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

STUDY P x R x T DESIGN -- G STUDY OF RANDOM EFFECTS

COMMENT STEP ONE

COMMENT # RECORDS = 8

COMMENT # VALUES PER RECORD = 9

OPTIONS RECORDS ALL

EFFECT \* P 8 0

EFFECT + T 3 0

EFFECT + R 3 0

FORMAT (9F2.0)

PROCESS

GENOVA VERSION 3.1 PAGE 2

G STUDY P x R x T DESIGN -- G STUDY OF RANDOM EFFECTS

EXPANDED MAIN AND INTERACTION EFFECT TABLE

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

SAMPLE SIZE 8 3 3 PRIMARY NUMBER OF

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

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

\* \* \* \* \*

\* P \* 1 \* 0 \* 0 \* 1 1 7

\* T \* 0 \* 1 \* 0 \* 1 1 2

\* R \* 0 \* 0 \* 1 \* 1 1 2

\* \* \* \* \*

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

\* \* \* \* \*

\* PT \* 1 \* 1 \* 0 \* 2 2 14

\* PR \* 1 \* 0 \* 1 \* 2 2 14

\* TR \* 0 \* 1 \* 1 \* 2 2 4

\* \* \* \* \*

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

\* \* \* \* \*

\* PTR \* 1 \* 1 \* 1 \* 3 3 28

\* \* \* \* \*

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

GENOVA VERSION 3.1 PAGE 3

G STUDY P x R x T DESIGN -- G STUDY OF RANDOM EFFECTS

INPUT RECORD LISTING WITH RECORD MEANS

RECORD # 1 4.00000 4.00000 4.00000 5.00000 5.00000 6.00000 5.00000 6.00000

6.00000 5.00000

RECORD # 2 6.00000 7.00000 6.00000 7.00000 9.00000 5.00000 8.00000 9.00000

5.00000 6.88889

RECORD # 3 8.00000 7.00000 7.00000 4.00000 3.00000 2.00000 4.00000 4.00000

3.00000 4.66667

RECORD # 4 6.00000 8.00000 7.00000 9.00000 11.00000 7.00000 9.00000 9.00000

8.00000 8.22222

RECORD # 5 2.00000 1.00000 1.00000 5.00000 5.00000 3.00000 5.00000 6.00000

4.00000 3.55556

RECORD # 6 5.00000 4.00000 4.00000 7.00000 6.00000 5.00000 7.00000 7.00000

5.00000 5.55556

RECORD # 7 4.00000 5.00000 6.00000 6.00000 8.00000 9.00000 7.00000 8.00000

8.00000 6.77778

RECORD # 8 7.00000 7.00000 6.00000 5.00000 9.00000 9.00000 6.00000 9.00000

9.00000 7.44444

GENOVA VERSION 3.1 PAGE 4

G STUDY P x R x T DESIGN -- G STUDY OF RANDOM EFFECTS

CELL MEAN SCORES

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

\*\*\* GRAND MEAN = 6.0138889 \*\*\*

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

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

(1) = 5.250000 (2) = 6.250000 (3) = 6.541667

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

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

(1) = 5.875000 (2) = 6.541667 (3) = 5.625000

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

MEAN SCORES FOR EFFECT: TR SUBSCRIPT NOTATION: (T,R)

(3,1) = 6.375000 (3,2) = 7.250000 (3,3) = 6.000000

GENOVA VERSION 3.1 PAGE 5

G STUDY P x R x T DESIGN -- G STUDY OF RANDOM EFFECTS

ANOVA TABLE

(\*\* = INFINITE) P T R

SAMPLE SIZE 8 3 3

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 7 2760.33333 156.31944 22.33135 3.21021 QF 7 QF 21 QF

T 2 2626.04167 22.02778 11.01389 2.13582 QF 2 QF 13 QF

R 2 2614.79167 10.77778 5.38889 2.01484 QF 2 QF 11 QF

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

PT 14 2853.00000 70.63889 5.04563 7.72948 14 28

PR 14 2807.00000 35.88889 2.56349 3.92705 14 28

TR 4 2639.87500 3.05556 .76389 1.17021 4 28

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

PTR 28 2921.00000 18.27778 .65278

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

MEAN 2604.01389

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

TOTAL 71 316.98611

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

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

GENOVA VERSION 3.1 PAGE 6

G STUDY P x R x T DESIGN -- G STUDY OF RANDOM EFFECTS

G STUDY RESULTS

(\*\* = INFINITE) P T R

SAMPLE SIZE 8 3 3

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 7 1.7083333 1.7083333 1.1907667

T 2 .2440476 .2440476 .3334846

R 2 .1130952 .1130952 .1643823

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

PT 14 1.4642857 1.4642857 .5972820

PR 14 .6369048 .6369048 .3072900

TR 4 .0138889 .0138889 .0590176

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

PTR 28 .6527778 .6527778 .1685465

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

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 R x T DESIGN -- G STUDY OF RANDOM EFFECTS

EXPECTED MEAN SQUARE EQUATIONS

(\*\* = INFINITE) P T R

SAMPLE SIZE 8 3 3

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

EMS(P) = 1.00\*VC(PTR) + 3.00\*VC(PR) + 3.00\*VC(PT) + 9.00\*VC(P)

EMS(T) = 1.00\*VC(PTR) + 8.00\*VC(TR) + 3.00\*VC(PT) + 24.00\*VC(T)

EMS(R) = 1.00\*VC(PTR) + 8.00\*VC(TR) + 3.00\*VC(PR) + 24.00\*VC(R)

EMS(PT) = 1.00\*VC(PTR) + 3.00\*VC(PT)

EMS(PR) = 1.00\*VC(PTR) + 3.00\*VC(PR)

EMS(TR) = 1.00\*VC(PTR) + 8.00\*VC(TR)

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

GENOVA VERSION 3.1 PAGE 9

CONTROL CARD INPUT LISTING

COLUMN 11111111112222222222333333333344444444445555555555666666666677777777778

12345678901234567890123456789012345678901234567890123456789012345678901234567890

COMMENT STEP TWO

COMMENT D STUDY (a)

DSTUDY P X T X R -- Random Effects, 2 Raters

DEFFECT $ P

DEFFECT T 2 3 4

DEFFECT R 2

ENDDSTUDY

GENOVA VERSION 3.1 PAGE 10

D STUDY P X T X R -- Random Effects, 2 Raters

D STUDY DESIGN NUMBER 001-001

OBJECT OF MEASUREMENT : P FACETS : T R

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 : 8 D STUDY SAMPLE SIZES : 2 2

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

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 1.70833 1.0000 1 1.70833 1.19077 1.70833 1.0000 1 1.70833 1.19077

T .24405 1.0000 2 .12202 .16674 .24405 1.0000 2 .12202 .16674

R .11310 1.0000 2 .05655 .08219 .11310 1.0000 2 .05655 .08219

PT 1.46429 1.0000 2 .73214 .29864 1.46429 1.0000 2 .73214 .29864

PR .63690 1.0000 2 .31845 .15365 .63690 1.0000 2 .31845 .15365

TR .01389 1.0000 4 .00347 .01475 .01389 1.0000 4 .00347 .01475

PTR .65278 1.0000 4 .16319 .04214 .65278 1.0000 4 .16319 .04214

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

QFM = QUADRATIC FORM

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

STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE 1.70833 1.30703 1.19077

EXPECTED OBSERVED SCORE 2.92212 1.70942 1.17496

LOWER CASE DELTA 1.21379 1.10172 .33378 GENERALIZABILITY COEFFICIENT = .58462 ( 1.40744)

UPPER CASE DELTA 1.39583 1.18145 .34344 PHI = .55034 ( 1.22388)

MEAN .54731 .73980

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

NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 12

D STUDY P X T X R -- Random Effects, 2 Raters

D STUDY DESIGN NUMBER 001-002

OBJECT OF MEASUREMENT : P FACETS : T R

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 : 8 D STUDY SAMPLE SIZES : 3 2

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

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 1.70833 1.0000 1 1.70833 1.19077 1.70833 1.0000 1 1.70833 1.19077

T .24405 1.0000 3 .08135 .11116 .24405 1.0000 3 .08135 .11116

R .11310 1.0000 2 .05655 .08219 .11310 1.0000 2 .05655 .08219

PT 1.46429 1.0000 3 .48810 .19909 1.46429 1.0000 3 .48810 .19909

PR .63690 1.0000 2 .31845 .15365 .63690 1.0000 2 .31845 .15365

TR .01389 1.0000 6 .00231 .00984 .01389 1.0000 6 .00231 .00984

PTR .65278 1.0000 6 .10880 .02809 .65278 1.0000 6 .10880 .02809

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

QFM = QUADRATIC FORM

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

STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE 1.70833 1.30703 1.19077

EXPECTED OBSERVED SCORE 2.62368 1.61978 1.17076

LOWER CASE DELTA .91534 .95674 .24991 GENERALIZABILITY COEFFICIENT = .65112 ( 1.86633)

UPPER CASE DELTA 1.05556 1.02740 .25663 PHI = .61809 ( 1.61842)

MEAN .46817 .68423

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

NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 14

D STUDY P X T X R -- Random Effects, 2 Raters

D STUDY DESIGN NUMBER 001-003

OBJECT OF MEASUREMENT : P FACETS : T R

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 : 8 D STUDY SAMPLE SIZES : 4 2

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

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 1.70833 1.0000 1 1.70833 1.19077 1.70833 1.0000 1 1.70833 1.19077

T .24405 1.0000 4 .06101 .08337 .24405 1.0000 4 .06101 .08337

R .11310 1.0000 2 .05655 .08219 .11310 1.0000 2 .05655 .08219

PT 1.46429 1.0000 4 .36607 .14932 1.46429 1.0000 4 .36607 .14932

PR .63690 1.0000 2 .31845 .15365 .63690 1.0000 2 .31845 .15365

TR .01389 1.0000 8 .00174 .00738 .01389 1.0000 8 .00174 .00738

PTR .65278 1.0000 8 .08160 .02107 .65278 1.0000 8 .08160 .02107

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QFM = QUADRATIC FORM

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STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE 1.70833 1.30703 1.19077

EXPECTED OBSERVED SCORE 2.47445 1.57304 1.17181

LOWER CASE DELTA .76612 .87528 .21298 GENERALIZABILITY COEFFICIENT = .69039 ( 2.22985)

UPPER CASE DELTA .88542 .94097 .21831 PHI = .65863 ( 1.92941)

MEAN .42860 .65468

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

NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 16

D STUDY P X T X R -- Random Effects, 2 Raters

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 T R UNIVERSE OBSERVED CASE CASE GEN.

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

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

001-001 8 2 2 1.70833 2.92212 1.21379 1.39583 .54731 .58462 .55034

001-002 8 3 2 1.70833 2.62368 .91534 1.05556 .46817 .65112 .61809

001-003 8 4 2 1.70833 2.47445 .76612 .88542 .42860 .69039 .65863

GENOVA VERSION 3.1 PAGE 17

CONTROL CARD INPUT LISTING

COLUMN 11111111112222222222333333333344444444445555555555666666666677777777778

12345678901234567890123456789012345678901234567890123456789012345678901234567890

COMMENT D STUDY (b)

DSTUDY P X T X R -- Random Effects, 3 Raters

DEFFECT $ P

DEFFECT T 2 3 4

DEFFECT R 3

ENDDSTUDY

GENOVA VERSION 3.1 PAGE 18

D STUDY P X T X R -- Random Effects, 3 Raters

D STUDY DESIGN NUMBER 002-001

OBJECT OF MEASUREMENT : P FACETS : T R

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 : 8 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 1.70833 1.0000 1 1.70833 1.19077 1.70833 1.0000 1 1.70833 1.19077

T .24405 1.0000 2 .12202 .16674 .24405 1.0000 2 .12202 .16674

R .11310 1.0000 3 .03770 .05479 .11310 1.0000 3 .03770 .05479

PT 1.46429 1.0000 2 .73214 .29864 1.46429 1.0000 2 .73214 .29864

PR .63690 1.0000 3 .21230 .10243 .63690 1.0000 3 .21230 .10243

TR .01389 1.0000 6 .00231 .00984 .01389 1.0000 6 .00231 .00984

PTR .65278 1.0000 6 .10880 .02809 .65278 1.0000 6 .10880 .02809

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

QFM = QUADRATIC FORM

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STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE 1.70833 1.30703 1.19077

EXPECTED OBSERVED SCORE 2.76157 1.66180 1.17387

LOWER CASE DELTA 1.05324 1.02628 .31447 GENERALIZABILITY COEFFICIENT = .61861 ( 1.62198)

UPPER CASE DELTA 1.21528 1.10240 .32384 PHI = .58432 ( 1.40571)

MEAN .50723 .71220

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

NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 20

D STUDY P X T X R -- Random Effects, 3 Raters

D STUDY DESIGN NUMBER 002-002

OBJECT OF MEASUREMENT : P FACETS : T R

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 : 8 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 1.70833 1.0000 1 1.70833 1.19077 1.70833 1.0000 1 1.70833 1.19077

T .24405 1.0000 3 .08135 .11116 .24405 1.0000 3 .08135 .11116

R .11310 1.0000 3 .03770 .05479 .11310 1.0000 3 .03770 .05479

PT 1.46429 1.0000 3 .48810 .19909 1.46429 1.0000 3 .48810 .19909

PR .63690 1.0000 3 .21230 .10243 .63690 1.0000 3 .21230 .10243

TR .01389 1.0000 9 .00154 .00656 .01389 1.0000 9 .00154 .00656

PTR .65278 1.0000 9 .07253 .01873 .65278 1.0000 9 .07253 .01873

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QFM = QUADRATIC FORM

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STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE 1.70833 1.30703 1.19077

EXPECTED OBSERVED SCORE 2.48126 1.57520 1.16968

LOWER CASE DELTA .77293 .87916 .22311 GENERALIZABILITY COEFFICIENT = .68849 ( 2.21021)

UPPER CASE DELTA .89352 .94526 .22946 PHI = .65658 ( 1.91192)

MEAN .43075 .65631

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

NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 22

D STUDY P X T X R -- Random Effects, 3 Raters

D STUDY DESIGN NUMBER 002-003

OBJECT OF MEASUREMENT : P FACETS : T R

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 : 8 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 1.70833 1.0000 1 1.70833 1.19077 1.70833 1.0000 1 1.70833 1.19077

T .24405 1.0000 4 .06101 .08337 .24405 1.0000 4 .06101 .08337

R .11310 1.0000 3 .03770 .05479 .11310 1.0000 3 .03770 .05479

PT 1.46429 1.0000 4 .36607 .14932 1.46429 1.0000 4 .36607 .14932

PR .63690 1.0000 3 .21230 .10243 .63690 1.0000 3 .21230 .10243

TR .01389 1.0000 12 .00116 .00492 .01389 1.0000 12 .00116 .00492

PTR .65278 1.0000 12 .05440 .01405 .65278 1.0000 12 .05440 .01405

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

QFM = QUADRATIC FORM

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

STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE 1.70833 1.30703 1.19077

EXPECTED OBSERVED SCORE 2.34110 1.53007 1.17073

LOWER CASE DELTA .63277 .79547 .18053 GENERALIZABILITY COEFFICIENT = .72971 ( 2.69976)

UPPER CASE DELTA .73264 .85594 .18540 PHI = .69986 ( 2.33175)

MEAN .39251 .62650

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

NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 24

D STUDY P X T X R -- Random Effects, 3 Raters

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

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

V A R I A N C E S

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

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

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

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

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

002-001 8 2 3 1.70833 2.76157 1.05324 1.21528 .50723 .61861 .58432

002-002 8 3 3 1.70833 2.48126 .77293 .89352 .43075 .68849 .65658

002-003 8 4 3 1.70833 2.34110 .63277 .73264 .39251 .72971 .69986

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CONTROL CARD INPUT LISTING

COLUMN 11111111112222222222333333333344444444445555555555666666666677777777778

12345678901234567890123456789012345678901234567890123456789012345678901234567890

COMMENT D STUDY (c)

DSTUDY P X T X R -- Tasks Fixed

DEFFECT $ P

DEFFECT T 3 / 3

DEFFECT R 2 3 4

ENDDSTUDY

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D STUDY P X T X R -- Tasks Fixed

D STUDY DESIGN NUMBER 003-001

OBJECT OF MEASUREMENT : P FACETS : T R

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

D STUDY POPULATION SIZE : INFINITE D STUDY UNIVERSE SIZES : 3 INFINITE

D STUDY SAMPLE SIZE : 8 D STUDY SAMPLE SIZES : 3 2

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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 1.70833 1.0000 1 1.70833 1.19077 2.19643 1.0000 1 2.19643 1.17400

T .24405 1.0000 3 .08135 .11116 .24405QFM0000E+00 3 ------- -------

R .11310 1.0000 2 .05655 .08219 .11772 1.0000 2 .05886 .08160

PT 1.46429 1.0000 3 .48810 .19909 1.46429 .0000E+00 3 ------- -------

PR .63690 1.0000 2 .31845 .15365 .85450 1.0000 2 .42725 .15106

TR .01389 1.0000 6 .00231 .00984 .01389 .0000E+00 6 ------- -------

PTR .65278 1.0000 6 .10880 .02809 .65278 .0000E+00 6 ------- -------

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QFM = QUADRATIC FORM

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STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE 2.19643 1.48204 1.17400

EXPECTED OBSERVED SCORE 2.62368 1.61978 1.17076

LOWER CASE DELTA .42725 .65364 .15106 GENERALIZABILITY COEFFICIENT = .83716 ( 5.14087)

UPPER CASE DELTA .48611 .69722 .15418 PHI = .81879 ( 4.51837)

MEAN .38682 .62195

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NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 28

D STUDY P X T X R -- Tasks Fixed

D STUDY DESIGN NUMBER 003-002

OBJECT OF MEASUREMENT : P FACETS : T R

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

D STUDY POPULATION SIZE : INFINITE D STUDY UNIVERSE SIZES : 3 INFINITE

D STUDY SAMPLE SIZE : 8 D STUDY SAMPLE SIZES : 3 3

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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 1.70833 1.0000 1 1.70833 1.19077 2.19643 1.0000 1 2.19643 1.17400

T .24405 1.0000 3 .08135 .11116 .24405QFM0000E+00 3 ------- -------

R .11310 1.0000 3 .03770 .05479 .11772 1.0000 3 .03924 .05440

PT 1.46429 1.0000 3 .48810 .19909 1.46429 .0000E+00 3 ------- -------

PR .63690 1.0000 3 .21230 .10243 .85450 1.0000 3 .28483 .10070

TR .01389 1.0000 9 .00154 .00656 .01389 .0000E+00 9 ------- -------

PTR .65278 1.0000 9 .07253 .01873 .65278 .0000E+00 9 ------- -------

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QFM = QUADRATIC FORM

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STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE 2.19643 1.48204 1.17400

EXPECTED OBSERVED SCORE 2.48126 1.57520 1.16968

LOWER CASE DELTA .28483 .53370 .10070 GENERALIZABILITY COEFFICIENT = .88521 ( 7.71130)

UPPER CASE DELTA .32407 .56928 .10279 PHI = .87142 ( 6.77755)

MEAN .34940 .59110

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NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 30

D STUDY P X T X R -- Tasks Fixed

D STUDY DESIGN NUMBER 003-003

OBJECT OF MEASUREMENT : P FACETS : T R

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

D STUDY POPULATION SIZE : INFINITE D STUDY UNIVERSE SIZES : 3 INFINITE

D STUDY SAMPLE SIZE : 8 D STUDY SAMPLE SIZES : 3 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 1.70833 1.0000 1 1.70833 1.19077 2.19643 1.0000 1 2.19643 1.17400

T .24405 1.0000 3 .08135 .11116 .24405QFM0000E+00 3 ------- -------

R .11310 1.0000 4 .02827 .04110 .11772 1.0000 4 .02943 .04080

PT 1.46429 1.0000 3 .48810 .19909 1.46429 .0000E+00 3 ------- -------

PR .63690 1.0000 4 .15923 .07682 .85450 1.0000 4 .21362 .07553

TR .01389 1.0000 12 .00116 .00492 .01389 .0000E+00 12 ------- -------

PTR .65278 1.0000 12 .05440 .01405 .65278 .0000E+00 12 ------- -------

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QFM = QUADRATIC FORM

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STANDARD

STANDARD ERROR OF

VARIANCE DEVIATION VARIANCE

UNIVERSE SCORE 2.19643 1.48204 1.17400

EXPECTED OBSERVED SCORE 2.41005 1.55243 1.16995

LOWER CASE DELTA .21362 .46220 .07553 GENERALIZABILITY COEFFICIENT = .91136 (10.28173)

UPPER CASE DELTA .24306 .49301 .07709 PHI = .90037 ( 9.03673)

MEAN .33069 .57505

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NOTE: SIGNAL/NOISE RATIOS ARE IN PARENTHESES

GENOVA VERSION 3.1 PAGE 32

D STUDY P X T X R -- Tasks Fixed

SUMMARY OF D STUDY RESULTS FOR SET OF CONTROL CARDS NO. 003

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V A R I A N C E S

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

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

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

NO UNIV.= INF. 3 INF. SCORE SCORE DELTA DELTA MEAN COEF. PHI

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003-001 8 3 2 2.19643 2.62368 .42725 .48611 .38682 .83716 .81879

003-002 8 3 3 2.19643 2.48126 .28483 .32407 .34940 .88521 .87142

003-003 8 3 4 2.19643 2.41005 .21362 .24306 .33069 .91136 .90037