

CONTENTS

Preface ix

1. INTRODUCTION	1
1. A Distinction	1
2. Some Other Studies in Light of the Distinction	4
3. Qualification and Clarifications of the Distinction	5
2. EXPERIMENT I	11
1. Design	11
2. Subjects	17
3. Materials	17
4. Procedure	18
5. Preliminary Analyses of Results	31
6. Overview of Subsequent Data Analyses	32
3. CONSISTENCY	35
1. Interest of the Question	35
2. Pass Rates for Tasks in the Four Interpretations	36
3. Correlations between Interpretations	37
4. Consistency within Subjects	39
5. Relative Consistency of Successful and Unsuccessful Subjects	43
6. Implications of the Consistency Analyses	45

4. STANDARD LOGIC ALGORITHMS AS PSYCHOLOGICAL MODELS	47
1. Some Unsuccessful Attempts	47
2. Unsuitability of Standard Algorithms	49
5. A THEORY OF THE OPERATIONS UNDERLYING THE EXPERIMENTAL FORMULAS	53
1. The Operations	53
2. Context Restrictions for the Operations	56
3. Derivations of the Experimental Formulas	60
4. Eight Remarks about the Model	62
6. PERFORMANCE MODELS AND PREDICTION OF FORMULA DIFFICULTY	71
1. General Remarks	71
2. The First Performance Model	72
3. Weightings for the Operations	75
4. The First Performance Model, as Improved by Weightings	82
5. The Second Performance Model	85
6. Alternative Performance Models	91
7. A Noncumulative Performance Model	96
7. THE QUESTION OF THE LOCUS	99
1. Constraint on Hypotheses	99
2. A Theory Inconsistent with the Constraint on Hypotheses	100
3. Two Theories Consistent with the Constraint on Hypotheses	103
8. EXPERIMENT II	109
1. Design	109
2. Subjects	111
3. Materials and Procedure	111
4. Preliminary Analyses of Results	115
9. REPLICATION OF PREVIOUS ANALYSES	119
1. Consistency	119
2. Derivations for the Formulas of Experiment II	120
3. Prediction of Relative Difficulty of Formulas	123
4. The Question of Development Revisited	127

10. EXPERIMENT III	131
1. Design	131
2. Subjects	132
3. Materials and Procedure	133
4. Preliminary Analysis of Results	137
5. Prediction of Formula Difficulty: Pass Rate	141
11. SOME FURTHER ISSUES	147
1. Ordering of the Operations	147
2. Another Possible Revision of the Competence Model	149
3. Nonlogical Factors in Derivations	152
4. The Question of Systematic Logical Confusions	154
5. On the Psychology of Relations	159
References	163
Author Index	173
Subject Index	177