CONTENTS

Series Editor's Introduction

Newman-Keuls

Ryan (REGWQ)

1.	Introduction	1
	Example: Helping Behavior	2
	Multiple Comparisons	2
	Definition	2 2 5
	Dimensions of Classification	5
	Types of Error Rate, Hypotheses, and Mean	
	Configurations	8
	Types of Error Rate	8
	Types of Hypotheses	10
	Types of Population Mean Configurations	12
	Types of Statistics	12
	t Statistic	12
	Range Statistic	13
	F Statistic	14
	Mean Difference	16
	Confidence Intervals	16
	Use of t	17
	Orthogonality of Multiple Comparisons	17
	SAS and SPSS	21
	SAS	21
	SPSS	25
2.	Multiple Comparison Procedures	27
	An MCP That Controls α Using ERPC: Usual t	27
	Simultaneous Test Procedures	31
	Dunn	31
	Tukey	32
	Scheffé	34
	Stepwise Methods	35

vii

35

38

	Protected Tests	41
	Protected t Test (Fisher's LSD)	41
	Shaffer-Ryan	42
	Fisher-Hayter	43
	All Treatments Compared With a Control	44
	Dunnett	44
	Summary	45
3.	Comparison of MCPs	46
	Critical Values and Power	46
	Miller Data	49
	Usual t	49
	Dunn and Tukey	50
	Scheffé	51
	Newman-Keuls	51
	Ryan	53
	Shaffer-Ryan	55
	Fisher-Hayter	55
	Dunnett	55
	Summary	55
4.	Violations of Assumptions and Robustness	57
	Unequal Sample Sizes and Variances	59
	Unequal Sample Sizes	59
	Tukey-Kramer	60
	Unequal Population Variances	61
	Research on Other MCPs	61
	Special MCPs	62
	The GH Procedure	62
	Example	63
	Robustness to Nonnormality of Classical MCPs	64
	Summary	66
5.	Multiple Comparisons for the Two-Way ANOVA:	
	Factorial or Randomized Blocks	66
	Example: Study Technique and Cognitive Style	67
	Control of α	68
	Main Effect Means	69
	MCPs on Main Effect Means	69
	SAS and SPSS	71
	Interaction Tests Versus Call Manna Tests	72

Interaction Tests	72
Cell Means Tests	74
Critical Values for Cell Means Tests	75
Summary	78
Appendix: Tables of Critical Values	79
Notes	88
References	92
About the Author	96