



Kenneth Knoblauch, Laurence T. Maloney

# Modeling Psychophysical Data in R

Series: Use R!

- Takes a hands-on approach to using psychophysical methods in a way that connects them properly to modern statistical practice
- Provides accessible approach to the material for established or new users of R or any other programming language. Practicing with R will help readers learn the language
- Extensive programming examples of R in the text include source code
- Includes accompanying website with extensions to material covered here

Many of the commonly used methods for modeling and fitting psychophysical data are special cases of statistical procedures of great power and generality, notably the Generalized Linear Model (GLM). This book illustrates how to fit data from a variety of psychophysical paradigms using modern statistical methods and the statistical language R. The paradigms include signal detection theory, psychometric function fitting, classification images and more. In two chapters, recently developed methods for scaling appearance, maximum likelihood difference scaling and maximum likelihood conjoint measurement are examined. The authors also consider the application of mixed-effects models to psychophysical data. R is an open-source programming language that is widely used by statisticians and is seeing enormous growth in its application to data in all fields. It is interactive, containing many powerful facilities for optimization, model evaluation, model selection, and graphical display of data. The reader who fits data in R can readily make use of these methods. The researcher who uses R to fit and model his data has access to most recently developed statistical methods. This book does not assume that the reader is familiar with R, and a little experience with any programming language is all that is needed to appreciate this book. There are large numbers of examples of R in the text and the source code for all examples is available in an R package MPDiR available through R. Kenneth Knoblauch is a researcher in the Department of Integrative Neurosciences in Inserm Unit 846, The Stem Cell and Brain Research Institute and associated with the University Claude Bernard, Lyon 1, in France.

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