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

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

 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

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

 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

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

 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

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

 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

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

 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

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

 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 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

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

 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

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

 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

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

 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

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

 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

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

 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 .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

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

 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

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

 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