

Contents

Introduction 3

**Chapter I: A Schema for Mathematical Models
in Behavioral Science** 5

1. Mathematical Systems 5
2. Empirical Systems 7
3. Reciprocity of Empirical and Mathematical
Systems 9
4. Deductive and Inductive Reasoning 11

Chapter II: The Case of Preference Behavior 17

1. What Is There to Explain? 17
2. Two Principles: Elemental Hedonic Processes
for Pleasure and Pain 21
3. An Example: Single Peaked Preference for
Children 22
4. A Third Principle: The Screening of Options 24
5. Pareto Optimality: More Pain Is the Price
of More Pleasure 27
6. Pareto Optimality in Two Dimensions 28
7. The Need for a Stronger Property:
Efficient Sets 29
8. The Interaction of Empirical Generalities and
Mathematical Reasoning 30

Chapter III: The Case of Measurement Theory 35

1. Measurement Theory in Psychology Is
Behavior Theory 36

CONTENTS

2. The Historical Dependence of Measurement on Empirical Addition 39
3. Empirical Addition in Psychology 41
4. Additive Conjoint Measurement 45
5. The Role of *AMI* in the Discovery of Empirical Addition in Behavior 47

Chapter IV: The Case of Probabilistic Choice Behavior 53

1. Intransitivity of Preference and Weak Stochastic Transitivity 55
2. Transitivity of Preference and Moderate Stochastic Transitivity 58
3. Psychophysical Choice Theory and Strong Stochastic Transitivity 65

Chapter V: General Discussion 75

1. Power and Generality of a Theory 75
2. On Necessary and Sufficient Conditions 79
3. Theory Languages in Psychology 87
4. A Caveat 92

Notes 95

References 99

Index 107