psychological Review_, 102(3), 490-502.

Perception of covariation often differs from statistically normative values. People find order in random series and relationships between uncorrelated values. Theoretical analysis, allowing for working-memory limitations, shows that the degree of covariation in the typical, locally representative series is more negative, whereas that of the atypical series is more positive that the covariation in the complete set. The author assumed that the typical series serve as a norm to which other series are compared, and predicted a positive bias in the perception of covariation. This prediction was tested and found to hold across a wide range of actual relationships in 2 experiments involving sequential dependencies and events with co-occurring values. Another analysis revealed positive correlations to be more informative than negatives ones when events are

not equiprobable. Positive bias may this be a rational predisposition for an early detection of a potentially more informative relationship.

Krueger, J., & Clement, R. W. (1996). Inferring category characteristics from sample characteristics: Inductive reasoning and social projection. _Journal of Experimental Psychology: General_, 125(1), 52-68.

Inductive reasoning involves generalization from sample observations to categories. This research examined the conditions under which generalizations go beyond the boundaries of the sampled categories. In experiment 1 participants sampled colored chips from urns. When categorization was not salient, participants revised their estimates of the probability of a particular color event in urns they had not sampled. As categorization became more salient, generalization became limited to the sampled urn.

In experiment 2 the salience of categorization in social induction was varied. When social categorization was not salient, participants projected their own responses to test items to members of a laboratory group even when they themselves did not belong to this group. When salience increased, projection decreased among nonmembers but not among members. In experiment 3 these results were replicated in a field setting.

Roth, M. W., & McGinn, M. K. (1997). Graphing: Cognitive ability or practice? _Science Education_, 81(1), 91-106.

Traditional views conceive graphing as knowledge represented in students minds. We show in our critique that such views lead to a common assessment problem of how to account for variations in performance across contexts and tasks, and a common attribution problem that locates difficulties in students' deficient cognitive apparatus.

Grounded in recent research of scientists at work and everyday cognition, this article provides an alternative perspective that conceives of graphing as observable practices employed to achieve specific goals. This perspective highlights the nature of graphs as semiotic objects, rhetorical devices, and conscription devices. This shift in perspective dissolves problems with assessment and inappropriate attribution of students' difficulties. The plausibility and fruitfulness of the new perspective is illustrated in three ways. First, we show that successes and failures of various graphing curricula become understandable in terms of the presence or absence of social dimensions of the practice, Second, we show how our perspective requires new assessment practices, Third, we show how our practice perspective on graphing led us to different learning environments and new foci for conducting research in student-centered open-inquiry contexts.

Sanchez, E. (1996). Dificultades en la comprension del concepto de eventos independientes. (Difficulties in understanding independence of events). In F. Hitt (Ed.), _Investigaciones en Matematica Educatica_ (pp. 389-404). Mexico, D.F.: Grupo Editorial Iberoamerica.

This paper first analyzes the concept of independence within some elementary situations where the notion is presented. Secondly, we observe teachers' responses to independence tasks. Both aspects show the difficulty in the understanding of the topic.

Schwartz, D. L., & Goldman, S. (1996). Why people are not like marbles in an urn: An effect of context on statistical reasoning. _Applied Cognitive Psychology_, 10, 99-112.

A large body of research has examined the effect of contextual knowledge on deductive reasoning. Relatively little work, however, has examined context effects on statistical reasoning. In this paper, the authors document that in a context such as drawing marbles from an urn, children correctly

think of sampling as a way to measure the distribution of marbles. However, in other contexts, such as taking a survey of people's opinions, children design samples that have the effect of causing a distribution. For example, they sample members of the population most likely to have positive opinions. We interpret these results by proposing that knowledge of statistics come in discrete pieces of intuitive understanding whose elicitation is contingent upon the problem context. We describe a model of instruction that acknowledges the effects of context on statistical reasoning.

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8. SHOULD WE GET RID OF STATISTICAL TESTING?

Richard B. MAY (rmay@utah-inter.net) sent me a message that I am summarizing below, concerning the current discussion on statistical testing uses and misuses.

In an article in the American Psychologist, Jacob Cohen (1994) urged that psychologists completely discontinue the use of statistical significance testing in analyzing research data and instead employ point estimates of population parameters and confidence intervals. In his Division 5 Presidential Address at the 1994 APA convention, Schmidt reached the same conclusion. Albert Bartz, a psychologist who has authored several statistical texts, brought this issue to the attention of the APA Board of Scientific Affairs in March of 1995. He proposed that the Board appoint a Task Force to make recommendations about how to implement the phasing out of statistical significance testing in course texts, journal articles,

etc.

Board member Duncan Luce took the lead in laying out this issue for the Board. The Board approved in principle the notion of a Task Force to study this question and make recommendations. The Board also felt that the question was larger than APA; they felt that APS, the Society for Mathematical Psychology, and other organizations should be given the opportunity to be involve the Group's activities.

They also felt they should at least check out the potential involvement of other disciplines, such as statistics (through the American Statistical Association). The Board plans to bring this question up at a meeting of the Federation of Behavioral and Social Sciences (which includes Anthropology, Sociology, Economics, and other social sciences).

Richard May offers the following recent developments for consideration of those of us who are interested in hypothesis testing. Basically, Cohen (1994), Schmidt (1995, 1996) and others wish to minimize, if not eliminate, statistical testing in behavioral science research, and textbooks. On the other hand, Frick (1996) and Muliak et al. (1996) point to the weaknesses of such a position and support use of the procedure in specific contexts that are common in behavioral research. For NPSTAT, textbook errata, and related material, see http://home.utah-inter.net/rmay/npstat.html

Cohen, J. (1994). The earth is round ($p < .05$). _American Psychologist_, 49(12), 997-1003. See seven replies in_American Psychologist_, (1995), 50(12), 1098- 1103.

Frick, R. W. (1996). The appropriate use of null hypothesis testing. _Psychological Methods_,1, 379-390.

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Behavior Research Methods, Instrumentation, & Computers, 25, 250-256.

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Morrison, D. E., & Henkel, R .E. (Eds.) (1970). _The significance test controversy - A reader_. Chicago: Aldine Publishing.

Morrison, G. R., & Weaver, B. (1995). Exactly how many p values is a picture worth? A commentary on Loftus's plot- plus-error-bar approach. _Behavior Research Methods, Instruments & Computers_, 27(1), 52-56. (See reply by Loftus, same issue pp. 57-59.)

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Statistical testing is a highly relevant idea in statistics and their misinterpretations and misuses pose a didactic research problem that migth interest some members of our group. Below I include other references concerning hypotheses testing misuses, students' misconceptions and philosophical problems. Please, send me any relevant reference you may know that could contribute to complete this list.

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Lindsay, R. M. (1988). _The use of tests of significance in accounting research: a methodological, philosophical and empirical inquiry_. Ph. D. Dissertation. University of Lancaster.

Kyburg, H. E. (1974). _The logical foundations of statistical Inference_. Boston:

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Menon, R. (1993). Statistical significance testing should be discontinued in mathematics education research. _Mathematics Education Research Journal_, 5(1),4-18. (See replies in the same issue).

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estudiantes universitarios. (University students' understanding of the logic of statistical tests). _Recherches en Didactique des Mathematiques_, 15, (3), 53-81.

VALLECILLOS, A., BATANERO, C., & GODINO, J. (1992). Students' understanding of the significance level on statistical tests. In W. Geesling, & K. Graham (Eds), Proceedings of the XVII Conference on the Psychology of Mathematics Education (v.1, pp. 49-56). University of New Hampshire.

VALLECILLOS, A., & BATANERO, C. (1996). Conditional probability and the level of significance in tests of hypotheses. In L. Puig, & A. Gutierrez (Eds), Proceedings

of the XX PME Conference on the Psychology of Mathematics Education. (v.4, pp. 271-378). University of Valencia.

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9. COMPLEMENTARY SHORT REFERENCES:

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527-554.

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10. ISI COMMITTEE ON WOMEN IN STATISTICS

Mary H. Regier (mhr@po.cwru.edu) is sending this information concerning ISI committee on Women in Statistics

The committee was formally established in name during the ISI Beijing Session in August 1995. The members of the committee are: Barbara A. Bailar (USA), Lelia Boeri de

Cervetto (Argentina), Nanjamma B. Chinnappa (India/Canada), Denise A. Lievesley (UK), Mary H. Regier (Lebanon/USA), and Susan R. Wilson (Australia). This committee has the

following aims:

1. To promote and strengthen the representation of women statisticians in the ISI and its Sections.

2. To help in providing opportunities for women members to assume active and visible roles in the ISI and other statistical associations.

3. To collect information on women in the statistical professions in different countries and to facilitate the flow of information among women statisticians.

4. To stimulate interest in statistics among women and encourage women students in schools and colleges to study statistics.

5. To support the compilation of statistics on women, with a view to generating relevant studies concerning women's roles

Current activities and plans:

1. The ISI has a total of about 2000 elected members, of whom a little under eight percent are women. For a few of the countries represented in the ISI, a fair proportion of the members are women, but in the majority of cases more initiative is needed for nominating qualified women statisticians to ISI membership. The Committee has been trying to stimulate such initiatives.

2. The Committee is planning to hold an Open Meeting during the forthcoming ISI Session (Istanbul, August 1997), which will provide a forum for the exc ange of views on matters

related to the Committee and its objectives. After a brief report from the Committee, the floor will be open for general discussion.

3. The Committee plans to participate more formally in the following ISI Session (Helsinki, 1999) by organizing a meeting which will be part of the scientific program of that Session.

4. The Committee is continuing to build up its base of correspondents worldwide in its efforts to collect information on women statisticians and their contributions to the practice of statistics and the development of statistical science.

Whatever means of communication we have used in reaching you, there are many ways in which you can help this committee towards fulfilling its objectives.

1. Initiate or recommend the nomination of a qualified female colleague to ISI membership. Committee members can help, if needed, in guiding the nominating process and contacting sponsors (a total of 5) for each application.

2. Encourage a woman colleague to join any of the five ISI Sections (Mathematical Statistics & Probability, Statistical Computing, Statistical Education, Official Statistics, and Survey Statistics) that relate to her area of interest.

3. Send us news of recent publications, special appointments or honors, planned activities, reports on special meetings, or other information within the broad framework of the Committee's terms of reference.

4. We would like to hear your reactions, comments and suggestions, as well as your news. Please write to us about them, or plan to attend our Open Meeting during the ISI Session in Istanbul next August if you have the chance to do so, or both.

5. The Committee will soon have to make a decision about our participation in the scientific program of the 1999 Session of the ISI in Helsinki. If you wish to recommend a topic for invited or contributed papers, please let us have your suggestions of the subject as well as of possible

organizers.

6. If it should become advisable to set up regional sub- committees to aid the Committee in accomplishing its tasks, would you be interested in being part of such a sub- committee in your region ?

7. Please send us names and addresses of other statisticians, men or women, who may wish to be on our mailing list, or have them contact us directly. Please include e-mail and fax, where available.

Mary H. Regier, Chair, ISI Committee on Women in Statistics

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Cleveland,

Ohio 44106-7054, U.S.A.

e-mail: mhr@po.cwru.edu fax: 216-368-0252

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11. INTERNET RESOURCES OF INTEREST

1. ASA NEWSLETTER

The Winter 1997 issue of the American Statistical Association (ASA) Section on Statistical Education newsletter is now complete.The newsletter is available at

http://renoir.vill.edu/cgom

http://renoir.vill.edu/cgi-bin/short/StatEd.cgi

If this does not work, you can access it through the Section on Statistical Education homepage which is part of the ASA website: http://www.amstat.org

If you do not have access to the World Wide Web, please contact Carol Joyce BLUMBERG (wncarolj@vax2.winona.msus.edu) and she will send you an

ASCII copy of the newsletter.

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2. WOODWARD ACADEMY: AP STATISTICS ON THE WEB

http://www.mindspring.com/~waus2/apstat/

Comprehensive statistics resources include information on textbooks, reference materials, software, TI calculator programs, and the College Board. The site also features

discussions on apstat-l and a selection of online tests.

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3. THE MATH FORUM A Virtual Center for Math Education on the Internet

Our goal is to build a community that can be a center for teachers, students, researchers, parents, educators, citizens at all levels who have an interest in mathematics

education.

http://forum.swarthmore.edu/

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4. TEACHING-STATISTICS E-MAIL LIST

The Teaching-Statistics list, which has the same concerns as the journal and the associated Teaching Statistics Trust will also enable discussion of how to make teaching and

learning statistics more effective and will provide a forum for those who want to discuss the practical issues of how best to introduce students to statistics.

The list owner is Mike Fuller (M.F.Fuller@ukc.a c.uk). The archives of the list are accesible from http://www.mailbase.ac.uk/lists-p-t/teaching-statistics

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5. INFORMAZIONI CIRDIS: Centro Interuniversitario di Ricerca

per la Didattica delle Discipline Statistiche

http://www.stat.unipg.it/cirdis/

This centre was established in 1991 and was fouded by the Societa Italiana di Statistica. It intends to become a tool to develop the scientific, professional and cultural competence for satisfying school and working needs of new statistics methods and intruments.

12. FORTHCOMING CONFERENCES

MERGA. Mathematics Education Research Group of Australasia group meets in Rotorua, NZ from 7 - 11 July 97 (just before PME). Further details from Andy BEGG (a.begg@waikato.ac.nz)

PME 21 - Psychology of Mathematics Education

The 21st Conference of the International Group for the Psychology of Mathematics Education (PME 21) will be held on July, 14-19, 1997 in Lahti, Finland. For more

information about PME 21 please contact the Conference Secretary Ms. Marja-Liisa Neuvonen-Rauhala (Marja- Liisa.Neuvonen@Helsinki.fi)

The Stochastics Teaching and Learning Group will be meeting at the PME Conference in Finland in July. Its major project will be preparing an annotated bibliography of key works in the topic, with a view to publishing in about 2 years time. It will also be working with the Advanced Mathematical Thinking Working Group to look at advanced mathematical

thinking in Stochastics.

This Group has a regular small newsletter which reports progress. Anyone who would like to be placed on the mailing list should contact Carmen Batanero at <batanero@goliat.ugr.es>.

ICTMA-8. August, 1-7, 1997. Institute for Learning Mathematics & Language. Griffith

University, Nathan, Queensland, 4111 Australia Information available from George Booker (gbooker2edu.qu.edu.au)

49 CIEAM, July, 24-30, 1997. Escuela Superior de Educacao de Setubal. Portugal

Information available from Juana Porfirio,(esesettec@mail.telepac.pt)

http://www.eseset.pt/ese/cieaem.html

51st Session of the International Statistical Institute, 18-26 August 1997, Istambul

Invited paper sessions related to statistical education:

36. Research on teaching and learning statistics. (Organizer: J. M. SHAUGHNESSY,USA).

37. Research and teaching of probability and statistics in the physical sciences. (Organizer: D.Vere-Jones, New Zealand and Ed.Waymire, USA).

38. Teaching and training in statistics with sampling and sample surveys.(Organizer: G. Cichitelli. Italy).

39. The role of Bayesian methods in statistical education.(Organizer: Jeff Witmar, USA).

40. Data centered versus mathematics centered training in statistics. (Organizer: Shir Ming Shen, Hong Kong).

41. Assessment and measurement in education. (Organizer: A. Bazarghan, Iran).

51. Computational statistics, electronic publishing and access to research data. (Organizer: T. ARNOLD, USA).

52. Technology in teaching statistics ("teachware"). (Organizer: E.M. Tiit, Estonia).

88. Rountable on "What is Statistical Literacy" -International Literacy Institute (Organizer: D. Wagner)

Information avaible from ISI97@die.gov.tr

Internet: http://www.die.gov.tr/ISI/isi ~i.html

The Fifth International Conference on Teaching Statistics

Place: Nanyang Technological University, Singapore, Dates: June 21 - 26, 1998.

Web Site: http://www.nie.ac.sg:8000/~wwwmath/icots.html

Theme: Statistical Education - Expanding the Network

Contacts:

Chair IPC: Brian PHILLIPS, bphillips@swin.edu.au Fax +61 3 9819 0821

Chair LOC: Teck-Wong Soon, twsoon@singstat.gov.sg

Singapore contact : Lionel PEREIRA-MENDOZA,pereiraml@am.nie.ac.sg

If you are interested in presenting a paper at ICOTS-5 please submit an abstract, 300 - 500 words, of the paper you would like to be considered as soon as possible to the relevant topic convener whose name and email is listed below or to the IPC Chair. You will

then be put in touch with the appropriate session organiser.

Topics

1. Statistical education at the school level (Elementary level, secondary level, teacher training, local teachers) Lionel PEREIRA-MENDOZA (pereiraml@am.nie.ac.sg)

2. Statistical education at the post-secondary level (Introductory statistics, mathematical statistics, design and analysis of experiments, regression and correlation, Bayesian methods, categorical data analysis, sample survey design and analysis). Richard SCHEAFFER (scheaffe@stat.ufl.edu)

3. Statistical education for people in the workplace(Statistical consultancy, continuing education, distance education, total quality). Kerstin Vannman (kerstin.vannman@ies.luth.se)

4. Statistical education and the wider society (Statistical societies, statistical literacy, publications, legal contexts, journalists, informed society). Anne HAWKINS

(ash@maths.nott.ac.uk)

5. An international perspective of statistical education (African region, Asian region, Spanish speaking, other developing regions). James Ntozi (sae@mukla.gn.apc.org)

6. Research in teaching statistics (Junior levels, senior school levels, post-secondary levels, probablity). Joan GARFIELD (jbg@maroon.tc.umn.edu)

7. The role of technology in the teaching of statistics (Software design, teaching experiments, graphics calculators, visualization, research, multi-media and WWW).

Rolf BIEHLER (rolf.biehler@post.uni-bielefeld.de).

8. Other determinants and developments in statistical education (Cultural/historical factors, learning factors, assessment, gender factors, projects/competitions). Guiseppe Cicchitelli (pino@stat.unipg.it)

9. Contributed papers. Shir-Ming Shen. (hrntssm@hkucc.hku.hk)

10. Poster sessions. Peng Yee Lee (leepy@am.nie.ac.sg)