

Comparison of nonparametric analysis of variance methods - a Monte Carlo study

Part A: Two between subjects factors designs

Appendix 7

Tables of the type I error rates for small and large n (5, 10 and 50) for $\alpha=0.05$ and fixed effect sizes of the exponential and the uniform distributions, each for the version of a continuous and three versions of a discrete distribution

All tables and graphs refer to $\alpha=0.05$. Reported are the proportions of rejections of the corresponding null hypothesis.

Table of Contents

| | | |
|---------|--------------------------------|---|
| 7. 1. | Main effect A - null model | 1 |
| 7. 1. 1 | equal n_i / # levels = 2*4 | 1 |
| | exponential distribution | 1 |
| | uniform distribution | 1 |
| 7. 1. 2 | equal n_i / # levels = 2*2 | 2 |
| | exponential distribution | 2 |
| | uniform distribution | 2 |
| 7. 1. 3 | unequal n_i / # levels = 4*5 | 3 |
| | exponential distribution | 3 |
| | uniform distribution | 3 |
| 7. 1. 4 | unequal n_i / # levels = 2*2 | 4 |
| | exponential distribution | 4 |
| | uniform distribution | 4 |
| 7. 2. | Main effect B - A significant | 5 |
| 7. 2. 1 | equal n_i / # levels = 2*4 | 5 |
| | exponential distribution | 5 |
| | uniform distribution | 5 |
| 7. 2. 2 | equal n_i / # levels = 2*2 | 6 |
| | exponential distribution | 6 |
| | uniform distribution | 6 |
| 7. 2. 3 | unequal n_i / # levels = 4*5 | 7 |
| | exponential distribution | 7 |
| | uniform distribution | 7 |
| 7. 2. 4 | unequal n_i / # levels = 2*2 | 8 |
| | exponential distribution | 8 |
| | uniform distribution | 8 |

| | | |
|---------|---|----|
| 7. 3. | Main effect A - Interaction significant | 9 |
| 7. 3. 1 | equal n_i / # levels = 2*4 | 9 |
| | exponential distribution | 9 |
| | uniform distribution | 9 |
| 7. 3. 2 | equal n_i / # levels = 2*2 | 10 |
| | exponential distribution | 10 |
| | uniform distribution | 10 |
| 7. 3. 3 | unequal n_i / # levels = 4*5 | 11 |
| | exponential distribution | 11 |
| | uniform distribution | 11 |
| 7. 3. 4 | unequal n_i / # levels = 2*2 | 12 |
| | exponential distribution | 12 |
| | uniform distribution | 12 |
| 7. 4. | Main effect B - A and Interaction significant | 13 |
| 7. 4. 1 | equal n_i / # levels = 2*4 | 13 |
| | exponential distribution | 13 |
| | uniform distribution | 13 |
| 7. 4. 2 | equal n_i / # levels = 2*2 | 14 |
| | exponential distribution | 14 |
| | uniform distribution | 14 |
| 7. 4. 3 | unequal n_i / # levels = 4*5 | 15 |
| | exponential distribution | 15 |
| | uniform distribution | 15 |
| 7. 4. 4 | unequal n_i / # levels = 2*2 | 16 |
| | exponential distribution | 16 |
| | uniform distribution | 16 |
| 7. 5. | Interaction - null model | 17 |
| 7. 5. 1 | equal n_i / # levels = 2*4 | 17 |
| | exponential distribution | 17 |
| | uniform distribution | 17 |
| 7. 5. 2 | equal n_i / # levels = 2*2 | 18 |
| | exponential distribution | 18 |
| | uniform distribution | 18 |
| 7. 5. 3 | unequal n_i / # levels = 4*5 | 19 |
| | exponential distribution | 19 |
| | uniform distribution | 19 |
| 7. 5. 4 | unequal n_i / # levels = 2*2 | 20 |
| | exponential distribution | 20 |
| | uniform distribution | 20 |
| 7. 6. | Interaction - A significant | 21 |
| 7. 6. 1 | equal n_i / # levels = 2*4 | 21 |
| | exponential distribution | 21 |
| | uniform distribution | 21 |
| 7. 6. 2 | equal n_i / # levels = 2*2 | 22 |
| | exponential distribution | 22 |

| | | |
|---------|--|----|
| | uniform distribution | 22 |
| 7. 6. 3 | unequal n_i / # levels = 4*5 | 23 |
| | exponential distribution | 23 |
| | uniform distribution | 23 |
| 7. 6. 4 | unequal n_i / # levels = 2*2 | 24 |
| | exponential distribution | 24 |
| | uniform distribution | 24 |
| 7. 7. | Interaction - A and B significant | 25 |
| 7. 7. 1 | equal n_i / # levels = 2*4 | 25 |
| | exponential distribution | 25 |
| | uniform distribution | 25 |
| 7. 7. 2 | equal n_i / # levels = 2*2 | 26 |
| | exponential distribution | 26 |
| | uniform distribution | 26 |
| 7. 7. 3 | unequal n_i / # levels = 4*5 | 27 |
| | exponential distribution | 27 |
| | uniform distribution | 27 |
| 7. 7. 4 | unequal n_i / # levels = 2*2 | 28 |
| | exponential distribution | 28 |
| | uniform distribution | 28 |
| 7. 8. | Summaries for the ART-method | 29 |
| 7. 8. 1 | Error rates for the version of a continuous and three versions of a discrete distribution for small and large n_i : exponential distribution - 2*4 and 4*5 design | 29 |
| 7. 8. 2 | Error rates for the version of a continuous and three versions of a discrete distribution for small and large n_i : uniform distribution - 2*4 and 4*5 design | 30 |
| 7. 8. 3 | Error rates for the version of a continuous and three versions of a discrete distribution for small and large n_i : exponential distribution - 2*2 design | 31 |
| 7. 8. 4 | Error rates for the version of a continuous and three versions of a discrete distribution for small and large n_i : uniform distribution - 2*2 design | 31 |
| 7. 8. 5 | Error rates for the version of a continuous and a versions of a discrete distribution in the range from 5 to 50 : exponential distribution | 32 |
| 7. 8. 6 | Error rates for the version of a continuous and a versions of a discrete distribution in the range from 5 to 50 : uniform distribution | 33 |

7. 1. Main effect A - null model

7. 1. 1 equal n_i / # levels = 2*4

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|------|-------|-------|
| | n = 10 | | | | n = 50 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 4.90 | 4.85 | 4.45 | 4.70 | 5.05 | 4.95 | 4.50 | 5.30 |
| RT | 6.00 | 5.50 | 4.85 | 4.75 | 5.05 | 4.70 | 4.55 | 5.65 |
| INT | 5.40 | 5.55 | 4.80 | 4.70 | 5.10 | 4.90 | 4.70 | 5.30 |
| ART | 5.40 | 5.90 | 7.65 | 20.20 | 5.30 | 8.15 | 17.25 | 38.75 |
| ART+INT | 4.50 | 4.70 | 4.90 | 12.90 | 4.45 | 8.00 | 14.00 | 32.40 |
| Puri & Sen | 5.70 | 5.30 | 4.65 | 4.60 | 5.00 | 4.65 | 4.55 | 5.65 |
| v.d.Waerden | 5.15 | 5.20 | 4.60 | 4.55 | 5.00 | 4.95 | 4.65 | 5.35 |
| ATS | 5.95 | 5.50 | 4.80 | 4.65 | 5.05 | 4.70 | 4.55 | 5.65 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|-------|-------|
| | n = 10 | | | | n = 50 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.25 | 5.20 | 5.00 | 5.75 | 4.40 | 4.40 | 5.10 | 5.40 |
| RT | 5.15 | 5.10 | 4.90 | 5.75 | 4.35 | 4.50 | 5.05 | 5.40 |
| INT | 5.00 | 4.95 | 4.95 | 5.75 | 4.35 | 4.50 | 5.00 | 5.40 |
| ART | 5.05 | 5.40 | 5.80 | 9.65 | 4.20 | 6.00 | 10.15 | 22.60 |
| ART+INT | 5.05 | 5.20 | 5.65 | 9.30 | 4.25 | 7.20 | 11.90 | 26.75 |
| Puri & Sen | 5.05 | 4.85 | 4.65 | 5.85 | 4.30 | 4.40 | 5.00 | 5.40 |
| v.d.Waerden | 4.55 | 4.95 | 4.65 | 5.85 | 4.35 | 4.50 | 5.05 | 5.40 |
| ATS | 5.05 | 5.10 | 4.90 | 5.75 | 4.35 | 4.50 | 5.05 | 5.40 |

7. 1. 2 equal n_i / # levels = 2*2

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|------|
| | n = 20 | | | | n = 100 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 4.65 | 4.50 | 4.15 | 4.90 | 5.10 | 4.95 | 4.45 | 5.25 |
| RT | 4.50 | 4.15 | 5.05 | 5.05 | 5.00 | 4.65 | 4.55 | 5.65 |
| INT | 4.50 | 4.60 | 4.80 | 5.30 | 5.00 | 5.00 | 4.65 | 5.35 |
| ART | 5.15 | 4.90 | 5.50 | 5.90 | 5.00 | 5.35 | 5.80 | 7.65 |
| ART+INT | 4.20 | 4.00 | 3.85 | 2.95 | 4.75 | 5.75 | 8.05 | 9.80 |
| Puri & Sen | 4.30 | 4.10 | 4.75 | 4.95 | 5.00 | 4.65 | 4.55 | 5.65 |
| v.d.Waerden | 4.35 | 4.55 | 4.55 | 5.00 | 5.00 | 4.95 | 4.65 | 5.35 |
| ATS | 4.40 | 4.15 | 4.95 | 4.80 | 5.00 | 4.65 | 4.55 | 5.65 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|------|
| | n = 20 | | | | n = 100 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.00 | 5.10 | 5.10 | 5.85 | 4.40 | 4.45 | 5.05 | 5.40 |
| RT | 5.15 | 4.90 | 4.95 | 5.85 | 4.35 | 4.40 | 5.05 | 5.40 |
| INT | 4.80 | 5.00 | 4.90 | 5.85 | 4.35 | 4.50 | 5.05 | 5.40 |
| ART | 5.20 | 4.90 | 4.90 | 6.10 | 4.20 | 4.50 | 4.95 | 5.45 |
| ART+INT | 4.90 | 4.70 | 3.90 | 3.45 | 4.20 | 4.00 | 4.15 | 3.40 |
| Puri & Sen | 5.05 | 4.85 | 4.65 | 5.85 | 4.30 | 4.40 | 5.00 | 5.40 |
| v.d.Waerden | 4.55 | 4.95 | 4.65 | 5.85 | 4.35 | 4.50 | 5.05 | 5.40 |
| ATS | 5.15 | 4.85 | 4.95 | 5.85 | 4.35 | 4.40 | 5.05 | 5.40 |

7. 1. 3 unequal n_i / # levels = 4*5

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|------|-------|-------|
| | n = 5 | | | | n = 50 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 5.40 | 5.40 | 5.60 | 5.05 | 4.65 | 4.25 | 4.20 | 4.65 |
| RT | 5.20 | 4.70 | 4.90 | 5.45 | 5.00 | 4.95 | 4.50 | 4.80 |
| INT | 5.05 | 5.30 | 5.05 | 5.00 | 4.90 | 5.15 | 4.45 | 4.55 |
| ART | 4.15 | 4.25 | 4.80 | 19.05 | 4.05 | 6.50 | 25.45 | 72.25 |
| ART+INT | 2.50 | 2.35 | 2.20 | 7.20 | 3.80 | 7.30 | 23.40 | 66.70 |
| Puri & Sen | 4.90 | 4.60 | 4.60 | 4.95 | 4.95 | 4.90 | 4.50 | 4.70 |
| v.d.Waerden | 5.10 | 4.75 | 4.95 | 4.75 | 4.85 | 5.10 | 4.50 | 4.55 |
| ATS | 4.00 | 4.50 | 4.35 | 2.90 | 5.05 | 4.90 | 4.50 | 4.35 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|-------|-------|
| | n = 5 | | | | n = 50 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 4.20 | 4.20 | 4.50 | 5.00 | 5.00 | 5.30 | 5.15 | 4.80 |
| RT | 4.05 | 4.20 | 4.60 | 5.00 | 5.20 | 5.15 | 5.15 | 4.80 |
| INT | 3.90 | 4.15 | 4.40 | 5.00 | 5.20 | 5.65 | 5.30 | 4.80 |
| ART | 2.20 | 2.25 | 2.80 | 3.00 | 2.30 | 3.65 | 7.20 | 38.45 |
| ART+INT | 2.15 | 2.00 | 2.40 | 4.40 | 2.55 | 5.15 | 12.85 | 55.95 |
| Puri & Sen | 3.70 | 3.95 | 4.25 | 4.75 | 5.20 | 5.15 | 5.10 | 4.85 |
| v.d.Waerden | 3.65 | 3.95 | 4.25 | 4.75 | 5.20 | 5.70 | 5.25 | 4.85 |
| ATS | 4.15 | 3.95 | 4.00 | 4.05 | 5.25 | 5.20 | 5.25 | 4.55 |

7. 1. 4 unequal n_i / # levels = 2*2

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|-------|-------|------------|-------|-------|-------|
| | n = 25 | | | | n = 100 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 4.40 | 5.05 | 5.15 | 5.35 | 4.50 | 4.45 | 4.55 | 4.55 |
| RT | 4.95 | 5.05 | 5.15 | 5.15 | 4.90 | 5.10 | 5.15 | 4.45 |
| INT | 5.25 | 4.95 | 5.00 | 5.00 | 4.75 | 4.80 | 4.95 | 4.60 |
| ART | 4.05 | 4.40 | 10.60 | 35.15 | 3.75 | 12.55 | 37.65 | 66.50 |
| ART+INT | 3.60 | 4.40 | 11.65 | 30.20 | 4.55 | 17.20 | 39.15 | 56.30 |
| Puri & Sen | 4.80 | 5.05 | 5.05 | 5.20 | 4.85 | 5.10 | 5.10 | 4.45 |
| v.d.Waerden | 5.15 | 5.00 | 5.05 | 4.90 | 4.75 | 4.75 | 4.95 | 4.65 |
| ATS | 5.40 | 5.40 | 5.30 | 5.00 | 5.10 | 5.05 | 5.05 | 4.45 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|-------|-------|-------|
| | n = 25 | | | | n = 100 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.00 | 4.80 | 4.80 | 5.15 | 4.70 | 5.00 | 4.85 | 5.35 |
| RT | 4.75 | 4.70 | 4.85 | 5.15 | 4.95 | 4.90 | 5.05 | 5.35 |
| INT | 4.80 | 4.80 | 4.60 | 5.15 | 5.70 | 5.10 | 5.10 | 5.35 |
| ART | 2.65 | 3.85 | 7.10 | 18.55 | 3.25 | 7.40 | 18.05 | 52.30 |
| ART+INT | 2.25 | 4.10 | 8.30 | 23.95 | 3.30 | 11.80 | 27.75 | 46.90 |
| Puri & Sen | 4.70 | 4.80 | 4.70 | 5.05 | 4.90 | 4.90 | 5.10 | 5.35 |
| v.d.Waerden | 4.80 | 4.80 | 4.55 | 5.05 | 5.70 | 5.05 | 5.10 | 5.35 |
| ATS | 4.75 | 5.25 | 4.80 | 5.50 | 5.10 | 5.05 | 5.00 | 5.40 |

7. 2. Main effect B - A significant

7. 2. 1 equal n_i / # levels = 2*4

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|------|-------|-------|
| | n = 10 | | | | n = 50 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 4.65 | 4.45 | 4.30 | 4.60 | 5.15 | 5.35 | 5.40 | 5.10 |
| RT | 5.50 | 5.45 | 5.15 | 5.00 | 5.55 | 5.35 | 5.75 | 5.00 |
| INT | 4.95 | 5.25 | 4.95 | 5.15 | 5.30 | 5.25 | 5.85 | 4.75 |
| ART | 7.05 | 7.25 | 7.25 | 10.90 | 8.90 | 9.15 | 13.80 | 24.15 |
| ART+INT | 3.80 | 3.30 | 3.10 | 2.35 | 3.50 | 3.45 | 3.30 | 1.95 |
| Puri & Sen | 4.35 | 4.15 | 4.15 | 4.35 | 4.75 | 4.60 | 5.05 | 4.35 |
| v.d.Waerden | 3.75 | 4.15 | 3.75 | 4.10 | 4.55 | 4.50 | 4.70 | 4.35 |
| ATS | 5.25 | 5.30 | 4.85 | 4.40 | 5.55 | 5.30 | 5.65 | 4.90 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|------|
| | n = 10 | | | | n = 50 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 4.40 | 4.95 | 5.15 | 5.00 | 5.00 | 5.15 | 4.95 | 4.30 |
| RT | 4.50 | 4.65 | 5.55 | 5.00 | 5.30 | 5.20 | 4.80 | 4.40 |
| INT | 4.45 | 4.90 | 5.10 | 4.95 | 4.70 | 5.05 | 4.75 | 4.35 |
| ART | 4.45 | 4.70 | 5.45 | 6.65 | 5.15 | 5.30 | 5.15 | 8.30 |
| ART+INT | 4.40 | 4.45 | 4.95 | 4.30 | 4.90 | 4.80 | 4.00 | 2.35 |
| Puri & Sen | 3.45 | 3.45 | 3.50 | 3.90 | 4.05 | 4.05 | 3.65 | 3.65 |
| v.d.Waerden | 3.05 | 3.15 | 3.70 | 3.65 | 3.45 | 3.50 | 3.35 | 2.85 |
| ATS | 4.20 | 4.50 | 5.25 | 4.85 | 5.30 | 5.20 | 4.80 | 4.35 |

7.2.2 equal n_i / # levels = 2*2

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|------|-------|-------|
| | n = 20 | | | | n = 100 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 5.15 | 5.35 | 5.15 | 5.10 | 5.35 | 5.20 | 5.25 | 5.35 |
| RT | 5.30 | 5.15 | 5.15 | 5.65 | 5.90 | 5.85 | 6.20 | 6.40 |
| INT | 5.10 | 5.15 | 5.05 | 5.95 | 5.25 | 5.25 | 5.70 | 6.60 |
| ART | 6.90 | 7.50 | 8.15 | 11.75 | 8.25 | 9.45 | 14.50 | 24.85 |
| ART+INT | 4.70 | 4.55 | 4.20 | 4.15 | 4.20 | 4.10 | 4.25 | 3.25 |
| Puri & Sen | 4.50 | 4.45 | 4.65 | 4.95 | 5.50 | 5.00 | 5.85 | 5.90 |
| v.d.Waerden | 4.35 | 4.40 | 4.40 | 5.10 | 4.90 | 4.80 | 5.15 | 5.50 |
| ATS | 5.30 | 5.15 | 5.15 | 5.65 | 5.90 | 5.85 | 6.20 | 6.40 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|-------|
| | n = 20 | | | | n = 100 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.50 | 5.35 | 5.70 | 5.80 | 5.55 | 5.80 | 5.50 | 5.75 |
| RT | 5.65 | 5.45 | 6.10 | 5.30 | 5.85 | 5.85 | 5.80 | 5.60 |
| INT | 5.55 | 5.50 | 6.00 | 5.95 | 5.85 | 5.65 | 5.75 | 5.80 |
| ART | 6.25 | 5.25 | 6.55 | 8.30 | 5.70 | 5.95 | 6.00 | 10.30 |
| ART+INT | 5.85 | 5.05 | 5.80 | 4.80 | 5.50 | 5.30 | 5.00 | 4.15 |
| Puri & Sen | 4.75 | 4.50 | 5.00 | 4.40 | 4.80 | 4.90 | 4.70 | 4.85 |
| v.d.Waerden | 4.40 | 4.20 | 4.85 | 4.45 | 4.60 | 4.35 | 4.65 | 4.70 |
| ATS | 5.65 | 5.45 | 6.05 | 5.30 | 5.85 | 5.85 | 5.80 | 5.60 |

7. 2. 3 unequal n_i / # levels = 4*5

exponential distribution

| | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|-------|-------|-------|
| | n = 5 | | | | n = 50 | | | |
| method | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 3.90 | 4.35 | 4.30 | 3.85 | 3.30 | 3.35 | 3.15 | 3.15 |
| RT | 4.35 | 4.40 | 3.95 | 3.95 | 4.60 | 4.55 | 4.05 | 3.75 |
| INT | 4.35 | 3.95 | 3.80 | 3.80 | 4.55 | 4.15 | 3.75 | 3.40 |
| ART | 6.45 | 6.60 | 7.25 | 14.40 | 19.50 | 22.50 | 37.85 | 69.30 |
| ART+INT | 2.90 | 3.15 | 3.20 | 4.95 | 14.90 | 16.85 | 33.10 | 59.55 |
| Puri & Sen | 3.50 | 3.55 | 2.90 | 3.20 | 3.50 | 3.65 | 3.70 | 3.20 |
| v.d.Waerden | 3.60 | 3.05 | 2.95 | 3.25 | 3.70 | 3.55 | 3.45 | 2.65 |
| ATS | 4.10 | 5.10 | 3.90 | 3.40 | 4.80 | 5.20 | 4.95 | 4.85 |

uniform distribution

| | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|-------|-------|-------|
| | n = 5 | | | | n = 50 | | | |
| method | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.45 | 5.20 | 5.20 | 4.00 | 5.80 | 5.40 | 5.40 | 4.35 |
| RT | 5.05 | 5.45 | 5.45 | 4.25 | 5.90 | 5.55 | 5.65 | 5.05 |
| INT | 5.10 | 4.65 | 4.85 | 3.90 | 5.00 | 5.30 | 5.15 | 4.20 |
| ART | 3.70 | 3.85 | 4.25 | 5.25 | 11.15 | 14.80 | 23.55 | 42.85 |
| ART+INT | 3.55 | 3.60 | 4.20 | 4.15 | 20.00 | 26.00 | 36.05 | 54.90 |
| Puri & Sen | 3.10 | 3.30 | 3.90 | 2.95 | 3.95 | 3.85 | 4.00 | 3.90 |
| v.d.Waerden | 2.90 | 2.90 | 3.45 | 2.65 | 3.55 | 3.40 | 3.40 | 2.90 |
| ATS | 4.55 | 4.75 | 4.20 | 4.40 | 6.00 | 5.30 | 5.75 | 5.55 |

7.2.4 unequal n_i / # levels = 2*2

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|-------|-------|-------|------------|-------|-------|-------|
| | n = 25 | | | | n = 100 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 3.05 | 2.70 | 2.80 | 2.35 | 3.40 | 3.35 | 2.85 | 2.90 |
| RT | 4.70 | 4.45 | 4.95 | 3.60 | 4.95 | 4.90 | 4.20 | 3.60 |
| INT | 4.40 | 4.10 | 4.00 | 3.40 | 4.75 | 4.35 | 3.95 | 3.50 |
| ART | 17.30 | 18.35 | 21.05 | 35.20 | 61.40 | 64.50 | 74.80 | 86.80 |
| ART+INT | 14.70 | 17.00 | 21.30 | 38.85 | 68.05 | 70.35 | 82.85 | 88.30 |
| Puri & Sen | 4.05 | 3.95 | 4.25 | 3.20 | 4.40 | 4.50 | 3.90 | 3.45 |
| v.d.Waerden | 3.70 | 3.90 | 3.55 | 2.90 | 4.35 | 3.75 | 3.65 | 3.10 |
| ATS | 5.10 | 4.65 | 5.25 | 5.35 | 5.85 | 5.60 | 5.15 | 4.90 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|-------|-------|-------|------------|-------|-------|-------|
| | n = 25 | | | | n = 100 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.30 | 5.45 | 4.80 | 3.50 | 5.05 | 4.65 | 4.25 | 2.90 |
| RT | 5.25 | 5.45 | 5.15 | 4.10 | 5.05 | 4.95 | 4.40 | 3.65 |
| INT | 5.30 | 5.40 | 4.80 | 3.55 | 5.10 | 4.70 | 4.20 | 2.90 |
| ART | 14.60 | 17.70 | 17.90 | 26.05 | 52.20 | 67.10 | 60.90 | 88.35 |
| ART+INT | 19.85 | 23.55 | 22.75 | 32.75 | 77.35 | 84.50 | 75.05 | 93.00 |
| Puri & Sen | 4.20 | 4.70 | 4.20 | 3.40 | 4.05 | 3.90 | 3.65 | 2.95 |
| v.d.Waerden | 4.10 | 4.55 | 3.90 | 2.65 | 4.00 | 3.90 | 3.20 | 2.30 |
| ATS | 5.60 | 5.50 | 5.85 | 5.40 | 4.80 | 4.90 | 4.50 | 4.35 |

7.3. Main effect A - Interaction significant

7.3.1 equal n_i / # levels = 2*4

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|-------|-------|------------|-------|-------|-------|
| | n = 10 | | | | n = 50 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 4.00 | 4.25 | 4.20 | 4.05 | 4.55 | 4.65 | 5.20 | 5.50 |
| RT | 5.05 | 4.90 | 5.05 | 4.25 | 4.90 | 5.35 | 5.85 | 5.15 |
| INT | 4.75 | 4.55 | 4.70 | 4.25 | 4.75 | 5.40 | 5.45 | 5.70 |
| ART | 5.85 | 7.00 | 10.45 | 23.55 | 6.60 | 10.00 | 20.70 | 39.55 |
| ART+INT | 4.45 | 4.60 | 6.80 | 14.85 | 4.00 | 7.05 | 13.15 | 26.55 |
| Puri & Sen | 4.50 | 4.30 | 4.60 | 3.95 | 4.70 | 5.05 | 5.45 | 5.00 |
| v.d.Waerden | 4.20 | 4.15 | 4.50 | 4.05 | 4.35 | 4.90 | 5.00 | 5.25 |
| ATS | 4.95 | 4.85 | 5.00 | 4.20 | 4.90 | 5.35 | 5.85 | 5.05 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|-------|
| | n = 10 | | | | n = 50 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.25 | 4.75 | 5.15 | 5.75 | 4.40 | 4.75 | 4.30 | 4.15 |
| RT | 5.00 | 4.80 | 5.30 | 5.60 | 4.45 | 4.55 | 4.60 | 4.15 |
| INT | 5.10 | 4.70 | 4.80 | 5.45 | 4.20 | 4.70 | 4.20 | 4.45 |
| ART | 5.05 | 4.85 | 5.85 | 8.85 | 4.20 | 6.55 | 6.60 | 14.05 |
| ART+INT | 5.05 | 4.45 | 5.85 | 7.90 | 4.25 | 6.95 | 7.45 | 14.50 |
| Puri & Sen | 4.15 | 4.15 | 4.90 | 5.35 | 3.90 | 4.20 | 4.40 | 3.90 |
| v.d.Waerden | 4.00 | 4.20 | 4.10 | 5.00 | 3.60 | 4.10 | 3.75 | 3.90 |
| ATS | 4.80 | 4.80 | 5.25 | 5.55 | 4.45 | 4.55 | 4.60 | 4.15 |

7.3.2 equal n_i / # levels = 2*2

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|-------|-------|------------|-------|-------|-------|
| | n = 20 | | | | n = 100 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 5.00 | 5.35 | 4.95 | 5.05 | 4.70 | 4.60 | 4.55 | 4.95 |
| RT | 5.80 | 6.30 | 5.50 | 5.85 | 4.85 | 4.90 | 4.85 | 4.90 |
| INT | 5.90 | 6.00 | 5.50 | 5.50 | 4.85 | 5.00 | 5.40 | 5.05 |
| ART | 8.35 | 9.35 | 13.15 | 18.10 | 8.60 | 13.05 | 25.20 | 43.85 |
| ART+INT | 4.70 | 5.50 | 4.85 | 3.75 | 3.70 | 3.65 | 3.50 | 2.35 |
| Puri & Sen | 4.90 | 5.20 | 4.65 | 5.10 | 4.30 | 4.20 | 4.15 | 4.15 |
| v.d.Waerden | 4.95 | 4.90 | 4.40 | 4.70 | 4.00 | 4.15 | 4.30 | 4.35 |
| ATS | 5.75 | 6.20 | 5.50 | 5.80 | 4.85 | 4.90 | 4.85 | 4.85 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|-----|------|------------|------|------|------|
| | n = 20 | | | | n = 100 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.00 | 4.75 | 5.1 | 4.45 | 4.40 | 4.60 | 4.55 | 4.25 |
| RT | 5.00 | 4.85 | 5.2 | 4.50 | 4.00 | 4.55 | 4.40 | 4.55 |
| INT | 4.55 | 4.40 | 4.9 | 4.45 | 4.25 | 4.65 | 4.70 | 4.15 |
| ART | 5.20 | 5.10 | 5.0 | 4.95 | 4.20 | 4.55 | 4.75 | 5.30 |
| ART+INT | 4.90 | 4.30 | 4.5 | 4.15 | 4.20 | 4.10 | 4.15 | 3.55 |
| Puri & Sen | 3.95 | 3.75 | 4.4 | 4.20 | 3.60 | 3.55 | 4.25 | 3.90 |
| v.d.Waerden | 3.30 | 3.25 | 3.6 | 3.75 | 3.20 | 3.80 | 3.85 | 3.55 |
| ATS | 4.90 | 4.85 | 5.2 | 4.50 | 4.00 | 4.55 | 4.40 | 4.55 |

7.3.3 unequal n_i / # levels = 4*5

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|-------|-------|-------|
| | n = 5 | | | | n = 50 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 7.50 | 7.65 | 7.75 | 7.50 | 6.60 | 6.60 | 6.30 | 6.25 |
| RT | 5.35 | 6.05 | 6.40 | 6.30 | 5.45 | 5.05 | 5.55 | 5.60 |
| INT | 6.00 | 6.65 | 6.25 | 6.65 | 5.15 | 5.60 | 5.90 | 6.00 |
| ART | 6.20 | 6.25 | 8.35 | 29.20 | 12.15 | 16.85 | 35.90 | 79.05 |
| ART+INT | 3.50 | 3.25 | 4.30 | 12.85 | 10.10 | 15.05 | 29.00 | 69.50 |
| Puri & Sen | 4.75 | 5.10 | 5.35 | 5.70 | 5.10 | 4.50 | 4.80 | 5.40 |
| v.d.Waerden | 5.20 | 5.35 | 5.55 | 5.30 | 4.75 | 5.05 | 5.10 | 5.50 |
| ATS | 4.25 | 4.30 | 5.00 | 3.35 | 4.40 | 4.25 | 5.00 | 4.95 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|-------|
| | n = 5 | | | | n = 50 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 4.20 | 4.45 | 4.20 | 4.20 | 5.00 | 4.85 | 4.55 | 4.60 |
| RT | 3.75 | 4.35 | 4.40 | 4.25 | 5.05 | 5.15 | 4.95 | 4.55 |
| INT | 3.70 | 4.15 | 3.90 | 4.20 | 5.25 | 5.25 | 4.50 | 4.40 |
| ART | 2.70 | 2.40 | 2.85 | 3.60 | 4.25 | 5.70 | 6.75 | 29.30 |
| ART+INT | 2.50 | 2.40 | 2.40 | 3.25 | 7.10 | 8.20 | 8.55 | 34.95 |
| Puri & Sen | 3.25 | 3.30 | 3.55 | 3.65 | 4.45 | 4.45 | 4.25 | 4.05 |
| v.d.Waerden | 3.00 | 3.05 | 3.00 | 3.45 | 4.35 | 4.45 | 3.70 | 3.55 |
| ATS | 4.05 | 4.15 | 4.00 | 4.10 | 5.20 | 5.05 | 4.95 | 4.95 |

7.3.4 unequal n_i / # levels = 2*2

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|-------|-------|------------|-------|-------|-------|
| | n = 25 | | | | n = 100 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 1.60 | 1.50 | 1.40 | 0.85 | 1.25 | 1.25 | 0.95 | 1.15 |
| RT | 4.40 | 4.35 | 3.60 | 2.30 | 3.55 | 3.75 | 3.35 | 2.10 |
| INT | 3.95 | 3.35 | 2.95 | 1.65 | 3.55 | 3.05 | 2.30 | 1.55 |
| ART | 6.45 | 7.75 | 11.75 | 19.00 | 10.15 | 18.60 | 42.05 | 45.95 |
| ART+INT | 3.40 | 4.70 | 9.25 | 20.50 | 6.80 | 18.60 | 44.25 | 55.80 |
| Puri & Sen | 3.40 | 3.70 | 3.10 | 1.70 | 2.95 | 3.35 | 2.65 | 1.65 |
| v.d.Waerden | 3.35 | 2.85 | 2.50 | 1.35 | 3.00 | 2.70 | 1.80 | 1.20 |
| ATS | 5.80 | 5.85 | 6.25 | 5.80 | 4.85 | 5.05 | 5.35 | 4.95 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|-------|-------|-------|
| | n = 25 | | | | n = 100 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.00 | 5.15 | 5.45 | 4.80 | 4.70 | 4.90 | 5.10 | 5.10 |
| RT | 4.45 | 4.70 | 4.75 | 4.80 | 4.55 | 4.70 | 5.00 | 4.70 |
| INT | 5.00 | 5.50 | 5.45 | 4.85 | 5.40 | 5.30 | 5.45 | 5.40 |
| ART | 3.15 | 4.60 | 8.50 | 18.85 | 5.45 | 14.60 | 26.70 | 63.50 |
| ART+INT | 3.55 | 5.50 | 9.20 | 19.70 | 7.15 | 19.00 | 31.75 | 62.40 |
| Puri & Sen | 3.80 | 4.20 | 4.10 | 4.10 | 3.85 | 4.15 | 4.25 | 4.35 |
| v.d.Waerden | 4.15 | 4.50 | 4.50 | 3.95 | 4.15 | 4.40 | 4.60 | 4.80 |
| ATS | 5.15 | 5.20 | 5.30 | 5.10 | 5.05 | 5.05 | 4.95 | 4.85 |

7. 4. Main effect B - A and Interaction significant

7. 4. 1 equal n_i / # levels = $2*4$

exponential distribution

| | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|------|-------|-------|
| | n = 10 | | | | n = 50 | | | |
| method | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 4.80 | 4.45 | 4.80 | 4.65 | 4.45 | 4.25 | 4.15 | 4.30 |
| RT | 5.25 | 5.40 | 5.50 | 5.15 | 7.40 | 7.20 | 6.05 | 5.05 |
| INT | 5.15 | 5.00 | 5.25 | 5.05 | 6.95 | 5.75 | 5.10 | 4.80 |
| ART | 7.45 | 7.80 | 9.20 | 11.10 | 8.10 | 8.80 | 10.05 | 26.45 |
| ART+INT | 4.10 | 4.10 | 3.90 | 3.05 | 4.25 | 3.60 | 3.15 | 2.55 |
| Puri & Sen | 3.95 | 3.80 | 4.25 | 4.05 | 6.45 | 6.10 | 4.80 | 4.20 |
| v.d.Waerden | 3.80 | 3.50 | 3.95 | 4.00 | 5.80 | 4.75 | 4.10 | 3.85 |
| ATS | 5.10 | 5.20 | 5.20 | 4.55 | 7.40 | 7.20 | 6.00 | 5.00 |

uniform distribution

| | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|------|
| | n = 10 | | | | n = 50 | | | |
| method | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 4.40 | 4.55 | 4.95 | 4.75 | 5.00 | 4.75 | 5.65 | 5.05 |
| RT | 4.55 | 4.50 | 5.10 | 4.60 | 5.25 | 4.60 | 5.70 | 5.40 |
| INT | 4.60 | 4.20 | 4.90 | 4.75 | 4.90 | 4.15 | 5.20 | 5.05 |
| ART | 4.45 | 4.40 | 4.75 | 5.45 | 5.15 | 4.85 | 5.90 | 8.10 |
| ART+INT | 4.40 | 4.55 | 4.60 | 4.50 | 4.90 | 4.75 | 5.50 | 5.15 |
| Puri & Sen | 3.10 | 2.65 | 3.05 | 3.20 | 3.70 | 3.50 | 4.05 | 3.95 |
| v.d.Waerden | 2.60 | 2.05 | 2.95 | 3.15 | 2.70 | 2.55 | 3.30 | 3.30 |
| ATS | 4.45 | 4.25 | 4.65 | 4.35 | 5.20 | 4.60 | 5.65 | 5.35 |

7.4.2 equal n_i / # levels = 2*2

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|-------|-------|-------|
| | n = 20 | | | | n = 100 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 5.30 | 5.15 | 4.95 | 4.45 | 4.35 | 4.65 | 4.65 | 5.20 |
| RT | 6.70 | 5.90 | 6.10 | 4.90 | 16.35 | 15.20 | 12.60 | 6.20 |
| INT | 6.20 | 5.45 | 5.70 | 4.40 | 12.10 | 10.35 | 7.70 | 4.80 |
| ART | 7.50 | 7.95 | 8.55 | 12.25 | 8.90 | 9.95 | 9.60 | 33.70 |
| ART+INT | 5.00 | 5.10 | 5.00 | 3.95 | 5.80 | 5.40 | 5.50 | 4.65 |
| Puri & Sen | 5.30 | 4.80 | 5.05 | 3.85 | 14.20 | 13.60 | 11.25 | 5.60 |
| v.d.Waerden | 5.10 | 4.90 | 4.70 | 3.65 | 10.70 | 8.70 | 6.75 | 4.30 |
| ATS | 6.70 | 5.90 | 6.10 | 4.80 | 16.35 | 15.20 | 12.50 | 6.20 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|------|
| | n = 20 | | | | n = 100 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.50 | 5.65 | 5.45 | 5.45 | 5.55 | 5.80 | 5.95 | 5.40 |
| RT | 5.35 | 5.50 | 5.35 | 5.65 | 5.35 | 5.70 | 6.15 | 6.45 |
| INT | 4.80 | 4.95 | 5.00 | 5.45 | 4.75 | 4.85 | 5.60 | 5.30 |
| ART | 6.25 | 5.70 | 5.90 | 7.20 | 5.70 | 5.55 | 6.45 | 9.55 |
| ART+INT | 5.85 | 5.55 | 5.55 | 5.30 | 5.50 | 5.75 | 5.50 | 5.35 |
| Puri & Sen | 4.05 | 4.15 | 4.35 | 4.20 | 3.85 | 4.45 | 4.80 | 4.95 |
| v.d.Waerden | 3.30 | 3.50 | 4.00 | 4.15 | 3.15 | 3.40 | 3.80 | 4.20 |
| ATS | 5.35 | 5.50 | 5.35 | 5.65 | 5.35 | 5.70 | 6.15 | 6.45 |

7.4.3 unequal n_i / # levels = 4*5

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|-------|-------|-------|
| | n = 5 | | | | n = 50 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 4.50 | 4.35 | 4.75 | 4.70 | 4.10 | 4.15 | 3.90 | 4.50 |
| RT | 5.50 | 5.65 | 5.05 | 5.35 | 9.30 | 8.20 | 7.10 | 5.40 |
| INT | 5.15 | 5.25 | 4.75 | 5.20 | 6.60 | 6.20 | 5.65 | 5.00 |
| ART | 8.05 | 8.75 | 9.40 | 15.85 | 17.40 | 18.95 | 25.55 | 57.45 |
| ART+INT | 3.55 | 3.95 | 4.05 | 6.50 | 12.45 | 13.60 | 21.35 | 35.95 |
| Puri & Sen | 4.25 | 4.45 | 3.75 | 3.90 | 7.05 | 6.25 | 5.90 | 4.70 |
| v.d.Waerden | 4.00 | 4.10 | 3.75 | 3.80 | 5.20 | 4.75 | 4.35 | 3.90 |
| ATS | 5.20 | 5.30 | 5.25 | 3.70 | 8.20 | 7.20 | 7.10 | 5.40 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|-------|-------|-------|
| | n = 5 | | | | n = 50 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.45 | 5.25 | 5.40 | 4.70 | 5.80 | 5.75 | 5.70 | 5.20 |
| RT | 4.95 | 5.20 | 5.05 | 5.25 | 6.05 | 5.55 | 5.90 | 5.45 |
| INT | 4.50 | 4.95 | 5.05 | 4.55 | 4.65 | 4.95 | 5.25 | 5.00 |
| ART | 3.80 | 4.15 | 4.05 | 5.15 | 8.80 | 11.00 | 12.25 | 12.90 |
| ART+INT | 3.45 | 3.95 | 3.75 | 4.30 | 16.05 | 17.30 | 17.15 | 20.95 |
| Puri & Sen | 3.05 | 3.05 | 3.20 | 2.95 | 3.55 | 3.80 | 3.80 | 3.90 |
| v.d.Waerden | 2.45 | 2.65 | 2.85 | 2.65 | 2.75 | 2.90 | 3.00 | 3.25 |
| ATS | 4.80 | 4.75 | 4.50 | 4.85 | 5.70 | 5.65 | 6.15 | 5.75 |

7.4.4 unequal n_i / # levels = 2*2

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|-------|-------|-------|------------|-------|-------|-------|
| | n = 25 | | | | n = 100 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 1.30 | 1.20 | 1.30 | 0.95 | 1.55 | 1.55 | 1.60 | 0.90 |
| RT | 5.00 | 4.95 | 3.50 | 2.85 | 10.45 | 9.55 | 7.45 | 2.45 |
| INT | 4.95 | 3.80 | 2.55 | 2.05 | 7.40 | 6.10 | 4.00 | 1.60 |
| ART | 30.75 | 31.70 | 26.00 | 15.35 | 88.00 | 85.65 | 64.90 | 6.30 |
| ART+INT | 18.05 | 21.45 | 17.50 | 16.30 | 67.00 | 68.45 | 36.60 | 10.50 |
| Puri & Sen | 4.45 | 4.15 | 3.05 | 2.55 | 9.10 | 8.55 | 6.55 | 2.30 |
| v.d.Waerden | 4.35 | 3.35 | 2.00 | 1.80 | 6.75 | 5.55 | 3.20 | 1.50 |
| ATS | 8.35 | 7.75 | 7.65 | 5.90 | 13.70 | 13.90 | 11.90 | 6.80 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|-------|-------|-------|------------|-------|-------|-------|
| | n = 25 | | | | n = 100 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.30 | 5.15 | 5.60 | 4.60 | 5.05 | 4.95 | 5.35 | 3.55 |
| RT | 4.45 | 4.70 | 5.00 | 4.40 | 4.70 | 4.45 | 5.05 | 4.35 |
| INT | 5.50 | 5.30 | 5.50 | 5.00 | 4.55 | 4.75 | 5.55 | 4.30 |
| ART | 31.15 | 30.35 | 21.55 | 13.70 | 88.45 | 83.70 | 62.50 | 9.10 |
| ART+INT | 40.70 | 39.70 | 26.15 | 13.90 | 97.40 | 93.60 | 72.65 | 24.30 |
| Puri & Sen | 3.65 | 3.70 | 3.85 | 3.30 | 3.40 | 3.30 | 3.40 | 3.40 |
| v.d.Waerden | 4.00 | 3.90 | 3.95 | 3.75 | 3.20 | 3.60 | 4.10 | 3.15 |
| ATS | 5.50 | 5.50 | 5.20 | 5.70 | 5.15 | 5.30 | 5.40 | 5.45 |

7. 5. Interaction - null model

7. 5. 1 equal n_i / # levels = 2*4

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|------|-------|-------|
| | n = 10 | | | | n = 50 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 4.65 | 4.30 | 4.35 | 4.30 | 5.70 | 5.50 | 5.55 | 5.00 |
| RT | 5.35 | 5.65 | 4.95 | 5.10 | 5.80 | 5.95 | 5.50 | 5.55 |
| INT | 5.35 | 5.65 | 5.00 | 4.80 | 5.65 | 6.00 | 5.75 | 5.40 |
| ART | 5.70 | 6.15 | 6.90 | 12.55 | 6.00 | 6.85 | 12.40 | 31.85 |
| ART+INT | 4.95 | 5.05 | 4.70 | 6.00 | 5.40 | 6.10 | 9.50 | 20.35 |
| Puri & Sen | 5.15 | 5.25 | 4.75 | 4.70 | 5.85 | 5.95 | 5.55 | 5.55 |
| v.d.Waerden | 4.95 | 5.30 | 4.65 | 4.50 | 5.55 | 6.00 | 5.65 | 5.30 |
| ATS | 5.25 | 5.25 | 4.90 | 4.30 | 5.75 | 5.90 | 5.45 | 5.50 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|-------|
| | n = 10 | | | | n = 50 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.95 | 5.65 | 5.15 | 5.90 | 5.05 | 4.95 | 4.15 | 4.65 |
| RT | 5.75 | 5.45 | 5.20 | 5.90 | 4.85 | 4.90 | 3.95 | 4.65 |
| INT | 5.85 | 5.60 | 5.45 | 5.90 | 4.55 | 5.00 | 4.05 | 4.65 |
| ART | 6.05 | 5.85 | 6.25 | 7.70 | 4.75 | 5.25 | 6.65 | 14.60 |
| ART+INT | 5.95 | 5.60 | 6.25 | 6.30 | 5.15 | 5.55 | 6.15 | 11.10 |
| Puri & Sen | 5.25 | 5.30 | 5.05 | 5.60 | 4.90 | 4.90 | 3.95 | 4.65 |
| v.d.Waerden | 5.40 | 5.20 | 5.10 | 5.60 | 4.40 | 4.95 | 4.05 | 4.65 |
| ATS | 5.65 | 5.40 | 5.00 | 5.80 | 4.85 | 4.90 | 3.95 | 4.65 |

7.5.2 equal n_i / # levels = 2*2

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|-----|------|------|
| | n = 20 | | | | n = 100 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 4.45 | 4.45 | 4.25 | 3.85 | 5.65 | 5.7 | 5.45 | 6.00 |
| RT | 4.90 | 4.45 | 4.25 | 4.50 | 5.40 | 5.5 | 5.15 | 5.30 |
| INT | 4.70 | 4.40 | 4.35 | 4.70 | 5.30 | 5.4 | 5.10 | 5.80 |
| ART | 4.80 | 4.90 | 5.35 | 5.60 | 5.25 | 5.8 | 6.45 | 7.65 |
| ART+INT | 3.40 | 3.35 | 3.20 | 1.95 | 5.15 | 5.5 | 7.55 | 9.45 |
| Puri & Sen | 4.70 | 4.35 | 4.30 | 4.60 | 5.35 | 5.5 | 5.10 | 5.30 |
| v.d.Waerden | 4.55 | 4.30 | 4.40 | 4.40 | 5.30 | 5.4 | 5.05 | 5.80 |
| ATS | 4.75 | 4.40 | 4.20 | 4.45 | 5.40 | 5.5 | 5.15 | 5.30 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|------|
| | n = 20 | | | | n = 100 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.95 | 5.60 | 6.00 | 6.55 | 4.65 | 4.65 | 5.05 | 5.70 |
| RT | 5.65 | 5.70 | 5.85 | 6.55 | 4.40 | 4.70 | 4.95 | 5.70 |
| INT | 5.65 | 5.60 | 5.70 | 6.55 | 4.90 | 4.60 | 4.95 | 5.70 |
| ART | 5.70 | 5.60 | 6.20 | 6.85 | 4.45 | 4.40 | 4.95 | 5.75 |
| ART+INT | 5.85 | 5.20 | 5.20 | 3.90 | 4.55 | 4.05 | 3.80 | 3.95 |
| Puri & Sen | 5.65 | 5.55 | 5.75 | 6.55 | 4.35 | 4.70 | 4.95 | 5.70 |
| v.d.Waerden | 5.55 | 5.35 | 5.55 | 6.55 | 4.80 | 4.60 | 4.85 | 5.70 |
| ATS | 5.60 | 5.70 | 5.80 | 6.55 | 4.40 | 4.70 | 4.95 | 5.70 |

7.5.3 unequal n_i / # levels = 4*5

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|------|-------|-------|
| | n = 5 | | | | n = 50 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 6.15 | 6.35 | 6.10 | 6.55 | 4.85 | 4.75 | 5.30 | 5.25 |
| RT | 5.35 | 5.40 | 5.55 | 5.45 | 4.65 | 4.75 | 4.35 | 5.05 |
| INT | 5.40 | 5.70 | 5.50 | 5.75 | 4.95 | 4.40 | 4.55 | 5.20 |
| ART | 6.65 | 7.10 | 8.40 | 17.95 | 4.65 | 8.50 | 21.70 | 71.10 |
| ART+INT | 6.10 | 6.20 | 7.05 | 10.00 | 5.25 | 9.55 | 20.80 | 53.45 |
| Puri & Sen | 4.00 | 3.80 | 3.85 | 4.15 | 4.65 | 4.70 | 4.20 | 4.95 |
| v.d.Waerden | 3.95 | 3.80 | 3.55 | 4.35 | 4.90 | 4.35 | 4.45 | 5.15 |
| ATS | 4.65 | 4.45 | 4.10 | 3.65 | 5.20 | 4.70 | 4.25 | 4.90 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|-------|-------|
| | n = 5 | | | | n = 50 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 4.40 | 4.25 | 4.40 | 4.35 | 5.45 | 5.90 | 5.55 | 5.15 |
| RT | 4.35 | 4.00 | 4.65 | 4.35 | 5.60 | 5.80 | 5.70 | 5.15 |
| INT | 4.40 | 4.25 | 4.70 | 4.35 | 5.25 | 5.70 | 5.65 | 5.15 |
| ART | 4.40 | 4.70 | 5.05 | 6.45 | 5.55 | 7.50 | 12.05 | 38.75 |
| ART+INT | 4.80 | 4.40 | 4.60 | 7.30 | 5.05 | 7.45 | 12.30 | 32.25 |
| Puri & Sen | 3.00 | 3.00 | 2.95 | 3.30 | 5.35 | 5.70 | 5.55 | 5.10 |
| v.d.Waerden | 3.35 | 3.25 | 3.05 | 3.30 | 5.20 | 5.60 | 5.45 | 5.10 |
| ATS | 4.40 | 4.35 | 4.10 | 4.30 | 5.20 | 5.45 | 5.15 | 4.90 |

7.5.4 unequal n_i / # levels = 2*2

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|-------|
| | n = 25 | | | | n = 100 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 4.55 | 4.90 | 4.50 | 4.05 | 5.00 | 5.30 | 5.05 | 5.25 |
| RT | 5.50 | 5.05 | 5.55 | 4.40 | 5.55 | 5.45 | 4.75 | 5.05 |
| INT | 5.80 | 5.30 | 4.90 | 4.70 | 5.35 | 5.20 | 5.10 | 5.05 |
| ART | 5.75 | 5.85 | 6.35 | 9.05 | 5.60 | 5.70 | 7.45 | 16.10 |
| ART+INT | 5.25 | 5.20 | 4.95 | 4.90 | 5.40 | 5.95 | 9.05 | 15.15 |
| Puri & Sen | 5.45 | 5.05 | 5.45 | 4.45 | 5.60 | 5.45 | 4.80 | 5.05 |
| v.d.Waerden | 5.75 | 5.20 | 4.90 | 4.70 | 5.35 | 5.20 | 5.10 | 5.05 |
| ATS | 5.75 | 5.50 | 5.50 | 5.40 | 5.50 | 5.45 | 4.70 | 5.35 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|------|
| | n = 25 | | | | n = 100 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.70 | 5.20 | 6.05 | 5.60 | 6.00 | 5.75 | 5.50 | 4.95 |
| RT | 6.10 | 5.20 | 6.00 | 5.60 | 5.95 | 5.85 | 5.50 | 4.95 |
| INT | 5.65 | 5.75 | 5.95 | 5.60 | 5.50 | 5.75 | 5.15 | 4.95 |
| ART | 5.80 | 5.15 | 6.45 | 7.20 | 6.00 | 6.25 | 6.05 | 9.10 |
| ART+INT | 5.65 | 5.40 | 5.85 | 5.90 | 5.60 | 6.00 | 6.10 | 6.20 |
| Puri & Sen | 6.15 | 5.20 | 6.05 | 5.85 | 6.00 | 5.80 | 5.50 | 4.95 |
| v.d.Waerden | 5.65 | 5.75 | 5.95 | 5.85 | 5.50 | 5.80 | 5.10 | 4.95 |
| ATS | 6.20 | 6.00 | 6.50 | 5.90 | 5.95 | 5.85 | 5.45 | 4.95 |

7. 6. Interaction - A significant

7. 6. 1 equal n_i / # levels = $2*4$

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|------|-------|-------|
| | n = 10 | | | | n = 50 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 4.40 | 4.70 | 4.80 | 4.65 | 5.05 | 5.05 | 4.65 | 5.30 |
| RT | 5.10 | 4.85 | 5.05 | 4.60 | 4.95 | 5.40 | 5.25 | 5.75 |
| INT | 4.95 | 4.75 | 5.20 | 4.55 | 4.75 | 5.20 | 5.15 | 5.50 |
| ART | 7.90 | 7.65 | 9.20 | 14.60 | 7.40 | 9.40 | 14.70 | 26.40 |
| ART+INT | 4.60 | 4.80 | 4.85 | 5.35 | 3.90 | 3.75 | 4.20 | 4.00 |
| Puri & Sen | 4.00 | 3.95 | 4.25 | 3.85 | 4.25 | 4.50 | 4.35 | 4.85 |
| v.d.Waerden | 3.70 | 3.75 | 3.95 | 3.50 | 3.95 | 4.45 | 4.30 | 4.75 |
| ATS | 4.75 | 4.45 | 4.75 | 4.25 | 4.85 | 5.35 | 5.20 | 5.35 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|------|
| | n = 10 | | | | n = 50 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.95 | 5.80 | 5.40 | 5.50 | 5.05 | 4.80 | 4.25 | 4.70 |
| RT | 5.90 | 6.20 | 5.20 | 5.60 | 5.15 | 4.90 | 4.20 | 4.50 |
| INT | 5.60 | 6.15 | 5.25 | 5.40 | 4.40 | 4.60 | 4.25 | 4.70 |
| ART | 6.05 | 6.00 | 5.95 | 9.05 | 4.75 | 5.65 | 5.50 | 9.20 |
| ART+INT | 5.95 | 6.00 | 6.05 | 6.35 | 5.15 | 5.60 | 4.15 | 2.35 |
| Puri & Sen | 3.75 | 4.30 | 3.95 | 4.50 | 3.65 | 3.85 | 3.15 | 3.50 |
| v.d.Waerden | 3.75 | 4.00 | 3.60 | 4.20 | 3.15 | 3.40 | 3.05 | 3.15 |
| ATS | 5.50 | 5.85 | 5.10 | 5.20 | 5.15 | 4.90 | 4.20 | 4.35 |

7. 6. 2 equal n_i / # levels = $2*2$

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|------|-------|-------|
| | n = 20 | | | | n = 100 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 5.20 | 5.35 | 5.60 | 5.25 | 4.85 | 4.80 | 4.95 | 4.75 |
| RT | 5.35 | 5.40 | 5.45 | 4.85 | 5.05 | 5.25 | 5.25 | 5.10 |
| INT | 5.35 | 5.15 | 5.60 | 5.10 | 5.35 | 5.60 | 5.30 | 4.90 |
| ART | 7.00 | 7.25 | 8.50 | 11.70 | 7.75 | 8.85 | 13.25 | 24.45 |
| ART+INT | 4.70 | 4.30 | 3.95 | 3.40 | 3.90 | 3.95 | 3.85 | 2.75 |
| Puri & Sen | 4.95 | 4.60 | 4.90 | 4.35 | 4.65 | 4.90 | 4.60 | 4.75 |
| v.d.Waerden | 4.90 | 4.55 | 5.05 | 4.45 | 5.00 | 4.90 | 4.50 | 4.20 |
| ATS | 5.35 | 5.35 | 5.45 | 4.75 | 5.05 | 5.25 | 5.25 | 5.10 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|-------|
| | n = 20 | | | | n = 100 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.95 | 5.95 | 5.75 | 6.05 | 4.65 | 4.70 | 4.50 | 5.10 |
| RT | 5.90 | 6.15 | 5.75 | 5.85 | 4.70 | 4.40 | 4.75 | 5.30 |
| INT | 5.55 | 6.15 | 5.95 | 6.00 | 4.55 | 4.50 | 4.25 | 5.00 |
| ART | 5.70 | 6.35 | 5.80 | 8.05 | 4.45 | 4.80 | 4.70 | 10.20 |
| ART+INT | 5.85 | 5.60 | 5.10 | 4.85 | 4.55 | 4.35 | 3.75 | 3.10 |
| Puri & Sen | 4.80 | 5.00 | 4.65 | 5.10 | 3.85 | 3.70 | 3.90 | 4.50 |
| v.d.Waerden | 3.90 | 4.65 | 4.55 | 4.95 | 3.40 | 3.50 | 3.45 | 4.35 |
| ATS | 5.85 | 6.10 | 5.75 | 5.85 | 4.70 | 4.40 | 4.75 | 5.30 |

7. 6. 3 unequal n_i / # levels = 4*5

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|------|-------|-------|
| | n = 5 | | | | n = 50 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 4.80 | 4.90 | 5.05 | 5.80 | 3.75 | 3.95 | 3.60 | 3.85 |
| RT | 4.60 | 4.45 | 4.35 | 4.10 | 4.25 | 4.70 | 4.15 | 4.10 |
| INT | 4.40 | 3.80 | 3.85 | 4.50 | 4.00 | 4.45 | 3.85 | 3.75 |
| ART | 5.10 | 5.80 | 6.35 | 11.30 | 5.20 | 7.05 | 12.30 | 18.60 |
| ART+INT | 3.85 | 4.25 | 4.80 | 6.45 | 2.90 | 3.75 | 7.80 | 16.30 |
| Puri & Sen | 2.55 | 2.35 | 2.60 | 2.60 | 2.95 | 3.30 | 3.00 | 2.90 |
| v.d.Waerden | 2.50 | 2.20 | 2.35 | 3.00 | 2.80 | 3.05 | 2.80 | 2.85 |
| ATS | 4.05 | 4.40 | 3.95 | 3.00 | 4.95 | 4.85 | 4.30 | 3.85 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|-------|
| | n = 5 | | | | n = 50 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 4.40 | 4.00 | 3.70 | 3.20 | 5.45 | 5.50 | 5.60 | 4.50 |
| RT | 4.35 | 3.50 | 3.90 | 3.50 | 5.35 | 5.30 | 5.45 | 4.65 |
| INT | 4.25 | 3.75 | 3.50 | 3.25 | 5.40 | 5.45 | 5.80 | 4.45 |
| ART | 4.40 | 4.25 | 4.50 | 5.45 | 5.50 | 6.90 | 8.20 | 9.80 |
| ART+INT | 4.85 | 4.00 | 3.95 | 3.60 | 5.10 | 6.90 | 8.90 | 10.35 |
| Puri & Sen | 1.30 | 1.25 | 1.45 | 1.55 | 2.95 | 3.05 | 3.05 | 2.75 |
| v.d.Waerden | 1.15 | 0.80 | 1.20 | 1.25 | 2.65 | 2.70 | 2.75 | 2.35 |
| ATS | 4.35 | 4.10 | 4.15 | 4.15 | 5.40 | 5.60 | 4.80 | 5.00 |

7. 6. 4 unequal n_i / # levels = 2*2

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|------|
| | n = 25 | | | | n = 100 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 2.50 | 2.55 | 2.95 | 2.60 | 3.20 | 3.45 | 3.25 | 2.95 |
| RT | 4.50 | 4.35 | 4.15 | 3.25 | 4.45 | 4.35 | 4.15 | 3.55 |
| INT | 4.65 | 3.65 | 4.05 | 3.10 | 4.20 | 4.45 | 3.30 | 3.35 |
| ART | 3.70 | 3.80 | 4.60 | 3.10 | 4.70 | 5.35 | 5.25 | 2.85 |
| ART+INT | 2.30 | 2.10 | 2.50 | 1.75 | 2.55 | 2.75 | 3.45 | 6.75 |
| Puri & Sen | 4.00 | 4.00 | 3.95 | 3.10 | 4.15 | 3.80 | 3.40 | 3.10 |
| v.d.Waerden | 4.20 | 3.55 | 3.65 | 2.95 | 3.80 | 3.75 | 2.85 | 2.90 |
| ATS | 5.05 | 5.25 | 5.60 | 4.90 | 5.05 | 5.00 | 5.10 | 4.95 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|------|
| | n = 25 | | | | n = 100 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.70 | 5.35 | 5.50 | 4.15 | 6.00 | 5.80 | 5.05 | 3.50 |
| RT | 5.70 | 5.65 | 5.75 | 4.55 | 5.90 | 5.55 | 5.15 | 4.10 |
| INT | 6.30 | 5.70 | 5.60 | 4.05 | 5.70 | 5.70 | 5.05 | 3.45 |
| ART | 5.80 | 5.70 | 6.30 | 5.15 | 5.85 | 6.15 | 6.65 | 4.95 |
| ART+INT | 5.65 | 5.90 | 5.80 | 4.10 | 5.70 | 5.70 | 7.00 | 8.70 |
| Puri & Sen | 4.55 | 4.70 | 4.60 | 4.00 | 4.30 | 4.50 | 4.25 | 3.70 |
| v.d.Waerden | 4.80 | 4.85 | 4.40 | 3.10 | 4.60 | 4.40 | 4.00 | 2.85 |
| ATS | 6.05 | 5.70 | 6.40 | 5.80 | 5.75 | 5.50 | 5.75 | 5.00 |

7. 7. Interaction - A and B significant

7. 7. 1 equal n_i / # levels = 2*4

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|-------|------------|-------|-------|-------|
| | n = 10 | | | | n = 50 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 5.65 | 5.55 | 5.60 | 5.75 | 6.20 | 6.25 | 6.05 | 6.00 |
| RT | 5.90 | 5.70 | 5.45 | 5.10 | 11.20 | 10.85 | 9.55 | 8.15 |
| INT | 5.40 | 4.95 | 5.45 | 5.25 | 8.50 | 8.20 | 7.30 | 6.15 |
| ART | 8.15 | 8.05 | 8.85 | 11.35 | 9.15 | 9.10 | 11.60 | 21.10 |
| ART+INT | 5.65 | 5.55 | 6.20 | 6.20 | 4.75 | 5.30 | 6.80 | 7.60 |
| Puri & Sen | 4.45 | 4.25 | 4.15 | 3.55 | 9.00 | 8.50 | 7.55 | 6.55 |
| v.d.Waerden | 3.60 | 3.80 | 3.70 | 3.65 | 6.35 | 6.50 | 5.75 | 4.80 |
| ATS | 5.55 | 5.45 | 5.25 | 4.60 | 11.05 | 10.80 | 9.35 | 7.90 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|-------|
| | n = 10 | | | | n = 50 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.95 | 5.95 | 5.65 | 5.65 | 5.05 | 4.80 | 4.85 | 4.90 |
| RT | 5.30 | 5.40 | 5.60 | 5.50 | 4.60 | 4.55 | 4.55 | 4.80 |
| INT | 5.00 | 5.25 | 5.15 | 5.70 | 3.85 | 3.75 | 4.10 | 4.90 |
| ART | 6.05 | 6.15 | 6.05 | 8.15 | 4.75 | 5.20 | 6.50 | 11.35 |
| ART+INT | 5.95 | 5.85 | 5.90 | 5.65 | 5.15 | 5.35 | 5.65 | 7.50 |
| Puri & Sen | 2.15 | 2.15 | 1.80 | 1.95 | 1.80 | 1.95 | 1.65 | 1.65 |
| v.d.Waerden | 1.60 | 1.75 | 1.40 | 1.90 | 1.05 | 1.25 | 1.20 | 1.70 |
| ATS | 4.90 | 5.25 | 5.25 | 5.05 | 4.60 | 4.55 | 4.50 | 4.70 |

7.7.2 equal n_i / # levels = 2*2

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|-------|-------|-------|
| | n = 20 | | | | n = 100 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 5.30 | 5.65 | 5.45 | 5.45 | 5.10 | 5.15 | 4.90 | 5.25 |
| RT | 6.40 | 6.25 | 6.25 | 5.95 | 16.20 | 15.10 | 13.65 | 9.75 |
| INT | 5.45 | 5.95 | 5.75 | 5.90 | 12.10 | 10.55 | 9.10 | 6.90 |
| ART | 7.10 | 7.70 | 8.35 | 9.15 | 8.55 | 8.80 | 11.00 | 16.10 |
| ART+INT | 4.85 | 4.90 | 4.95 | 5.40 | 5.70 | 5.50 | 4.95 | 5.25 |
| Puri & Sen | 5.50 | 5.35 | 5.20 | 4.90 | 14.45 | 13.70 | 11.95 | 8.60 |
| v.d.Waerden | 4.30 | 4.80 | 4.60 | 4.30 | 10.05 | 9.50 | 7.65 | 5.85 |
| ATS | 6.40 | 6.25 | 6.25 | 5.95 | 16.20 | 15.10 | 13.65 | 9.75 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|------|
| | n = 20 | | | | n = 100 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 5.95 | 5.85 | 5.50 | 6.05 | 4.65 | 4.35 | 4.75 | 4.85 |
| RT | 5.60 | 5.60 | 5.60 | 5.90 | 4.30 | 4.25 | 4.80 | 4.90 |
| INT | 4.85 | 4.90 | 4.95 | 6.00 | 3.25 | 3.30 | 3.55 | 4.85 |
| ART | 5.70 | 6.00 | 5.60 | 7.20 | 4.45 | 4.50 | 4.50 | 6.90 |
| ART+INT | 5.85 | 5.40 | 5.25 | 5.65 | 4.55 | 4.05 | 3.85 | 4.50 |
| Puri & Sen | 3.35 | 3.35 | 3.45 | 3.85 | 2.35 | 2.20 | 2.35 | 2.40 |
| v.d.Waerden | 2.70 | 2.85 | 3.35 | 3.90 | 1.50 | 1.65 | 1.80 | 2.40 |
| ATS | 5.60 | 5.60 | 5.60 | 5.85 | 4.30 | 4.25 | 4.80 | 4.90 |

7.7.3 unequal n_i / # levels = 4*5

exponential distribution

| | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|-------|-------|-------|
| | n = 5 | | | | n = 50 | | | |
| method | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 4.80 | 4.90 | 4.75 | 4.90 | 4.25 | 4.40 | 4.45 | 4.35 |
| RT | 4.45 | 4.25 | 3.70 | 3.45 | 10.35 | 10.05 | 8.90 | 6.00 |
| INT | 3.95 | 4.15 | 3.80 | 3.20 | 7.25 | 6.85 | 5.80 | 4.45 |
| ART | 5.30 | 5.25 | 5.70 | 7.75 | 6.70 | 7.75 | 11.05 | 35.35 |
| ART+INT | 4.75 | 4.80 | 4.95 | 5.70 | 4.50 | 4.90 | 6.25 | 9.60 |
| Puri & Sen | 1.70 | 1.85 | 1.85 | 1.35 | 6.65 | 6.75 | 5.90 | 3.80 |
| v.d.Waerden | 1.60 | 1.60 | 1.45 | 1.35 | 4.70 | 4.65 | 3.80 | 2.80 |
| ATS | 3.80 | 4.20 | 4.30 | 3.25 | 9.45 | 9.50 | 9.05 | 6.85 |

uniform distribution

| | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|-------|-------|
| | n = 5 | | | | n = 50 | | | |
| method | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 4.40 | 4.30 | 4.20 | 3.40 | 5.45 | 5.45 | 5.65 | 4.25 |
| RT | 3.50 | 4.00 | 3.50 | 3.40 | 4.75 | 4.85 | 5.10 | 4.30 |
| INT | 4.35 | 4.60 | 4.10 | 3.40 | 5.50 | 5.30 | 5.75 | 4.25 |
| ART | 4.60 | 4.95 | 4.85 | 5.15 | 5.60 | 6.50 | 12.25 | 14.95 |
| ART+INT | 4.55 | 4.75 | 4.40 | 3.45 | 5.45 | 7.25 | 11.50 | 15.85 |
| Puri & Sen | 0.45 | 0.30 | 0.35 | 0.25 | 0.85 | 0.80 | 0.90 | 0.60 |
| v.d.Waerden | 0.20 | 0.25 | 0.25 | 0.30 | 0.90 | 1.00 | 0.65 | 0.60 |
| ATS | 4.45 | 4.90 | 4.25 | 3.40 | 4.85 | 4.95 | 5.15 | 5.35 |

7.7.4 unequal n_i / # levels = 2*2

exponential distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|-------|-------|-------|
| | n = 25 | | | | n = 100 | | | |
| | continuous | 18 | 10 | 5 | continuous | 18 | 10 | 5 |
| parametric | 4.80 | 4.90 | 4.75 | 4.90 | 3.30 | 3.30 | 3.40 | 3.05 |
| RT | 4.45 | 4.25 | 3.70 | 3.45 | 12.50 | 12.05 | 11.50 | 8.85 |
| INT | 3.95 | 4.15 | 3.80 | 3.20 | 9.10 | 7.95 | 7.40 | 6.00 |
| ART | 5.30 | 5.25 | 5.70 | 7.75 | 7.75 | 8.05 | 9.80 | 16.50 |
| ART+INT | 4.75 | 4.80 | 4.95 | 5.70 | 3.10 | 2.85 | 3.25 | 5.80 |
| Puri & Sen | 1.70 | 1.85 | 1.85 | 1.35 | 10.55 | 10.15 | 9.60 | 7.20 |
| v.d.Waerden | 1.60 | 1.60 | 1.45 | 1.35 | 7.35 | 6.35 | 5.70 | 4.40 |
| ATS | 3.80 | 4.20 | 4.30 | 3.25 | 12.05 | 11.55 | 10.85 | 7.75 |

uniform distribution

| method | number of discrete values | | | | | | | |
|-------------|---------------------------|------|------|------|------------|------|------|-------|
| | n = 25 | | | | n = 100 | | | |
| | continuous | 7 | 4 | 2 | continuous | 7 | 4 | 2 |
| parametric | 4.40 | 4.30 | 4.20 | 3.40 | 6.00 | 5.75 | 5.60 | 8.40 |
| RT | 3.50 | 4.00 | 3.50 | 3.40 | 6.75 | 6.70 | 6.50 | 8.55 |
| INT | 4.35 | 4.60 | 4.10 | 3.40 | 3.55 | 3.95 | 3.60 | 8.40 |
| ART | 4.60 | 4.95 | 4.85 | 5.15 | 5.90 | 6.05 | 5.85 | 14.80 |
| ART+INT | 4.55 | 4.75 | 4.40 | 3.45 | 4.85 | 5.00 | 4.95 | 13.85 |
| Puri & Sen | 0.45 | 0.30 | 0.35 | 0.25 | 2.30 | 2.75 | 1.95 | 4.10 |
| v.d.Waerden | 0.20 | 0.25 | 0.25 | 0.30 | 1.15 | 1.50 | 1.20 | 4.10 |
| ATS | 4.45 | 4.90 | 4.25 | 3.40 | 5.60 | 5.45 | 5.15 | 5.55 |

7. 8. Summaries for the ART-method

7. 8. 1 Error rates for the version of a continuous and three versions of a discrete distribution for small and large n_i : exponential distribution - 2*4 and 4*5 design

| method | count | design | number of discrete values | | | | | | | |
|-----------------------------------|---------|--------|---------------------------|-------|-------|-------|--------|-------|-------|-------|
| | | | n = 5 / n = 10 | | | | n = 50 | | | |
| | | | cont. | 18 | 10 | 5 | cont. | 18 | 10 | 5 |
| Main effect A - null model | equal | 2*4 | 5.40 | 5.90 | 7.65 | 20.20 | 5.30 | 8.15 | 17.25 | 38.75 |
| | | 4*5 | 6.90 | 7.45 | 8.60 | 27.60 | 4.95 | 6.60 | 19.80 | 55.45 |
| | unequal | 2*4 | 4.65 | 4.65 | 7.15 | 17.05 | 4.65 | 8.25 | 19.70 | 48.35 |
| | | 4*5 | 4.15 | 4.25 | 4.80 | 19.05 | 4.05 | 6.50 | 25.45 | 72.25 |
| Main effect B - A significant | equal | 2*4 | 7.05 | 7.25 | 7.25 | 10.90 | 8.90 | 9.15 | 13.80 | 24.15 |
| | | 4*5 | 9.15 | 9.60 | 11.00 | 22.80 | 9.70 | 12.05 | 25.90 | 60.45 |
| | unequal | 2*4 | 6.45 | 7.00 | 9.20 | 14.15 | 17.70 | 22.90 | 40.95 | 73.85 |
| | | 4*5 | 6.45 | 6.60 | 7.25 | 14.40 | 19.50 | 22.50 | 37.85 | 69.30 |
| Main effect A - interact. sig | equal | 2*4 | 5.85 | 7.00 | 10.45 | 23.55 | 6.60 | 10.00 | 20.70 | 39.55 |
| | | 4*5 | 7.65 | 8.50 | 10.95 | 33.55 | 8.25 | 10.90 | 23.80 | 59.20 |
| | unequal | 2*4 | 6.40 | 7.35 | 11.05 | 25.30 | 25.20 | 32.25 | 44.60 | 69.70 |
| | | 4*5 | 6.20 | 6.25 | 8.35 | 29.20 | 12.15 | 16.85 | 35.90 | 79.05 |
| Main effect B - A and int. sig | equal | 2*4 | 7.45 | 7.80 | 9.20 | 11.10 | 8.10 | 8.80 | 10.05 | 26.45 |
| | | 4*5 | 9.55 | 10.20 | 12.10 | 23.95 | 9.95 | 12.10 | 18.65 | 67.70 |
| | unequal | 2*4 | 7.25 | 7.85 | 9.25 | 16.60 | 13.10 | 15.45 | 15.45 | 54.10 |
| | | 4*5 | 8.05 | 8.75 | 9.40 | 15.85 | 17.40 | 18.95 | 25.55 | 57.45 |
| Interaction - null model | equal | 2*4 | 5.70 | 6.15 | 6.90 | 12.55 | 6.00 | 6.85 | 12.40 | 31.85 |
| | | 4*5 | 6.60 | 7.05 | 8.65 | 15.55 | 4.95 | 7.90 | 22.60 | 70.95 |
| | unequal | 2*4 | 5.75 | 6.15 | 8.35 | 14.70 | 5.10 | 7.20 | 13.60 | 37.40 |
| | | 4*5 | 6.65 | 7.10 | 8.40 | 17.95 | 4.65 | 8.50 | 21.70 | 71.10 |
| Interaction - A significant | equal | 2*4 | 7.90 | 7.65 | 9.20 | 14.60 | 7.40 | 9.40 | 14.70 | 26.40 |
| | | 4*5 | 8.70 | 8.80 | 9.90 | 16.35 | 7.80 | 10.00 | 18.60 | 44.90 |
| | unequal | 2*4 | 6.55 | 7.65 | 9.10 | 13.20 | 8.05 | 8.65 | 14.70 | 24.15 |
| | | 4*5 | 5.10 | 5.80 | 6.35 | 11.30 | 5.20 | 7.05 | 12.30 | 18.60 |
| Interaction - A and B sig | equal | 2*4 | 8.15 | 8.05 | 8.85 | 11.35 | 9.15 | 9.10 | 11.60 | 21.10 |
| | | 4*5 | 8.80 | 8.80 | 9.30 | 12.90 | 9.60 | 10.85 | 19.35 | 40.50 |
| | unequal | 2*4 | 10.00 | 10.40 | 11.25 | 15.75 | 9.90 | 11.45 | 13.55 | 29.10 |
| | | 4*5 | 5.30 | 5.25 | 5.70 | 7.75 | 6.70 | 7.75 | 11.05 | 35.35 |

7. 8. 2 Error rates for the version of a continuous and three versions of a discrete distribution for small and large n_i : uniform distribution - 2*4 and 4*5 design

| method | count | design | number of discrete values | | | | | | | |
|-----------------------------------|---------|--------|---------------------------|------|------|-------|--------|-------|-------|-------|
| | | | n = 5 / n= 10 | | | | n = 50 | | | |
| | | | cont. | 7 | 4 | 2 | cont. | 7 | 4 | 2 |
| Main effect A - null model | equal | 2*4 | 5.05 | 5.40 | 5.80 | 9.65 | 4.20 | 6.0 | 10.15 | 22.60 |
| | | 4*5 | 4.85 | 5.20 | 5.60 | 5.75 | 4.85 | 5.95 | 9.45 | 28.95 |
| | unequal | 2*4 | 3.20 | 3.70 | 4.25 | 7.05 | 2.80 | 4.95 | 9.30 | 29.05 |
| | | 4*5 | 2.20 | 2.25 | 2.80 | 3.00 | 2.30 | 3.65 | 7.20 | 38.45 |
| Main effect B - A significant | equal | 2*4 | 4.45 | 4.70 | 5.45 | 6.65 | 5.15 | 5.30 | 5.15 | 8.30 |
| | | 4*5 | 6.15 | 6.25 | 6.50 | 9.05 | 4.15 | 5.80 | 7.60 | 23.95 |
| | unequal | 2*4 | 5.55 | 6.20 | 7.20 | 10.70 | 13.30 | 21.85 | 29.65 | 60.50 |
| | | 4*5 | 3.70 | 3.85 | 4.25 | 5.25 | 11.15 | 14.80 | 23.55 | 42.85 |
| Main effect A - interact. sig | equal | 2*4 | 5.05 | 4.85 | 5.85 | 8.85 | 4.20 | 6.55 | 6.60 | 14.05 |
| | | 4*5 | 4.85 | 5.40 | 5.40 | 7.05 | 4.85 | 5.50 | 7.00 | 16.20 |
| | unequal | 2*4 | 4.80 | 4.60 | 4.85 | 9.10 | 12.15 | 14.40 | 13.05 | 40.55 |
| | | 4*5 | 2.70 | 2.40 | 2.85 | 3.60 | 4.25 | 5.70 | 6.75 | 29.30 |
| Main effect B - A and int. sig | equal | 2*4 | 4.45 | 4.40 | 4.75 | 5.45 | 5.15 | 4.85 | 5.90 | 8.10 |
| | | 4*5 | 6.15 | 5.90 | 6.00 | 7.00 | 4.15 | 5.65 | 6.30 | 13.45 |
| | unequal | 2*4 | 5.15 | 5.65 | 6.00 | 8.30 | 11.45 | 15.30 | 7.85 | 18.40 |
| | | 4*5 | 3.80 | 4.15 | 4.05 | 5.15 | 8.80 | 11.00 | 12.25 | 12.90 |
| Interaction - null model | equal | 2*4 | 6.05 | 5.85 | 6.25 | 7.70 | 4.75 | 5.25 | 6.65 | 14.60 |
| | | 4*5 | 5.35 | 5.65 | 5.35 | 7.40 | 5.00 | 6.10 | 9.10 | 35.75 |
| | unequal | 2*4 | 4.65 | 5.05 | 5.15 | 6.35 | 4.95 | 6.10 | 8.00 | 20.70 |
| | | 4*5 | 4.40 | 4.70 | 5.05 | 6.45 | 5.55 | 7.50 | 12.05 | 38.75 |
| Interaction - A significant | equal | 2*4 | 6.05 | 6.00 | 5.95 | 9.05 | 4.75 | 5.65 | 5.50 | 9.20 |
| | | 4*5 | 5.35 | 5.10 | 5.45 | 7.50 | 5.00 | 5.80 | 5.85 | 16.10 |
| | unequal | 2*4 | 4.30 | 4.80 | 4.85 | 7.75 | 5.00 | 5.80 | 7.75 | 10.10 |
| | | 4*5 | 4.40 | 4.25 | 4.50 | 5.45 | 5.50 | 6.90 | 8.20 | 9.80 |
| Interaction - A and B sig | equal | 2*4 | 6.05 | 6.15 | 6.05 | 8.15 | 4.75 | 5.20 | 6.50 | 11.35 |
| | | 4*5 | 5.35 | 5.6 | 5.30 | 7.45 | 5.00 | 5.30 | 9.60 | 16.45 |
| | unequal | 2*4 | 4.30 | 4.60 | 5.35 | 6.55 | 4.75 | 6.30 | 9.90 | 11.45 |
| | | 4*5 | 4.60 | 4.95 | 4.85 | 5.15 | 5.60 | 6.50 | 12.25 | 14.95 |

7. 8. 3 Error rates for the version of a continuous and three versions of a discrete distribution for small and large n_i : exponential distribution - 2*2 design

| method | count | design | number of discrete values | | | | | | | |
|-----------------------------------|---------|--------|---------------------------|-------|-------|-------|---------|-------|-------|-------|
| | | | n = 20 / 25 | | | | n = 100 | | | |
| | | | cont. | 18 | 10 | 5 | cont. | 18 | 10 | 5 |
| Main effect A - null model | equal | 2*2 | 5.15 | 4.90 | 5.50 | 5.90 | 5.00 | 5.35 | 5.80 | 7.65 |
| | unequal | 2*2 | 4.05 | 4.40 | 10.60 | 35.15 | 3.75 | 12.55 | 37.65 | 66.50 |
| Main effect B - A significant | equal | 2*2 | 6.90 | 7.50 | 8.15 | 11.75 | 8.25 | 9.45 | 14.50 | 24.85 |
| | unequal | 2*2 | 17.30 | 18.35 | 21.05 | 35.20 | 61.40 | 64.50 | 74.80 | 86.80 |
| Main effect A - interact. sig | equal | 2*2 | 8.35 | 9.35 | 13.15 | 18.10 | 8.60 | 13.05 | 25.20 | 43.85 |
| | unequal | 2*2 | 6.45 | 7.75 | 11.75 | 19.00 | 10.15 | 18.60 | 42.05 | 45.95 |
| Main effect B - A and int. sig | equal | 2*2 | 7.50 | 7.95 | 8.55 | 12.25 | 8.90 | 9.95 | 9.60 | 33.70 |
| | unequal | 2*2 | 30.75 | 31.70 | 26.00 | 15.35 | 88.00 | 85.65 | 64.90 | 6.30 |
| Interaction - null model | equal | 2*2 | 4.80 | 4.90 | 5.35 | 5.60 | 5.25 | 5.8 | 6.45 | 7.65 |
| | unequal | 2*2 | 5.75 | 5.85 | 6.35 | 9.05 | 5.60 | 5.70 | 7.45 | 16.10 |
| Interaction - A significant | equal | 2*2 | 7.00 | 7.25 | 8.50 | 11.70 | 7.75 | 8.85 | 13.25 | 24.45 |
| | unequal | 2*2 | 3.70 | 3.80 | 4.60 | 3.10 | 4.70 | 5.35 | 5.25 | 2.85 |
| Interaction - A and B sig | equal | 2*2 | 7.10 | 7.70 | 8.35 | 9.15 | 8.55 | 8.80 | 11.00 | 16.10 |
| | unequal | 2*2 | 5.30 | 5.25 | 5.70 | 7.75 | 7.75 | 8.05 | 9.80 | 16.50 |

7. 8. 4 Error rates for the version of a continuous and three versions of a discrete distribution for small and large n_i : uniform distribution - 2*2 design

| method | count | design | number of discrete values | | | | | | | |
|-----------------------------------|---------|--------|---------------------------|-------|-------|-------|---------|-------|-------|-------|
| | | | n = 20 / 25 | | | | n = 100 | | | |
| | | | cont. | 18 | 10 | 5 | cont. | 18 | 10 | 5 |
| Main effect A - null model | equal | 2*2 | 5.20 | 4.90 | 4.90 | 6.10 | 4.20 | 4.50 | 4.95 | 5.45 |
| | unequal | 2*2 | 2.65 | 3.85 | 7.10 | 18.55 | 3.25 | 7.40 | 18.05 | 52.30 |
| Main effect B - A significant | equal | 2*2 | 6.25 | 5.25 | 6.55 | 8.30 | 5.70 | 5.95 | 6.00 | 10.30 |
| | unequal | 2*2 | 14.60 | 17.70 | 17.90 | 26.05 | 52.20 | 67.10 | 60.90 | 88.35 |
| Main effect A - interact. sig | equal | 2*2 | 5.20 | 5.10 | 5.0 | 4.95 | 4.20 | 4.55 | 4.75 | 5.30 |
| | unequal | 2*2 | 3.15 | 4.60 | 8.50 | 18.85 | 5.45 | 14.60 | 26.70 | 63.50 |
| Main effect B - A and int. sig | equal | 2*2 | 6.25 | 5.70 | 5.90 | 7.20 | 5.70 | 5.55 | 6.45 | 9.55 |
| | unequal | 2*2 | 31.15 | 30.35 | 21.55 | 13.70 | 88.45 | 83.70 | 62.50 | 9.10 |
| Interaction - null model | equal | 2*2 | 5.70 | 5.60 | 6.20 | 6.85 | 4.45 | 4.40 | 4.95 | 5.75 |
| | unequal | 2*2 | 5.80 | 5.15 | 6.45 | 7.20 | 6.00 | 6.25 | 6.05 | 9.10 |
| Interaction - A significant | equal | 2*2 | 5.70 | 6.35 | 5.80 | 8.05 | 4.45 | 4.80 | 4.70 | 10.20 |
| | unequal | 2*2 | 5.80 | 5.70 | 6.30 | 5.15 | 5.85 | 6.15 | 6.65 | 4.95 |
| Interaction - A and B sig | equal | 2*2 | 5.70 | 6.00 | 5.60 | 7.20 | 4.45 | 4.50 | 4.50 | 6.90 |
| | unequal | 2*2 | 4.60 | 4.95 | 4.85 | 5.15 | 5.90 | 6.05 | 5.85 | 14.80 |

7. 8. 5 Error rates for the version of a continuous and a versions of a discrete distribution in the range from 5 to 50 : exponential distribution

(This is a summary of the results for the ART-method tabulated in Appendix 2.)

| method | count | scale | cell count | | | | | | | | | |
|-----------------------------------|---------|--------|------------|------|------|-------|-------|-------|-------|-------|-------|-------|
| | | | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Main effect A - null model | equal | cont. | 5.40 | 5.40 | 5.35 | 4.90 | 5.00 | 5.80 | 5.80 | 4.65 | 5.00 | 5.30 |
| | | discr. | 5.45 | 5.90 | 6.30 | 6.20 | 6.65 | 6.75 | 8.35 | 7.20 | 8.05 | 8.15 |
| | unequal | cont. | 4.15 | 3.05 | 3.70 | 2.65 | 3.95 | 3.45 | 3.50 | 3.60 | 3.20 | 4.05 |
| | | discr. | 4.25 | 3.50 | 4.40 | 3.70 | 4.95 | 5.20 | 5.15 | 5.90 | 5.65 | 6.50 |
| Main effect B - A significant | equal | cont. | 6.00 | 7.05 | 7.70 | 7.70 | 7.20 | 7.60 | 6.40 | 6.90 | 8.40 | 8.90 |
| | | discr. | 6.25 | 7.25 | 7.80 | 7.90 | 7.85 | 7.95 | 7.30 | 7.35 | 8.70 | 9.15 |
| | unequal | cont. | 6.45 | 7.60 | 8.00 | 10.50 | 13.20 | 13.65 | 15.50 | 17.45 | 18.25 | 19.50 |
| | | discr. | 6.60 | 8.40 | 8.35 | 11.70 | 13.90 | 15.40 | 16.65 | 20.00 | 20.85 | 22.50 |
| Main effect A - interact. sig | equal | cont. | 6.45 | 5.85 | 7.30 | 7.05 | 7.45 | 6.10 | 6.00 | 6.70 | 6.40 | 6.60 |
| | | discr. | 6.65 | 7.00 | 8.10 | 9.30 | 8.35 | 8.95 | 8.25 | 10.25 | 9.60 | 10.00 |
| | unequal | cont. | 6.20 | 5.40 | 7.35 | 6.80 | 6.85 | 8.45 | 9.10 | 9.50 | 10.30 | 12.15 |
| | | discr. | 6.25 | 6.00 | 8.45 | 7.80 | 8.20 | 10.80 | 11.95 | 13.75 | 13.40 | 16.85 |
| Main effect B - A and int. sig | equal | cont. | 6.65 | 6.30 | 6.60 | 7.15 | 7.85 | 7.40 | 7.45 | 7.30 | 7.20 | 6.50 |
| | | discr. | 7.05 | 6.40 | 7.30 | 7.70 | 7.90 | 8.10 | 7.65 | 7.55 | 7.25 | 7.15 |
| | unequal | cont. | 6.85 | 6.35 | 7.25 | 8.00 | 8.60 | 9.50 | 9.70 | 11.65 | 11.65 | 13.40 |
| | | discr. | 7.00 | 6.75 | 8.05 | 8.35 | 9.40 | 11.55 | 12.30 | 13.00 | 14.80 | 16.90 |
| Interaction - null model | equal | cont. | 5.85 | 5.70 | 5.65 | 5.75 | 5.60 | 5.60 | 5.60 | 5.90 | 5.75 | 6.00 |
| | | discr. | 6.00 | 6.15 | 6.25 | 6.30 | 6.15 | 6.80 | 6.75 | 7.00 | 6.70 | 6.85 |
| | unequal | cont. | 6.65 | 5.35 | 4.85 | 5.55 | 4.70 | 5.20 | 4.85 | 5.55 | 4.65 | 4.65 |
| | | discr. | 7.10 | 5.60 | 5.40 | 7.25 | 6.65 | 6.65 | 6.90 | 8.50 | 8.05 | 8.50 |
| Interaction - A significant | equal | cont. | 7.65 | 7.90 | 8.40 | 7.40 | 8.50 | 7.20 | 8.55 | 8.25 | 7.80 | 7.40 |
| | | discr. | 8.20 | 7.65 | 8.95 | 8.25 | 9.25 | 7.60 | 9.25 | 8.70 | 8.65 | 9.40 |
| | unequal | cont. | 5.10 | 6.40 | 5.65 | 5.90 | 4.60 | 5.30 | 5.90 | 4.95 | 6.00 | 5.20 |
| | | discr. | 5.80 | 6.65 | 6.25 | 6.20 | 5.85 | 5.95 | 6.60 | 5.90 | 6.95 | 7.05 |
| Interaction - A and B sig | equal | cont. | 7.10 | 8.15 | 8.05 | 7.85 | 7.65 | 8.90 | 7.65 | 9.25 | 8.55 | 9.15 |
| | | discr. | 7.55 | 8.05 | 8.45 | 8.30 | 8.10 | 9.60 | 8.10 | 9.25 | 9.05 | 9.10 |
| | unequal | cont. | 5.30 | 5.65 | 7.10 | 6.10 | 6.90 | 7.15 | 6.80 | 7.60 | 7.55 | 6.70 |
| | | discr. | 5.25 | 6.05 | 6.50 | 6.05 | 6.75 | 7.90 | 7.75 | 7.95 | 8.35 | 7.75 |

7. 8. 6 Error rates for the version of a continuous and a versions of a discrete distribution in the range from 5 to 50 : uniform distribution

(This is a summary of the results for the ART-method tabulated in Appendix 2.)

| method | count | scale | cell count | | | | | | | | | |
|-----------------------------------|---------|--------|------------|------|------|------|-------|-------|-------|-------|-------|-------|
| | | | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Main effect A - null model | equal | cont. | 5.05 | 5.40 | 5.40 | 4.75 | 4.65 | 5.05 | 4.40 | 4.20 | 5.75 | 5.15 |
| | | discr. | 5.40 | 6.05 | 6.10 | 5.65 | 6.30 | 7.00 | 6.75 | 7.70 | 7.05 | 7.95 |
| | unequal | cont. | 2.70 | 2.30 | 2.60 | 2.25 | 2.60 | 2.55 | 2.35 | 2.90 | 2.30 | 2.40 |
| | | discr. | 2.85 | 2.40 | 3.40 | 3.10 | 3.30 | 3.90 | 4.30 | 4.90 | 4.85 | 5.05 |
| Main effect B - A significant | equal | cont. | 4.60 | 4.55 | 4.00 | 4.65 | 4.60 | 5.55 | 5.40 | 4.65 | 4.00 | 5.05 |
| | | discr. | 4.40 | 4.50 | 4.30 | 4.65 | 5.05 | 5.40 | 5.00 | 5.10 | 4.55 | 5.70 |
| | unequal | cont. | 3.50 | 4.20 | 4.80 | 5.10 | 7.15 | 7.80 | 9.00 | 8.90 | 9.55 | 11.05 |
| | | discr. | 3.75 | 4.65 | 6.25 | 7.10 | 10.05 | 12.20 | 15.75 | 22.25 | 25.10 | 32.80 |
| Main effect A - interact. sig | equal | cont. | 4.45 | 5.15 | 4.85 | 4.90 | 4.75 | 5.35 | 5.30 | 4.90 | 4.75 | 4.45 |
| | | discr. | 5.10 | 5.25 | 5.90 | 5.80 | 5.95 | 6.70 | 6.60 | 6.90 | 8.15 | 6.80 |
| | unequal | cont. | 3.05 | 2.85 | 2.80 | 3.50 | 3.20 | 4.00 | 3.75 | 4.80 | 4.90 | 5.30 |
| | | discr. | 3.20 | 3.45 | 2.90 | 3.45 | 4.65 | 4.65 | 4.80 | 6.15 | 5.55 | 5.90 |
| Main effect B - A and int. sig | equal | cont. | 4.60 | 4.55 | 4.00 | 4.65 | 4.60 | 5.55 | 5.40 | 4.65 | 4.00 | 5.05 |
| | | discr. | 4.40 | 4.40 | 4.50 | 5.05 | 5.45 | 5.70 | 5.10 | 4.90 | 4.20 | 5.70 |
| | unequal | cont. | 3.40 | 3.40 | 3.60 | 3.60 | 3.90 | 4.15 | 4.40 | 4.90 | 4.50 | 5.55 |
| | | discr. | 3.50 | 3.75 | 3.65 | 4.05 | 4.65 | 4.80 | 4.95 | 6.05 | 5.30 | 6.15 |
| Interaction - null model | equal | cont. | 5.25 | 5.30 | 4.10 | 5.00 | 5.05 | 4.60 | 4.70 | 4.25 | 5.20 | 4.55 |
| | | discr. | 5.75 | 4.50 | 4.85 | 5.00 | 5.95 | 5.15 | 4.85 | 5.40 | 6.30 | 6.15 |
| | unequal | cont. | 5.50 | 5.55 | 5.30 | 5.80 | 4.35 | 4.45 | 4.60 | 4.20 | 4.65 | 4.40 |
| | | discr. | 5.55 | 5.95 | 5.85 | 6.80 | 6.30 | 5.80 | 6.70 | 7.35 | 7.70 | 7.60 |
| Interaction - A significant | equal | cont. | 5.25 | 5.30 | 4.10 | 5.00 | 5.05 | 4.60 | 4.70 | 4.25 | 5.20 | 4.55 |
| | | discr. | 5.75 | 5.00 | 4.75 | 5.25 | 5.85 | 4.85 | 5.05 | 5.35 | 5.60 | 5.90 |
| | unequal | cont. | 5.50 | 5.65 | 5.05 | 5.80 | 4.35 | 4.50 | 4.50 | 4.30 | 4.60 | 4.60 |
| | | discr. | 5.55 | 6.00 | 6.40 | 7.45 | 6.30 | 6.10 | 6.85 | 6.55 | 7.00 | 7.20 |
| Interaction - A and B sig | equal | cont. | 5.25 | 5.30 | 4.10 | 5.00 | 5.05 | 4.60 | 4.70 | 4.25 | 5.20 | 4.55 |
| | | discr. | 5.75 | 4.50 | 4.85 | 5.00 | 5.95 | 5.15 | 4.85 | 5.40 | 6.30 | 6.15 |
| | unequal | cont. | 5.10 | 5.60 | 4.95 | 5.90 | 4.40 | 4.40 | 4.60 | 4.25 | 4.60 | 4.45 |
| | | discr. | 5.65 | 6.10 | 5.60 | 7.00 | 6.65 | 6.05 | 7.25 | 7.65 | 7.45 | 8.05 |