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Editorial

The *Journal of Mathematical Psychology* was established in 1964 to provide an outlet for lengthy articles involving the development of mathematically based models and/or the testing of such models by experimental data. Before that, such articles had appeared as book chapters, in specialty journals such as the *Journal of the Acoustical Society of America* and the *Journal of the Optical Society*, and occasionally in *Psychometrika* or the *Psychological Review*. In addition to the increasing amount of model-based research in the early 60's other than for auditory and visual phenomena there were clear reasons why researchers could not expect *Psychometrika* and the *Psychological Review* to be the main outlets for such work. *Psychometrika* was the home of traditional quantitative applications in psychology. These involved the development and extension of data-processing techniques such as factor analysis, analysis of variance and covariance, scaling, test theory, etc., which were thought to be applicable to a data base more-or-less independently of the underlying psychological processes that gave rise to that data base. The considerable body of research, mostly of an applied statistical character, on data processing techniques had come to fill the pages of *Psychometrika*.

Psychologists with a bent toward developing and testing theories with deeper psychological content found the *Psychological Review* a natural outlet. However, the *Review* covered a very wide span of areas in psychology, many of which involved nonquantitative, theoretical work; thus the *Review* could not have served as the primary outlet for mathematical psychology.

Hence the birth of the journal. During its early years, the developing and testing of substantive mathematical models was its dominant theme. However, from the start there were signs of a second theme—foundations of psychological measurement—which grew considerably in amount in the late 60's and early 70's. Such articles were typically more abstract and complex mathematically and involved less actual data than the model-testing research. Consequently (in part) the unwritten policy for both submissions and acceptance of articles to be published in the journal became: (1) a primarily mathematical paper with clear implications for substantive psychological theories; or (2) a primarily experimental or observational paper reporting data relevant to an existing mathematical theory of behavior or justifying a new theory.

We think that several developments in the last few years make it wise to broaden the policy of the journal. First of all, traditional journals such as the *Psychological Review*, the *Psychological Bulletin*, and even the *Journal of Experimental Psychology* have opened their covers to articles formerly almost certain to have been viewed as appropriate only to our journal.

Second, several newer journals such as *Cognitive Psychology* and *Perception & Psycho-*

physics and also the *British Journal of Mathematical and Statistical Psychology* provide outlets for mathematically based theories.

A third recent development is that a greater variety of mathematical formalisms are being applied to psychology, e.g., automaton theory, functional analysis, various structural systems of algebra, systems theory and neural nets, computer simulation, and logic. Since such formalisms mostly lack a statistically based metatheory of errors, they necessitate some revision in standards of empirical validation.

Finally, mathematically oriented psychologists are beginning to tackle some complex areas of psychology such as language behavior, neural systems, global perceptual phenomena, stage development in children, as well as continuing their work in the comparatively more secure areas such as concept identification, probability learning, reaction time, and psychophysics.

For these and other reasons we, supported by the Board of Editors of the journal, wish to state its current publication policy. First, there will be three new categories of articles. One is short technical notes of not more than two journal pages. These notes should contribute some limited mathematical development of relevance to some area of psychological investigation. Submissions in this category will be reviewed rapidly by the Board of Editors themselves, and they will be judged on the basis of their importance to extant developments in psychology.

The second new category of articles is lengthy invited reviews of books of major importance to the development of mathematical psychology. Authors will be encouraged to write sharp, evaluative reviews that place the book in context and compare it with other books, rather than the primarily informative reviews such as those that appear in *Contemporary Psychology*. Anyone is welcome to make suggestions of books and reviews by writing directly to the Editors.

The third new category involves invited, tutorial articles of new areas of mathematical applications relevant to psychology. The hope is that these reviews will cover an area of mathematical psychology not currently well represented in the journal and point out to the reader some open problems in the area.

In addition to the three new categories of articles, we wish to encourage researchers to submit articles to the journal involving the application of different types of mathematics to model construction and/or the application of standard approaches to new substantive areas of psychology. Without discouraging articles of major importance in the traditional and well worked areas of mathematical psychology, we wish to emphasize an expanded vision of our area and to make clear we do not intend only to accept articles that make incremental progress in well-worked areas. We recognize that in the past such novel articles all too often took exceptionally long to be reviewed by the journal; we intend to make every effort to accelerate the review process in the future.

There is, however, one proviso to our efforts to define a liberal journal policy. We have a strong bias that mathematical theories in psychology should be testable by

experiments. Too often mathematics is applied in psychology as a metaphor, or as a type of formal mentalism incapable, in principle, of direct validation. We believe in a liberal behaviorism in which it is as important in an article to demonstrate predictability and verifiability of one's theory as it is to postulate exciting and complex new types of formal structures. We do not, however, insist on statistical formalism where the statistical underpinnings do not exist. We intend to publish articles of a largely experimental character if the experiments bear sharply on one or more theoretical issues in mathematical psychology; however, authors of empirical articles that bear on well known and fairly elementary mathematical theories should consider the advisability of publishing their work in an appropriate experimental journal.

In the measurement-related areas we will continue to publish articles that are largely mathematical provided we see clear implications for an empirically based psychology. But authors of highly technical mathematical articles on the foundations of measurement and choice that involve clarification of philosophical points or provide generalizations which appear to be primarily of mathematical interest should consider carefully the advisability of publishing in appropriate mathematical or philosophical journals.

Our hope is that these changes will permit this journal to continue to be a natural archive for many of the exciting and timely efforts to provide and test precisely stated psychological theories.

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Editors