GGGGGGGGGG EEEEEEEEEEEE NN NN OOOOOOOO VV VV AAAAAAAAAA

GGGGGGGGGGGG EEEEEEEEEEEE NNN NN OOOOOOOOOO VV VV AAAAAAAAAAAA

GG G EE NNNN NN OO OO VV VV AA AA

GG EE NN NN NN OO OO VV VV AA AA

GG EE NN NN NN OO OO VV VV AA AA

GG EE NN NN NN OO OO VV VV AA AA

GG EE NN NN NN OO OO VV VV AA AA

GG EEEEEEEE NN NN NN OO OO VV VV AA AA

GG GGGG EEEEEEEE NN NNNN OO OO VV VV AAAAAAAAAAAA

GG GGGG EE NN NNN OO OO VV VV AAAAAAAAAAAA

GG GG EE NN NN OO OO VV VV AA AA

GG GG EE NN NN OO OO VV VV AA AA

GG GG EE NN NN OO OO V V AA AA

GG GG EE NN NN OO OO VVVV AA AA

GGGGGGGGGGGG EEEEEEEEEEEE NN NN OOOOOOOOOO VVVV AA AA

GGGGGGGGGG EEEEEEEEEEEE NN NN OOOOOOOO VV AA AA

A GENERAL PURPOSE ANALYSIS OF VARIANCE SYSTEM

--- - --

GENOVA IS A FORTRAN 77 PROGRAM FOR ANALYSIS OF VARIANCE

AND GENERALIZABILITY ANALYSES WITH BALANCED DESIGNS

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VERSION 3.1

January, 2001

GENOVA has been checked for accuracy of output, however the authors

can make no assurances that the program is totally without error.

GENOVA was developed in part under contract No. N00123-78-C-1206 with the Navy Personnel Research and

Development Center (NPRDC); Robert L. Brennan Principal Investigator. GENOVA does not necessarily

reflect NPRDC positions or policy, and no official endorsement should be inferred

GENOVA VERSION 3.1 PAGE 1

CONTROL CARD INPUT LISTING

COLUMN 11111111112222222222333333333344444444445555555555666666666677777777778

12345678901234567890123456789012345678901234567890123456789012345678901234567890

GSTUDY P X O X T DESIGN -- RANDOM MODEL

OPTIONS RECORDS 2

EFFECT \* P 10 0

EFFECT + O 2 0

EFFECT + T 4 0

FORMAT (8F1.0)

PROCESS

GENOVA VERSION 3.1 PAGE 2

G STUDY P X O X T DESIGN -- RANDOM MODEL

EXPANDED MAIN AND INTERACTION EFFECT TABLE

(\*\* = INFINITE) P O T TOTAL DEGREES

SAMPLE SIZE 10 2 4 PRIMARY NUMBER OF

UNIVERSE SIZE \*\*\*\* \*\*\*\* \*\*\*\* INDICES INDICES FREEDOM

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\* \* \* \* \*

\* P \* 1 \* 0 \* 0 \* 1 1 9

\* O \* 0 \* 1 \* 0 \* 1 1 1

\* T \* 0 \* 0 \* 1 \* 1 1 3

\* \* \* \* \*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\* \* \* \* \*

\* PO \* 1 \* 1 \* 0 \* 2 2 9

\* PT \* 1 \* 0 \* 1 \* 2 2 27

\* OT \* 0 \* 1 \* 1 \* 2 2 3

\* \* \* \* \*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\* \* \* \* \*

\* POT \* 1 \* 1 \* 1 \* 3 3 27

\* \* \* \* \*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

GENOVA VERSION 3.1 PAGE 3

G STUDY P X O X T DESIGN -- RANDOM MODEL

INPUT RECORD LISTING WITH RECORD MEANS

RECORD # 1 2.00000 6.00000 7.00000 5.00000 2.00000 5.00000 5.00000 5.00000

4.62500

RECORD # 2 4.00000 5.00000 6.00000 7.00000 6.00000 7.00000 5.00000 7.00000

5.87500

RECORD # 9 .00000 5.00000 4.00000 5.00000 5.00000 5.00000 5.00000 3.00000

4.00000

RECORD # 10 6.00000 8.00000 7.00000 6.00000 6.00000 8.00000 8.00000 6.00000

6.87500

GENOVA VERSION 3.1 PAGE 4

G STUDY P X O X T DESIGN -- RANDOM MODEL

CELL MEAN SCORES

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*\* GRAND MEAN = 5.2750000 \*\*\*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

MEAN SCORES FOR EFFECT: O SUBSCRIPT NOTATION: (O)

(1) = 5.075000 (2) = 5.475000

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

MEAN SCORES FOR EFFECT: T SUBSCRIPT NOTATION: (T)

(1) = 4.100000 (2) = 5.650000 (3) = 5.800000 (4) = 5.550000

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

MEAN SCORES FOR EFFECT: OT SUBSCRIPT NOTATION: (O,T)

(1,1) = 3.500000 (1,2) = 5.500000 (1,3) = 5.500000 (1,4) = 5.800000

(2,1) = 4.700000 (2,2) = 5.800000 (2,3) = 6.100000 (2,4) = 5.300000

GENOVA VERSION 3.1 PAGE 5

G STUDY P X O X T DESIGN -- RANDOM MODEL

ANOVA TABLE

(\*\* = INFINITE) P O T

SAMPLE SIZE 10 2 4

UNIVERSE SIZE \*\*\*\* \*\*\*\* \*\*\*\*

------------------------------------------------------------------------------------------------------------------

DEGREES SUMS OF SUMS OF (QF = QUASI F RATIO)

OF SQUARES FOR SQUARES FOR MEAN F F-TEST DEGREES OF FREEDOM

EFFECT FREEDOM MEAN SCORES SCORE EFFECTS SQUARES STATISTIC NUMERATOR DENOMINATOR

------------------------------------------------------------------------------------------------------------------

P 9 2288.25000 62.20000 6.91111 2.77679 QF 9 QF 16 QF

O 1 2229.25000 3.20000 3.20000 1.10204 QF 1 QF 4 QF

T 3 2263.50000 37.45000 12.48333 3.42009 QF 3 QF 6 QF

------------------------------------------------------------------------------------------------------------------

PO 9 2303.50000 12.05000 1.33889 1.43168 9 27

PT 27 2382.00000 56.30000 2.08519 2.22970 27 27

OT 3 2274.20000 7.50000 2.50000 2.67327 3 27

------------------------------------------------------------------------------------------------------------------

POT 27 2430.00000 25.25000 .93519

------------------------------------------------------------------------------------------------------------------

MEAN 2226.05000

------------------------------------------------------------------------------------------------------------------

TOTAL 79 203.95000

------------------------------------------------------------------------------------------------------------------

NOTE: FOR GENERALIZABILITY ANALYSES, F-STATISTICS SHOULD BE IGNORED

GENOVA VERSION 3.1 PAGE 6

G STUDY P X O X T DESIGN -- RANDOM MODEL

G STUDY RESULTS

(\*\* = INFINITE) P O T

SAMPLE SIZE 10 2 4

UNIVERSE SIZE \*\*\*\* \*\*\*\* \*\*\*\* QFM = QUADRATIC FORM

-----------------------------------------------------------------------------

M O D E L V A R I A N C E C O M P O N E N T S

DEGREES - - - - - - - - - - - - - - - - - - - - - - -

OF USING USING EMS STANDARD

EFFECT FREEDOM ALGORITHM EQUATIONS ERROR

-----------------------------------------------------------------------------

P 9 .5527778 .5527778 .3826383

O 1 .0074074 .0074074 .0779139

T 3 .4416667 .4416667 .4037128

-----------------------------------------------------------------------------

PO 9 .1009259 .1009259 .1553719

PT 27 .5750000 .5750000 .3000738

OT 3 .1564815 .1564815 .1600099

-----------------------------------------------------------------------------

POT 27 .9351852 .9351852 .2455917

-----------------------------------------------------------------------------

NOTE: THE "ALGORITHM" AND "EMS" ESTIMATED VARIANCE COMPONENTS WILL BE

IDENTICAL IF THERE ARE NO NEGATIVE ESTIMATES

GENOVA VERSION 3.1 PAGE 7

G STUDY P X O X T DESIGN -- RANDOM MODEL

EXPECTED MEAN SQUARE EQUATIONS

(\*\* = INFINITE) P O T

SAMPLE SIZE 10 2 4

UNIVERSE SIZE \*\*\*\* \*\*\*\* \*\*\*\*

EMS(P) = 1.00\*VC(POT) + 2.00\*VC(PT) + 4.00\*VC(PO) + 8.00\*VC(P)

EMS(O) = 1.00\*VC(POT) + 10.00\*VC(OT) + 4.00\*VC(PO) + 40.00\*VC(O)

EMS(T) = 1.00\*VC(POT) + 10.00\*VC(OT) + 2.00\*VC(PT) + 20.00\*VC(T)

EMS(PO) = 1.00\*VC(POT) + 4.00\*VC(PO)

EMS(PT) = 1.00\*VC(POT) + 2.00\*VC(PT)

EMS(OT) = 1.00\*VC(POT) + 10.00\*VC(OT)

EMS(POT) = 1.00\*VC(POT)

GENOVA VERSION 3.1 PAGE 8

G STUDY P X O X T DESIGN -- RANDOM MODEL

VARIANCE - COVARIANCE MATRIX FOR ESTIMATED VARIANCE COMPONENTS (V)

P O T PO PT OT POT

P .1464121

O .0012070 .0060706

T .0022511 .0032004 .1629841

PO -.0120702 -.0024140 -.0007539 .0241404

PT -.0225111 -.0007539 -.0090044 .0075394 .0900443

OT -.0007539 -.0064008 -.0128016 .0015079 .0030158 .0256032

POT .0075394 .0015079 .0030158 -.0150788 -.0301576 -.0060315 .0603153

GENOVA VERSION 3.1 PAGE 9

CONTROL CARD INPUT LISTING

COLUMN 11111111112222222222333333333344444444445555555555666666666677777777778

12345678901234567890123456789012345678901234567890123456789012345678901234567890

COMMENT

COMMENT What if we vary the number of occasions?

DSTUDY #1 -- P X O X T DESIGN -- O AND T RANDOM

DEFFECT $ P

DEFFECT O 1 2 3 4 6

DEFFECT T 3

ENDDSTUDY

GENOVA VERSION 3.1 PAGE 10

D STUDY #1 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 001-001

OBJECT OF MEASUREMENT : P FACETS : O T

G STUDY POPULATION SIZE : INFINITE G STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY POPULATION SIZE : INFINITE D STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY SAMPLE SIZE : 10 D STUDY SAMPLE SIZES : 1 3

----------------------------------------------------------------------------------------------------------------------------------

VARIANCE COMPONENTS IN TERMS OF VARIANCE COMPONENTS IN TERMS OF

G STUDY UNIVERSE (OF ADMISSIBLE OBSERVATIONS) SIZES D STUDY UNIVERSE (OF GENERALIZATION) SIZES

---------------------------------------------------------- -----------------------------------------------------------

VARIANCE COMPONENTS VARIANCE COMPONENTS

VARIANCE FINITE D STUDY FOR MEAN SCORES VARIANCE FINITE D STUDY FOR MEAN SCORES

COMPONENTS UNIVERSE SAMPLING -------------------------- COMPONENTS UNIVERSE SAMPLING ---------------------------

FOR SINGLE COR- FRE- STANDARD FOR SINGLE COR- FRE- STANDARD

EFFECT OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS

----------------------------------------------------------------------------------------------------------------------------------

P .55278 1.0000 1 .55278 .38264 .55278 1.0000 1 .55278 .38264

O .00741 1.0000 1 .00741 .07791 .00741 1.0000 1 .00741 .07791

T .44167 1.0000 3 .14722 .13457 .44167 1.0000 3 .14722 .13457

PO .10093 1.0000 1 .10093 .15537 .10093 1.0000 1 .10093 .15537

PT .57500 1.0000 3 .19167 .10002 .57500 1.0000 3 .19167 .10002

OT .15648 1.0000 3 .05216 .05334 .15648 1.0000 3 .05216 .05334

POT .93519 1.0000 3 .31173 .08186 .93519 1.0000 3 .31173 .08186

----------------------------------------------------------------------------------------------------------------------------------

QFM = QUADRATIC FORM

----------------------------------------------------------------------------------------------------------------------------------

STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE .55278 .74349 .38264

EXPECTED OBSERVED SCORE 1.15710 1.07569 .37604

LOWER CASE DELTA .60432 .77738 .17064 GENERALIZABILITY COEFFICIENT = .47773 ( .91471)

UPPER CASE DELTA .81111 .90062 .21294 PHI = .40530 ( .68151)

MEAN .32250 .56789

----------------------------------------------------------------------------------------------------------------------------------

NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 11

D STUDY #1 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 001-001

VARIANCE - COVARIANCE MATRIX FOR ESTIMATED VARIANCE COMPONENTS (FOR MEAN SCORES) IN UNIVERSE OF GENERALIZATION (W)

P O T PO PT OT POT

P .1464121

O .0012070 .0060706

T .0007504 .0010668 .0181093

PO -.0120702 -.0024140 -.0002513 .0241404

PT -.0075037 -.0002513 -.0010005 .0025131 .0100049

OT -.0002513 -.0021336 -.0014224 .0005026 .0003351 .0028448

POT .0025131 .0005026 .0003351 -.0050263 -.0033508 -.0006702 .0067017

GENOVA VERSION 3.1 PAGE 12

D STUDY #1 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 001-002

OBJECT OF MEASUREMENT : P FACETS : O T

G STUDY POPULATION SIZE : INFINITE G STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY POPULATION SIZE : INFINITE D STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY SAMPLE SIZE : 10 D STUDY SAMPLE SIZES : 2 3

----------------------------------------------------------------------------------------------------------------------------------

VARIANCE COMPONENTS IN TERMS OF VARIANCE COMPONENTS IN TERMS OF

G STUDY UNIVERSE (OF ADMISSIBLE OBSERVATIONS) SIZES D STUDY UNIVERSE (OF GENERALIZATION) SIZES

---------------------------------------------------------- -----------------------------------------------------------

VARIANCE COMPONENTS VARIANCE COMPONENTS

VARIANCE FINITE D STUDY FOR MEAN SCORES VARIANCE FINITE D STUDY FOR MEAN SCORES

COMPONENTS UNIVERSE SAMPLING -------------------------- COMPONENTS UNIVERSE SAMPLING ---------------------------

FOR SINGLE COR- FRE- STANDARD FOR SINGLE COR- FRE- STANDARD

EFFECT OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS

----------------------------------------------------------------------------------------------------------------------------------

P .55278 1.0000 1 .55278 .38264 .55278 1.0000 1 .55278 .38264

O .00741 1.0000 2 .00370 .03896 .00741 1.0000 2 .00370 .03896

T .44167 1.0000 3 .14722 .13457 .44167 1.0000 3 .14722 .13457

PO .10093 1.0000 2 .05046 .07769 .10093 1.0000 2 .05046 .07769

PT .57500 1.0000 3 .19167 .10002 .57500 1.0000 3 .19167 .10002

OT .15648 1.0000 6 .02608 .02667 .15648 1.0000 6 .02608 .02667

POT .93519 1.0000 6 .15586 .04093 .93519 1.0000 6 .15586 .04093

----------------------------------------------------------------------------------------------------------------------------------

QFM = QUADRATIC FORM

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STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE .55278 .74349 .38264

EXPECTED OBSERVED SCORE .95077 .97508 .36907

LOWER CASE DELTA .39799 .63087 .11985 GENERALIZABILITY COEFFICIENT = .58140 ( 1.38891)

UPPER CASE DELTA .57500 .75829 .17438 PHI = .49015 ( .96135)

MEAN .27208 .52162

----------------------------------------------------------------------------------------------------------------------------------

NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 13

D STUDY #1 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 001-002

VARIANCE - COVARIANCE MATRIX FOR ESTIMATED VARIANCE COMPONENTS (FOR MEAN SCORES) IN UNIVERSE OF GENERALIZATION (W)

P O T PO PT OT POT

P .1464121

O .0006035 .0015176

T .0007504 .0005334 .0181093

PO -.0060351 -.0006035 -.0001257 .0060351

PT -.0075037 -.0001257 -.0010005 .0012566 .0100049

OT -.0001257 -.0005334 -.0007112 .0001257 .0001675 .0007112

POT .0012566 .0001257 .0001675 -.0012566 -.0016754 -.0001675 .0016754

GENOVA VERSION 3.1 PAGE 14

D STUDY #1 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 001-003

OBJECT OF MEASUREMENT : P FACETS : O T

G STUDY POPULATION SIZE : INFINITE G STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY POPULATION SIZE : INFINITE D STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY SAMPLE SIZE : 10 D STUDY SAMPLE SIZES : 3 3

----------------------------------------------------------------------------------------------------------------------------------

VARIANCE COMPONENTS IN TERMS OF VARIANCE COMPONENTS IN TERMS OF

G STUDY UNIVERSE (OF ADMISSIBLE OBSERVATIONS) SIZES D STUDY UNIVERSE (OF GENERALIZATION) SIZES

---------------------------------------------------------- -----------------------------------------------------------

VARIANCE COMPONENTS VARIANCE COMPONENTS

VARIANCE FINITE D STUDY FOR MEAN SCORES VARIANCE FINITE D STUDY FOR MEAN SCORES

COMPONENTS UNIVERSE SAMPLING -------------------------- COMPONENTS UNIVERSE SAMPLING ---------------------------

FOR SINGLE COR- FRE- STANDARD FOR SINGLE COR- FRE- STANDARD

EFFECT OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS

----------------------------------------------------------------------------------------------------------------------------------

P .55278 1.0000 1 .55278 .38264 .55278 1.0000 1 .55278 .38264

O .00741 1.0000 3 .00247 .02597 .00741 1.0000 3 .00247 .02597

T .44167 1.0000 3 .14722 .13457 .44167 1.0000 3 .14722 .13457

PO .10093 1.0000 3 .03364 .05179 .10093 1.0000 3 .03364 .05179

PT .57500 1.0000 3 .19167 .10002 .57500 1.0000 3 .19167 .10002

OT .15648 1.0000 9 .01739 .01778 .15648 1.0000 9 .01739 .01778

POT .93519 1.0000 9 .10391 .02729 .93519 1.0000 9 .10391 .02729

----------------------------------------------------------------------------------------------------------------------------------

QFM = QUADRATIC FORM

----------------------------------------------------------------------------------------------------------------------------------

STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE .55278 .74349 .38264

EXPECTED OBSERVED SCORE .88200 .93915 .36985

LOWER CASE DELTA .32922 .57378 .10843 GENERALIZABILITY COEFFICIENT = .62674 ( 1.67906)

UPPER CASE DELTA .49630 .70448 .16671 PHI = .52692 ( 1.11381)

MEAN .25528 .50525

----------------------------------------------------------------------------------------------------------------------------------

NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 15

D STUDY #1 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 001-003

VARIANCE - COVARIANCE MATRIX FOR ESTIMATED VARIANCE COMPONENTS (FOR MEAN SCORES) IN UNIVERSE OF GENERALIZATION (W)

P O T PO PT OT POT

P .1464121

O .0004023 .0006745

T .0007504 .0003556 .0181093

PO -.0040234 -.0002682 -.0000838 .0026823

PT -.0075037 -.0000838 -.0010005 .0008377 .0100049

OT -.0000838 -.0002371 -.0004741 .0000558 .0001117 .0003161

POT .0008377 .0000558 .0001117 -.0005585 -.0011169 -.0000745 .0007446

GENOVA VERSION 3.1 PAGE 16

D STUDY #1 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 001-004

OBJECT OF MEASUREMENT : P FACETS : O T

G STUDY POPULATION SIZE : INFINITE G STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY POPULATION SIZE : INFINITE D STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY SAMPLE SIZE : 10 D STUDY SAMPLE SIZES : 4 3

----------------------------------------------------------------------------------------------------------------------------------

VARIANCE COMPONENTS IN TERMS OF VARIANCE COMPONENTS IN TERMS OF

G STUDY UNIVERSE (OF ADMISSIBLE OBSERVATIONS) SIZES D STUDY UNIVERSE (OF GENERALIZATION) SIZES

---------------------------------------------------------- -----------------------------------------------------------

VARIANCE COMPONENTS VARIANCE COMPONENTS

VARIANCE FINITE D STUDY FOR MEAN SCORES VARIANCE FINITE D STUDY FOR MEAN SCORES

COMPONENTS UNIVERSE SAMPLING -------------------------- COMPONENTS UNIVERSE SAMPLING ---------------------------

FOR SINGLE COR- FRE- STANDARD FOR SINGLE COR- FRE- STANDARD

EFFECT OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS

----------------------------------------------------------------------------------------------------------------------------------

P .55278 1.0000 1 .55278 .38264 .55278 1.0000 1 .55278 .38264

O .00741 1.0000 4 .00185 .01948 .00741 1.0000 4 .00185 .01948

T .44167 1.0000 3 .14722 .13457 .44167 1.0000 3 .14722 .13457

PO .10093 1.0000 4 .02523 .03884 .10093 1.0000 4 .02523 .03884

PT .57500 1.0000 3 .19167 .10002 .57500 1.0000 3 .19167 .10002

OT .15648 1.0000 12 .01304 .01333 .15648 1.0000 12 .01304 .01333

POT .93519 1.0000 12 .07793 .02047 .93519 1.0000 12 .07793 .02047

----------------------------------------------------------------------------------------------------------------------------------

QFM = QUADRATIC FORM

----------------------------------------------------------------------------------------------------------------------------------

STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE .55278 .74349 .38264

EXPECTED OBSERVED SCORE .84761 .92066 .37083

LOWER CASE DELTA .29483 .54298 .10433 GENERALIZABILITY COEFFICIENT = .65216 ( 1.87490)

UPPER CASE DELTA .45694 .67598 .16410 PHI = .54746 ( 1.20973)

MEAN .24688 .49687

----------------------------------------------------------------------------------------------------------------------------------

NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 17

D STUDY #1 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 001-004

VARIANCE - COVARIANCE MATRIX FOR ESTIMATED VARIANCE COMPONENTS (FOR MEAN SCORES) IN UNIVERSE OF GENERALIZATION (W)

P O T PO PT OT POT

P .1464121

O .0003018 .0003794

T .0007504 .0002667 .0181093

PO -.0030176 -.0001509 -.0000628 .0015088

PT -.0075037 -.0000628 -.0010005 .0006283 .0100049

OT -.0000628 -.0001333 -.0003556 .0000314 .0000838 .0001778

POT .0006283 .0000314 .0000838 -.0003141 -.0008377 -.0000419 .0004189

GENOVA VERSION 3.1 PAGE 18

D STUDY #1 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 001-005

OBJECT OF MEASUREMENT : P FACETS : O T

G STUDY POPULATION SIZE : INFINITE G STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY POPULATION SIZE : INFINITE D STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY SAMPLE SIZE : 10 D STUDY SAMPLE SIZES : 6 3

----------------------------------------------------------------------------------------------------------------------------------

VARIANCE COMPONENTS IN TERMS OF VARIANCE COMPONENTS IN TERMS OF

G STUDY UNIVERSE (OF ADMISSIBLE OBSERVATIONS) SIZES D STUDY UNIVERSE (OF GENERALIZATION) SIZES

---------------------------------------------------------- -----------------------------------------------------------

VARIANCE COMPONENTS VARIANCE COMPONENTS

VARIANCE FINITE D STUDY FOR MEAN SCORES VARIANCE FINITE D STUDY FOR MEAN SCORES

COMPONENTS UNIVERSE SAMPLING -------------------------- COMPONENTS UNIVERSE SAMPLING ---------------------------

FOR SINGLE COR- FRE- STANDARD FOR SINGLE COR- FRE- STANDARD

EFFECT OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS

----------------------------------------------------------------------------------------------------------------------------------

P .55278 1.0000 1 .55278 .38264 .55278 1.0000 1 .55278 .38264

O .00741 1.0000 6 .00123 .01299 .00741 1.0000 6 .00123 .01299

T .44167 1.0000 3 .14722 .13457 .44167 1.0000 3 .14722 .13457

PO .10093 1.0000 6 .01682 .02590 .10093 1.0000 6 .01682 .02590

PT .57500 1.0000 3 .19167 .10002 .57500 1.0000 3 .19167 .10002

OT .15648 1.0000 18 .00869 .00889 .15648 1.0000 18 .00869 .00889

POT .93519 1.0000 18 .05195 .01364 .93519 1.0000 18 .05195 .01364

----------------------------------------------------------------------------------------------------------------------------------

QFM = QUADRATIC FORM

----------------------------------------------------------------------------------------------------------------------------------

STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE .55278 .74349 .38264

EXPECTED OBSERVED SCORE .81322 .90179 .37219

LOWER CASE DELTA .26044 .51034 .10150 GENERALIZABILITY COEFFICIENT = .67974 ( 2.12246)

UPPER CASE DELTA .41759 .64621 .16237 PHI = .56966 ( 1.32373)

MEAN .23847 .48834

----------------------------------------------------------------------------------------------------------------------------------

NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 19

D STUDY #1 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 001-005

VARIANCE - COVARIANCE MATRIX FOR ESTIMATED VARIANCE COMPONENTS (FOR MEAN SCORES) IN UNIVERSE OF GENERALIZATION (W)

P O T PO PT OT POT

P .1464121

O .0002012 .0001686

T .0007504 .0001778 .0181093

PO -.0020117 -.0000671 -.0000419 .0006706

PT -.0075037 -.0000419 -.0010005 .0004189 .0100049

OT -.0000419 -.0000593 -.0002371 .0000140 .0000558 .0000790

POT .0004189 .0000140 .0000558 -.0001396 -.0005585 -.0000186 .0001862

GENOVA VERSION 3.1 PAGE 20

D STUDY #1 -- P X O X T DESIGN -- O AND T RANDOM

SUMMARY OF D STUDY RESULTS FOR SET OF CONTROL CARDS NO. 001

---------------------------------------------------------------------------------------------------------------------------------

V A R I A N C E S

SAMPLE SIZES --------------------------------------------------------

D STUDY ------------------------------------- EXPECTED LOWER UPPER

DESIGN INDEX= $P O T UNIVERSE OBSERVED CASE CASE GEN.

NO UNIV.= INF. INF. INF. SCORE SCORE DELTA DELTA MEAN COEF. PHI

---------------------------------------------------------------------------------------------------------------------------------

001-001 10 1 3 .55278 1.15710 .60432 .81111 .32250 .47773 .40530

001-002 10 2 3 .55278 .95077 .39799 .57500 .27208 .58140 .49015

001-003 10 3 3 .55278 .88200 .32922 .49630 .25528 .62674 .52692

001-004 10 4 3 .55278 .84761 .29483 .45694 .24688 .65216 .54746

001-005 10 6 3 .55278 .81322 .26044 .41759 .23847 .67974 .56966

GENOVA VERSION 3.1 PAGE 21

CONTROL CARD INPUT LISTING

COLUMN 11111111112222222222333333333344444444445555555555666666666677777777778

12345678901234567890123456789012345678901234567890123456789012345678901234567890

COMMENT

COMMENT What if we vary the number of tasks?

DSTUDY #2 -- P X O X T DESIGN -- O AND T RANDOM

DEFFECT $ P

DEFFECT O 2

DEFFECT T 4 6 8 10

ENDDSTUDY

GENOVA VERSION 3.1 PAGE 22

D STUDY #2 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 002-001

OBJECT OF MEASUREMENT : P FACETS : O T

G STUDY POPULATION SIZE : INFINITE G STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY POPULATION SIZE : INFINITE D STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY SAMPLE SIZE : 10 D STUDY SAMPLE SIZES : 2 4

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VARIANCE COMPONENTS IN TERMS OF VARIANCE COMPONENTS IN TERMS OF

G STUDY UNIVERSE (OF ADMISSIBLE OBSERVATIONS) SIZES D STUDY UNIVERSE (OF GENERALIZATION) SIZES

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VARIANCE COMPONENTS VARIANCE COMPONENTS

VARIANCE FINITE D STUDY FOR MEAN SCORES VARIANCE FINITE D STUDY FOR MEAN SCORES

COMPONENTS UNIVERSE SAMPLING -------------------------- COMPONENTS UNIVERSE SAMPLING ---------------------------

FOR SINGLE COR- FRE- STANDARD FOR SINGLE COR- FRE- STANDARD

EFFECT OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS

----------------------------------------------------------------------------------------------------------------------------------

P .55278 1.0000 1 .55278 .38264 .55278 1.0000 1 .55278 .38264

O .00741 1.0000 2 .00370 .03896 .00741 1.0000 2 .00370 .03896

T .44167 1.0000 4 .11042 .10093 .44167 1.0000 4 .11042 .10093

PO .10093 1.0000 2 .05046 .07769 .10093 1.0000 2 .05046 .07769

PT .57500 1.0000 4 .14375 .07502 .57500 1.0000 4 .14375 .07502

OT .15648 1.0000 8 .01956 .02000 .15648 1.0000 8 .01956 .02000

POT .93519 1.0000 8 .11690 .03070 .93519 1.0000 8 .11690 .03070

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QFM = QUADRATIC FORM

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STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE .55278 .74349 .38264

EXPECTED OBSERVED SCORE .86389 .92946 .36836

LOWER CASE DELTA .31111 .55777 .10354 GENERALIZABILITY COEFFICIENT = .63987 ( 1.77679)

UPPER CASE DELTA .44479 .66693 .14100 PHI = .55412 ( 1.24278)

MEAN .22007 .46912

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NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 23

D STUDY #2 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 002-001

VARIANCE - COVARIANCE MATRIX FOR ESTIMATED VARIANCE COMPONENTS (FOR MEAN SCORES) IN UNIVERSE OF GENERALIZATION (W)

P O T PO PT OT POT

P .1464121

O .0006035 .0015176

T .0005628 .0004000 .0101865

PO -.0060351 -.0006035 -.0000942 .0060351

PT -.0056278 -.0000942 -.0005628 .0009424 .0056278

OT -.0000942 -.0004000 -.0004000 .0000942 .0000942 .0004000

POT .0009424 .0000942 .0000942 -.0009424 -.0009424 -.0000942 .0009424

GENOVA VERSION 3.1 PAGE 24

D STUDY #2 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 002-002

OBJECT OF MEASUREMENT : P FACETS : O T

G STUDY POPULATION SIZE : INFINITE G STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY POPULATION SIZE : INFINITE D STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY SAMPLE SIZE : 10 D STUDY SAMPLE SIZES : 2 6

----------------------------------------------------------------------------------------------------------------------------------

VARIANCE COMPONENTS IN TERMS OF VARIANCE COMPONENTS IN TERMS OF

G STUDY UNIVERSE (OF ADMISSIBLE OBSERVATIONS) SIZES D STUDY UNIVERSE (OF GENERALIZATION) SIZES

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VARIANCE COMPONENTS VARIANCE COMPONENTS

VARIANCE FINITE D STUDY FOR MEAN SCORES VARIANCE FINITE D STUDY FOR MEAN SCORES

COMPONENTS UNIVERSE SAMPLING -------------------------- COMPONENTS UNIVERSE SAMPLING ---------------------------

FOR SINGLE COR- FRE- STANDARD FOR SINGLE COR- FRE- STANDARD

EFFECT OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS

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P .55278 1.0000 1 .55278 .38264 .55278 1.0000 1 .55278 .38264

O .00741 1.0000 2 .00370 .03896 .00741 1.0000 2 .00370 .03896

T .44167 1.0000 6 .07361 .06729 .44167 1.0000 6 .07361 .06729

PO .10093 1.0000 2 .05046 .07769 .10093 1.0000 2 .05046 .07769

PT .57500 1.0000 6 .09583 .05001 .57500 1.0000 6 .09583 .05001

OT .15648 1.0000 12 .01304 .01333 .15648 1.0000 12 .01304 .01333

POT .93519 1.0000 12 .07793 .02047 .93519 1.0000 12 .07793 .02047

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QFM = QUADRATIC FORM

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STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE .55278 .74349 .38264

EXPECTED OBSERVED SCORE .77701 .88148 .36907

LOWER CASE DELTA .22423 .47353 .09010 GENERALIZABILITY COEFFICIENT = .71142 ( 2.46524)

UPPER CASE DELTA .31458 .56088 .11118 PHI = .63731 ( 1.75717)

MEAN .16806 .40995

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NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 25

D STUDY #2 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 002-002

VARIANCE - COVARIANCE MATRIX FOR ESTIMATED VARIANCE COMPONENTS (FOR MEAN SCORES) IN UNIVERSE OF GENERALIZATION (W)

P O T PO PT OT POT

P .1464121

O .0006035 .0015176

T .0003752 .0002667 .0045273

PO -.0060351 -.0006035 -.0000628 .0060351

PT -.0037518 -.0000628 -.0002501 .0006283 .0025012

OT -.0000628 -.0002667 -.0001778 .0000628 .0000419 .0001778

POT .0006283 .0000628 .0000419 -.0006283 -.0004189 -.0000419 .0004189

GENOVA VERSION 3.1 PAGE 26

D STUDY #2 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 002-003

OBJECT OF MEASUREMENT : P FACETS : O T

G STUDY POPULATION SIZE : INFINITE G STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY POPULATION SIZE : INFINITE D STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY SAMPLE SIZE : 10 D STUDY SAMPLE SIZES : 2 8

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VARIANCE COMPONENTS IN TERMS OF VARIANCE COMPONENTS IN TERMS OF

G STUDY UNIVERSE (OF ADMISSIBLE OBSERVATIONS) SIZES D STUDY UNIVERSE (OF GENERALIZATION) SIZES

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VARIANCE COMPONENTS VARIANCE COMPONENTS

VARIANCE FINITE D STUDY FOR MEAN SCORES VARIANCE FINITE D STUDY FOR MEAN SCORES

COMPONENTS UNIVERSE SAMPLING -------------------------- COMPONENTS UNIVERSE SAMPLING ---------------------------

FOR SINGLE COR- FRE- STANDARD FOR SINGLE COR- FRE- STANDARD

EFFECT OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS

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P .55278 1.0000 1 .55278 .38264 .55278 1.0000 1 .55278 .38264

O .00741 1.0000 2 .00370 .03896 .00741 1.0000 2 .00370 .03896

T .44167 1.0000 8 .05521 .05046 .44167 1.0000 8 .05521 .05046

PO .10093 1.0000 2 .05046 .07769 .10093 1.0000 2 .05046 .07769

PT .57500 1.0000 8 .07187 .03751 .57500 1.0000 8 .07187 .03751

OT .15648 1.0000 16 .00978 .01000 .15648 1.0000 16 .00978 .01000

POT .93519 1.0000 16 .05845 .01535 .93519 1.0000 16 .05845 .01535

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QFM = QUADRATIC FORM

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STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE .55278 .74349 .38264

EXPECTED OBSERVED SCORE .73356 .85648 .36995

LOWER CASE DELTA .18079 .42519 .08489 GENERALIZABILITY COEFFICIENT = .75355 ( 3.05762)

UPPER CASE DELTA .24948 .49948 .09864 PHI = .68903 ( 2.21573)

MEAN .14205 .37689

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NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 27

D STUDY #2 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 002-003

VARIANCE - COVARIANCE MATRIX FOR ESTIMATED VARIANCE COMPONENTS (FOR MEAN SCORES) IN UNIVERSE OF GENERALIZATION (W)

P O T PO PT OT POT

P .1464121

O .0006035 .0015176

T .0002814 .0002000 .0025466

PO -.0060351 -.0006035 -.0000471 .0060351

PT -.0028139 -.0000471 -.0001407 .0004712 .0014069

OT -.0000471 -.0002000 -.0001000 .0000471 .0000236 .0001000

POT .0004712 .0000471 .0000236 -.0004712 -.0002356 -.0000236 .0002356

GENOVA VERSION 3.1 PAGE 28

D STUDY #2 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 002-004

OBJECT OF MEASUREMENT : P FACETS : O T

G STUDY POPULATION SIZE : INFINITE G STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY POPULATION SIZE : INFINITE D STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY SAMPLE SIZE : 10 D STUDY SAMPLE SIZES : 2 10

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VARIANCE COMPONENTS IN TERMS OF VARIANCE COMPONENTS IN TERMS OF

G STUDY UNIVERSE (OF ADMISSIBLE OBSERVATIONS) SIZES D STUDY UNIVERSE (OF GENERALIZATION) SIZES

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VARIANCE COMPONENTS VARIANCE COMPONENTS

VARIANCE FINITE D STUDY FOR MEAN SCORES VARIANCE FINITE D STUDY FOR MEAN SCORES

COMPONENTS UNIVERSE SAMPLING -------------------------- COMPONENTS UNIVERSE SAMPLING ---------------------------

FOR SINGLE COR- FRE- STANDARD FOR SINGLE COR- FRE- STANDARD

EFFECT OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS

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P .55278 1.0000 1 .55278 .38264 .55278 1.0000 1 .55278 .38264

O .00741 1.0000 2 .00370 .03896 .00741 1.0000 2 .00370 .03896

T .44167 1.0000 10 .04417 .04037 .44167 1.0000 10 .04417 .04037

PO .10093 1.0000 2 .05046 .07769 .10093 1.0000 2 .05046 .07769

PT .57500 1.0000 10 .05750 .03001 .57500 1.0000 10 .05750 .03001

OT .15648 1.0000 20 .00782 .00800 .15648 1.0000 20 .00782 .00800

POT .93519 1.0000 20 .04676 .01228 .93519 1.0000 20 .04676 .01228

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QFM = QUADRATIC FORM

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STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE .55278 .74349 .38264

EXPECTED OBSERVED SCORE .70750 .84113 .37065

LOWER CASE DELTA .15472 .39335 .08237 GENERALIZABILITY COEFFICIENT = .78131 ( 3.57271)

UPPER CASE DELTA .21042 .45871 .09226 PHI = .72429 ( 2.62706)

MEAN .12644 .35559

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NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 29

D STUDY #2 -- P X O X T DESIGN -- O AND T RANDOM

D STUDY DESIGN NUMBER 002-004

VARIANCE - COVARIANCE MATRIX FOR ESTIMATED VARIANCE COMPONENTS (FOR MEAN SCORES) IN UNIVERSE OF GENERALIZATION (W)

P O T PO PT OT POT

P .1464121

O .0006035 .0015176

T .0002251 .0001600 .0016298

PO -.0060351 -.0006035 -.0000377 .0060351

PT -.0022511 -.0000377 -.0000900 .0003770 .0009004

OT -.0000377 -.0001600 -.0000640 .0000377 .0000151 .0000640

POT .0003770 .0000377 .0000151 -.0003770 -.0001508 -.0000151 .0001508

GENOVA VERSION 3.1 PAGE 30

D STUDY #2 -- P X O X T DESIGN -- O AND T RANDOM

SUMMARY OF D STUDY RESULTS FOR SET OF CONTROL CARDS NO. 002

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V A R I A N C E S

SAMPLE SIZES --------------------------------------------------------

D STUDY ------------------------------------- EXPECTED LOWER UPPER

DESIGN INDEX= $P O T UNIVERSE OBSERVED CASE CASE GEN.

NO UNIV.= INF. INF. INF. SCORE SCORE DELTA DELTA MEAN COEF. PHI

---------------------------------------------------------------------------------------------------------------------------------

002-001 10 2 4 .55278 .86389 .31111 .44479 .22007 .63987 .55412

002-002 10 2 6 .55278 .77701 .22423 .31458 .16806 .71142 .63731

002-003 10 2 8 .55278 .73356 .18079 .24948 .14205 .75355 .68903

002-004 10 2 10 .55278 .70750 .15472 .21042 .12644 .78131 .72429

GENOVA VERSION 3.1 PAGE 31

CONTROL CARD INPUT LISTING

COLUMN 11111111112222222222333333333344444444445555555555666666666677777777778

12345678901234567890123456789012345678901234567890123456789012345678901234567890

COMMENT

COMMENT What if tasks were fixed - universe of generalization has 4 tasks?

DSTUDY #3 -- P X O X T DESIGN -- O RANDOM, T FIXED

DEFFECT $ P

DEFFECT O 1

DEFFECT T 4 / 4

ENDDSTUDY

GENOVA VERSION 3.1 PAGE 32

D STUDY #3 -- P X O X T DESIGN -- O RANDOM, T FIXED

D STUDY DESIGN NUMBER 003-001

OBJECT OF MEASUREMENT : P FACETS : O T

G STUDY POPULATION SIZE : INFINITE G STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY POPULATION SIZE : INFINITE D STUDY UNIVERSE SIZES : INFINITE 4

D STUDY SAMPLE SIZE : 10 D STUDY SAMPLE SIZES : 1 4

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VARIANCE COMPONENTS IN TERMS OF VARIANCE COMPONENTS IN TERMS OF

G STUDY UNIVERSE (OF ADMISSIBLE OBSERVATIONS) SIZES D STUDY UNIVERSE (OF GENERALIZATION) SIZES

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VARIANCE COMPONENTS VARIANCE COMPONENTS

VARIANCE FINITE D STUDY FOR MEAN SCORES VARIANCE FINITE D STUDY FOR MEAN SCORES

COMPONENTS UNIVERSE SAMPLING -------------------------- COMPONENTS UNIVERSE SAMPLING ---------------------------

FOR SINGLE COR- FRE- STANDARD FOR SINGLE COR- FRE- STANDARD

EFFECT OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS

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P .55278 1.0000 1 .55278 .38264 .69653 1.0000 1 .69653 .37521

O .00741 1.0000 1 .00741 .07791 .04653 1.0000 1 .04653 .06686

T .44167 1.0000 4 .11042 .10093 .44167QFM0000E+00 4 ------- -------

PO .10093 1.0000 1 .10093 .15537 .33472 1.0000 1 .33472 .14273

PT .57500 1.0000 4 .14375 .07502 .57500 .0000E+00 4 ------- -------

OT .15648 1.0000 4 .03912 .04000 .15648 .0000E+00 4 ------- -------

POT .93519 1.0000 4 .23380 .06140 .93519 .0000E+00 4 ------- -------

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QFM = QUADRATIC FORM

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STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE .69653 .83458 .37521

EXPECTED OBSERVED SCORE 1.03125 1.01550 .37521

LOWER CASE DELTA .33472 .57855 .14273 GENERALIZABILITY COEFFICIENT = .67542 ( 2.08091)

UPPER CASE DELTA .38125 .61745 .14411 PHI = .64626 ( 1.82696)

MEAN .14965 .38685

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NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 33

D STUDY #3 -- P X O X T DESIGN -- O RANDOM, T FIXED

D STUDY DESIGN NUMBER 003-001

VARIANCE - COVARIANCE MATRIX FOR ESTIMATED VARIANCE COMPONENTS (FOR MEAN SCORES) IN UNIVERSE OF GENERALIZATION (W)

P O PO

P .1407843

O .0010185 .0044704

PO -.0101854 -.0020371 .0203707

GENOVA VERSION 3.1 PAGE 34

CONTROL CARD INPUT LISTING

COLUMN 11111111112222222222333333333344444444445555555555666666666677777777778

12345678901234567890123456789012345678901234567890123456789012345678901234567890

COMMENT

COMMENT What if tasks were nested within occasion?

COMMENT Persons perform different tasks on different occasions.

DSTUDY #4 -- P X (T:O) DESIGN -- R AND T RANDOM

DEFFECT $ P

DEFFECT O 2

DEFFECT T:O 4

ENDDSTUDY

GENOVA VERSION 3.1 PAGE 35

D STUDY #4 -- P X (T:O) DESIGN -- R AND T RANDOM

D STUDY DESIGN NUMBER 004-001

OBJECT OF MEASUREMENT : P FACETS : O T

G STUDY POPULATION SIZE : INFINITE G STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY POPULATION SIZE : INFINITE D STUDY UNIVERSE SIZES : INFINITE INFINITE

D STUDY SAMPLE SIZE : 10 D STUDY SAMPLE SIZES : 2 4

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VARIANCE COMPONENTS IN TERMS OF VARIANCE COMPONENTS IN TERMS OF

G STUDY UNIVERSE (OF ADMISSIBLE OBSERVATIONS) SIZES D STUDY UNIVERSE (OF GENERALIZATION) SIZES

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VARIANCE COMPONENTS VARIANCE COMPONENTS

VARIANCE FINITE D STUDY FOR MEAN SCORES VARIANCE FINITE D STUDY FOR MEAN SCORES

COMPONENTS UNIVERSE SAMPLING -------------------------- COMPONENTS UNIVERSE SAMPLING ---------------------------

FOR SINGLE COR- FRE- STANDARD FOR SINGLE COR- FRE- STANDARD

EFFECT OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS OBSERVATIONS RECTIONS QUENCIES ESTIMATES ERRORS

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P .55278 1.0000 1 .55278 .38264 .55278 1.0000 1 .55278 .38264

O .00741 1.0000 2 .00370 .03896 .00741 1.0000 2 .00370 .03896

T .59815 1.0000 8 .07477 .05046 .59815 1.0000 8 .07477 .05046

PO .10093 1.0000 2 .05046 .07769 .10093 1.0000 2 .05046 .07769

PT 1.51019 1.0000 8 .18877 .03751 1.51019 1.0000 8 .18877 .03751

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QFM = QUADRATIC FORM

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STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE .55278 .74349 .38264

EXPECTED OBSERVED SCORE .79201 .88995 .37027

LOWER CASE DELTA .23924 .48912 .08062 GENERALIZABILITY COEFFICIENT = .69794 ( 2.31060)

UPPER CASE DELTA .31771 .56366 .09415 PHI = .63502 ( 1.73989)

MEAN .15767 .39708

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NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 36

D STUDY #4 -- P X (T:O) DESIGN -- R AND T RANDOM

D STUDY DESIGN NUMBER 004-001

VARIANCE - COVARIANCE MATRIX FOR ESTIMATED VARIANCE COMPONENTS (FOR MEAN SCORES) IN UNIVERSE OF GENERALIZATION (W)

P O T PO PT

P .1464121

O .0006035 .0015176

T .0001871 -.0002000 .0025466

PO -.0060351 -.0006035 .0000471 .0060351

PT -.0018715 .0000471 -.0001407 -.0004712 .0014069

GENOVA VERSION 3.1 PAGE 37

CONTROL CARD INPUT LISTING

COLUMN 11111111112222222222333333333344444444445555555555666666666677777777778

12345678901234567890123456789012345678901234567890123456789012345678901234567890

FINISH