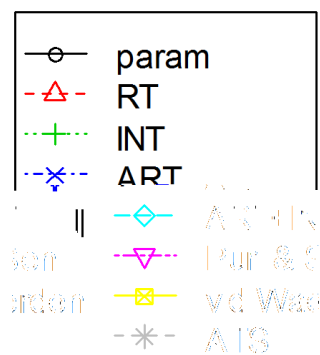# Comparison of nonparametric analysis of variance methods - a Monte Carlo study
Part A: Two between subjects factors designs

Appendix 4
Tables and Graphs of the Type I Error Rate for large effect sizes

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

The legend for all graphs is the same:

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4. 1.   Main effect B - A significant (equal n_i=10 / # levels = 2*4)

4. 1. 1   normal distribution - equal variances

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.50	4.65	4.90	4.60	4.95	4.90	5.45	5.55
RT	4.65	5.00	5.10	5.05	5.20	4.85	5.50	4.70
INT	4.55	4.90	5.30	5.20	5.15	5.00	5.30	5.50
ART	4.80	4.70	4.90	5.60	5.30	4.85	5.30	5.65
ART+INT	4.55	4.45	5.00	5.25	5.40	5.15	5.15	5.45
Puri & Sen	4.05	4.35	3.70	3.15	2.10	1.40	0.90	0.65
v.d.Waerden	4.30	4.10	3.55	3.45	2.20	1.55	0.85	0.65
ATS	4.25	4.65	4.65	4.70	4.85	4.60	4.95	4.50
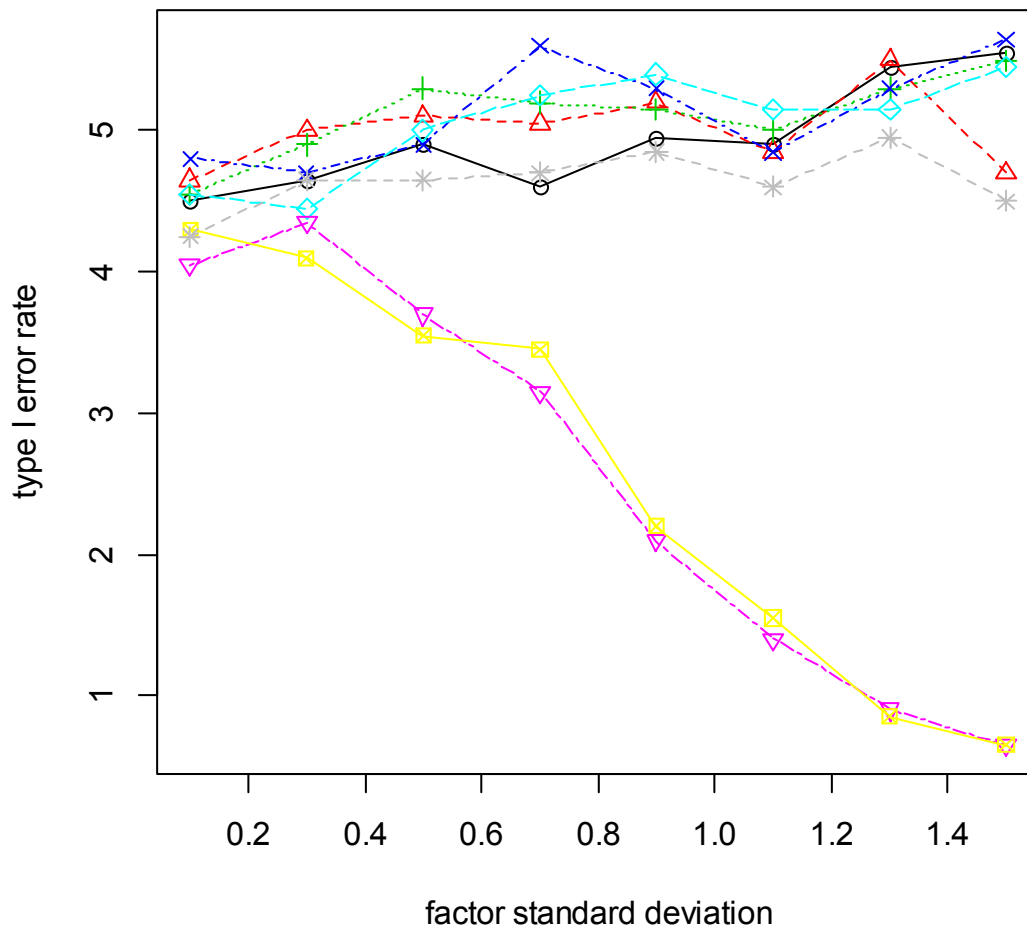
4. 1. 2　　normal distribution -　unequal variances (on B)

	factor standard deviation							
method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	6.10	6.75	6.55	6.85	6.50	6.20	5.95	6.95
RT	5.70	6.40	5.85	6.00	5.75	5.45	5.70	6.60
INT	5.10	5.95	5.70	5.75	5.85	5.60	5.30	6.10
ART	5.60	6.15	5.90	5.75	6.00	5.90	6.05	6.50
ART+INT	5.05	5.95	5.35	5.90	5.45	5.40	5.15	5.55
Puri & Sen	5.05	5.40	5.00	4.05	2.95	1.75	1.20	0.75
v.d.Waerden	4.70	5.05	4.80	4.10	3.25	2.05	1.60	0.85
ATS	5.00	5.50	5.40	5.50	5.20	5.15	4.75	5.55
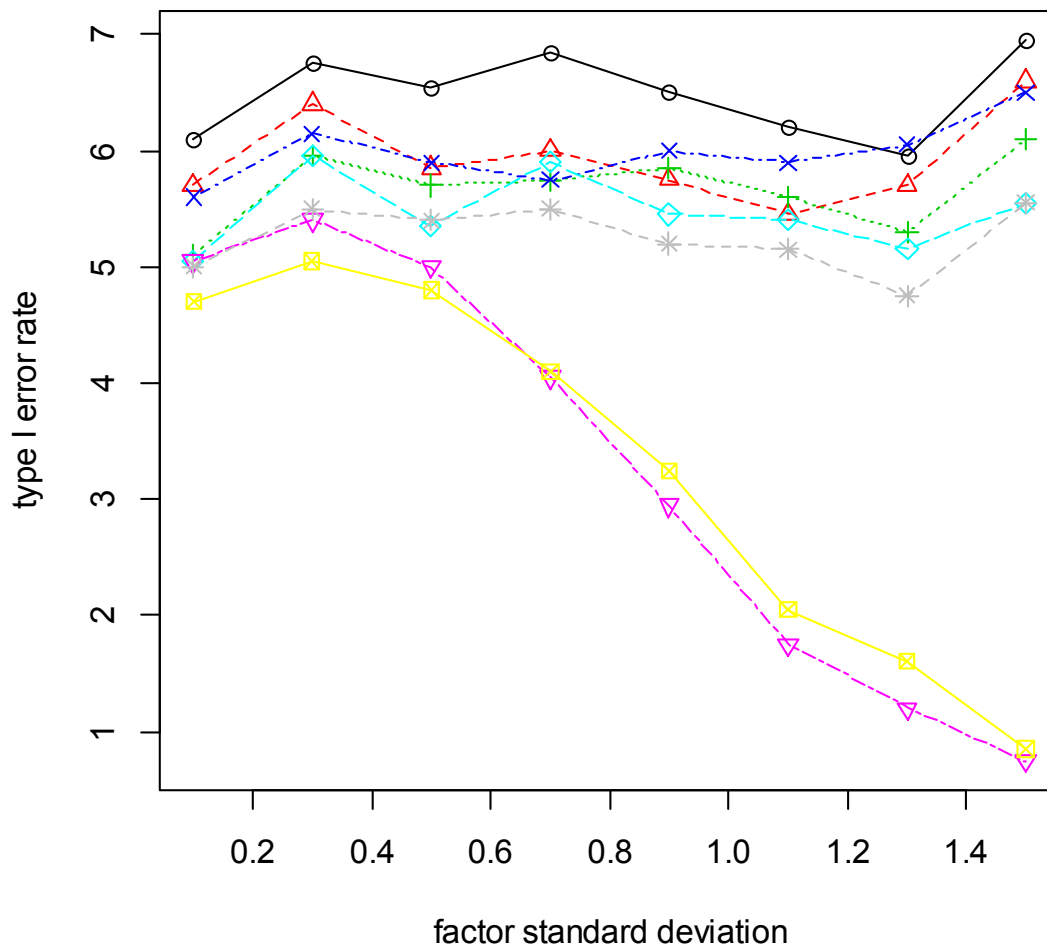
4. 1. 3   normal distribution - unequal variances (on A and B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.80	6.30	5.80	6.05	5.80	5.70	6.05	7.05
RT	5.10	6.10	5.90	6.05	5.90	5.90	6.10	7.00
INT	4.75	5.85	5.60	5.35	5.75	5.70	5.80	6.10
ART	5.80	6.60	6.05	6.60	6.10	6.35	6.50	6.70
ART+INT	5.30	5.95	5.50	5.60	5.85	5.55	5.70	6.30
Puri & Sen	4.65	5.10	4.40	3.70	2.50	1.45	1.25	1.10
v.d.Waerden	4.55	5.30	4.30	3.85	3.30	1.65	1.35	1.00
ATS	4.75	5.45	5.00	5.40	5.30	5.20	5.30	5.95
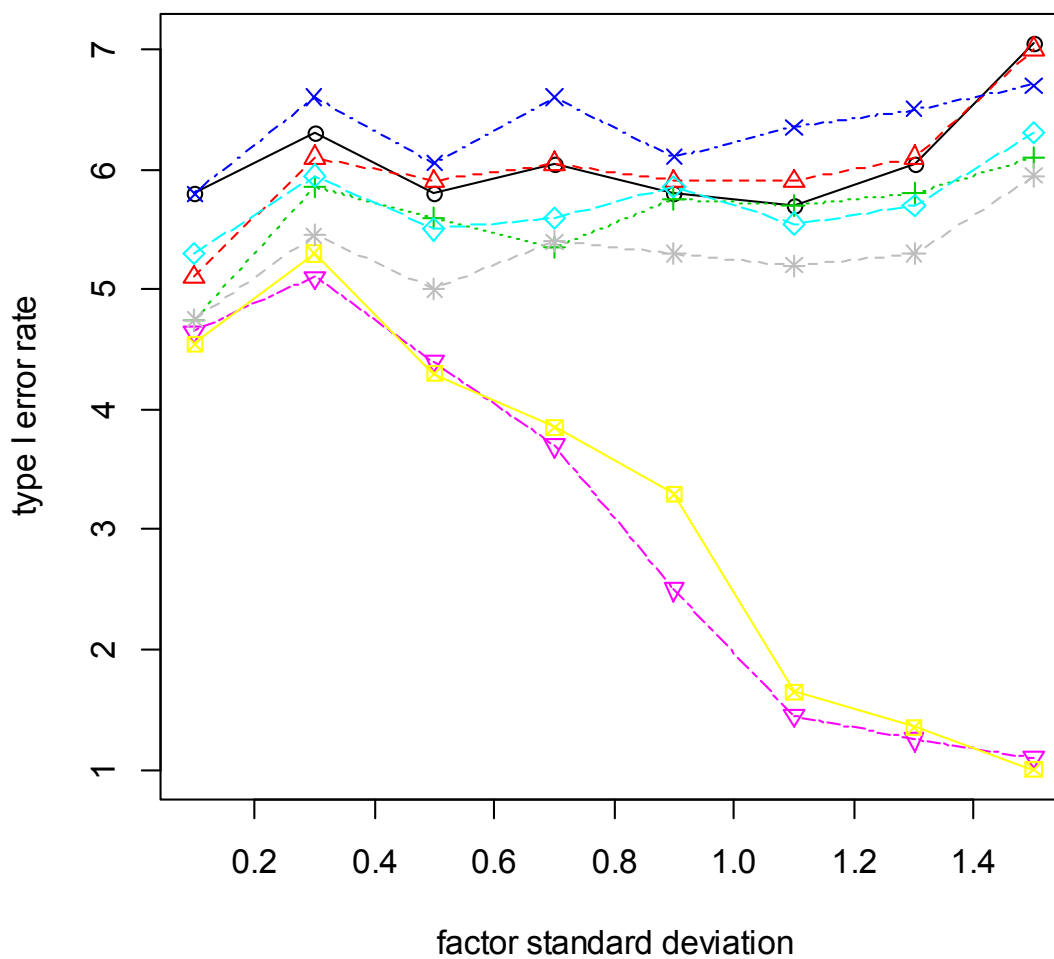
4. 1. 4   right skewed distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.55	5.00	5.00	4.15	4.25	4.55	4.10	5.90
RT	4.60	5.05	5.75	4.25	4.95	4.70	4.50	4.90
INT	5.05	4.80	5.25	4.35	4.70	4.80	4.60	5.20
ART	5.00	5.35	5.20	4.40	4.90	4.50	4.55	5.25
ART+INT	4.10	4.45	5.15	4.20	3.70	4.10	4.25	4.75
Puri & Sen	4.25	4.55	3.95	2.50	1.80	1.25	1.05	0.50
v.d.Waerden	4.30	4.00	3.55	2.30	1.80	1.20	1.00	0.70
ATS	4.20	4.90	5.50	4.05	4.45	4.25	4.15	4.85
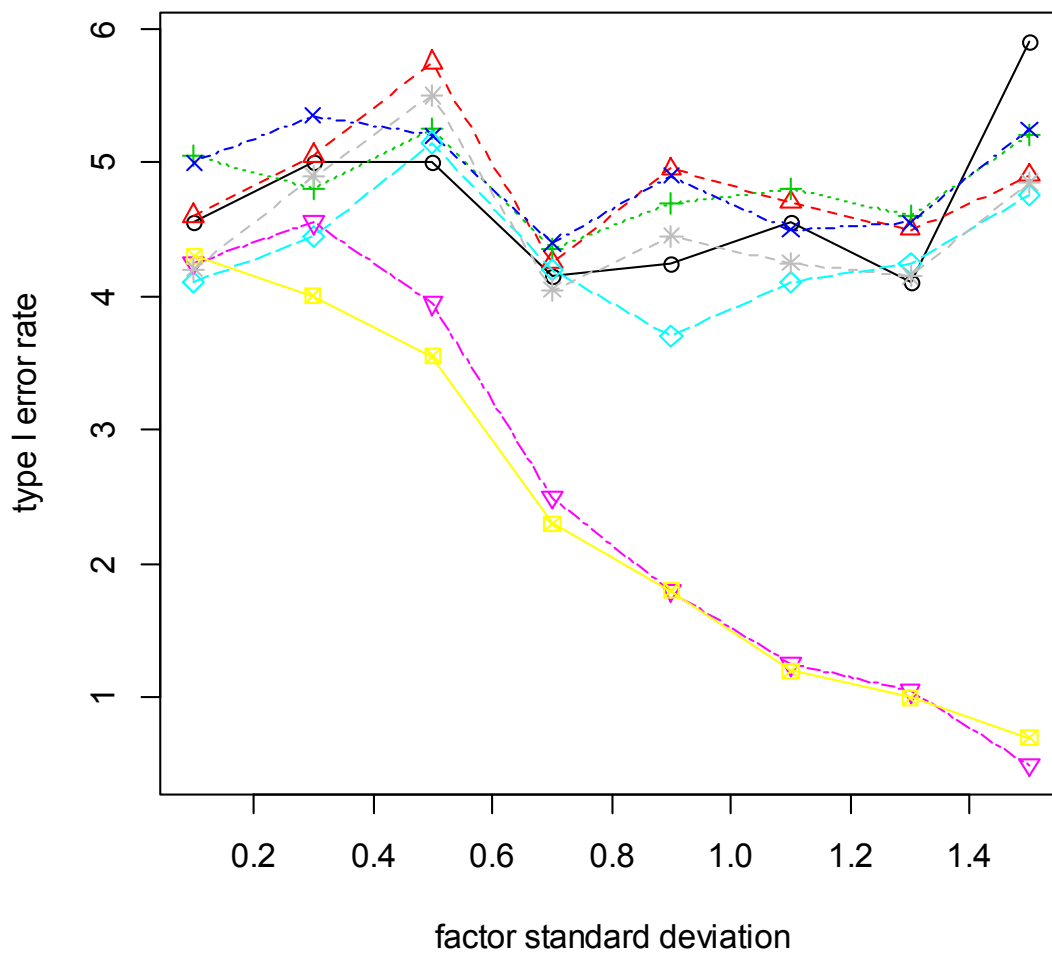
4. 1. 5   exponential distribution - continuous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.65	4.75	3.85	4.25	4.30	4.75	5.35	4.45
RT	4.35	5.90	5.90	5.05	5.95	5.85	5.50	5.20
INT	4.25	5.60	5.55	4.85	5.65	5.55	5.05	5.05
ART	4.90	6.30	7.10	7.45	8.45	9.55	11.05	12.55
ART+INT	3.10	4.10	3.70	3.45	4.20	4.45	5.25	5.30
Puri & Sen	4.15	5.35	5.15	3.90	4.75	3.95	3.15	2.85
v.d.Waerden	3.90	5.00	4.45	3.50	3.85	4.00	3.15	2.65
ATS	4.10	5.50	5.70	4.80	5.60	5.65	5.35	5.15
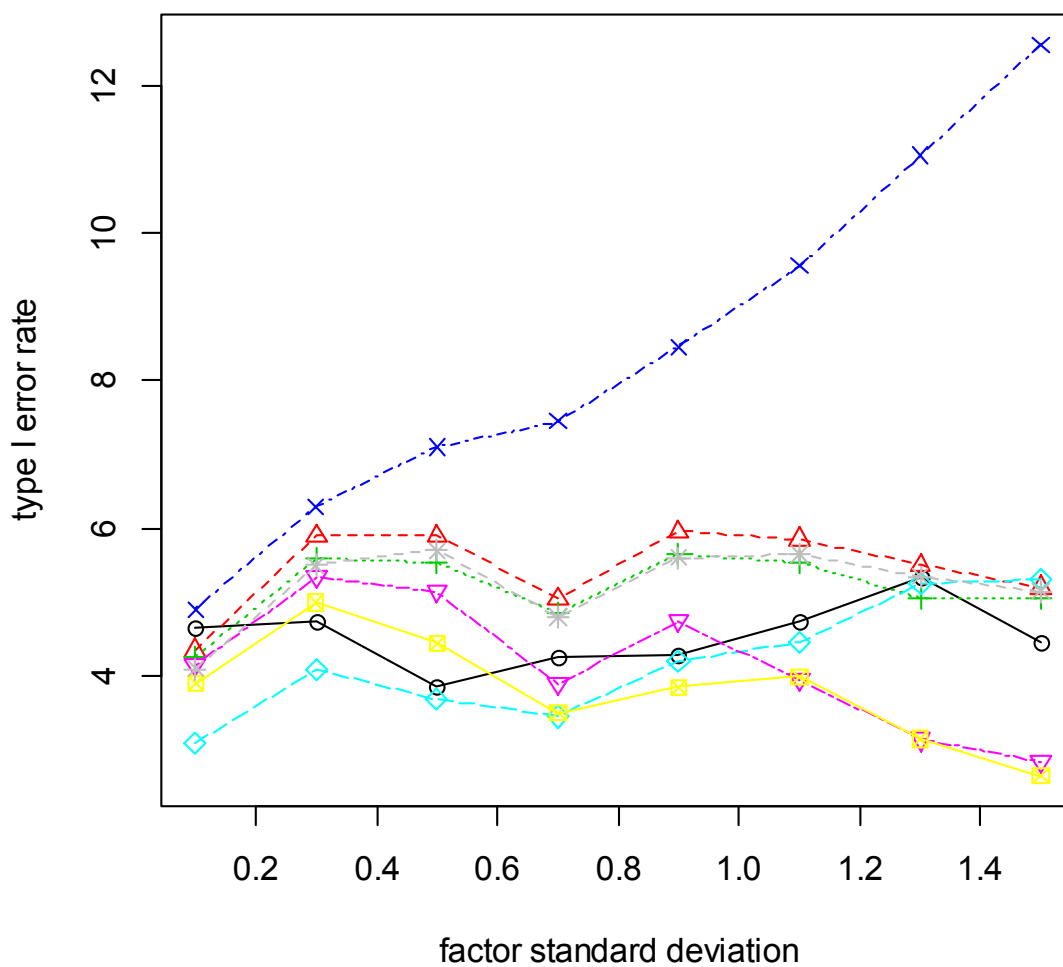
4. 1. 6   exponential distribution - discrete

	factor standard deviation							
method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.70	4.55	4.20	4.05	4.70	4.60	5.35	4.60
RT	4.10	6.20	5.35	4.85	6.10	5.70	5.40	5.20
INT	3.85	5.90	5.25	4.95	5.80	5.75	5.80	5.25
ART	4.75	6.85	7.25	8.05	8.55	9.80	11.55	13.10
ART+INT	2.75	4.10	3.80	3.35	4.45	4.25	5.25	5.50
Puri & Sen	3.80	5.70	4.45	3.85	4.55	3.55	2.90	2.50
v.d.Waerden	3.65	5.35	4.40	3.70	4.05	3.40	3.10	2.20
ATS	3.65	5.90	5.15	4.65	5.75	5.45	5.25	5.05
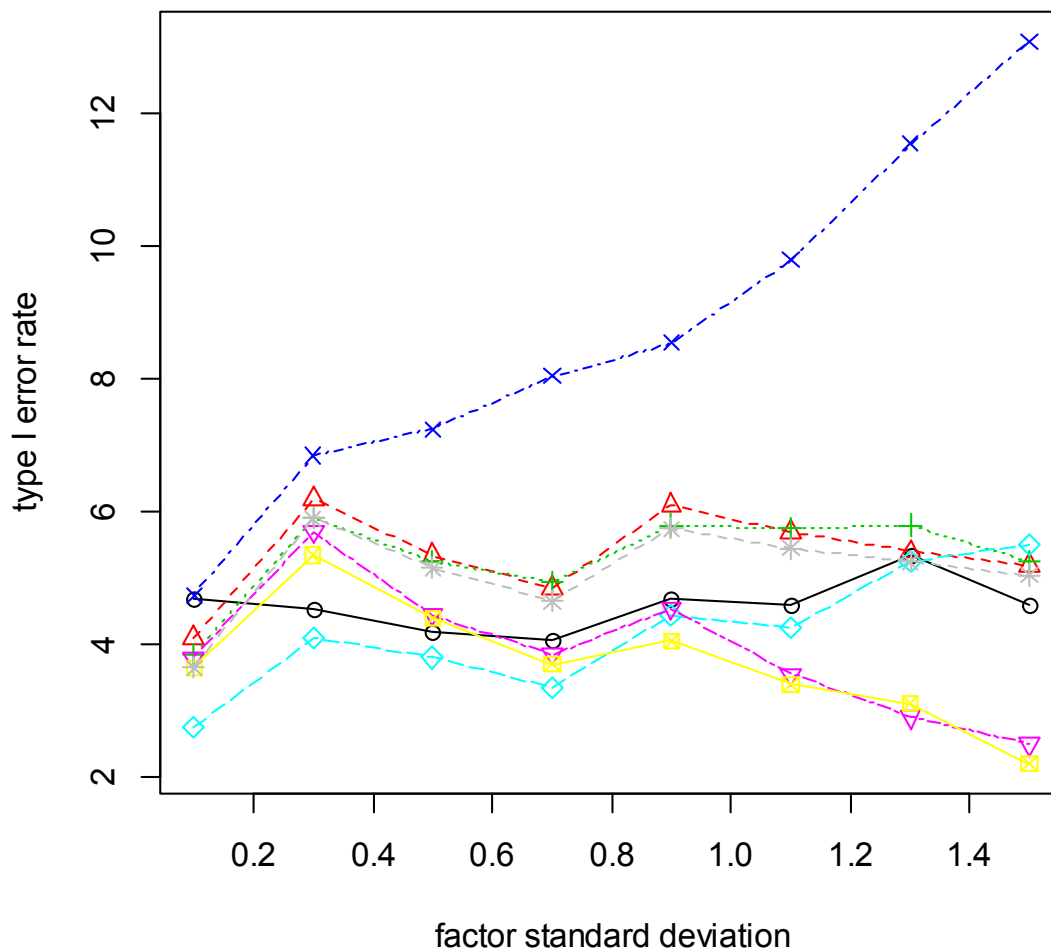
4. 1. 7   lognormal distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.70	4.70	4.75	5.15	5.15	4.55	4.65	5.60
RT	5.30	4.95	5.90	4.85	5.25	4.75	4.60	5.10
INT	5.30	4.85	5.20	4.80	5.25	4.55	4.80	4.90
ART	5.00	4.85	5.45	4.90	5.10	4.70	4.70	5.05
ART+INT	4.85	4.70	4.80	4.55	5.00	4.60	4.70	5.15
Puri & Sen	4.90	4.45	4.20	2.75	2.15	1.15	0.60	0.50
v.d.Waerden	4.90	4.30	3.45	2.80	2.15	1.35	0.85	0.50
ATS	5.05	4.75	5.70	4.55	4.85	4.35	4.35	4.90
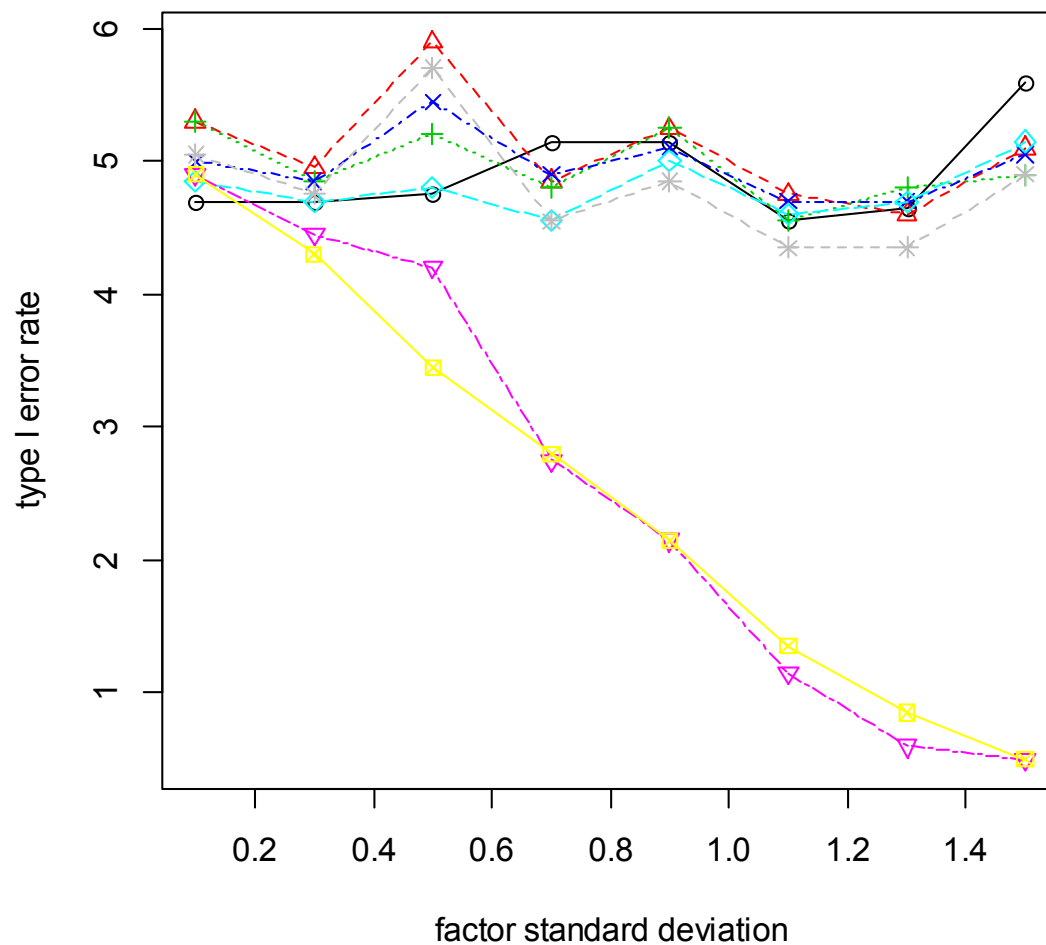
4. 1. 8   uniform distribution - continous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.40	5.25	5.55	4.35	5.05	4.30	4.55	5.35
RT	4.65	5.10	5.65	4.65	4.55	4.70	4.30	5.50
INT	4.55	5.40	5.15	4.55	4.90	4.25	4.45	5.40
ART	4.55	5.35	5.20	4.30	4.85	4.35	4.75	5.50
ART+INT	4.60	5.10	5.30	4.40	4.80	4.35	4.80	5.75
Puri & Sen	4.35	4.70	3.85	2.90	2.30	1.85	1.25	0.55
v.d.Waerden	4.40	4.45	3.60	2.65	1.80	1.70	1.15	0.50
ATS	4.55	4.85	5.45	4.50	4.25	4.40	4.15	5.30
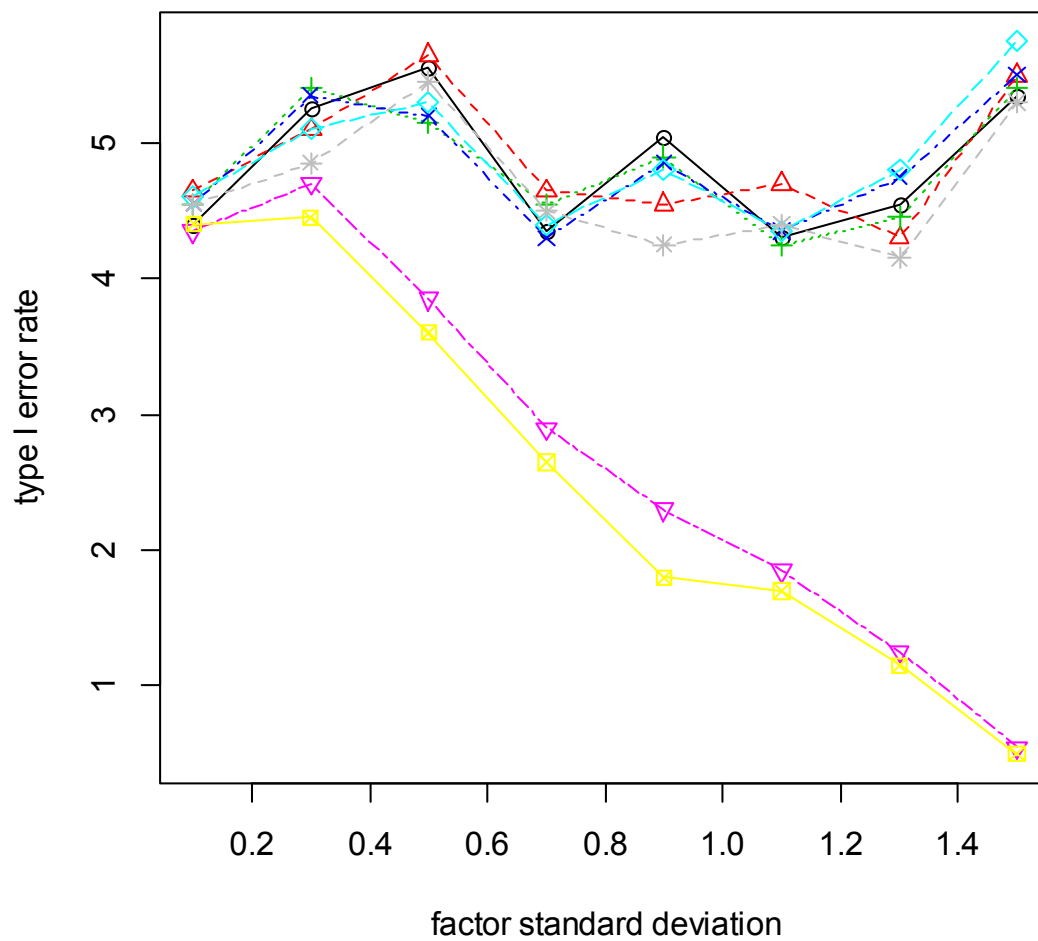
4. 1. 9   uniform distribution - discrete

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.45	5.25	4.80	4.15	4.60	4.20	4.60	5.90
RT	4.35	5.25	5.25	4.15	4.90	4.20	4.60	5.70
INT	4.50	5.15	4.85	4.35	4.70	4.15	4.85	5.85
ART	4.90	5.35	5.20	4.50	4.70	4.35	4.85	6.15
ART+INT	4.25	4.95	4.55	4.45	4.55	4.15	4.65	5.50
Puri & Sen	3.95	4.80	3.70	2.60	1.90	1.45	1.30	0.75
v.d.Waerden	4.05	4.35	3.70	2.30	1.85	1.50	1.20	0.50
ATS	4.30	5.05	5.05	4.10	4.70	4.00	4.40	5.50
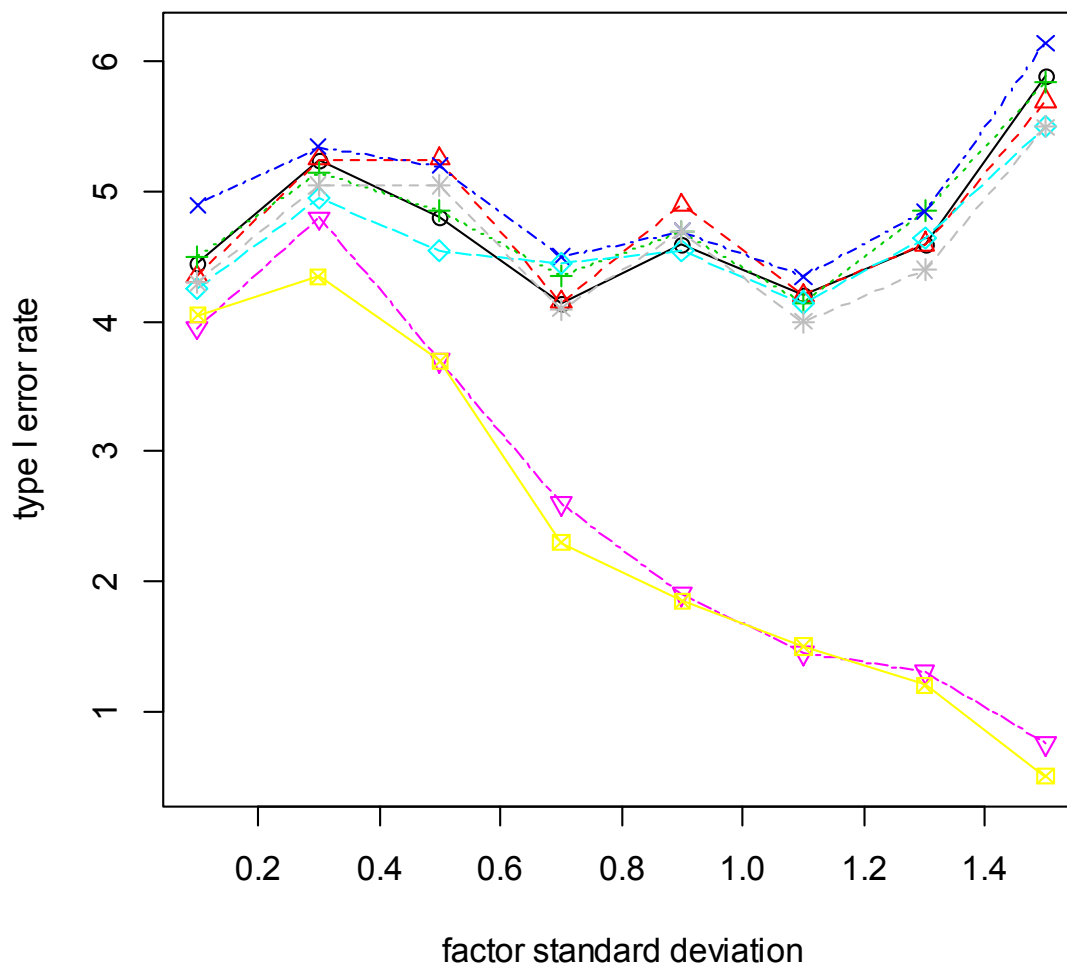
4. 1. 10   left/right skewed distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.45	5.25	5.25	4.30	4.50	4.30	4.15	5.25
RT	4.50	4.40	4.75	3.75	4.15	4.05	4.50	4.70
INT	5.35	5.90	5.55	4.60	5.00	4.90	4.50	5.40
ART	4.50	4.65	4.50	3.80	4.20	4.05	4.30	4.80
ART+INT	4.75	5.80	5.50	4.80	4.80	5.10	4.90	5.80
Puri & Sen	4.05	3.70	3.65	2.15	1.90	1.40	1.40	0.70
v.d.Waerden	4.95	5.10	4.20	2.45	2.35	1.65	1.30	0.70
ATS	4.30	4.20	4.45	3.65	3.90	3.95	4.25	4.60
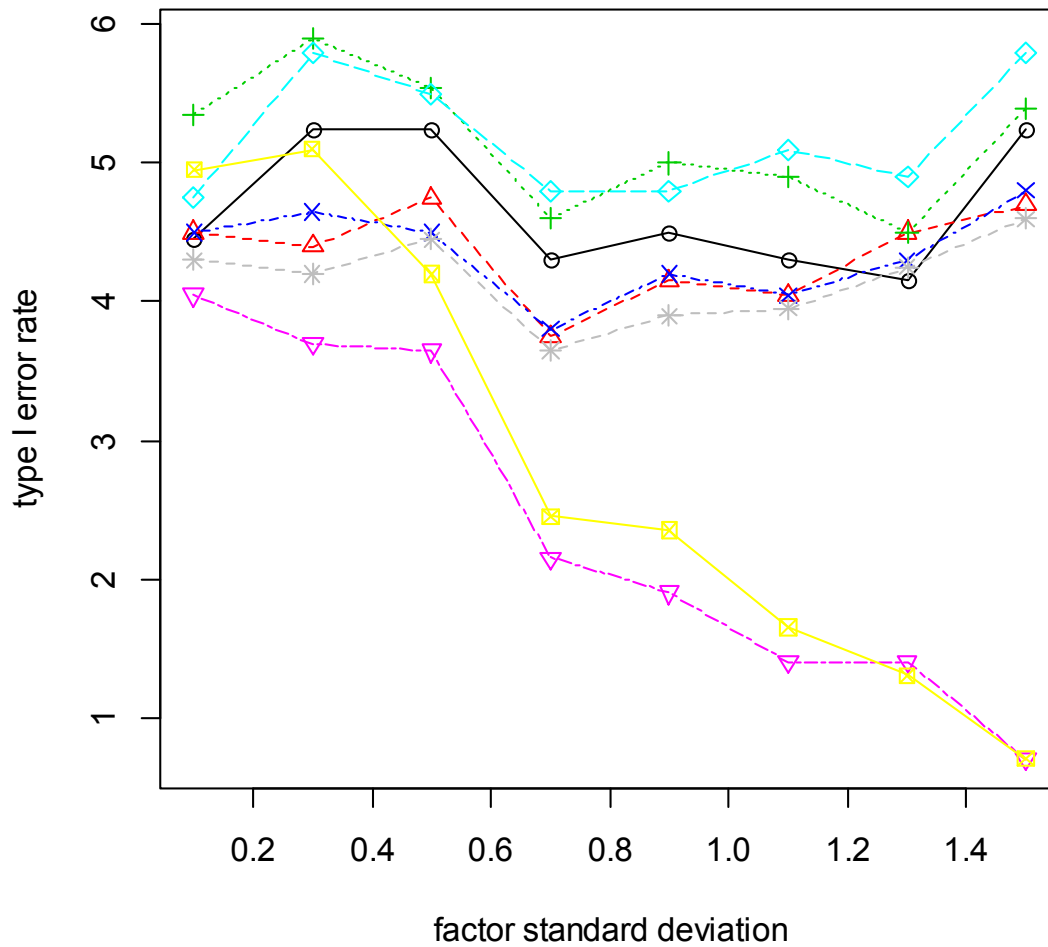
4. 1. 11　left skewed distribution - unequal variances (on B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.20	5.55	5.60	4.90	5.30	4.90	5.20	6.30
RT	5.50	5.35	6.20	5.20	5.25	5.35	5.35	6.45
INT	4.65	5.00	5.30	4.40	4.85	4.75	5.15	6.05
ART	4.95	5.55	5.85	5.05	5.10	5.35	5.30	6.15
ART+INT	4.40	4.65	5.10	4.35	4.60	4.45	4.95	5.65
Puri & Sen	5.05	4.90	4.65	3.20	2.75	1.95	1.25	0.90
v.d.Waerden	4.25	4.30	4.25	2.70	2.40	1.80	1.30	1.05
ATS	4.75	4.75	5.35	4.65	4.45	4.70	4.40	5.65
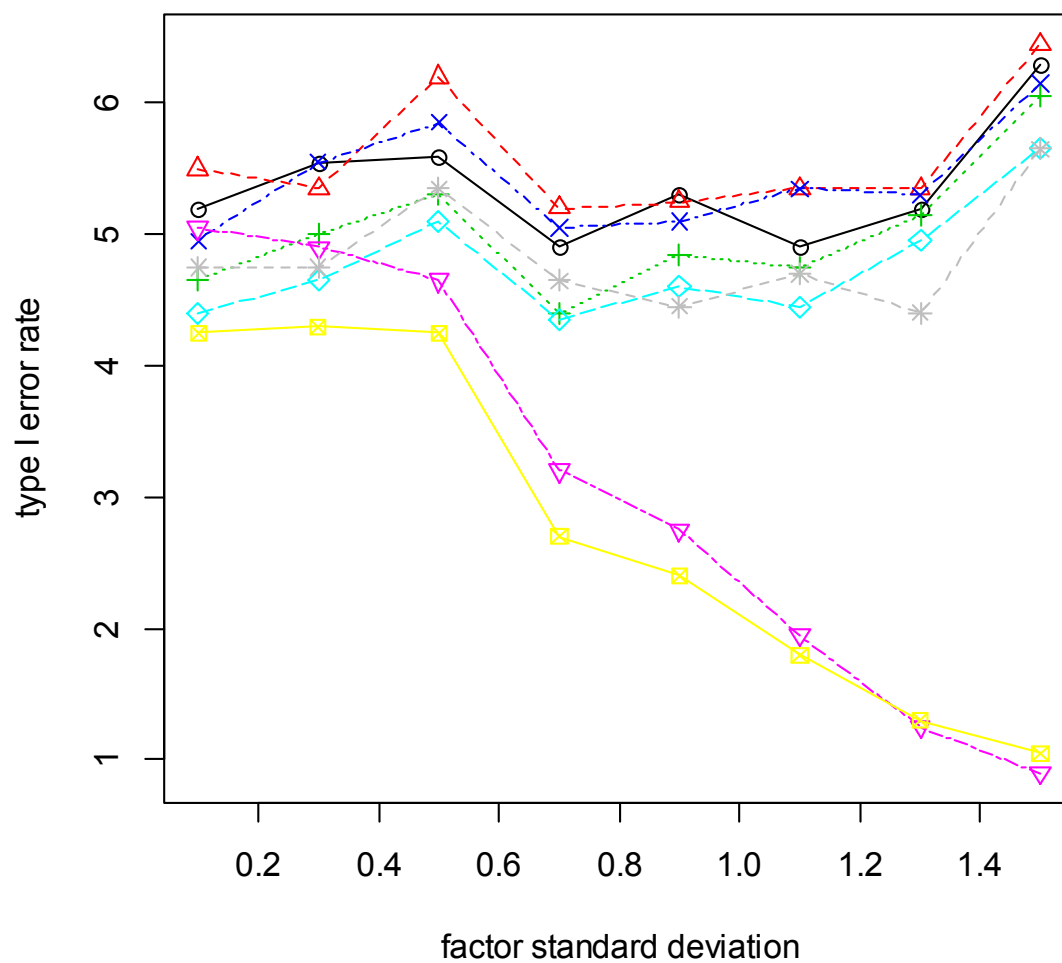
4. 1. 12   left skewed distribution - unequal variances (on A and B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.05	5.90	5.35	5.45	5.40	5.50	5.15	6.55
RT	5.45	4.85	5.80	5.15	5.00	5.45	5.40	6.85
INT	4.95	5.05	5.35	4.70	5.15	4.85	4.85	6.45
ART	5.55	5.80	5.75	5.65	5.85	5.95	5.95	6.40
ART+INT	5.25	5.50	5.15	5.20	5.45	4.95	5.30	5.50
Puri & Sen	4.85	4.40	4.25	2.90	2.45	1.70	1.30	1.10
v.d.Waerden	4.70	4.30	4.25	2.70	2.55	1.95	1.55	1.10
ATS	4.70	4.30	5.05	4.55	4.20	4.55	4.45	6.15
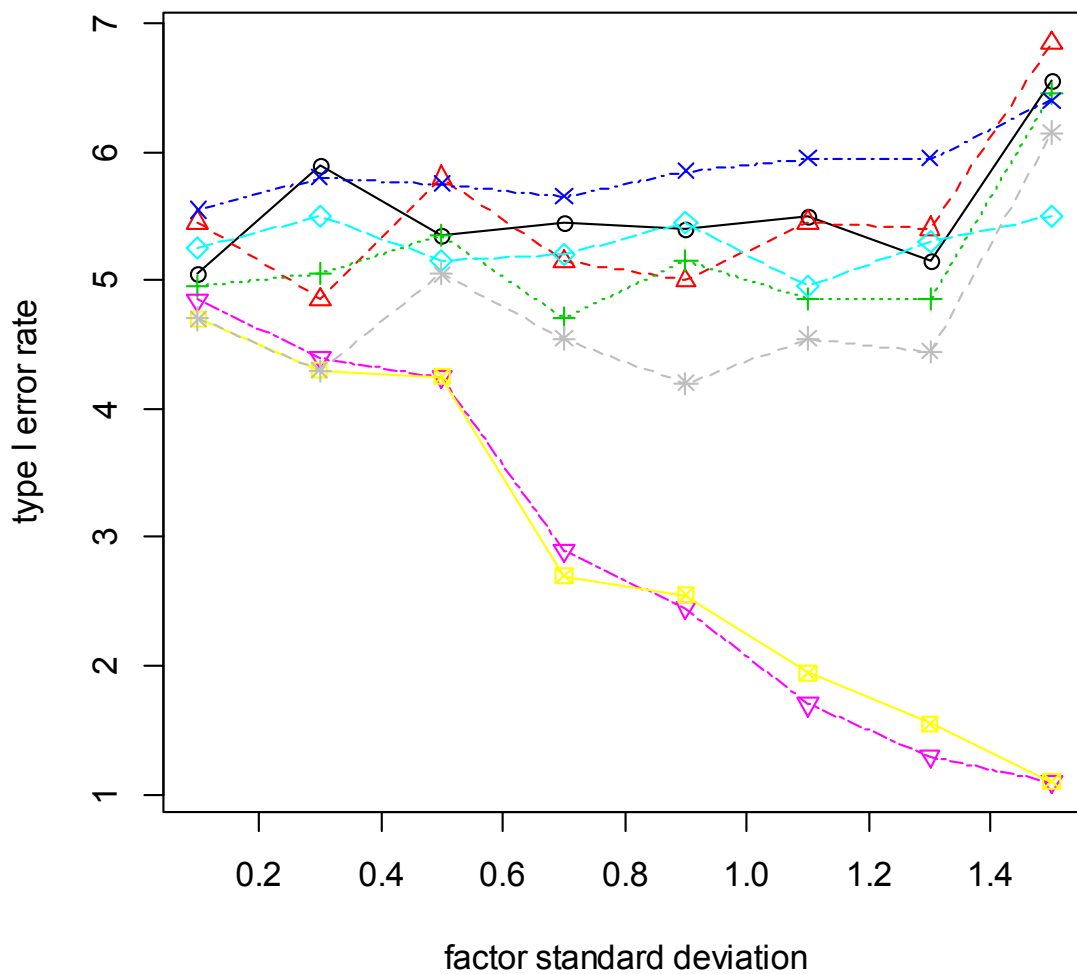
4. 2.   Main effect B - A significant
(unequal $n_i \sim 5$ / # levels = 4*5)

4. 2. 1   normal distribution - equal variances

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.85	4.05	4.70	4.75	5.95	4.75	5.20	4.75
RT	6.00	4.45	4.85	4.75	5.70	4.90	5.55	5.30
INT	5.85	4.10	4.65	4.65	6.15	4.80	5.30	5.05
ART	3.65	2.30	3.60	4.25	6.95	7.90	10.55	12.45
ART+INT	3.70	2.25	3.00	3.90	5.95	6.50	9.95	12.00
Puri & Sen	5.65	3.50	3.95	3.10	2.85	1.75	1.15	1.15
v.d.Waerden	5.35	3.30	3.55	3.20	2.85	1.60	1.15	1.20
ATS	4.90	3.60	3.45	4.05	3.95	4.55	4.80	4.80
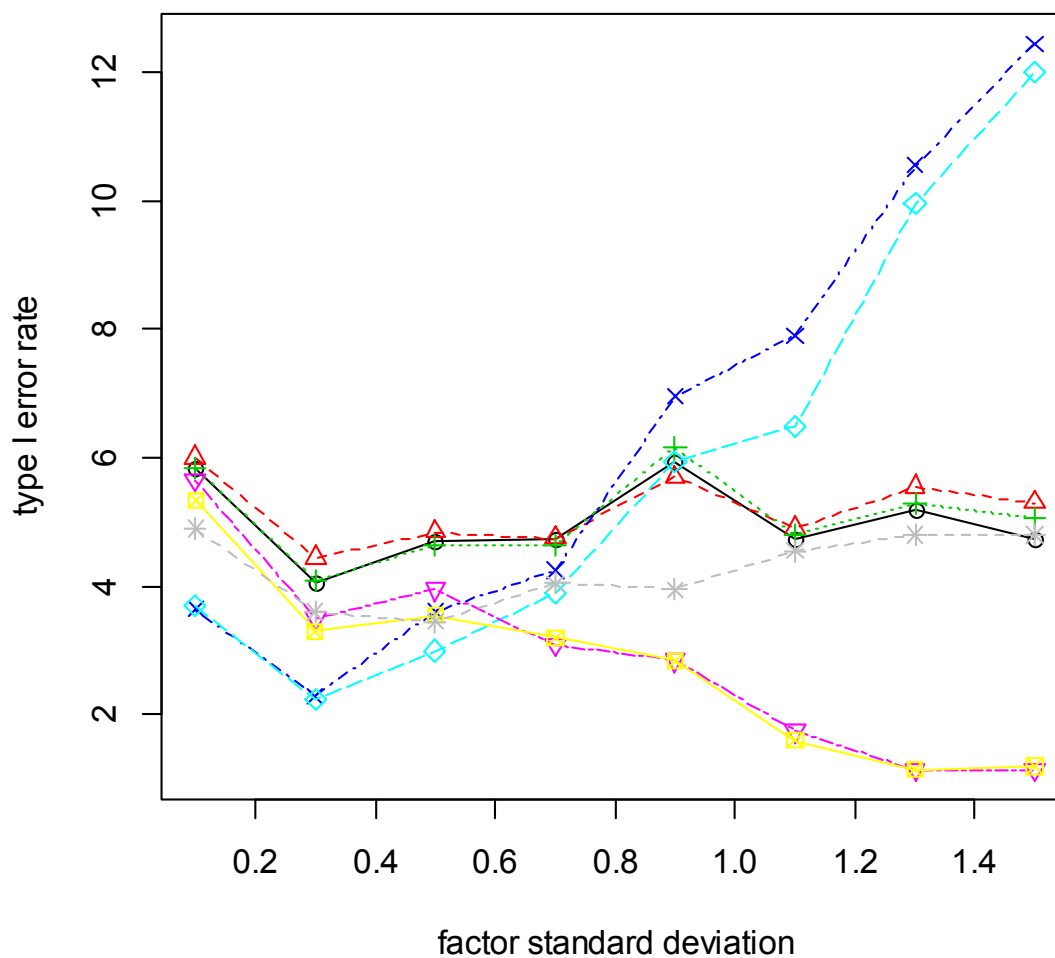
4. 2. 2   normal distribution - unequal variances (on B)

	factor standard deviation							
method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	6.45	5.60	5.15	6.00	6.25	6.20	6.00	6.20
RT	5.70	4.75	4.75	5.05	6.45	5.35	5.75	5.55
INT	5.30	4.85	4.05	4.75	5.80	5.45	5.25	5.40
ART	3.90	3.05	4.00	4.80	7.75	8.55	10.65	14.05
ART+INT	3.60	3.15	3.10	4.30	5.85	7.40	9.00	11.30
Puri & Sen	5.60	4.25	3.75	3.10	3.30	2.30	1.15	1.50
v.d.Waerden	4.95	4.60	3.30	3.10	3.00	2.20	1.20	1.25
ATS	4.25	3.90	3.80	3.75	4.40	4.50	4.30	4.60
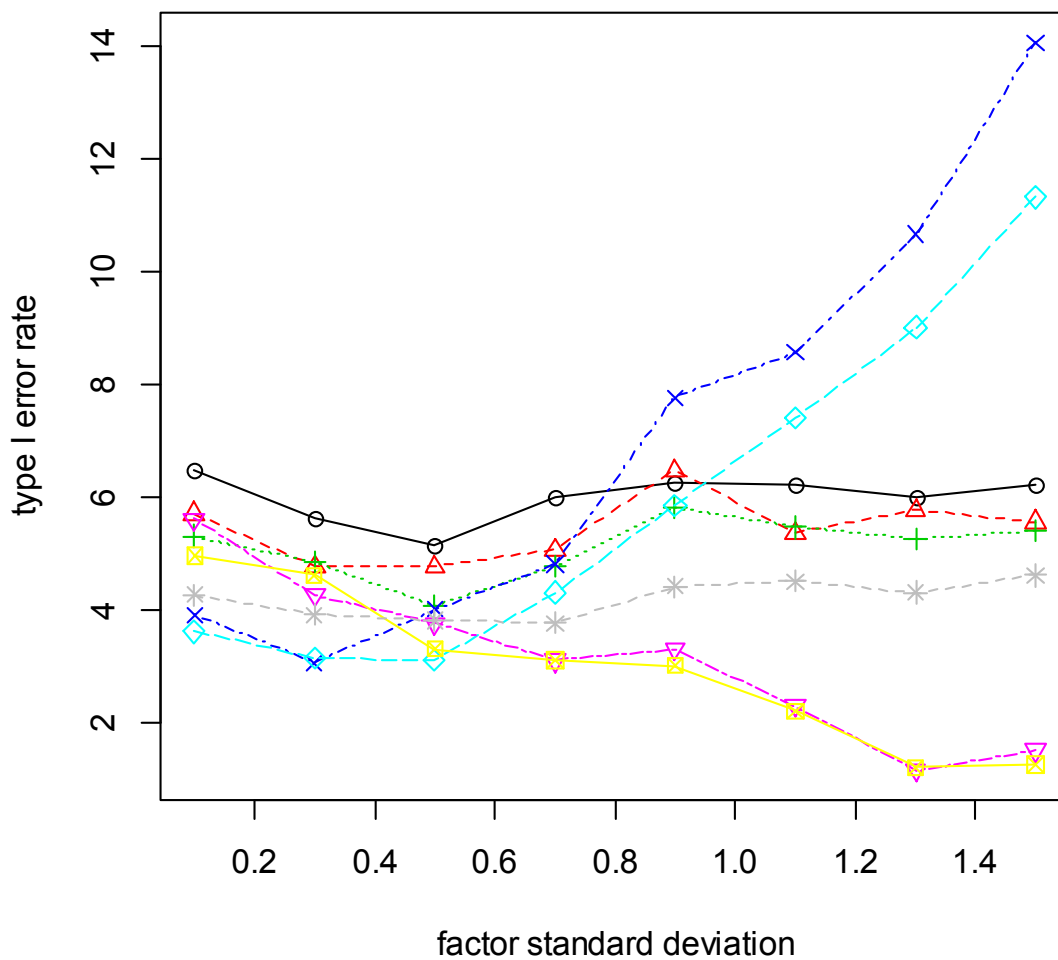
4. 2. 3   normal distribution - unequal variances (on A and B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	7.85	6.35	6.35	6.95	7.50	7.10	7.15	7.90
RT	6.25	4.90	5.35	5.30	6.30	5.95	6.75	7.15
INT	7.10	5.35	5.15	5.85	7.10	5.70	6.15	6.80
ART	4.70	3.60	4.60	5.70	8.25	9.80	12.25	14.85
ART+INT	4.50	3.05	3.70	4.75	6.95	7.90	9.90	12.35
Puri & Sen	5.75	4.15	3.95	3.45	3.45	2.70	1.70	1.50
v.d.Waerden	6.55	4.35	4.10	3.60	3.65	2.50	1.80	1.60
ATS	4.60	3.55	3.20	3.70	4.00	4.20	4.45	4.20
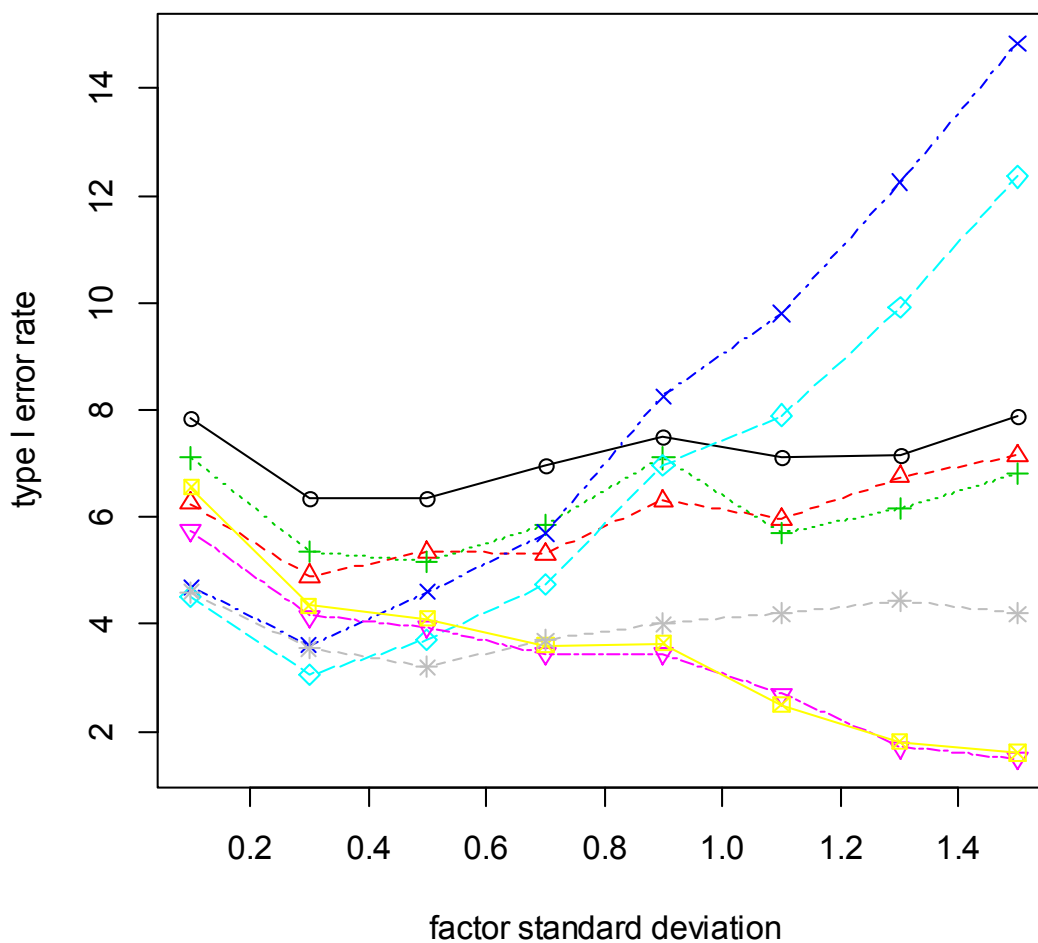
4. 2. 4   right skewed distribution

	factor standard deviation							
method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.30	5.35	5.90	5.15	5.10	5.15	5.05	4.95
RT	5.60	5.15	5.65	5.35	5.10	6.15	5.70	5.45
INT	5.85	5.30	5.80	5.75	4.95	5.85	5.65	5.10
ART	3.20	3.30	4.05	4.95	6.65	8.45	11.95	15.00
ART+INT	2.60	2.55	3.40	4.40	5.60	7.40	10.90	14.30
Puri & Sen	5.05	4.75	4.15	3.15	2.60	1.70	2.00	0.85
v.d.Waerden	5.30	4.30	3.75	2.90	2.75	1.75	1.95	0.80
ATS	4.40	4.55	5.45	4.60	4.70	4.60	5.10	4.20
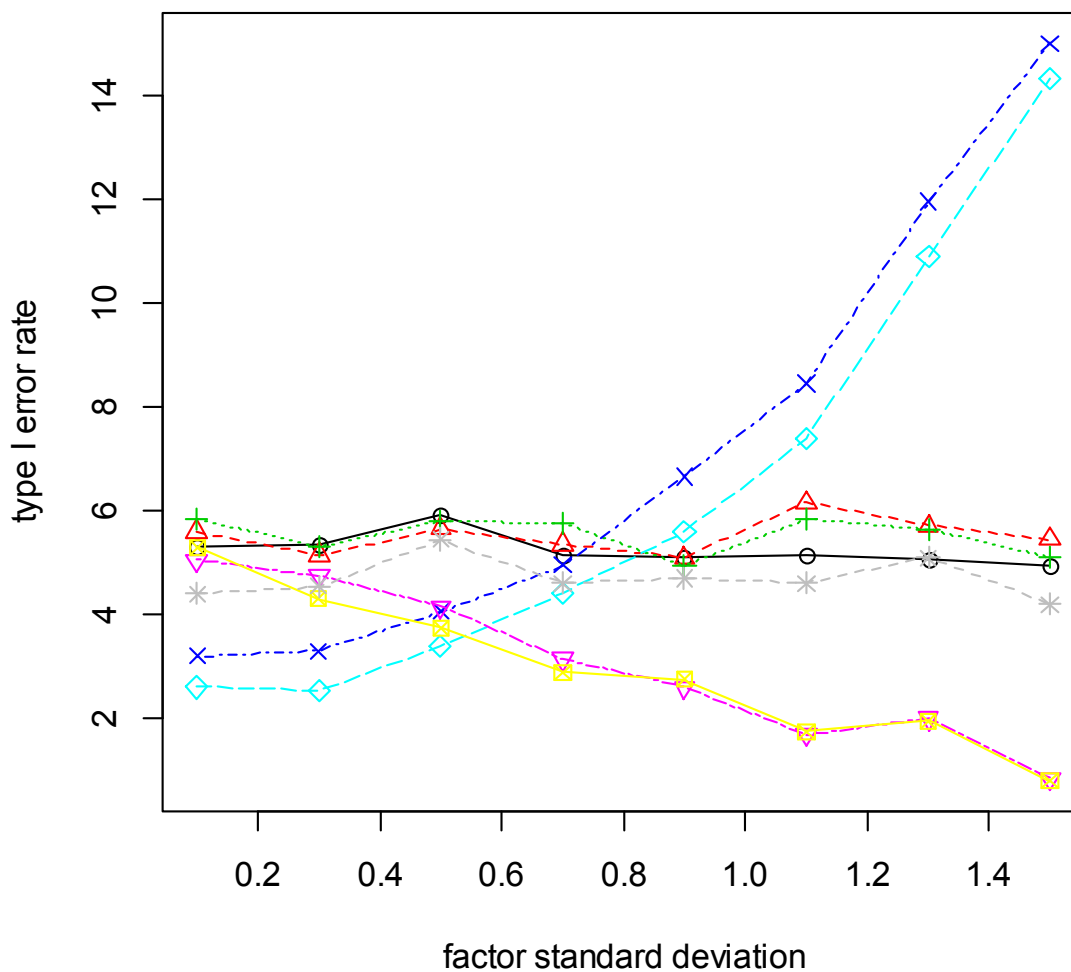
4. 2. 5   exponential distribution - continous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.30	4.90	4.25	4.05	3.20	3.20	2.60	3.60
RT	5.10	4.90	4.55	4.85	3.85	3.55	4.10	4.75
INT	5.60	5.15	4.70	4.80	3.85	3.50	4.10	4.50
ART	5.00	5.35	6.35	7.55	7.70	9.80	11.25	13.85
ART+INT	2.20	2.25	3.00	3.30	3.05	3.90	5.65	6.30
Puri & Sen	4.70	4.75	3.80	3.60	2.80	1.95	2.30	2.20
v.d.Waerden	4.95	4.60	3.85	3.50	2.80	2.10	2.00	2.50
ATS	4.85	4.65	4.75	4.00	4.50	4.20	4.35	4.55
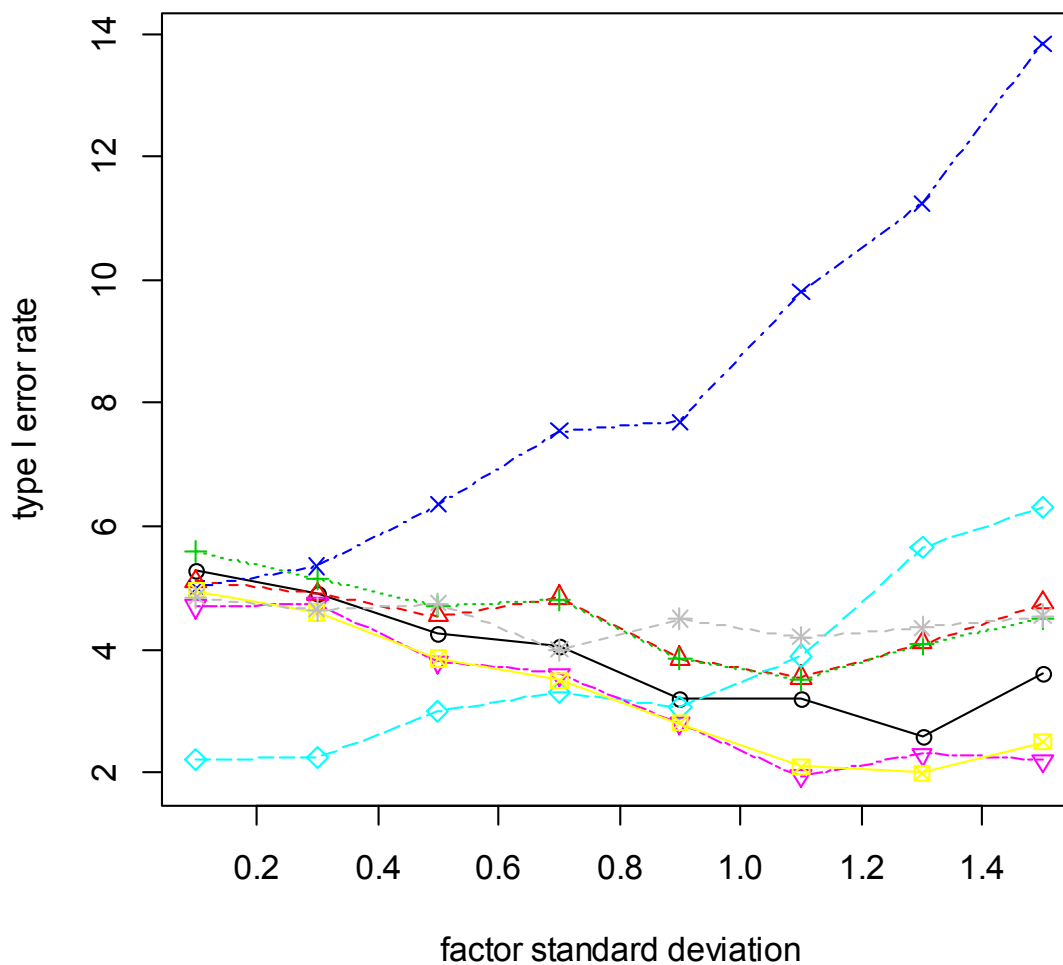
4. 2. 6   exponential distribution - discrete

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.30	4.55	4.05	4.00	3.15	3.25	2.70	3.60
RT	5.35	4.55	4.65	4.50	3.50	3.60	4.25	4.20
INT	5.40	4.40	4.15	4.55	3.45	3.70	3.35	4.10
ART	5.20	5.70	6.55	7.65	8.40	10.30	11.80	13.90
ART+INT	2.10	2.60	2.90	3.15	3.25	4.20	5.15	5.95
Puri & Sen	4.95	4.25	3.45	3.35	2.55	2.55	2.15	1.85
v.d.Waerden	5.00	4.00	3.25	3.30	2.45	2.05	2.00	1.80
ATS	4.50	4.95	4.90	4.10	4.20	3.90	4.15	4.30
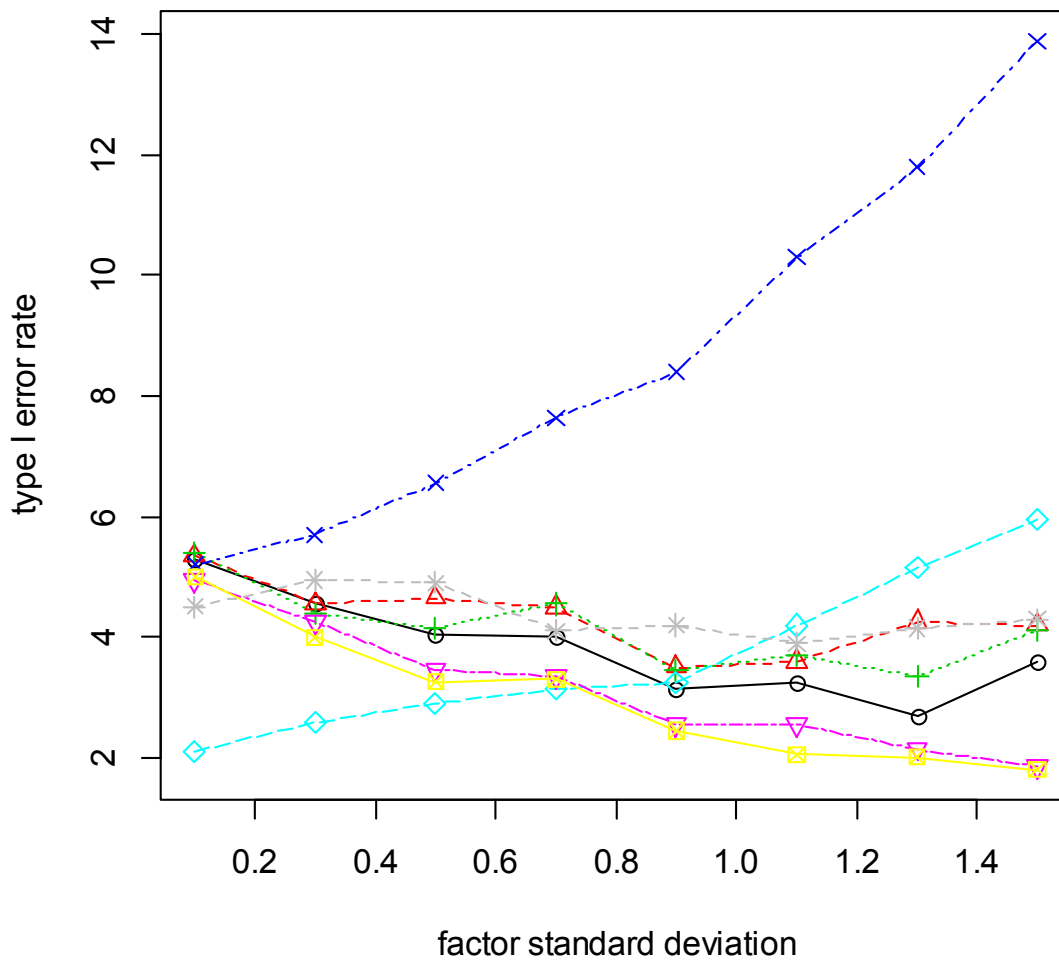
4. 2. 7 lognormal distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.65	5.70	4.90	5.35	6.10	4.85	5.30	6.00
RT	4.20	5.20	4.70	5.60	6.25	5.15	6.05	6.20
INT	4.35	5.20	5.15	5.80	6.15	5.30	5.90	5.90
ART	3.20	3.70	3.50	4.10	5.90	5.70	7.05	9.75
ART+INT	2.50	3.05	3.15	3.70	4.85	4.75	6.15	8.55
Puri & Sen	4.05	4.15	3.40	3.70	2.45	1.10	1.20	0.30
v.d.Waerden	3.95	4.55	3.85	3.75	2.45	1.45	1.20	0.50
ATS	3.95	4.40	4.80	4.15	4.55	4.05	4.60	4.15
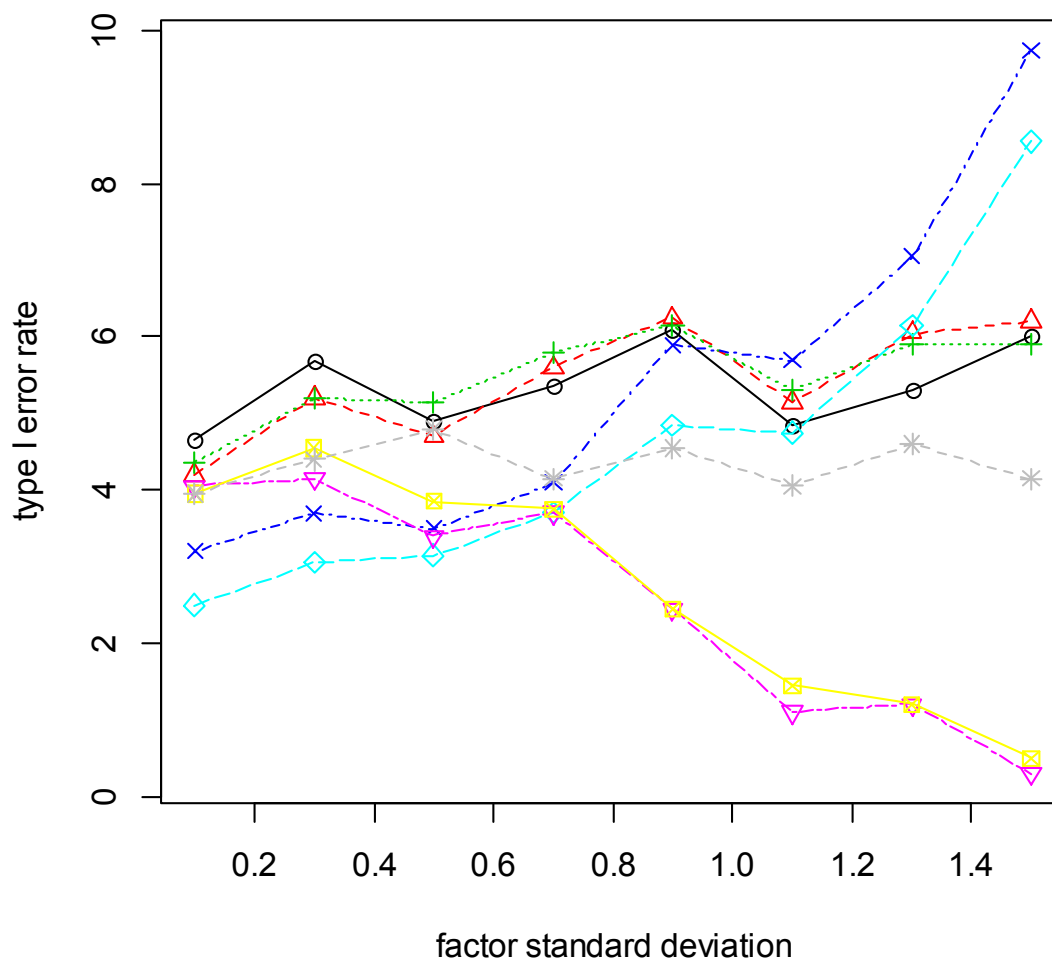
4. 2. 8   uniform distribution - continous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.45	4.90	4.95	4.90	4.85	5.35	5.10	5.05
RT	5.55	5.15	5.30	4.80	5.15	5.35	5.70	4.80
INT	5.70	5.45	5.65	4.90	4.65	5.25	5.10	5.25
ART	3.20	2.70	3.50	4.60	4.95	7.70	8.65	10.60
ART+INT	2.85	2.55	3.15	4.70	5.15	8.05	9.75	11.70
Puri & Sen	5.05	4.70	4.10	3.40	2.80	2.20	1.50	1.45
v.d.Waerden	5.10	4.55	3.90	3.20	2.35	1.85	1.20	1.15
ATS	4.60	4.50	5.15	4.55	4.35	4.60	4.90	4.55
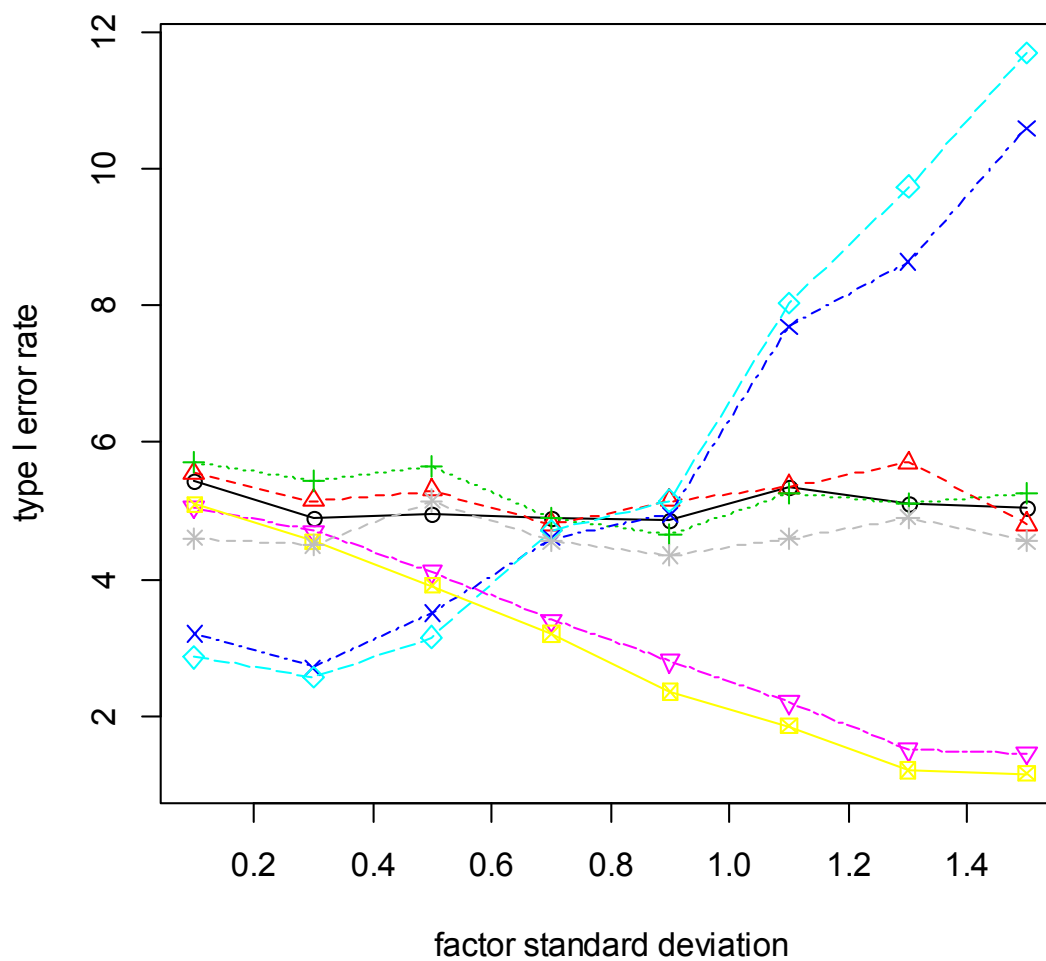
4. 2. 9   uniform distribution - discrete

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.35	5.65	5.35	5.35	5.10	5.40	5.35	5.10
RT	5.25	5.70	5.55	5.35	5.10	5.25	5.55	4.85
INT	5.30	5.35	5.25	5.10	5.20	5.70	5.30	5.00
ART	2.85	3.15	3.65	4.30	5.45	8.20	9.55	10.55
ART+INT	3.25	2.90	3.65	5.25	5.70	7.60	10.75	12.40
Puri & Sen	4.95	5.00	4.20	3.25	2.95	2.30	1.55	1.40
v.d.Waerden	5.10	4.95	3.60	2.95	2.35	1.65	1.10	1.00
ATS	4.70	4.35	5.65	4.85	4.60	4.65	5.15	4.40
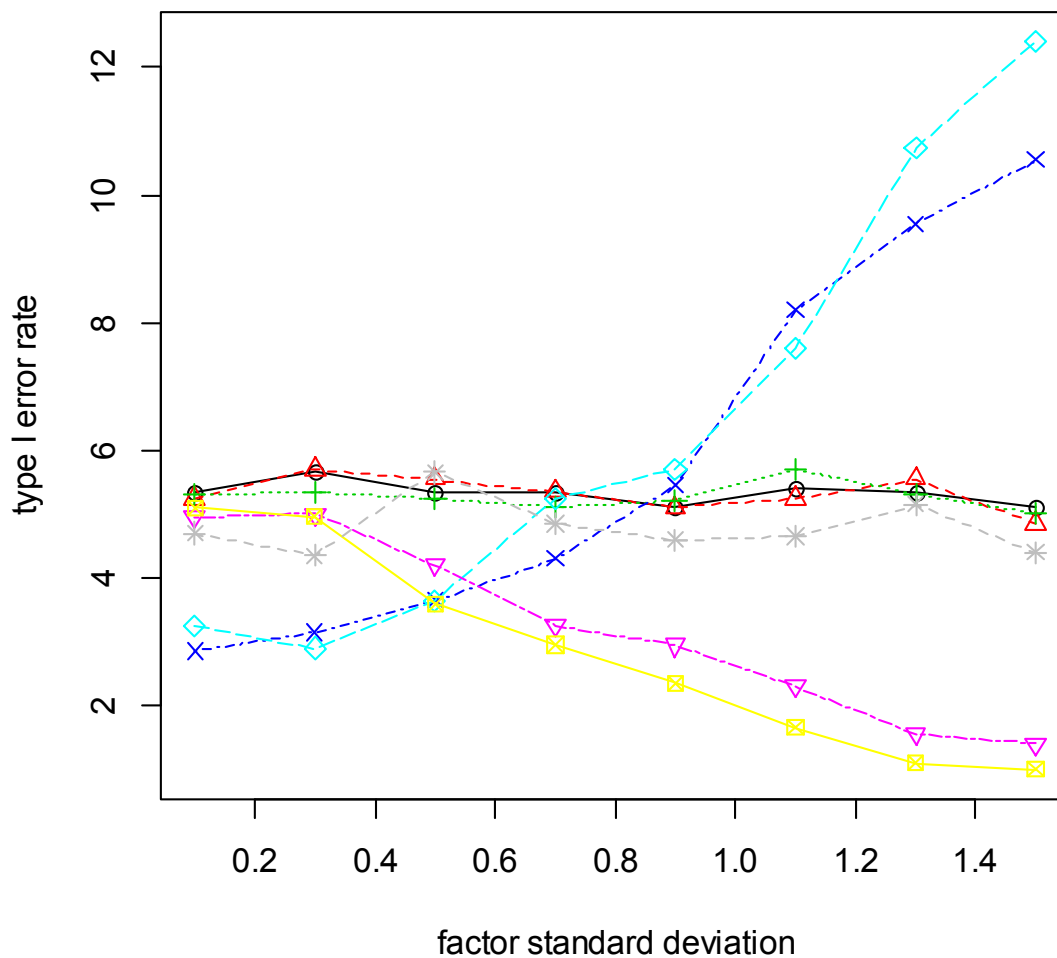
4. 2. 10   left/right skewed distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.30	4.75	5.50	5.10	5.05	5.35	5.15	5.50
RT	5.25	4.45	4.35	4.40	4.35	4.90	4.90	4.95
INT	6.70	5.95	6.20	5.80	5.85	6.25	5.95	6.25
ART	2.95	2.60	3.40	4.30	5.05	8.25	8.20	10.40
ART+INT	2.95	2.50	3.30	4.65	5.00	8.00	8.80	11.35
Puri & Sen	4.60	3.95	3.25	3.00	2.25	1.85	1.55	1.05
v.d.Waerden	6.00	5.00	5.00	3.60	2.70	2.15	1.60	1.10
ATS	4.25	3.80	5.00	4.00	3.80	4.05	5.05	4.15
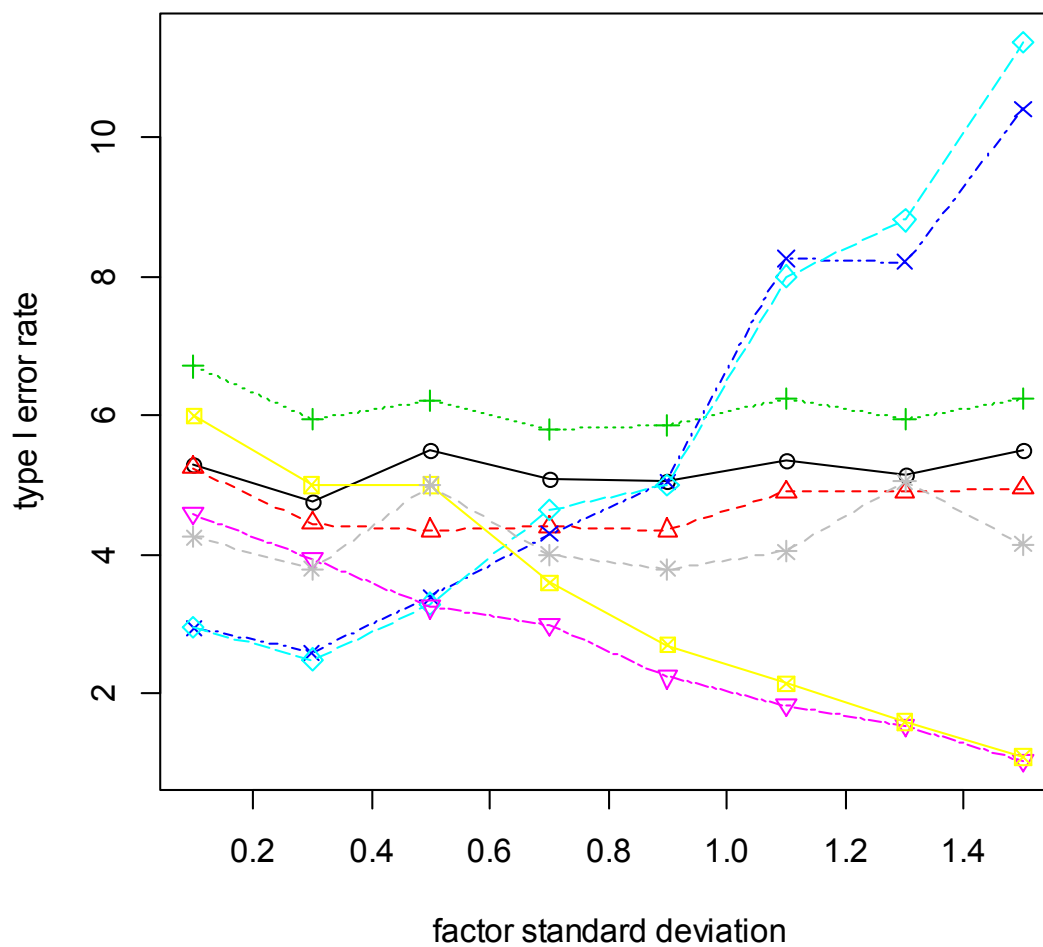
4. 2. 11   left skewed distribution - unequal variances (on B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	6.10	5.55	5.35	5.90	5.10	5.50	4.65	6.15
RT	6.25	5.20	5.90	6.10	4.80	5.50	5.40	6.20
INT	5.90	5.05	5.05	5.45	4.75	5.10	4.75	5.70
ART	3.05	3.00	3.20	4.10	4.45	5.75	7.10	9.00
ART+INT	2.85	2.55	2.75	3.75	3.35	4.40	5.70	7.75
Puri & Sen	5.90	4.80	4.65	4.40	2.85	2.40	1.80	1.30
v.d.Waerden	5.90	4.60	4.15	4.05	3.00	2.20	1.75	1.40
ATS	3.95	4.10	5.00	4.30	3.90	4.40	4.50	4.90
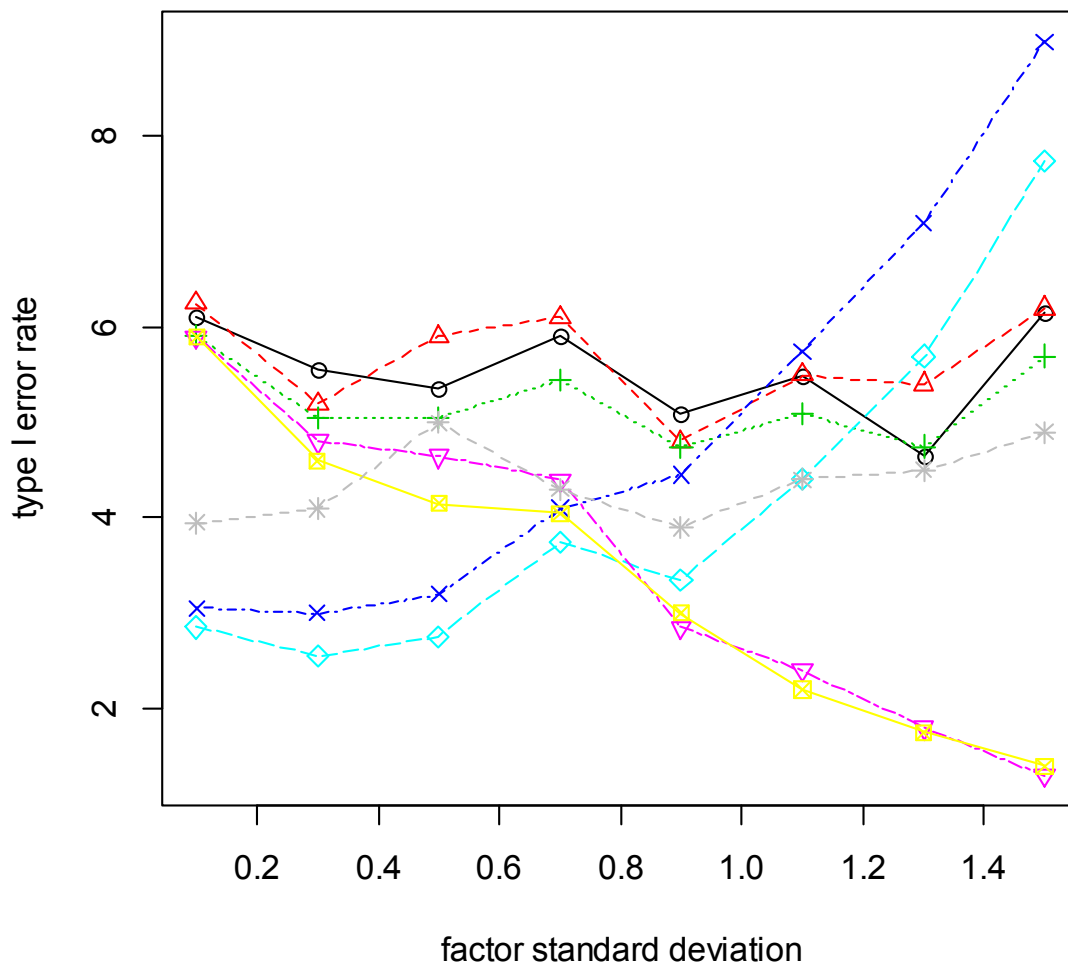
4. 2. 12   left skewed distribution - unequal variances (on A and B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	8.50	7.05	7.55	7.70	7.15	7.15	7.10	7.65
RT	6.20	5.45	5.15	5.65	5.25	6.05	6.20	6.30
INT	7.10	6.30	6.05	6.80	5.85	6.20	5.80	6.20
ART	4.00	3.75	3.90	6.00	5.55	8.10	10.50	11.10
ART+INT	3.45	3.30	3.00	4.95	4.95	6.80	8.65	10.60
Puri & Sen	5.65	4.75	3.80	3.60	2.90	2.55	2.20	2.05
v.d.Waerden	6.20	5.40	4.60	4.10	3.15	2.45	2.20	1.80
ATS	3.75	4.30	4.65	4.05	3.85	4.00	4.95	4.25
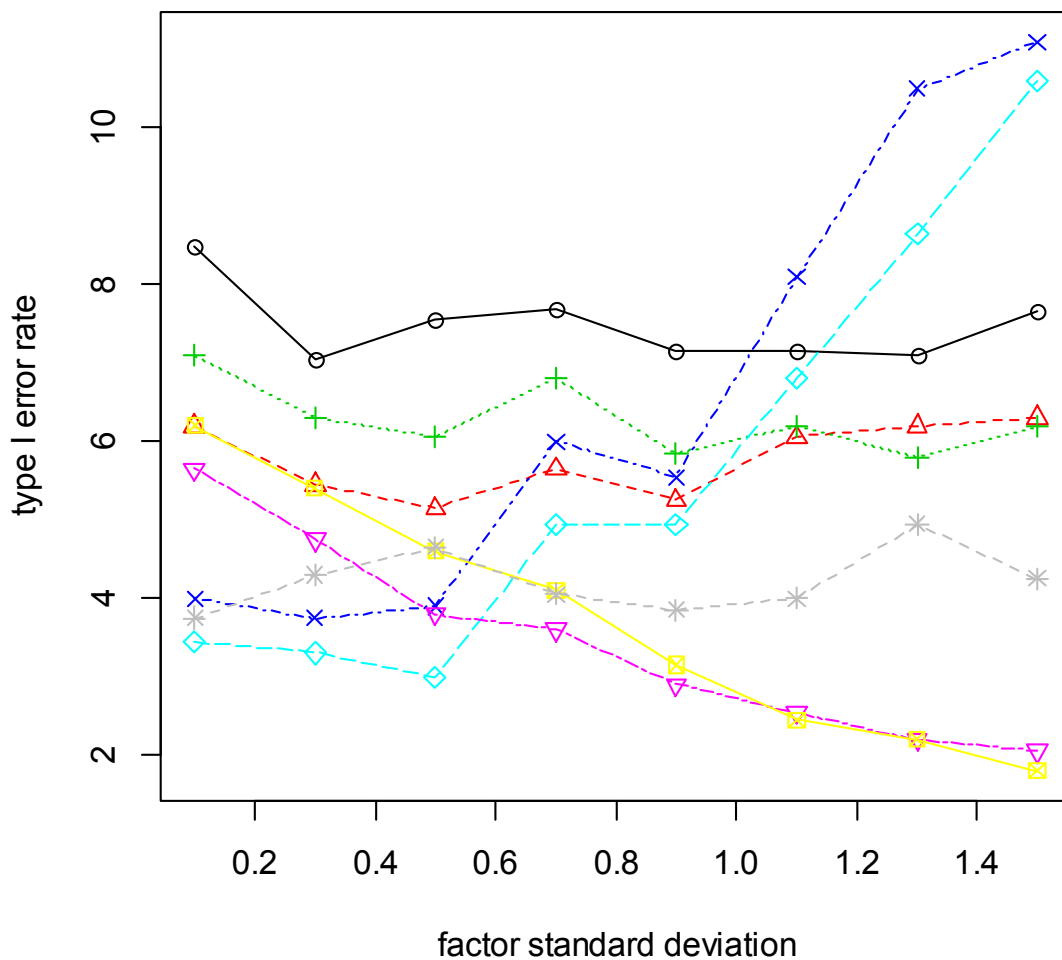
4. 2. 13   normal distribution - unequal variances (small $n_i \sim$ small s_i)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	1.30	1.00	1.25	1.25	1.20	1.05	0.95	1.20
RT	2.40	1.60	1.80	2.05	2.05	2.20	2.00	2.15
INT	1.25	1.20	1.35	1.35	1.70	1.25	1.25	1.55
ART	5.10	4.15	5.10	6.30	9.35	11.10	14.35	16.85
ART+INT	3.10	2.30	3.25	4.35	6.05	6.85	9.70	12.75
Puri & Sen	2.15	1.50	1.25	1.20	1.30	0.40	0.30	0.45
v.d.Waerden	1.45	0.90	1.15	0.90	0.70	0.20	0.15	0.25
ATS	4.95	3.60	3.55	3.95	4.65	4.15	4.65	4.30
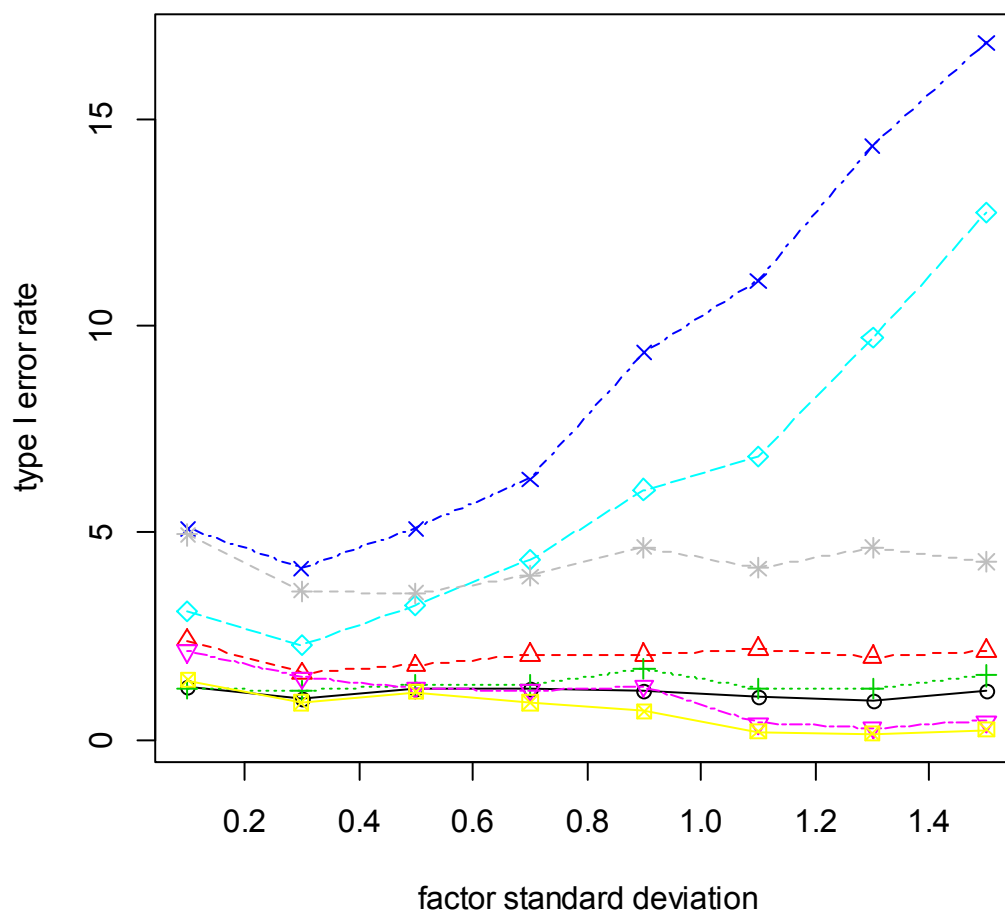
4. 2. 14   normal distribution - unequal variances (small n_i ~ large s_i)

	factor standard deviation							
method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	19.65	18.80	17.20	17.15	20.30	19.60	19.95	20.00
RT	10.75	9.20	9.25	10.10	12.60	13.05	14.75	13.95
INT	15.00	14.45	13.65	14.30	16.45	16.15	17.20	17.30
ART	4.70	3.45	4.55	4.95	7.35	9.30	11.60	13.30
ART+INT	4.60	3.25	3.90	5.15	7.70	8.80	12.05	13.45
Puri & Sen	9.65	7.80	7.40	6.25	7.10	5.00	4.35	3.45
v.d.Waerden	13.25	11.95	10.30	9.45	9.85	7.00	5.50	4.85
ATS	4.95	4.50	3.80	4.40	4.95	5.05	6.05	5.80
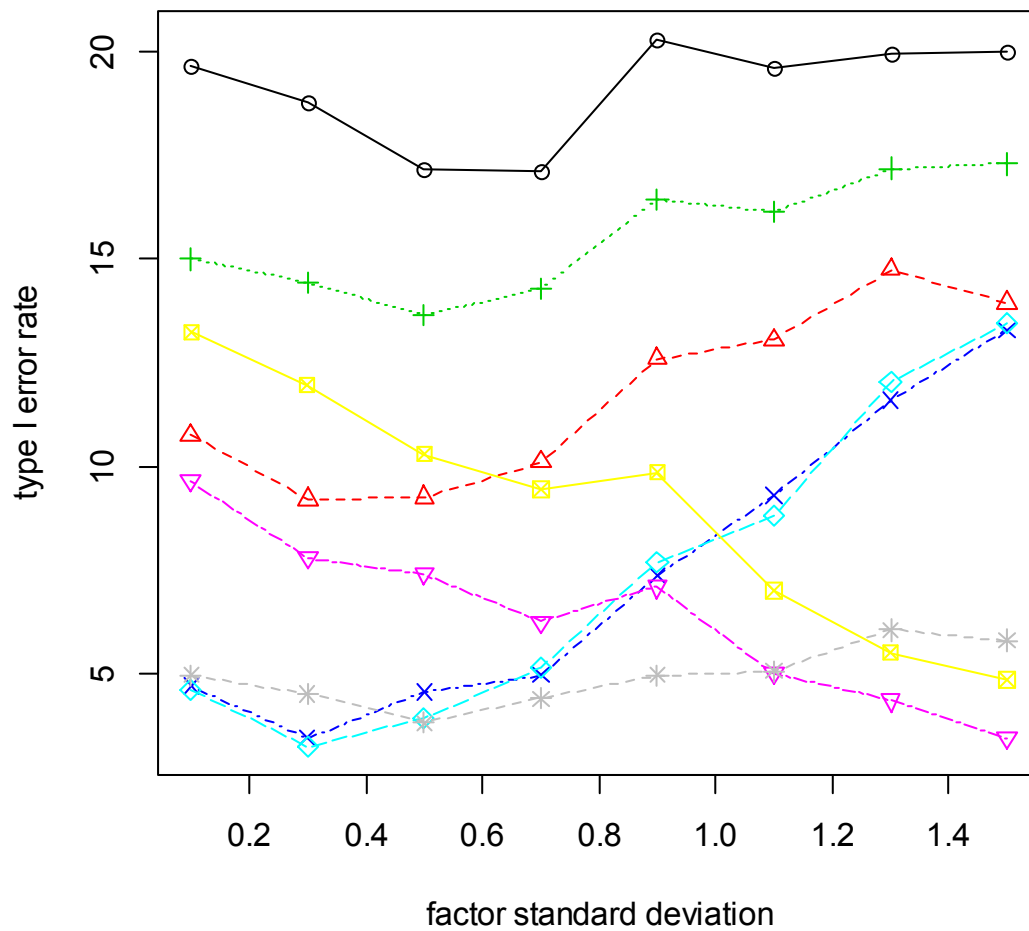
4. 2. 15   left skewed distribution - unequal variances (small $n_i \sim$ small s_i)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	1.45	1.25	0.75	0.85	1.15	1.85	1.10	1.45
RT	1.95	1.55	1.35	1.30	1.60	2.45	1.85	1.60
INT	1.00	0.90	0.50	0.75	1.10	1.60	1.05	1.40
ART	3.75	3.60	4.10	5.50	6.35	9.20	10.25	12.45
ART+INT	2.30	2.00	2.05	3.55	4.15	5.90	7.10	8.85
Puri & Sen	1.85	1.55	1.15	0.85	1.00	0.80	0.40	0.40
v.d.Waerden	0.85	0.70	0.35	0.55	0.55	0.25	0.20	0.30
ATS	4.20	4.40	4.90	4.25	4.65	4.65	5.25	5.00
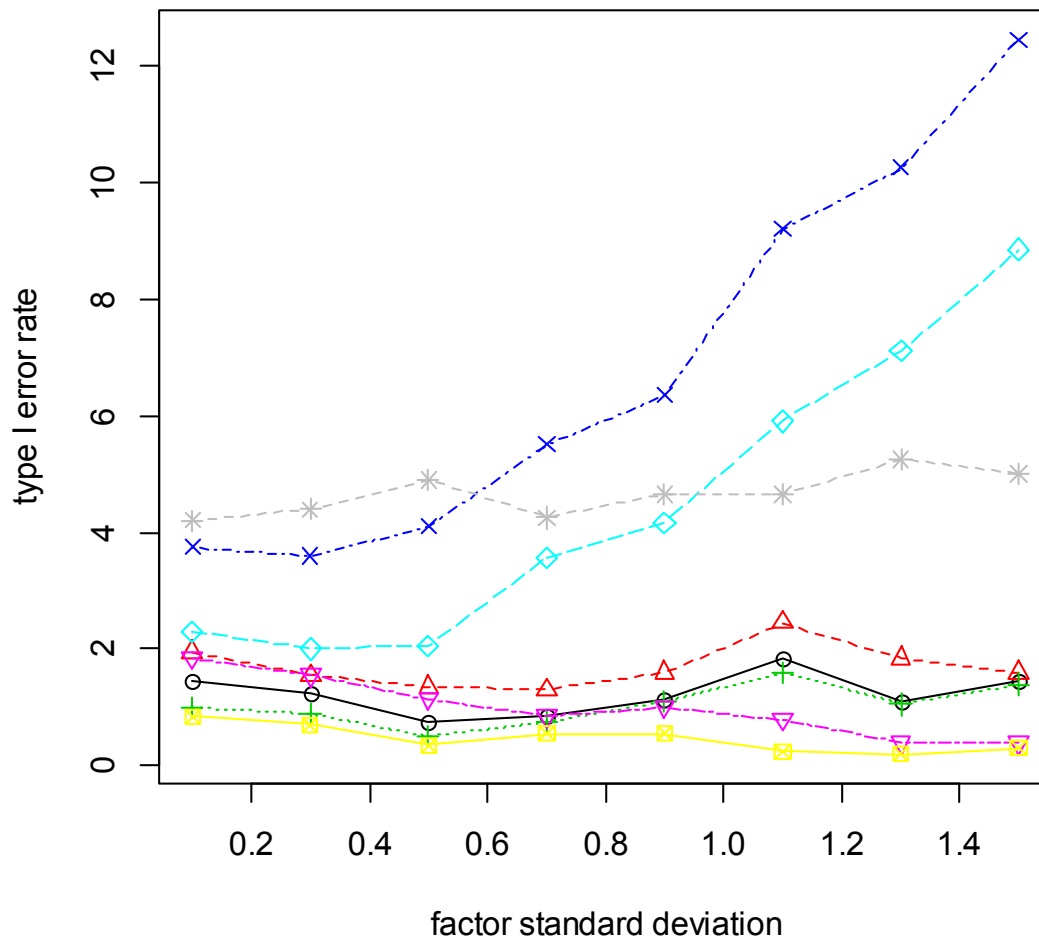
4. 2. 16   left skewed distribution - unequal variances (small $n_i \sim$ large s_i)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	19.40	18.85	19.30	17.80	18.75	17.45	19.60	19.70
RT	13.30	12.80	13.30	13.25	13.00	13.80	15.80	15.00
INT	21.90	21.45	21.40	18.45	18.80	16.90	19.15	18.55
ART	4.10	3.90	4.80	5.55	6.75	8.75	11.00	12.65
ART+INT	4.15	4.20	4.65	5.85	7.15	10.35	12.20	14.65
Puri & Sen	12.20	10.85	9.80	8.80	7.85	6.10	5.50	3.85
v.d.Waerden	19.30	17.60	15.90	12.45	10.50	7.30	7.15	4.55
ATS	4.90	4.20	5.60	5.20	4.85	5.20	6.50	5.30
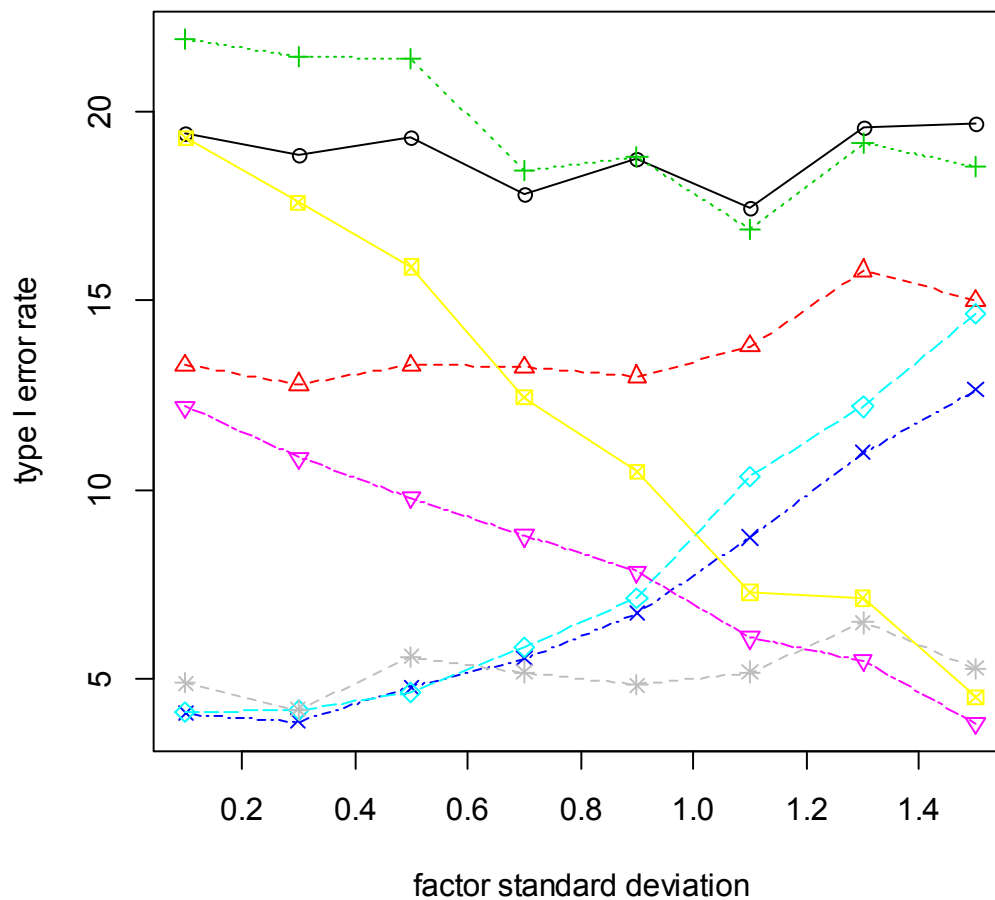
4. 3. Main effect A - Interaction significant (equal n$_i$=10 / # levels = 2*4)

4. 3. 1   normal distribution - equal variances

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.80	5.25	5.25	4.90	4.95	5.55	4.80	6.10
RT	5.45	5.35	5.20	4.50	5.40	6.15	4.75	6.25
INT	5.60	5.50	5.35	4.95	4.85	5.65	4.75	5.80
ART	5.10	5.05	5.30	5.05	5.45	5.35	4.80	5.95
ART+INT	5.60	5.45	5.10	4.95	5.10	5.60	4.60	5.65
Puri & Sen	5.30	5.15	4.55	3.70	3.50	2.90	1.70	1.55
v.d.Waerden	5.40	5.35	4.60	3.35	3.60	2.95	1.95	1.55
ATS	5.45	5.35	5.20	4.50	5.40	6.05	4.70	6.10
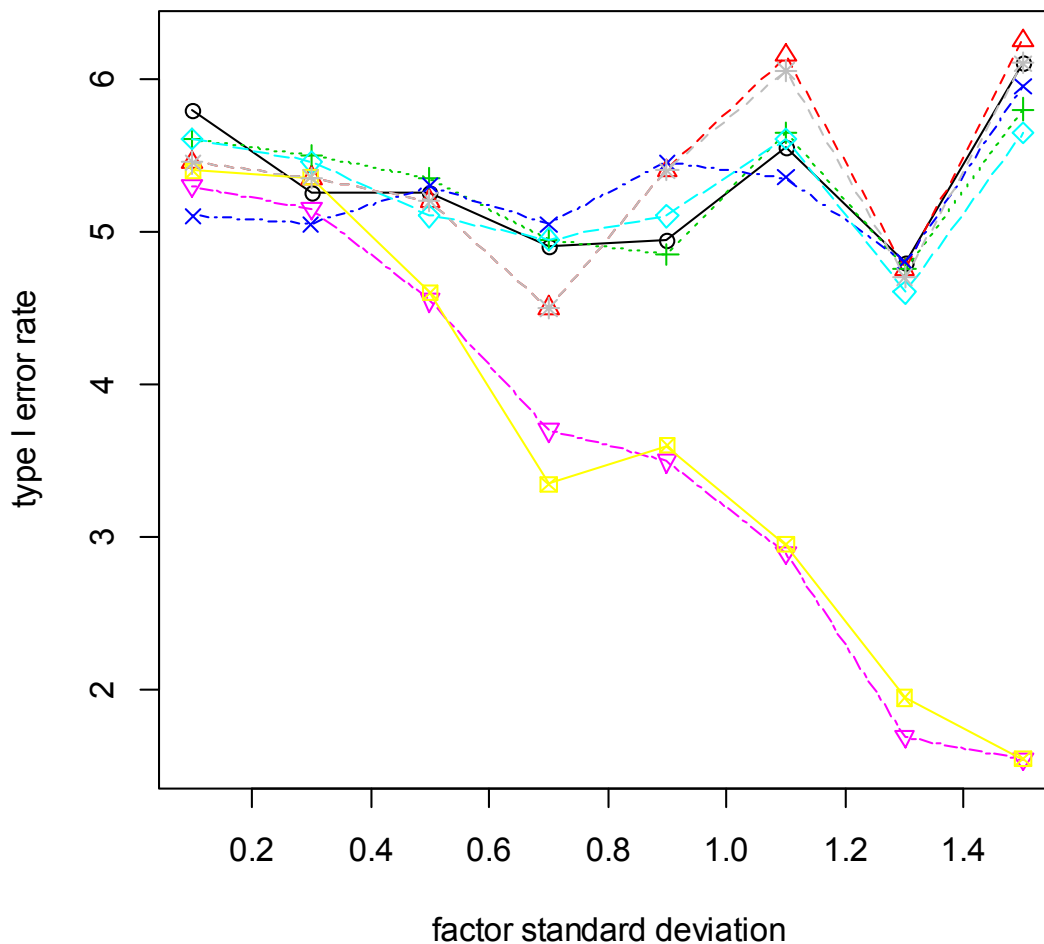
4. 3. 2   normal distribution - unequal variances (on B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.70	5.50	5.20	4.30	4.65	5.65	4.95	5.50
RT	5.30	5.35	6.15	6.80	7.60	8.95	8.70	9.55
INT	5.55	5.00	5.15	5.00	5.25	5.75	5.05	5.25
ART	6.85	7.00	6.15	6.25	7.15	7.05	7.15	7.10
ART+INT	6.40	6.00	5.35	5.20	5.95	6.40	6.00	6.30
Puri & Sen	5.25	5.25	5.50	5.30	5.20	5.30	4.45	3.35
v.d.Waerden	5.25	4.80	4.45	4.00	3.45	3.25	2.20	1.40
ATS	5.20	5.35	6.00	6.70	7.50	8.80	8.35	9.40
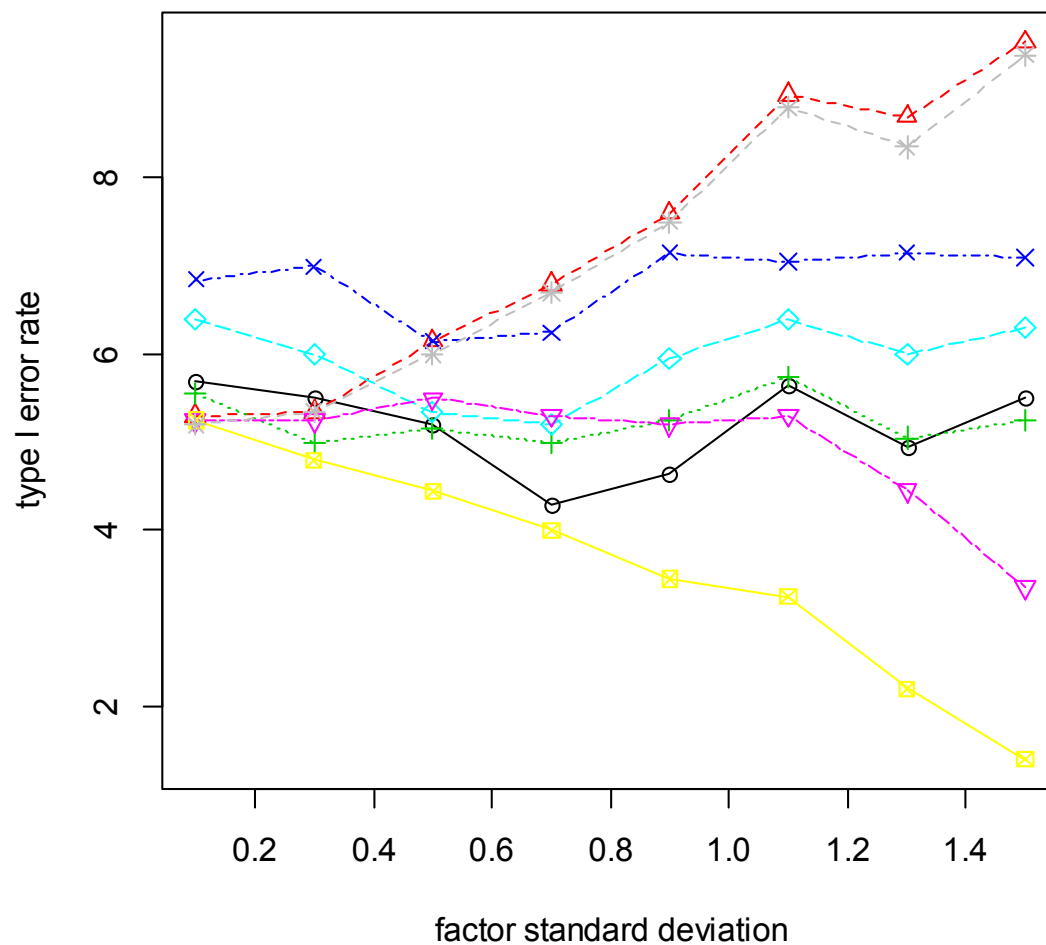
4. 3. 3   normal distribution - unequal variances (on A and B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.75	5.60	5.45	5.00	4.60	6.00	4.70	5.45
RT	5.25	5.50	5.90	6.90	7.60	9.00	9.25	9.35
INT	5.50	5.20	4.90	4.85	4.90	6.05	4.85	4.95
ART	6.85	6.70	6.10	6.10	6.55	6.95	6.80	7.05
ART+INT	6.05	6.20	5.20	5.40	5.45	6.45	5.95	6.25
Puri & Sen	5.00	4.85	5.25	5.35	5.20	5.80	4.55	3.30
v.d.Waerden	5.25	4.70	4.40	3.85	3.15	3.60	2.45	1.55
ATS	5.25	5.45	5.65	6.75	7.40	8.95	9.00	9.25
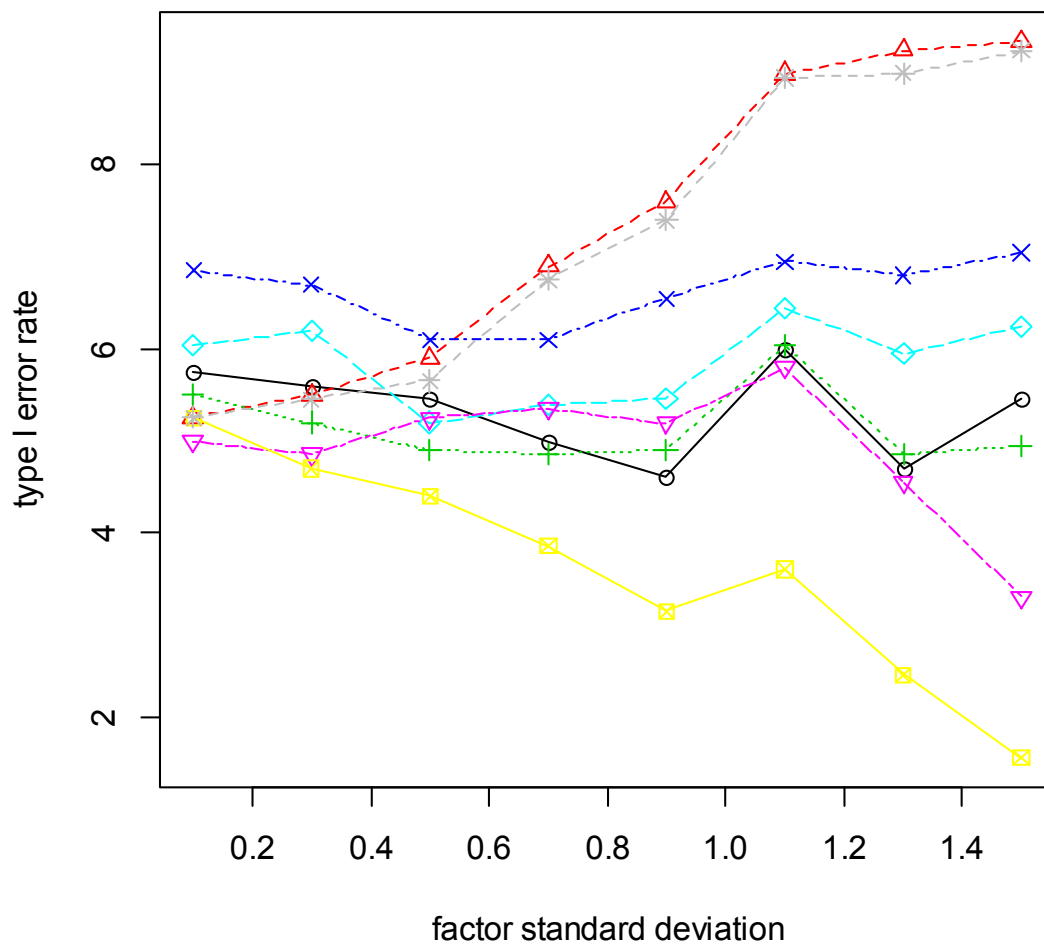
4. 3. 4   right skewed distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.50	4.40	4.65	6.35	4.30	5.95	4.75	4.70
RT	5.70	4.75	4.05	6.20	4.85	5.00	4.90	4.40
INT	5.35	4.65	4.50	6.25	4.50	5.00	4.90	4.50
ART	5.45	5.60	4.60	6.55	4.95	6.25	5.30	4.70
ART+INT	5.20	4.45	4.40	5.95	4.50	5.90	4.15	3.95
Puri & Sen	5.45	4.20	3.30	4.30	2.95	2.40	2.05	1.50
v.d.Waerden	5.35	4.05	3.50	4.05	2.50	2.95	1.80	1.50
ATS	5.65	4.70	3.95	6.00	4.80	5.00	4.70	4.30

4. 3. 5   exponential distribution - continous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.15	5.20	4.75	4.40	5.55	4.95	5.55	5.45
RT	5.00	4.75	4.70	5.00	5.65	6.00	5.10	4.80
INT	4.80	4.95	4.90	4.50	6.05	5.65	5.15	4.60
ART	5.20	6.30	7.00	9.25	12.40	15.45	21.80	30.25
ART+INT	4.05	4.55	4.45	6.10	7.10	9.15	13.25	17.90
Puri & Sen	4.75	4.70	4.10	3.85	3.60	2.80	1.65	1.20
v.d.Waerden	4.60	4.85	4.40	3.85	3.65	3.00	1.55	1.00
ATS	4.95	4.75	4.65	4.85	5.60	6.00	5.05	4.55

4. 3. 6   exponential distribution - discrete

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.05	4.80	4.70	4.85	5.55	5.00	5.40	5.30
RT	4.80	4.90	5.05	5.10	5.05	5.65	5.35	5.45
INT	4.65	4.75	4.70	4.95	4.90	5.65	5.45	4.90
ART	6.05	6.45	7.95	10.15	14.10	18.60	25.45	38.95
ART+INT	4.25	4.70	4.75	6.45	8.55	10.10	14.40	21.80
Puri & Sen	4.90	4.65	4.40	3.60	3.35	2.65	1.65	1.00
v.d.Waerden	4.50	4.70	4.10	3.75	3.75	2.65	1.85	1.10
ATS	4.75	4.80	5.00	5.05	5.00	5.65	5.25	5.20
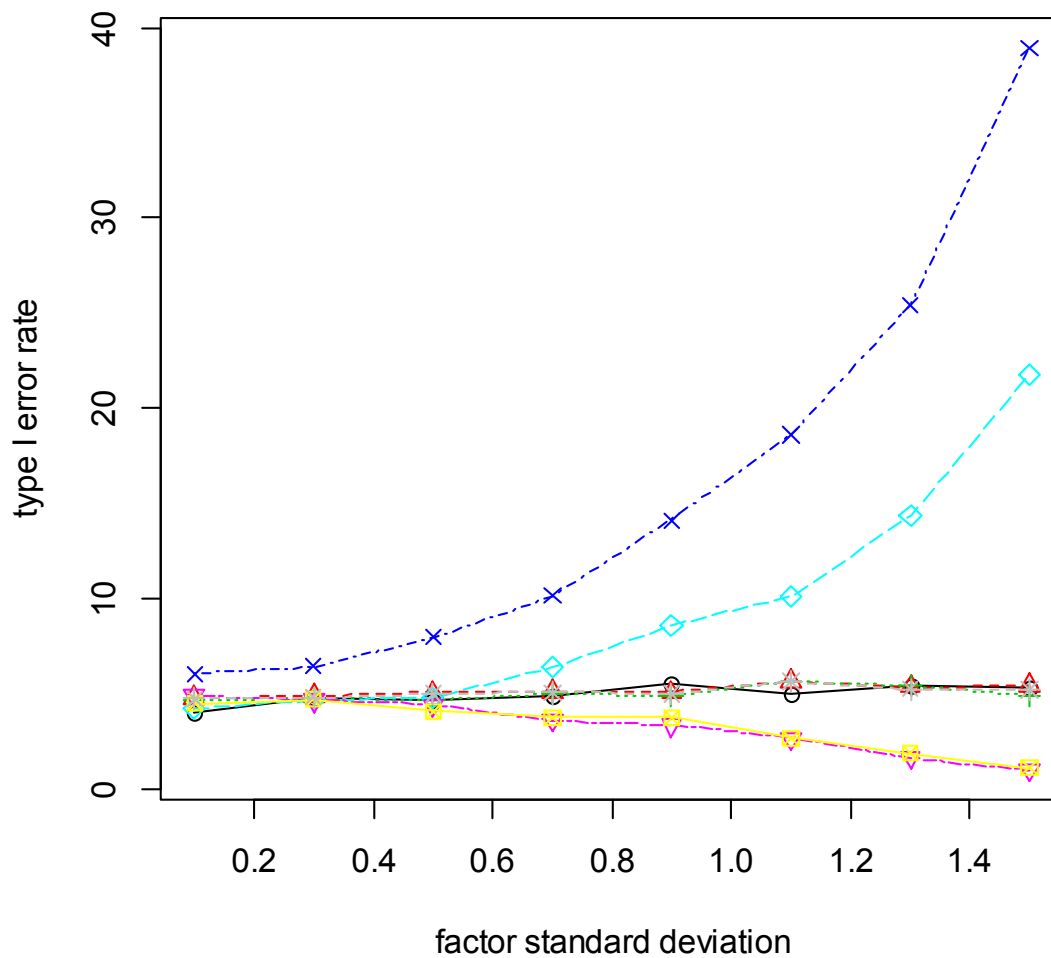
4. 3. 7   lognormal distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.55	4.55	5.60	5.50	4.45	4.85	5.55	4.95
RT	4.95	4.85	5.10	4.95	4.55	5.15	5.65	4.80
INT	5.15	4.95	5.55	5.35	4.45	5.10	5.40	4.55
ART	5.30	5.55	5.10	4.65	4.25	4.65	5.80	4.95
ART+INT	5.00	4.65	5.60	5.40	4.20	4.75	5.95	4.70
Puri & Sen	5.10	4.75	4.45	3.90	2.60	2.40	1.65	1.05
v.d.Waerden	5.05	4.65	4.60	3.95	2.20	2.20	1.65	1.15
ATS	4.95	4.85	5.10	4.85	4.50	5.05	5.50	4.75
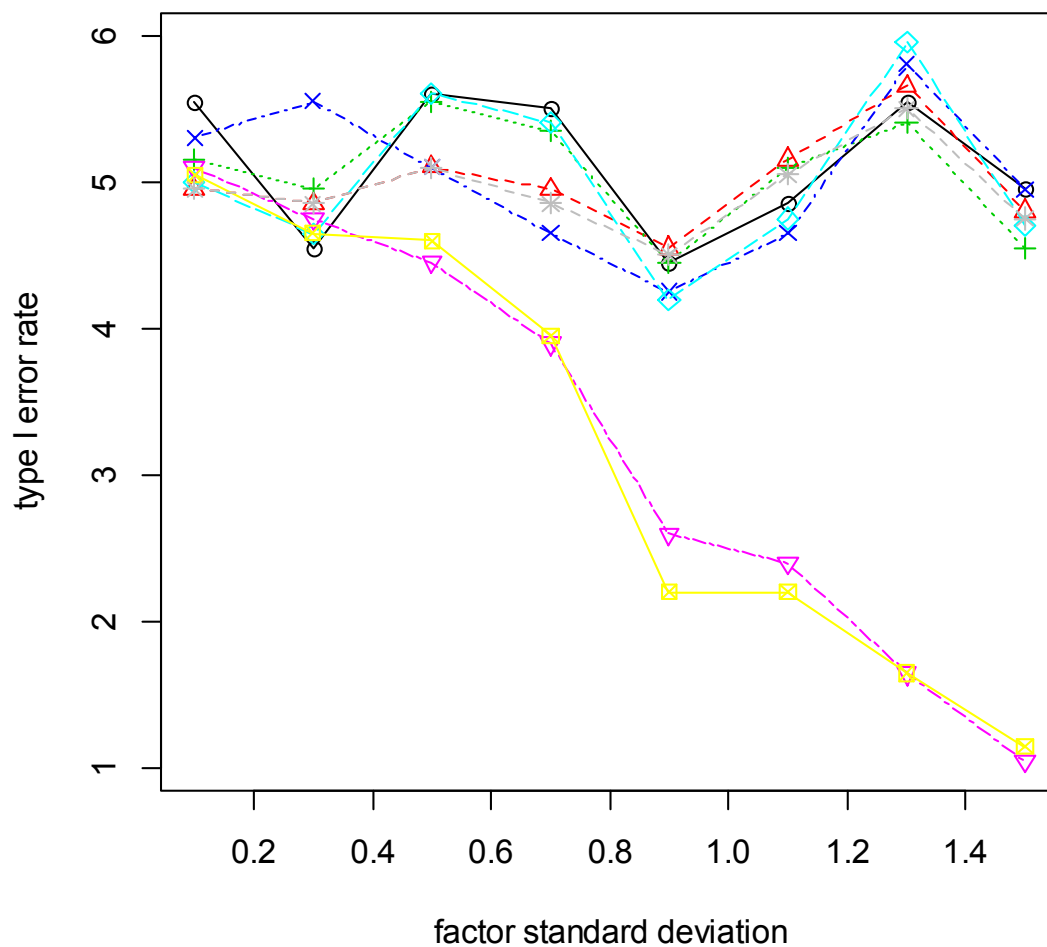
4. 3. 8   uniform distribution - continous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.70	5.00	4.70	6.50	4.75	5.50	4.65	4.35
RT	6.00	5.05	4.40	6.65	4.95	5.90	5.20	4.20
INT	5.75	4.70	4.55	6.25	4.75	5.25	5.05	4.75
ART	5.40	4.60	4.15	6.45	4.80	5.70	4.90	3.95
ART+INT	5.50	4.70	4.25	6.30	5.20	5.40	4.90	4.25
Puri & Sen	5.90	4.45	3.50	5.30	3.35	3.00	1.95	1.50
v.d.Waerden	5.65	4.50	3.45	4.70	2.75	3.05	1.75	1.60
ATS	5.90	5.05	4.35	6.65	4.90	5.90	5.15	4.20
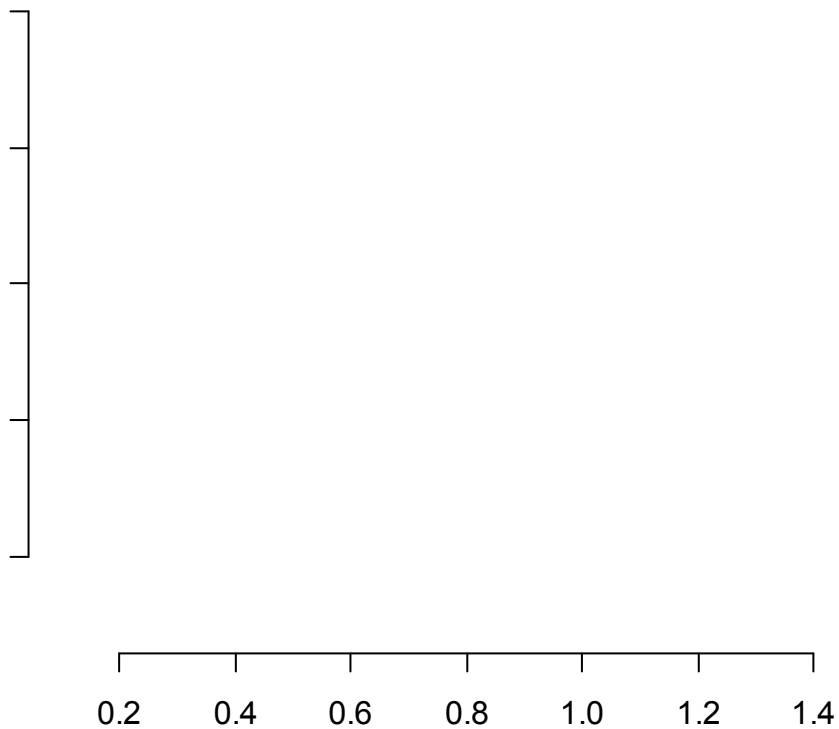
4. 3. 9   uniform distribution - discrete

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.55	5.25	4.55	6.60	4.80	5.55	4.95	4.00
RT	5.35	5.35	4.70	6.90	4.80	5.60	5.05	3.80
INT	5.45	4.80	4.30	6.50	4.35	5.75	5.40	4.35
ART	6.40	5.20	5.05	6.90	5.15	6.40	5.55	4.70
ART+INT	6.15	5.00	5.20	7.05	5.20	6.10	5.25	4.80
Puri & Sen	5.30	5.00	3.80	5.65	3.10	2.85	1.80	1.55
v.d.Waerden	5.45	4.40	3.35	5.25	3.00	2.70	1.70	1.25
ATS	5.35	5.30	4.70	6.80	4.80	5.60	5.00	3.80
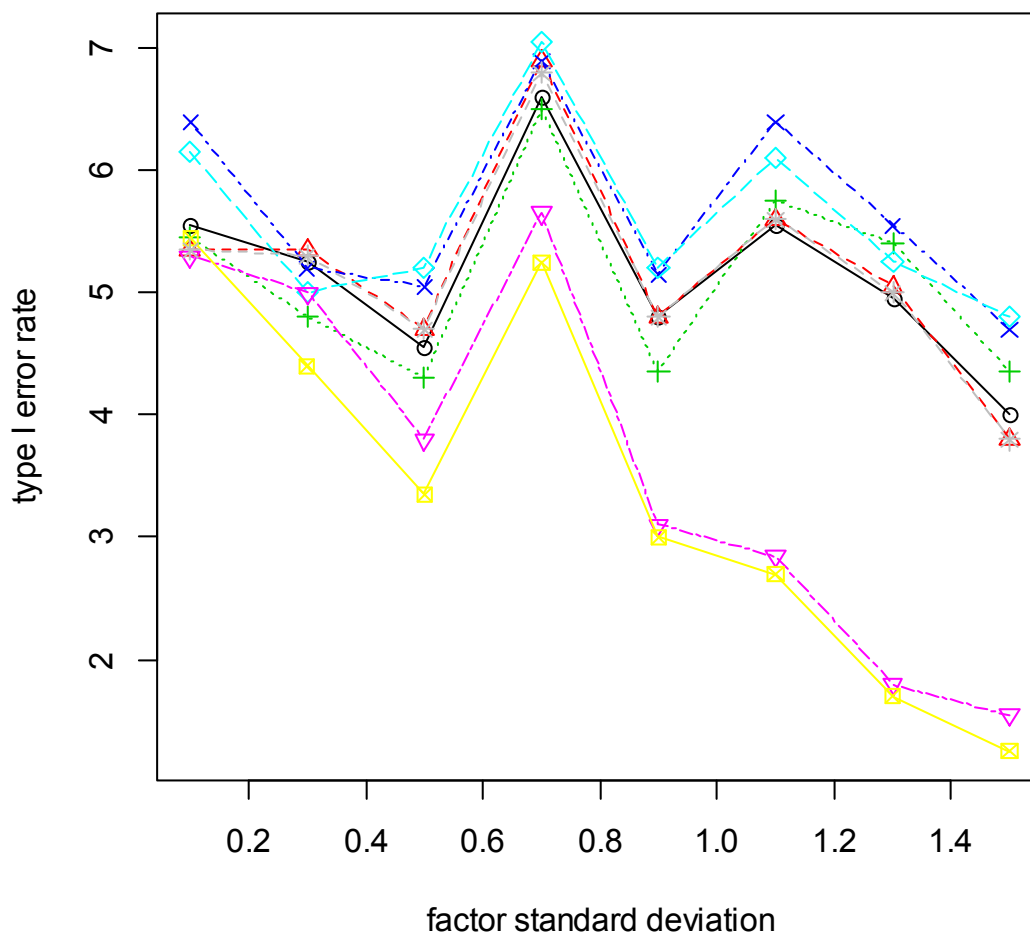
4. 3. 10   left/right skewed distribution

	factor standard deviation							
method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.35	4.40	4.70	4.50	4.20	4.85	5.40	4.00
RT	4.20	3.95	5.10	4.70	4.35	5.50	6.00	4.10
INT	4.35	4.25	4.65	4.90	4.35	4.80	6.00	4.05
ART	4.30	4.20	5.10	4.40	4.20	5.50	5.70	4.45
ART+INT	4.45	4.35	4.80	5.20	4.90	4.90	5.45	4.30
Puri & Sen	4.30	3.55	4.65	3.45	3.05	2.65	2.45	1.20
v.d.Waerden	4.15	3.90	3.60	3.45	2.95	2.35	2.25	0.95
ATS	4.20	3.95	5.10	4.70	4.30	5.45	5.90	4.10
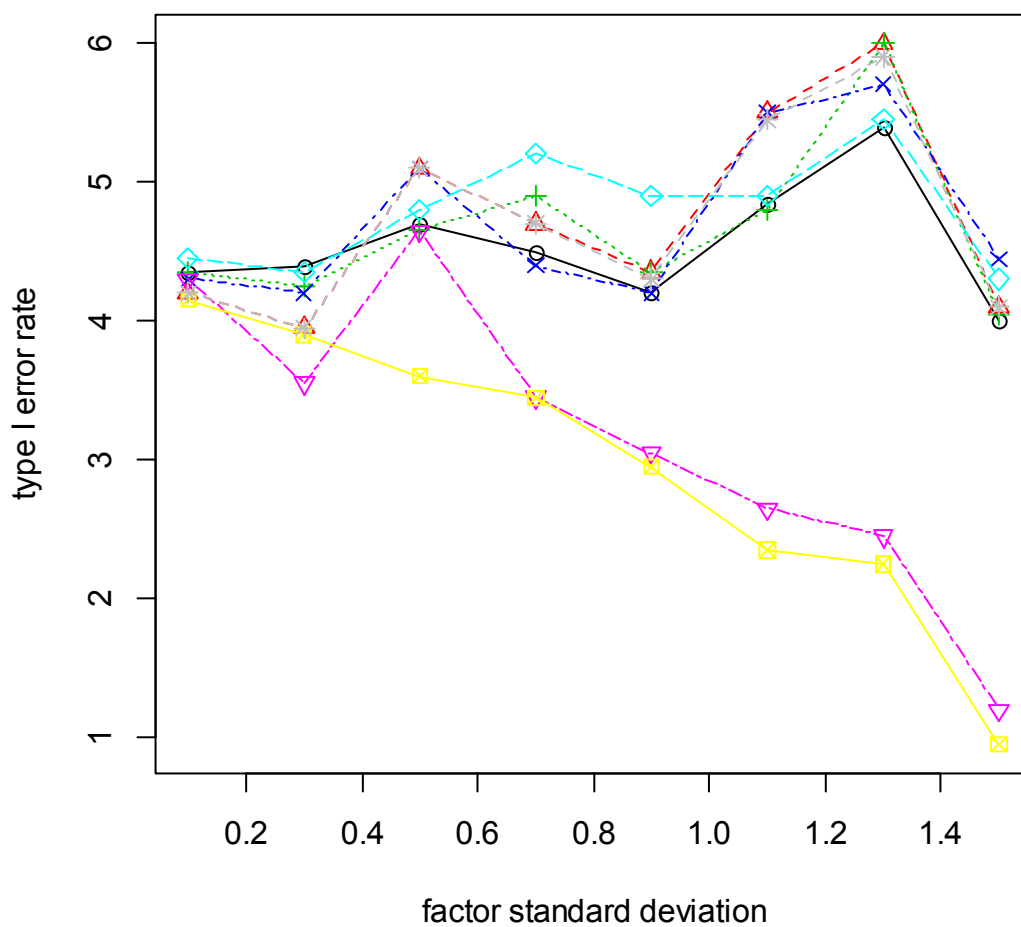
4. 3. 11   left skewed distribution - unequal variances (on B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.65	4.40	4.95	6.00	4.60	5.15	5.75	4.60
RT	5.70	4.50	6.00	7.95	6.60	8.90	9.10	7.95
INT	5.60	4.40	4.55	5.30	4.30	4.75	5.45	4.40
ART	7.55	6.85	6.75	8.05	6.40	7.60	8.25	6.50
ART+INT	6.00	5.00	5.30	6.35	4.85	5.75	6.50	5.20
Puri & Sen	5.40	4.40	5.15	6.60	4.90	5.40	5.40	2.95
v.d.Waerden	5.50	3.85	3.90	4.05	2.65	2.95	2.05	1.40
ATS	5.60	4.40	5.90	7.85	6.45	8.70	8.90	7.90
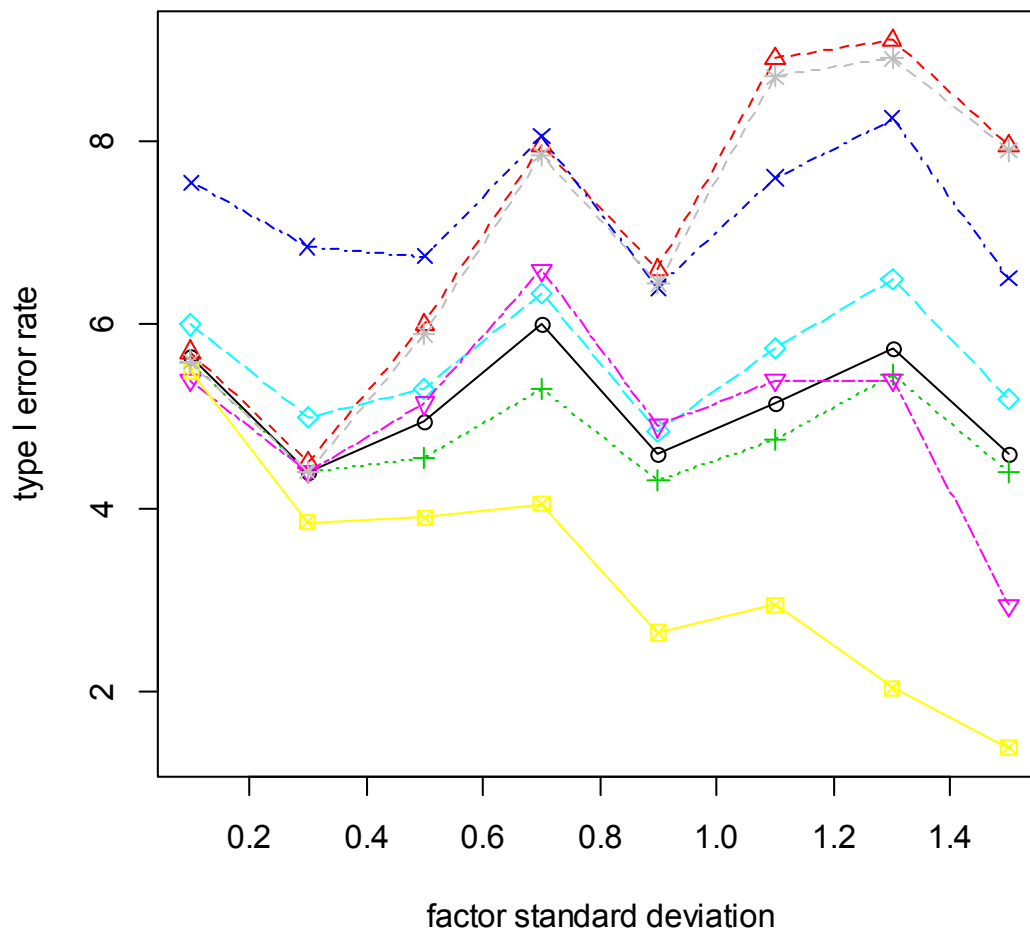
4. 4.   Main effect A - Interaction significant (unequal $n_i \sim 5$ / # levels = 4*5)

4. 4. 1   normal distribution - equal variances

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.70	5.15	4.75	4.15	5.00	5.00	4.30	5.70
RT	4.45	5.40	4.90	4.40	5.15	5.20	5.50	5.40
INT	4.75	5.25	4.90	3.95	4.70	5.05	4.50	5.50
ART	2.90	3.05	3.55	3.00	3.50	4.80	4.45	6.00
ART+INT	2.75	3.05	3.25	2.60	2.85	4.05	4.10	6.30
Puri & Sen	4.20	4.85	4.10	3.00	2.75	1.95	0.95	0.75
v.d.Waerden	4.60	4.75	3.85	2.75	2.50	2.00	0.70	1.10
ATS	4.05	5.00	4.15	3.70	4.35	4.00	4.90	4.05
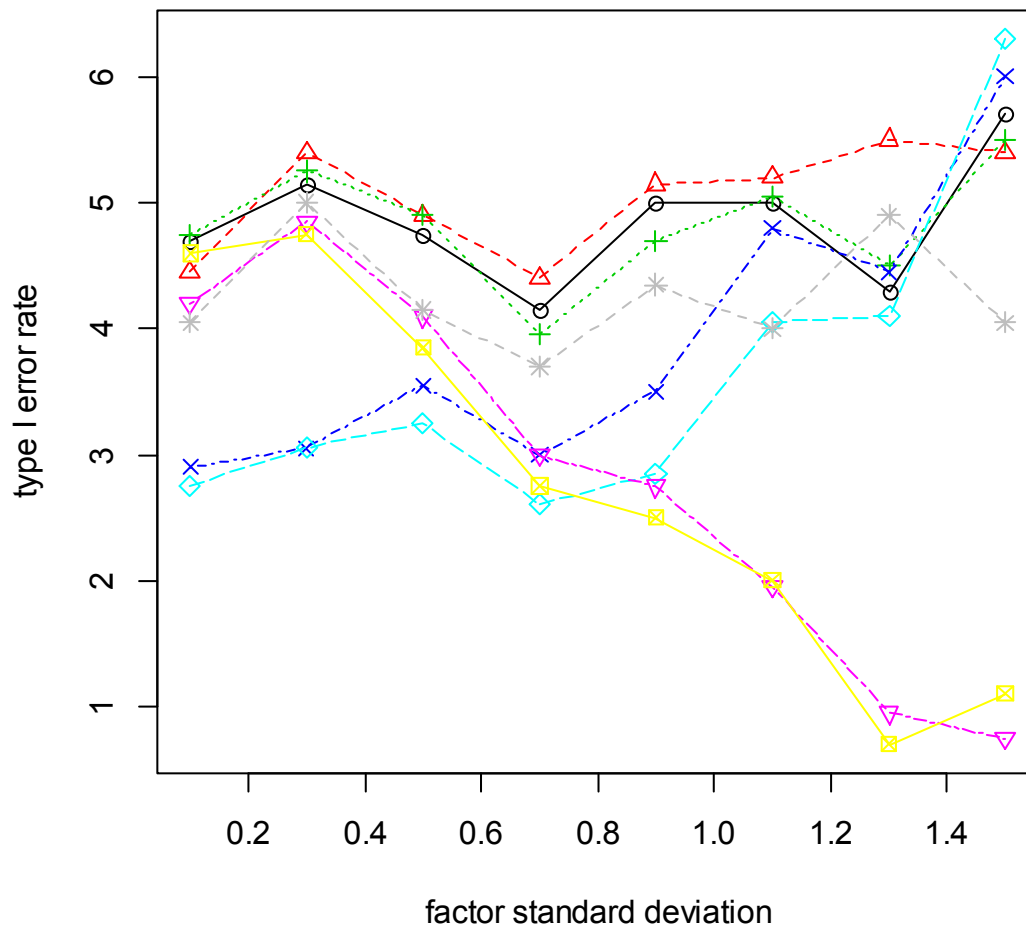
4. 4. 2   normal distribution - unequal variances (on B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	3.25	4.05	4.05	3.30	4.00	4.15	3.90	4.15
RT	3.70	5.00	4.65	4.25	4.60	5.30	5.20	5.65
INT	3.55	4.50	4.10	2.95	4.00	4.30	3.65	4.10
ART	4.60	5.25	5.25	5.20	6.65	7.60	8.15	9.65
ART+INT	3.35	3.85	4.05	3.55	4.60	5.50	5.70	7.35
Puri & Sen	3.70	4.50	3.80	2.60	2.60	2.25	0.90	1.05
v.d.Waerden	3.40	4.20	3.40	2.15	2.15	1.50	0.55	0.90
ATS	3.55	4.60	3.85	3.80	4.25	4.45	4.50	4.75
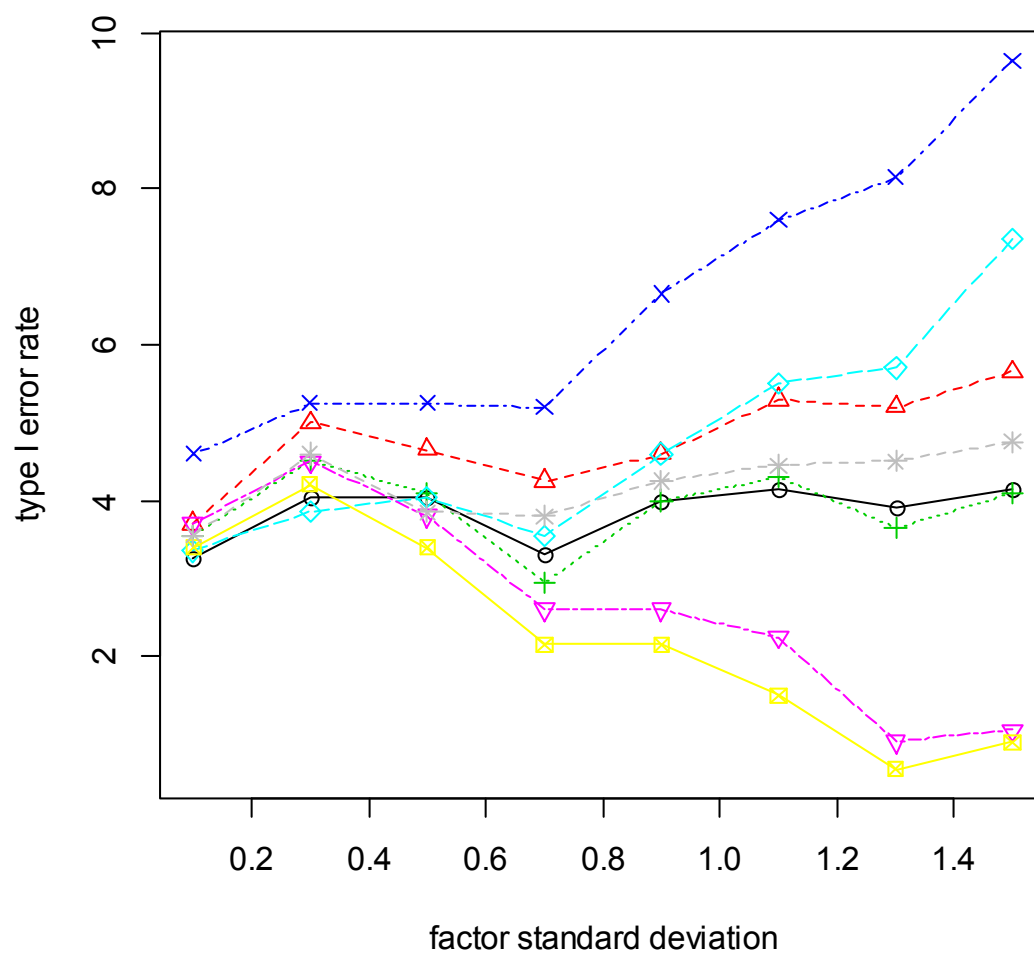
4. 4. 3   normal distribution - unequal variances (on A and B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	6.35	6.95	6.65	5.45	7.65	7.30	6.25	7.40
RT	4.65	6.05	5.75	4.70	5.45	6.45	5.95	6.05
INT	5.15	6.45	5.15	4.65	5.65	5.55	5.05	5.95
ART	3.35	3.90	4.15	3.80	4.95	6.05	6.50	7.15
ART+INT	2.70	3.05	3.65	2.70	4.10	5.15	5.15	6.85
Puri & Sen	4.45	5.55	4.40	3.50	3.05	2.70	1.65	1.40
v.d.Waerden	4.70	5.70	4.60	3.05	3.25	2.40	1.55	1.45
ATS	3.55	4.45	4.25	3.55	4.95	4.35	4.10	3.95
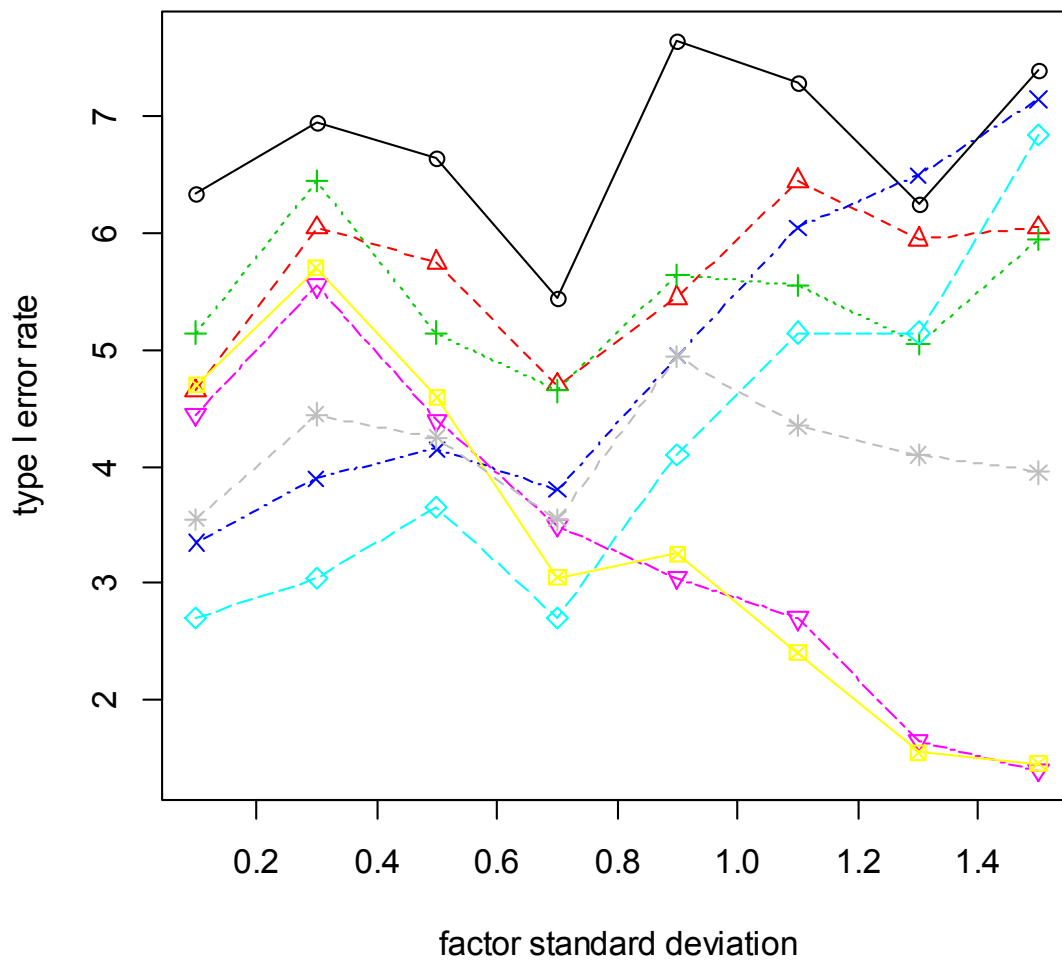
4. 4. 4 right skewed distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.35	4.90	4.60	4.75	5.10	4.50	4.00	5.10
RT	4.55	4.55	4.35	3.70	4.75	4.05	3.20	3.85
INT	3.95	3.95	3.55	3.35	4.90	3.35	3.25	3.70
ART	2.50	3.15	3.45	3.30	4.95	5.50	5.80	6.45
ART+INT	2.50	2.45	2.30	2.15	4.05	4.30	4.35	5.60
Puri & Sen	4.15	3.85	3.15	2.10	2.05	0.90	0.70	0.70
v.d.Waerden	3.55	3.30	2.75	1.60	1.95	1.15	0.65	0.60
ATS	4.20	3.70	4.45	4.05	5.45	4.00	3.75	4.50
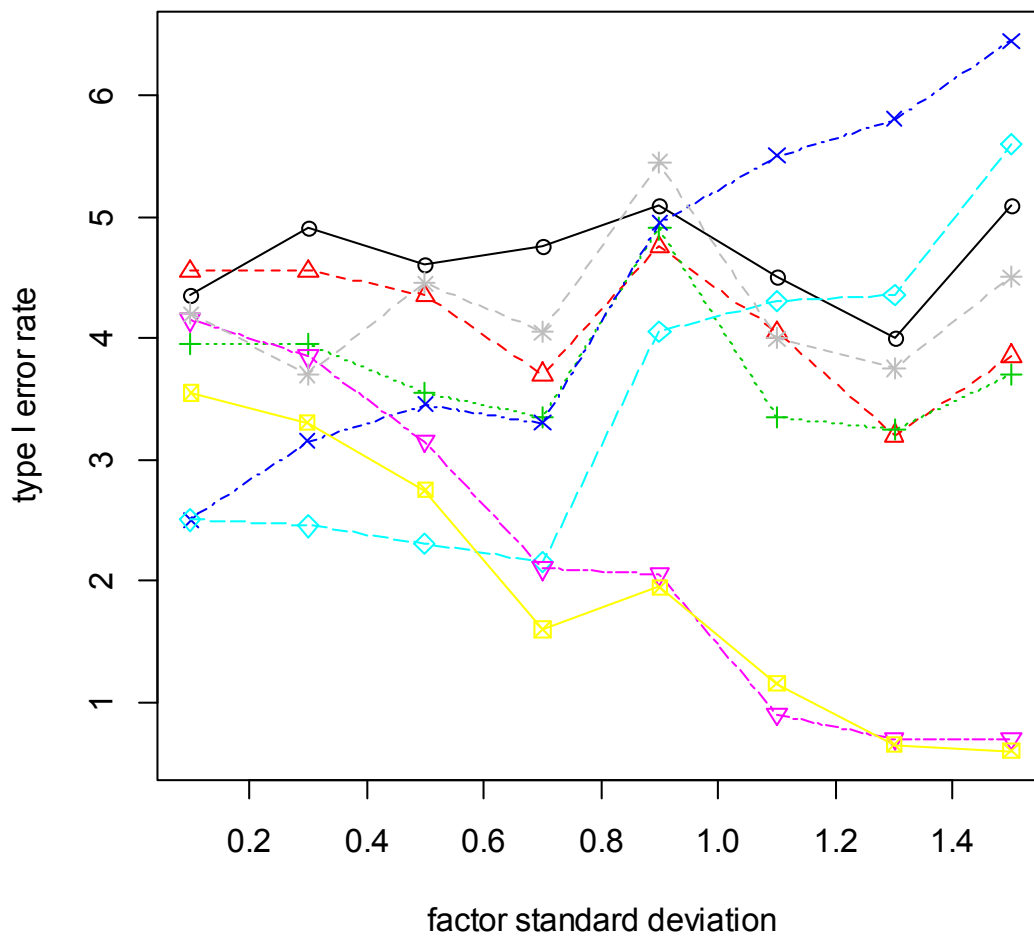
4. 4. 5 exponential distribution - continous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	6.35	7.00	7.00	8.15	8.25	9.25	8.65	8.70
RT	5.00	5.40	4.95	5.30	5.30	6.60	6.30	6.60
INT	5.75	5.70	4.90	5.65	5.90	6.50	6.30	6.05
ART	4.85	4.70	5.85	9.95	13.30	18.80	26.90	37.40
ART+INT	2.85	2.40	2.75	4.55	5.95	9.00	14.50	19.15
Puri & Sen	5.05	5.00	4.00	3.85	3.50	2.85	1.30	0.90
v.d.Waerden	5.20	5.20	3.80	3.85	3.55	2.60	1.20	0.80
ATS	4.30	4.65	4.55	4.45	4.40	4.70	3.70	4.45

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        0.2     0.4     0.6     0.8     1.0     1.2     1.4
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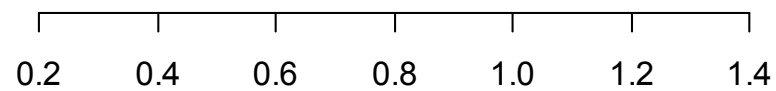
4. 4. 6   exponential distribution - discrete

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.90	6.80	7.35	8.50	8.40	9.20	8.85	8.85
RT	5.65	5.60	5.70	5.10	5.75	7.25	7.50	8.40
INT	6.05	5.70	6.15	5.60	6.10	7.85	7.85	8.55
ART	5.50	4.90	6.55	10.45	14.45	20.75	30.65	42.30
ART+INT	2.75	2.25	3.15	5.15	6.80	10.55	15.85	21.30
Puri & Sen	5.30	5.05	4.65	3.90	3.70	2.95	1.60	1.05
v.d.Waerden	5.50	5.35	4.35	4.05	3.75	3.10	1.50	1.00
ATS	4.80	4.60	4.60	4.50	4.55	4.95	4.00	4.60
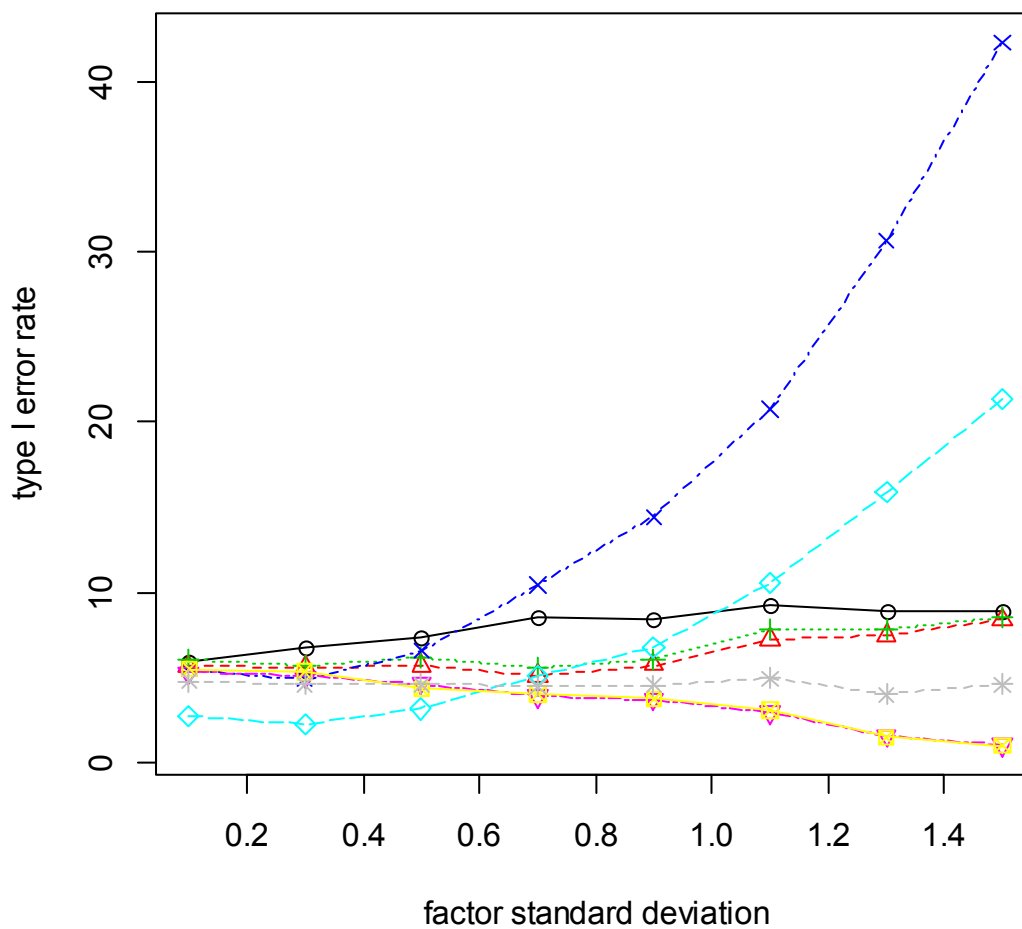
4. 4. 7   lognormal distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.50	4.80	6.10	5.00	5.05	5.55	5.05	4.95
RT	4.75	4.30	5.50	4.95	4.10	4.80	4.60	5.05
INT	5.20	3.95	5.30	4.75	3.85	4.90	4.05	4.45
ART	3.30	3.05	4.25	3.65	4.20	5.40	5.50	6.70
ART+INT	2.65	2.50	3.60	3.40	3.80	4.70	5.10	5.55
Puri & Sen	4.90	3.65	4.60	2.95	1.80	1.95	0.85	0.50
v.d.Waerden	4.90	3.40	4.30	2.50	2.00	2.05	1.00	0.45
ATS	3.85	3.75	4.85	4.55	3.80	4.90	4.10	4.60
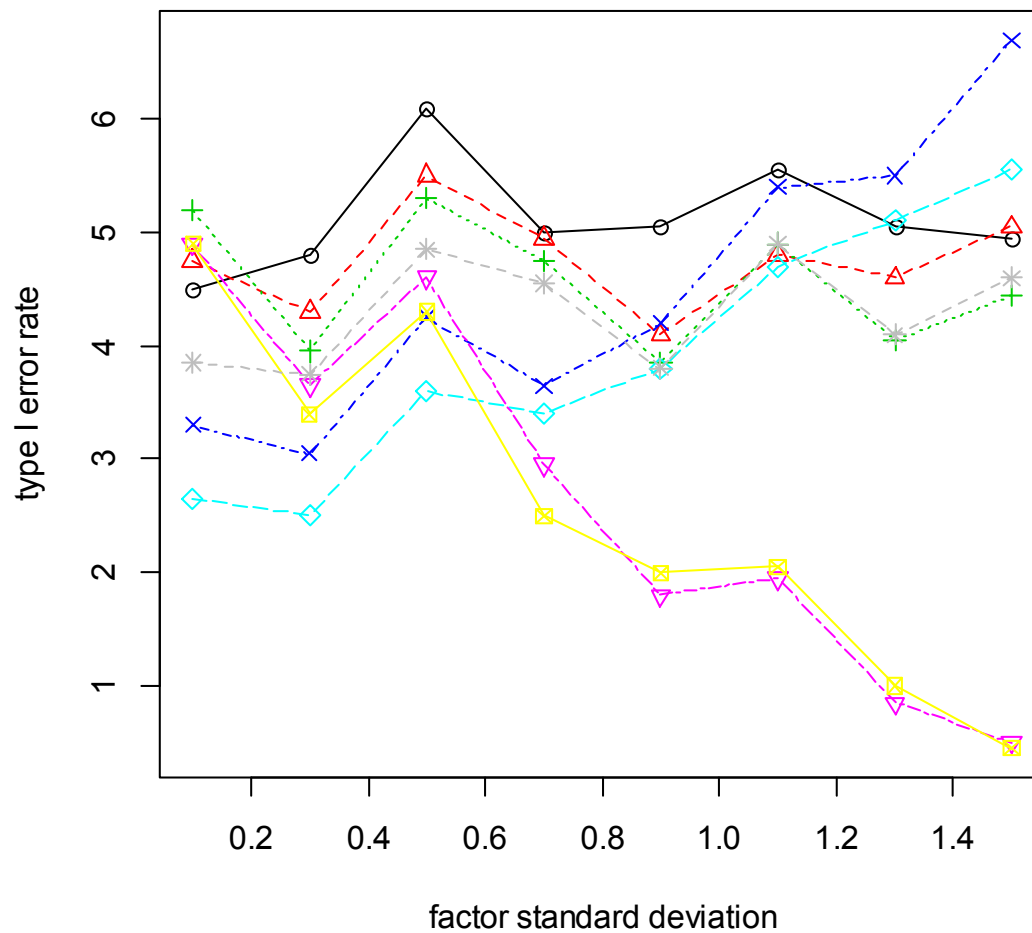
4. 4. 8 uniform distribution - continous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.65	5.10	4.45	4.45	5.80	4.90	3.80	4.85
RT	4.90	5.05	4.50	4.70	5.80	5.45	4.30	4.85
INT	4.90	5.00	4.65	4.05	5.15	5.00	3.85	4.35
ART	2.80	2.90	3.10	2.90	3.85	4.70	4.05	5.50
ART+INT	2.60	3.10	2.90	2.65	4.15	5.05	4.00	5.80
Puri & Sen	4.35	4.90	3.40	3.05	3.30	2.30	1.25	1.15
v.d.Waerden	4.10	4.25	3.45	2.30	2.50	1.70	0.80	0.90
ATS	4.45	3.90	4.80	3.95	5.85	4.55	3.70	4.15
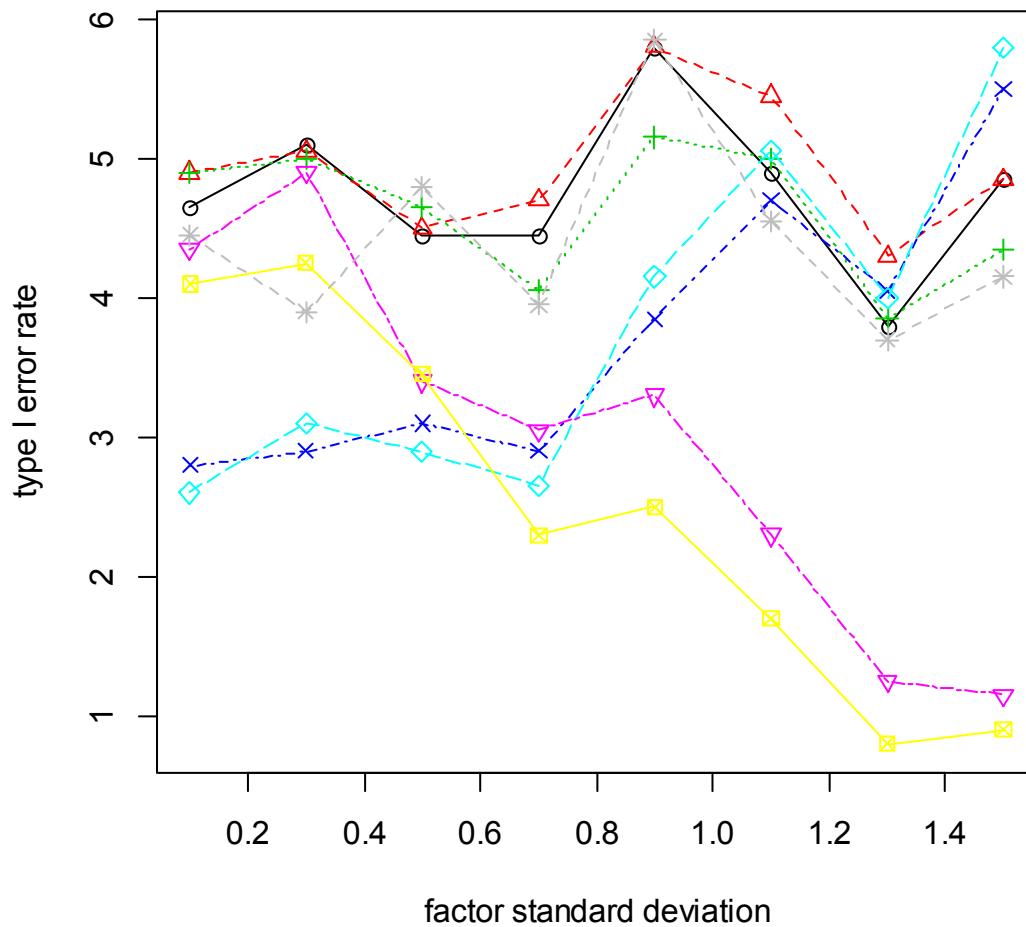
4. 4. 9   uniform distribution - discrete

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.85	4.80	4.80	4.05	4.80	5.40	3.90	4.50
RT	5.10	5.10	4.85	4.80	4.95	5.60	4.35	4.75
INT	4.80	4.95	4.40	4.05	5.05	5.35	4.10	4.20
ART	3.10	3.10	3.25	3.20	4.30	5.00	4.60	6.40
ART+INT	3.30	2.90	2.80	3.25	3.70	5.30	4.45	6.45
Puri & Sen	4.45	4.50	4.15	3.10	3.25	2.35	1.25	1.20
v.d.Waerden	4.30	4.30	3.50	2.55	2.70	1.90	1.00	0.70
ATS	4.55	4.15	4.60	4.55	4.75	4.50	3.85	4.45
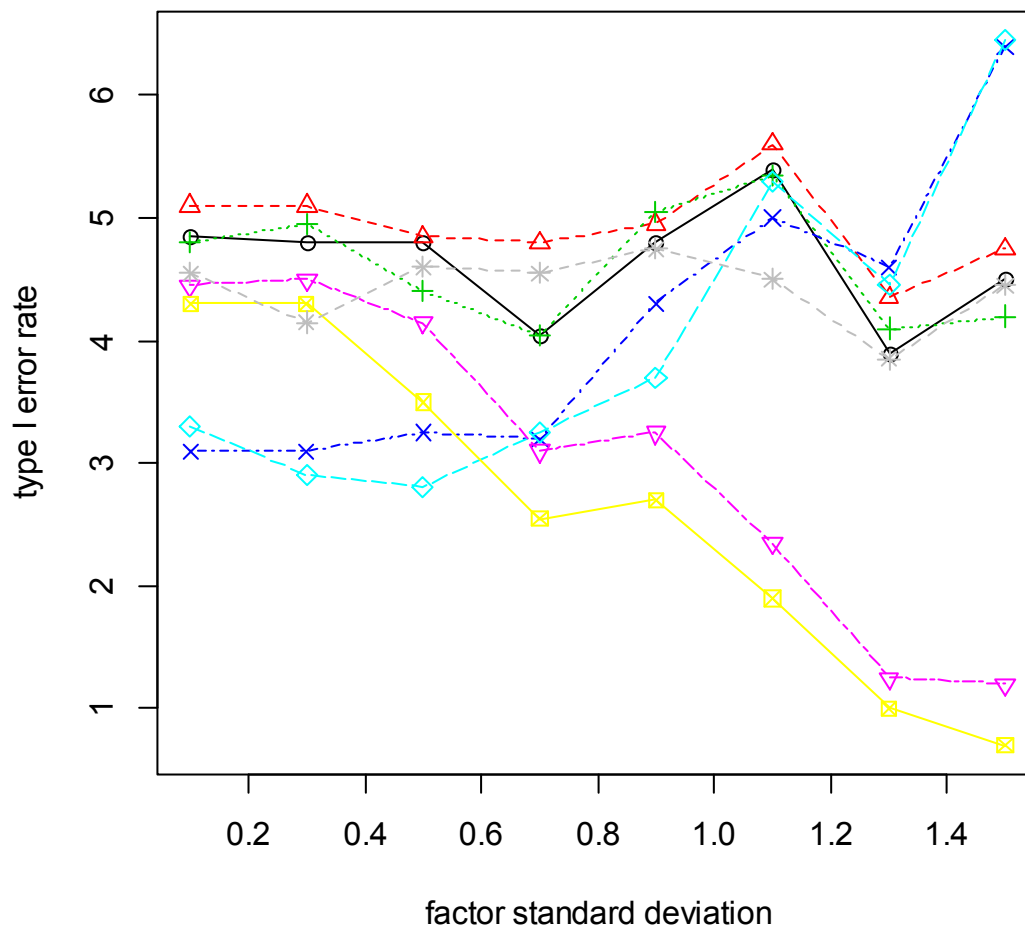
4. 4. 10   left/right skewed distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.95	4.95	5.20	4.65	4.50	4.35	4.90	5.90
RT	5.00	4.85	5.35	4.75	4.60	4.50	5.05	6.20
INT	5.30	4.55	5.00	4.35	3.85	4.30	5.00	5.65
ART	2.80	2.60	2.55	3.25	3.00	4.30	4.10	6.25
ART+INT	3.00	2.30	2.25	3.40	3.20	4.35	4.55	6.35
Puri & Sen	4.75	4.25	4.35	2.85	2.25	1.95	1.30	1.50
v.d.Waerden	4.55	3.90	3.75	2.70	1.90	1.60	0.90	1.20
ATS	4.25	3.90	4.90	4.05	4.35	3.95	4.85	4.35
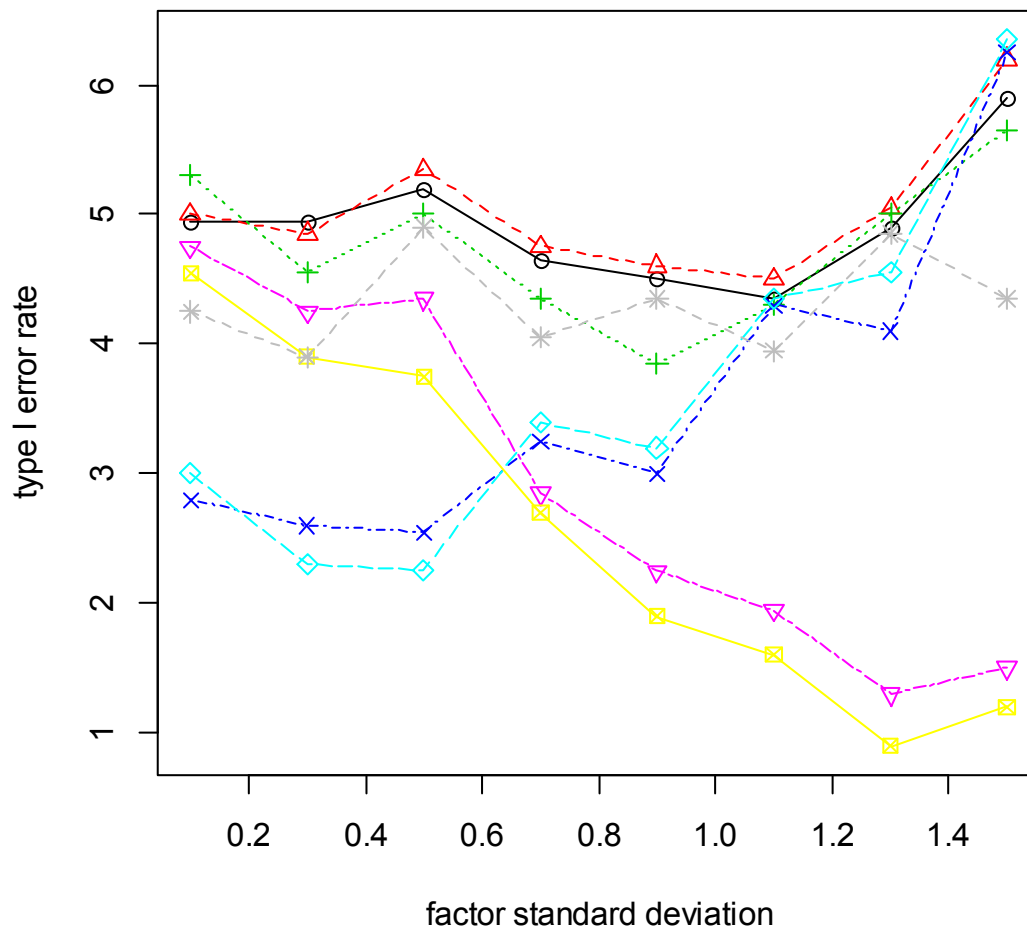
4. 4. 11   left skewed distribution - unequal variances (on B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	3.60	4.15	4.05	3.80	4.05	4.00	2.80	3.80
RT	3.90	4.55	4.40	4.75	5.85	6.55	5.15	6.40
INT	3.85	4.10	3.95	3.50	3.35	3.70	2.50	3.90
ART	4.50	5.40	4.60	5.50	5.55	7.05	7.35	9.50
ART+INT	3.15	3.55	2.95	3.45	3.80	4.95	4.70	6.45
Puri & Sen	3.45	3.90	3.80	3.10	3.15	3.20	1.40	1.50
v.d.Waerden	3.30	3.30	3.10	1.75	1.25	1.40	0.50	0.40
ATS	3.40	3.85	4.45	4.30	4.95	4.65	4.30	5.45
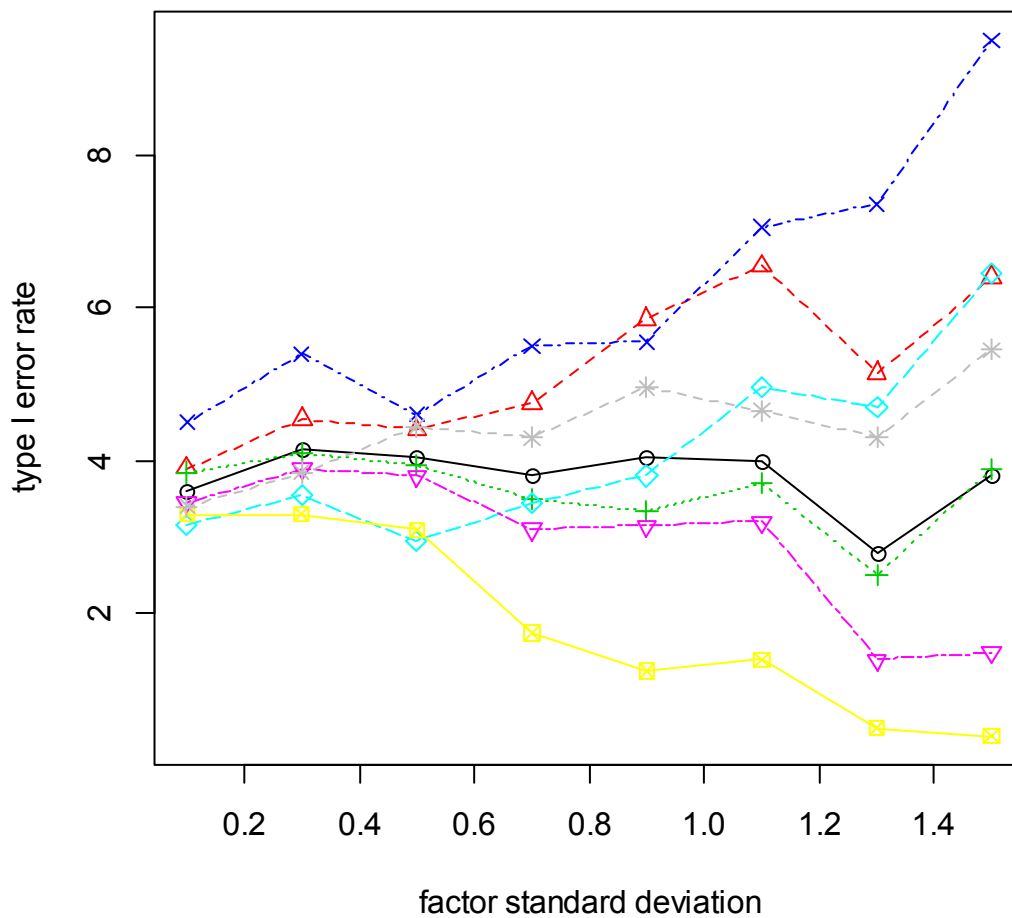
4. 4. 12 left skewed distribution - unequal variances (on A and B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	6.90	6.85	6.25	6.05	6.30	7.35	5.90	6.50
RT	5.10	5.45	5.15	5.45	5.95	6.85	5.75	6.60
INT	5.75	5.85	5.70	5.55	5.90	6.70	5.25	5.25
ART	3.25	3.95	3.65	3.95	4.75	5.45	5.90	7.60
ART+INT	2.75	2.85	2.70	3.40	4.25	5.35	5.20	6.85
Puri & Sen	4.85	5.35	4.20	3.55	3.15	2.95	1.85	1.65
v.d.Waerden	4.90	5.30	4.20	3.70	3.10	2.85	1.40	1.25
ATS	3.65	3.45	3.95	4.20	5.00	4.10	4.15	4.75
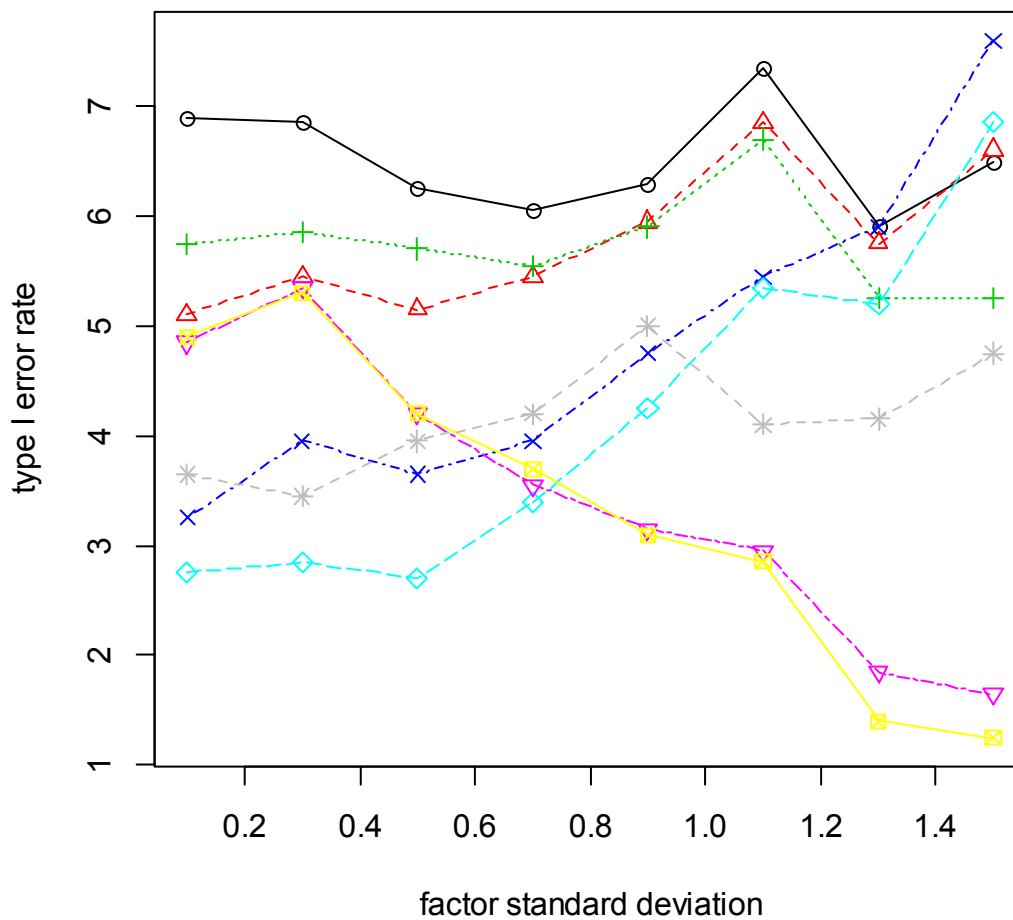
4. 4. 13   normal distribution - unequal variances (small n_i ~ small s_i)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	1.00	0.90	1.45	0.65	1.10	1.35	0.85	1.65
RT	2.05	2.35	2.45	1.70	1.85	2.10	1.65	2.05
INT	1.30	1.15	1.70	0.90	1.20	1.65	0.85	1.70
ART	3.75	4.35	4.50	4.45	4.95	6.35	6.60	7.90
ART+INT	2.45	2.90	3.45	2.60	3.15	4.65	4.60	6.10
Puri & Sen	1.95	1.85	2.20	1.05	0.85	0.65	0.05	0.30
v.d.Waerden	1.35	1.05	1.40	0.40	0.45	0.35	0.10	0.25
ATS	4.10	4.70	4.80	3.70	4.75	4.70	4.45	4.35
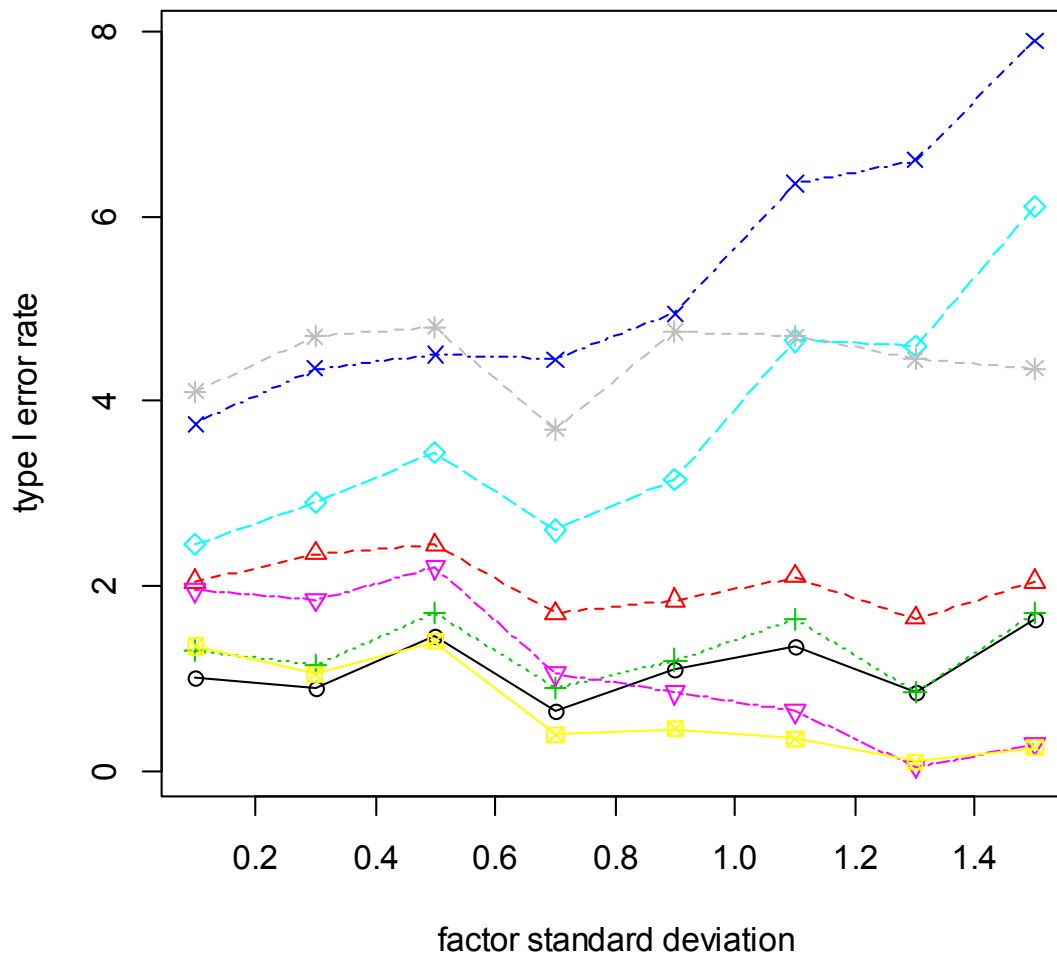
4. 4. 14   normal distribution - unequal variances (small $n_i \sim$ large s_i)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	18.25	19.45	18.35	16.40	17.30	18.25	18.65	18.90
RT	9.45	11.40	10.90	9.50	10.45	11.75	12.85	12.95
INT	14.40	15.45	14.20	13.30	13.95	15.25	15.65	16.25
ART	3.15	3.70	4.10	3.20	4.55	5.00	5.75	7.15
ART+INT	3.40	4.00	4.05	3.20	3.95	5.70	5.25	7.00
Puri & Sen	9.15	9.80	8.45	6.35	6.05	4.95	3.45	3.05
v.d.Waerden	12.75	13.05	11.05	9.45	8.50	6.90	4.95	4.80
ATS	4.40	4.75	4.95	4.10	4.20	4.25	5.45	4.65
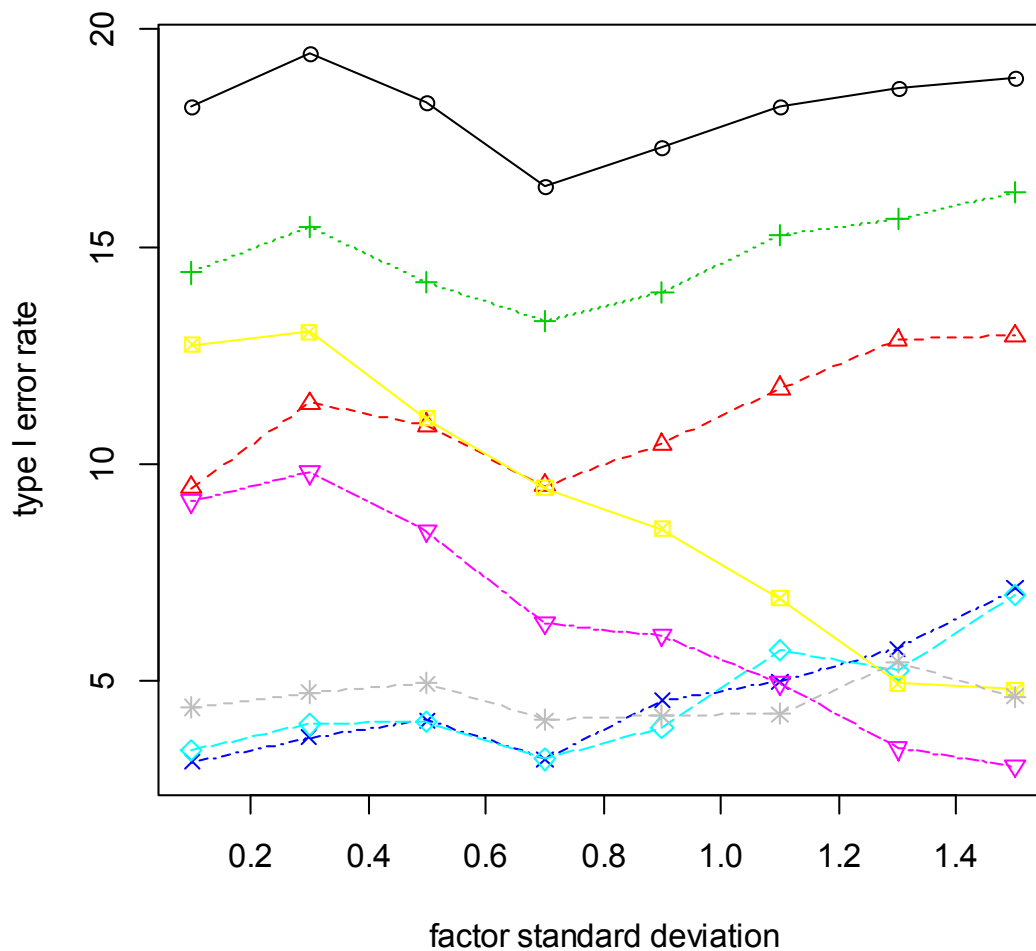
4. 4. 15   left skewed distribution - unequal variances (small $n_i \sim$ small s_i)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	1.00	1.30	1.40	0.80	1.05	1.35	0.75	0.75
RT	1.20	1.40	1.70	1.20	1.75	2.30	1.45	1.35
INT	0.95	0.75	1.00	0.70	0.95	1.35	0.85	1.00
ART	3.35	3.55	3.45	3.60	4.75	5.80	5.15	7.10
ART+INT	2.05	1.90	1.95	2.30	3.40	4.15	3.30	5.55
Puri & Sen	1.20	1.25	1.45	0.70	1.00	0.65	0.30	0.20
v.d.Waerden	0.75	0.60	0.85	0.50	0.40	0.20	0.05	0.05
ATS	4.25	4.50	4.45	4.15	5.85	5.15	3.75	5.10
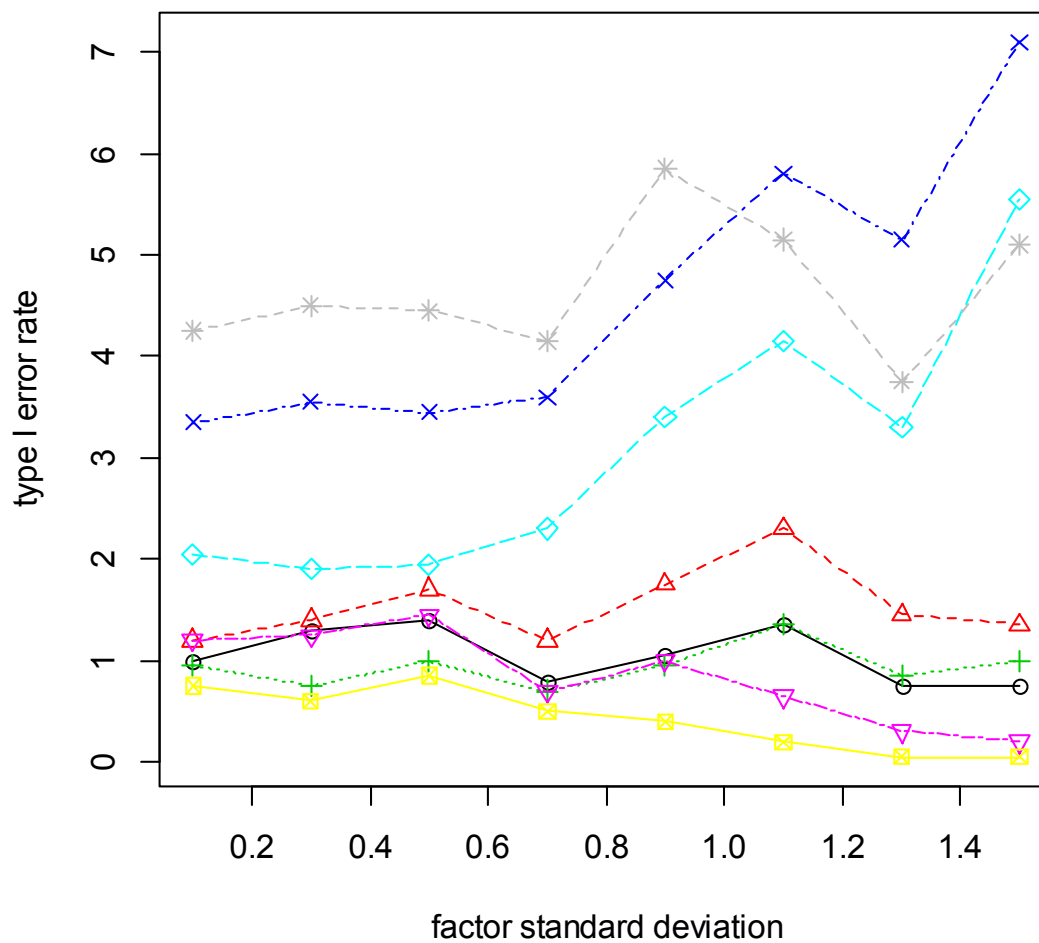
4. 4. 16   left skewed distribution - unequal variances (small $n_i \sim$ large s_i)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	17.20	19.25	19.05	18.45	18.80	18.85	17.35	17.40
RT	11.45	12.00	12.25	12.35	13.90	15.05	12.60	13.45
INT	18.90	20.75	20.10	19.75	20.00	19.25	17.45	17.80
ART	3.15	3.75	3.70	3.60	5.05	4.90	5.05	6.15
ART+INT	3.70	3.45	4.15	4.10	5.95	5.60	5.85	6.75
Puri & Sen	10.15	10.35	9.95	9.30	8.20	6.80	4.35	4.10
v.d.Waerden	16.65	16.75	15.55	13.15	12.20	9.35	6.30	5.40
ATS	4.55	4.50	5.35	4.95	5.40	4.80	4.30	4.85
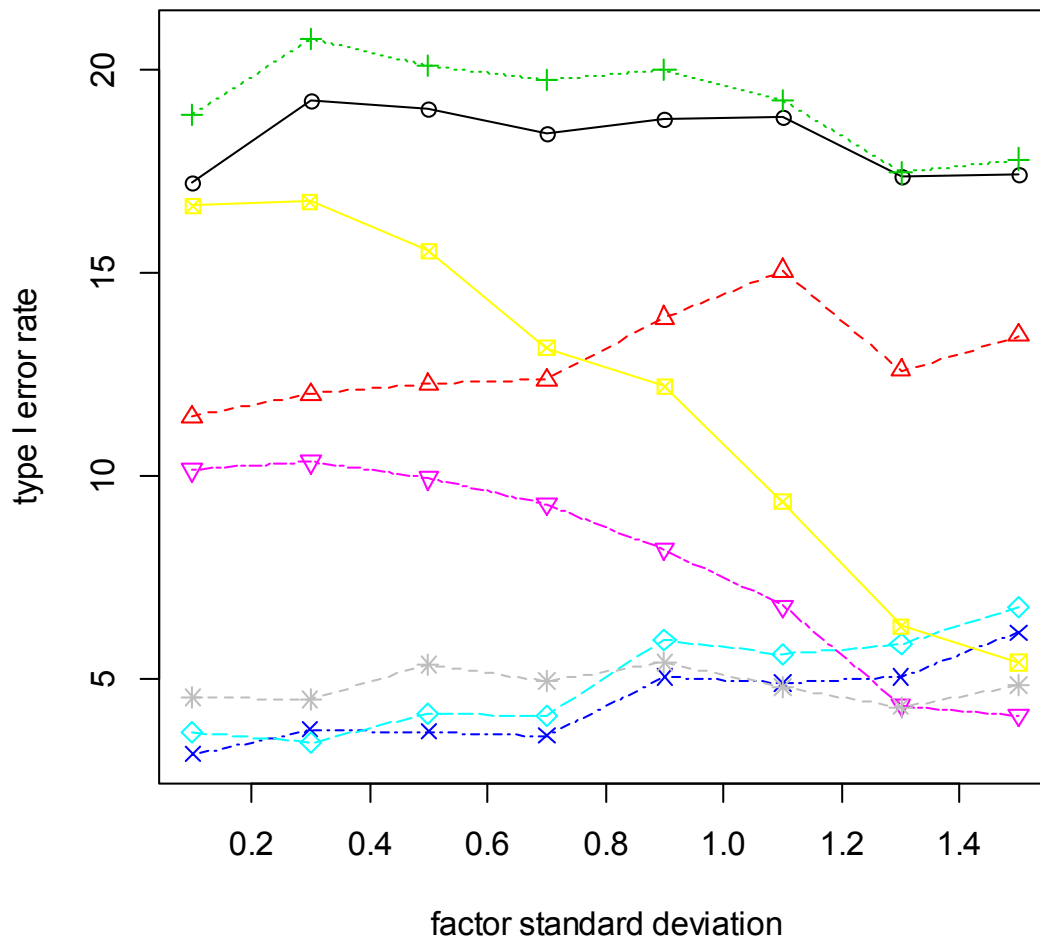
4. 5.   Interaction AB - A significant (equal n$_i$=10 / # levels = 2*4)

4. 5. 1   normal distribution - equal variances

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.65	4.20	4.65	5.70	5.00	5.30	4.95	4.95
RT	5.00	4.45	4.45	5.60	4.70	4.90	5.10	5.05
INT	5.25	4.30	4.65	5.70	4.85	5.00	5.05	4.70
ART	5.50	4.65	4.75	5.80	5.10	5.10	5.30	4.90
ART+INT	5.25	4.40	4.60	5.60	5.45	5.35	4.75	4.85
Puri & Sen	4.30	4.00	3.25	3.35	2.00	1.80	1.40	0.70
v.d.Waerden	4.65	3.65	3.50	3.40	2.05	1.80	1.45	0.75
ATS	4.70	4.30	4.15	5.40	4.60	4.50	5.00	4.55
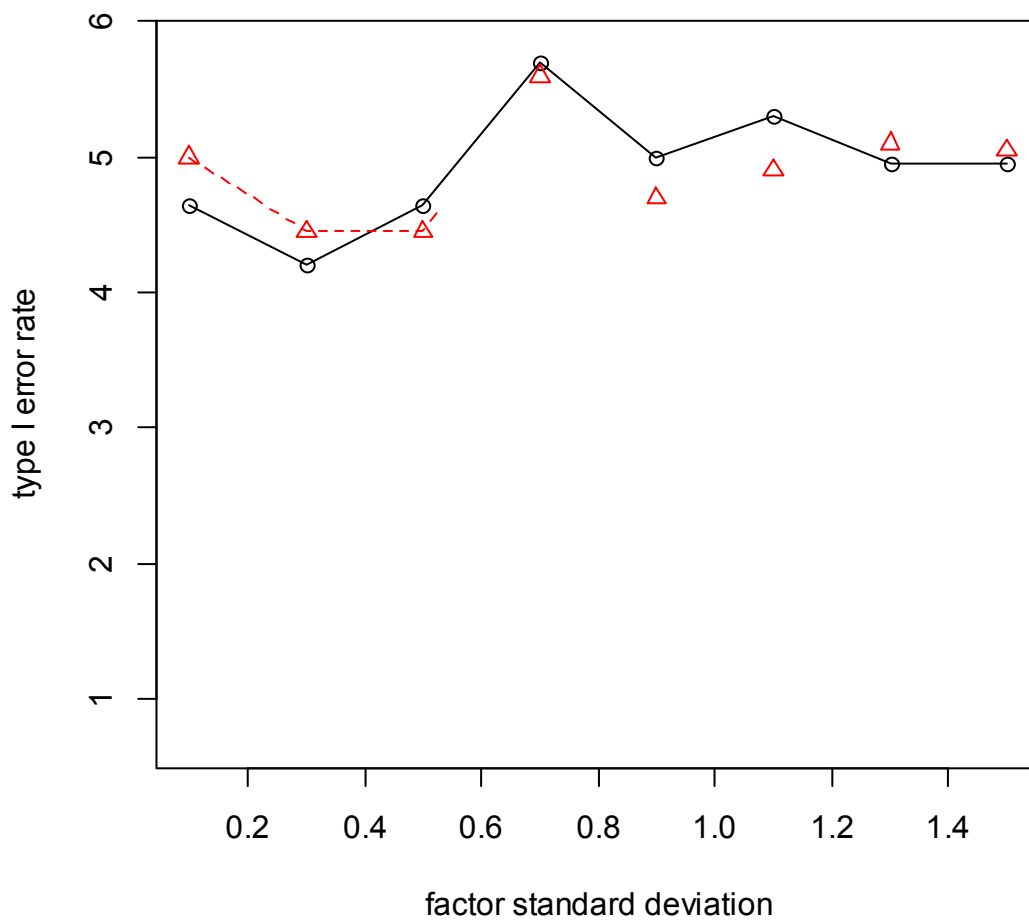
4. 5. 2   normal distribution - unequal variances (on B)

	factor standard deviation							
method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.85	5.85	6.05	6.50	5.45	6.30	5.55	5.55
RT	4.70	5.35	5.40	7.25	7.00	7.80	7.90	7.45
INT	5.20	5.85	5.55	6.20	5.45	6.20	6.20	5.15
ART	6.15	6.45	5.85	6.60	6.05	6.75	6.05	5.50
ART+INT	5.70	6.00	5.70	6.45	5.45	6.40	5.95	5.40
Puri & Sen	4.20	4.55	3.85	4.60	3.10	3.00	2.65	1.65
v.d.Waerden	4.75	5.15	4.20	4.05	2.75	2.50	1.80	1.45
ATS	4.45	5.00	4.95	6.55	6.35	7.45	7.35	6.40
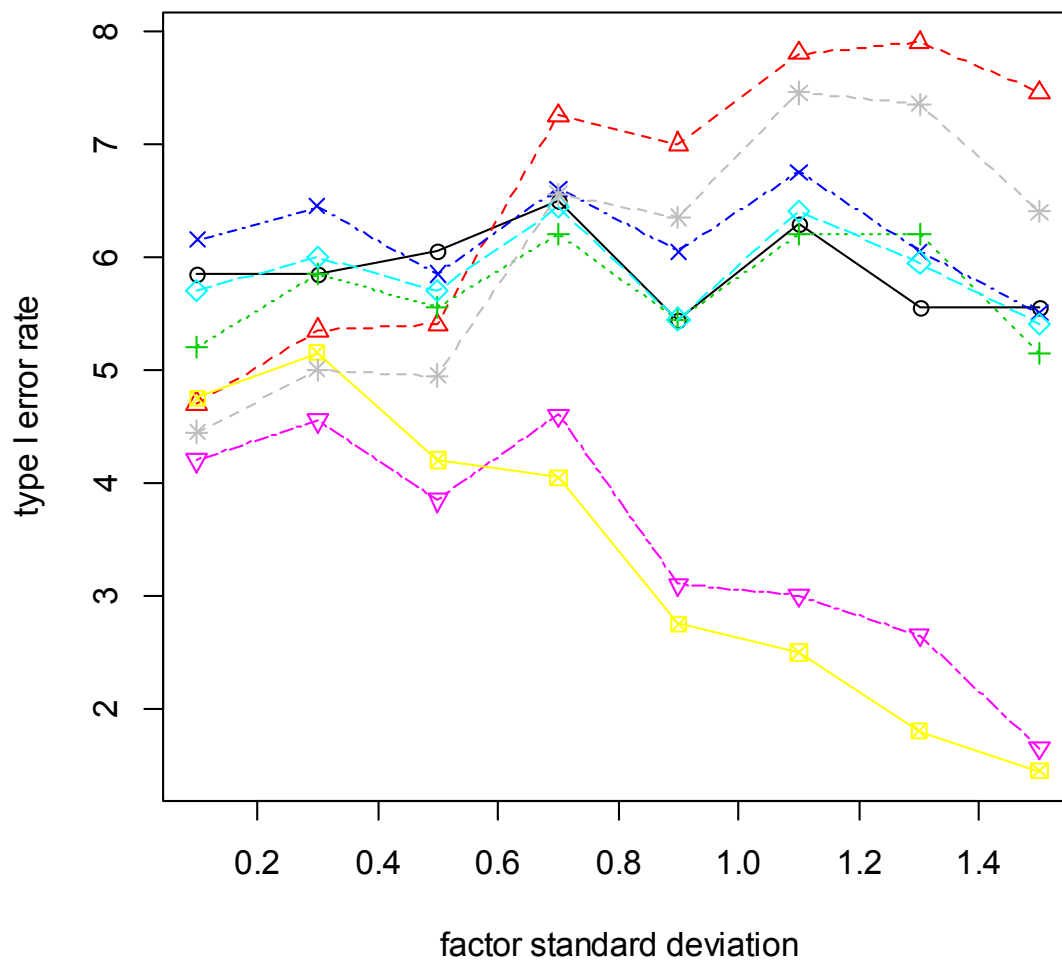
4. 5. 3   normal distribution - unequal variances (on A and B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.60	5.75	5.40	5.65	5.45	6.70	5.70	5.55
RT	5.40	5.05	5.15	7.20	7.05	7.95	7.45	6.85
INT	5.50	4.90	5.05	5.95	5.35	6.05	5.80	5.30
ART	6.75	6.40	5.90	7.00	6.50	6.75	6.75	6.35
ART+INT	5.90	5.85	5.15	6.50	5.75	6.40	6.60	5.60
Puri & Sen	4.75	4.20	3.95	4.75	3.05	2.70	2.30	1.25
v.d.Waerden	4.95	4.30	3.75	4.35	2.70	2.60	1.65	1.30
ATS	5.15	4.65	4.75	6.95	6.25	7.15	6.75	6.15

4. 5. 4 right skewed distribution

	factor standard deviation							
method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.00	5.05	5.15	4.85	5.20	5.35	5.65	3.90
RT	5.20	4.95	5.65	4.75	5.50	5.35	5.75	3.70
INT	5.25	4.75	5.30	5.00	5.05	5.00	5.50	3.95
ART	4.90	5.60	5.80	4.80	5.05	5.45	5.40	4.15
ART+INT	4.90	5.30	5.45	4.45	4.80	4.70	5.65	4.00
Puri & Sen	4.95	4.25	4.10	2.20	2.15	1.50	1.05	0.45
v.d.Waerden	4.85	4.00	3.55	2.05	1.90	1.60	1.00	0.35
ATS	5.00	4.80	5.45	4.10	4.70	4.60	5.00	3.30
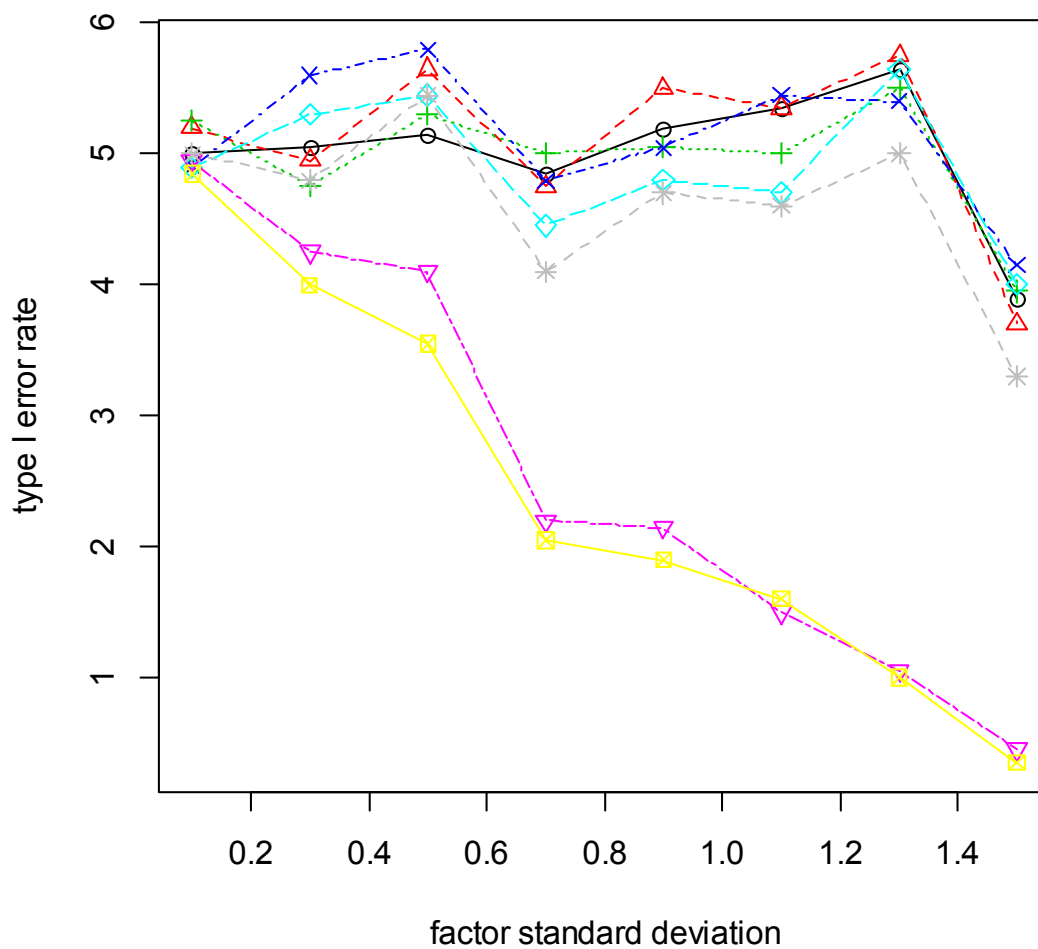
4. 5. 5   exponential distribution - continous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.20	4.55	4.25	4.80	4.50	5.40	4.35	4.90
RT	6.10	5.30	5.05	5.40	4.55	5.40	4.60	5.80
INT	5.60	5.00	5.15	5.20	4.25	5.75	4.55	5.35
ART	6.80	6.20	6.80	8.40	8.05	10.00	12.40	13.45
ART+INT	5.90	4.95	4.30	5.35	4.55	5.45	5.65	6.25
Puri & Sen	5.40	4.90	3.95	3.45	3.35	3.75	2.45	3.05
v.d.Waerden	4.95	4.30	4.05	3.75	3.30	3.40	2.15	3.05
ATS	6.00	5.15	4.65	5.10	4.45	5.25	4.25	5.35
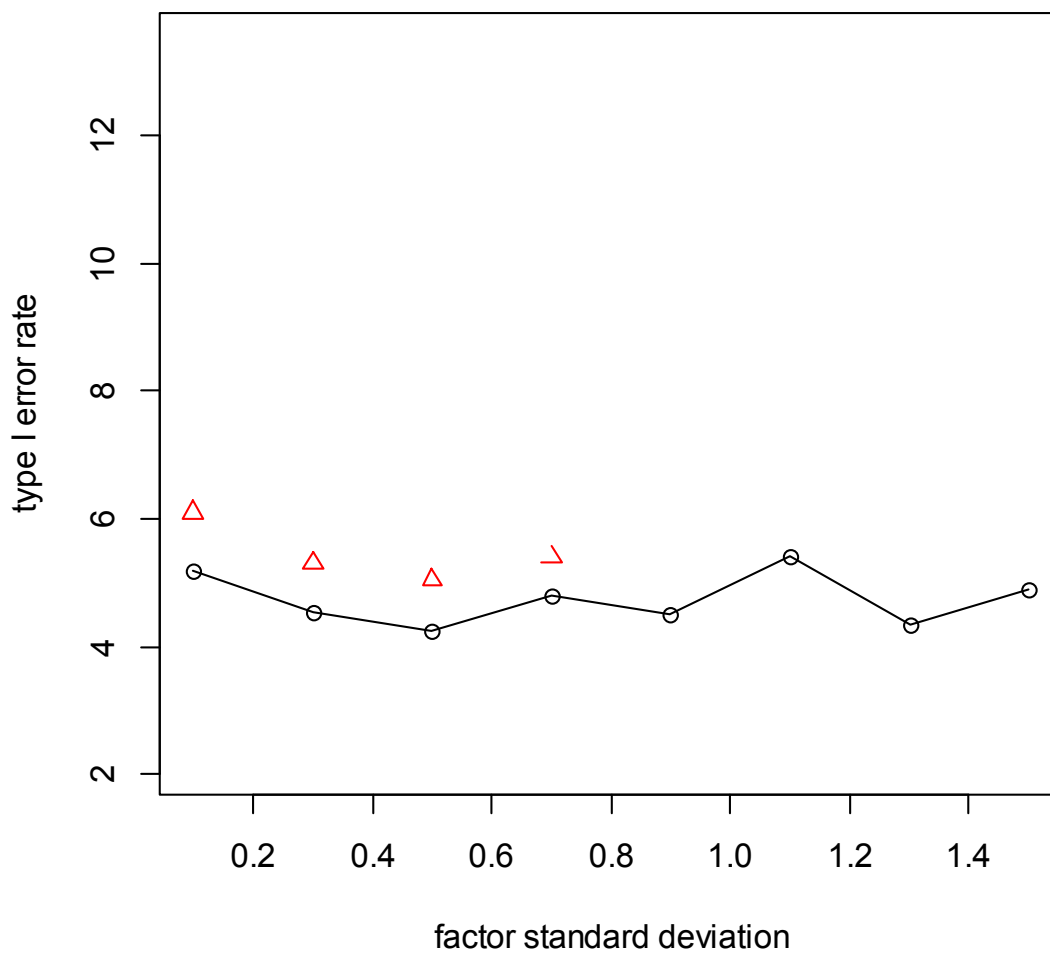
4. 5. 6   exponential distribution - discrete

	factor standard deviation							
method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.50	4.65	4.50	4.80	4.55	5.55	4.35	4.65
RT	6.45	5.25	5.00	5.05	4.65	5.50	4.95	6.00
INT	6.10	5.05	4.70	5.00	4.55	5.55	4.90	5.60
ART	7.35	6.25	6.90	8.70	8.95	10.30	12.40	14.50
ART+INT	6.05	4.60	4.75	5.55	4.45	5.45	5.60	6.00
Puri & Sen	5.80	4.80	3.85	3.45	3.15	3.75	2.50	3.25
v.d.Waerden	5.75	4.60	3.85	3.50	3.20	3.35	2.30	3.05
ATS	6.35	4.95	4.55	4.65	4.30	5.10	4.65	5.75
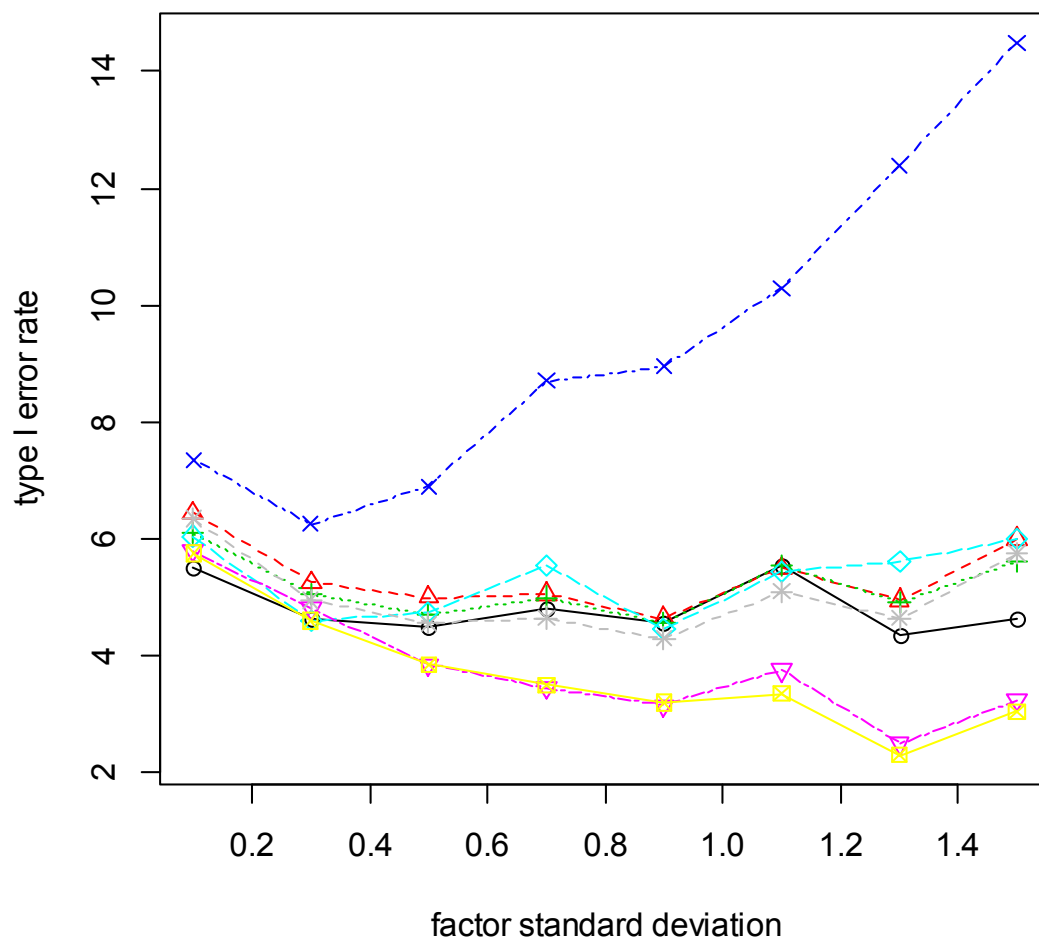
4. 5. 7   lognormal distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.00	4.95	4.95	4.65	5.10	5.05	4.45	5.55
RT	4.60	4.80	5.85	5.30	4.70	5.30	4.30	5.75
INT	4.60	4.75	5.30	5.20	4.90	5.15	4.45	5.75
ART	4.85	4.65	5.35	4.85	4.95	5.40	4.60	5.50
ART+INT	4.50	5.00	5.10	4.80	5.05	5.15	4.75	5.45
Puri & Sen	4.10	4.20	4.20	3.25	1.80	1.70	0.80	0.55
v.d.Waerden	4.00	4.00	3.90	3.15	1.60	1.50	0.80	0.75
ATS	4.45	4.40	5.60	4.95	4.25	4.90	4.10	5.30
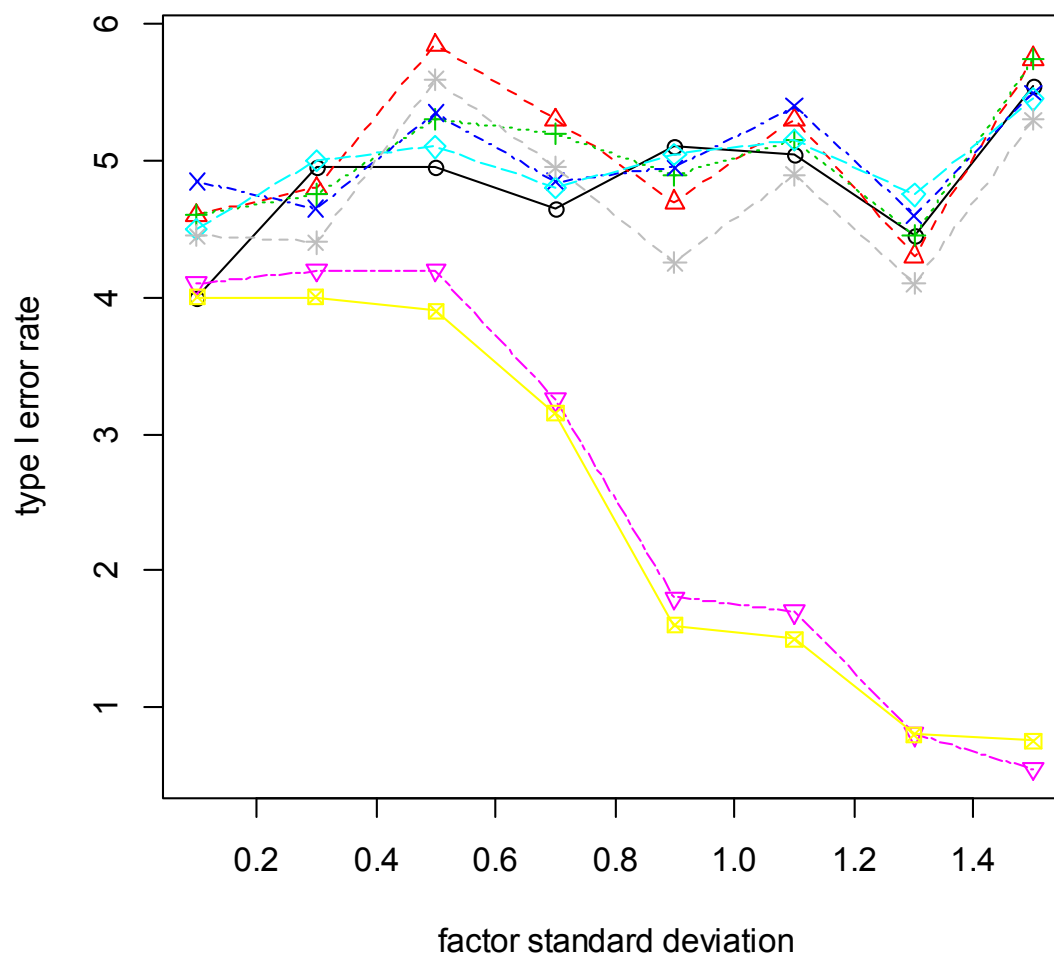
4. 5. 8   uniform distribution - continous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.10	4.80	5.35	4.55	4.90	5.30	5.10	3.65
RT	5.45	5.10	4.95	4.80	5.05	4.85	5.45	4.20
INT	5.00	4.90	4.95	4.90	5.25	4.95	5.25	3.90
ART	5.30	5.05	5.40	4.65	5.35	5.25	5.30	3.80
ART+INT	5.25	4.75	5.15	4.80	4.90	4.80	5.45	4.10
Puri & Sen	5.30	4.65	4.25	3.10	2.45	2.05	1.05	0.65
v.d.Waerden	4.90	4.20	3.80	2.60	2.20	1.70	1.15	0.60
ATS	5.40	4.95	4.80	4.65	4.90	4.65	5.15	3.75
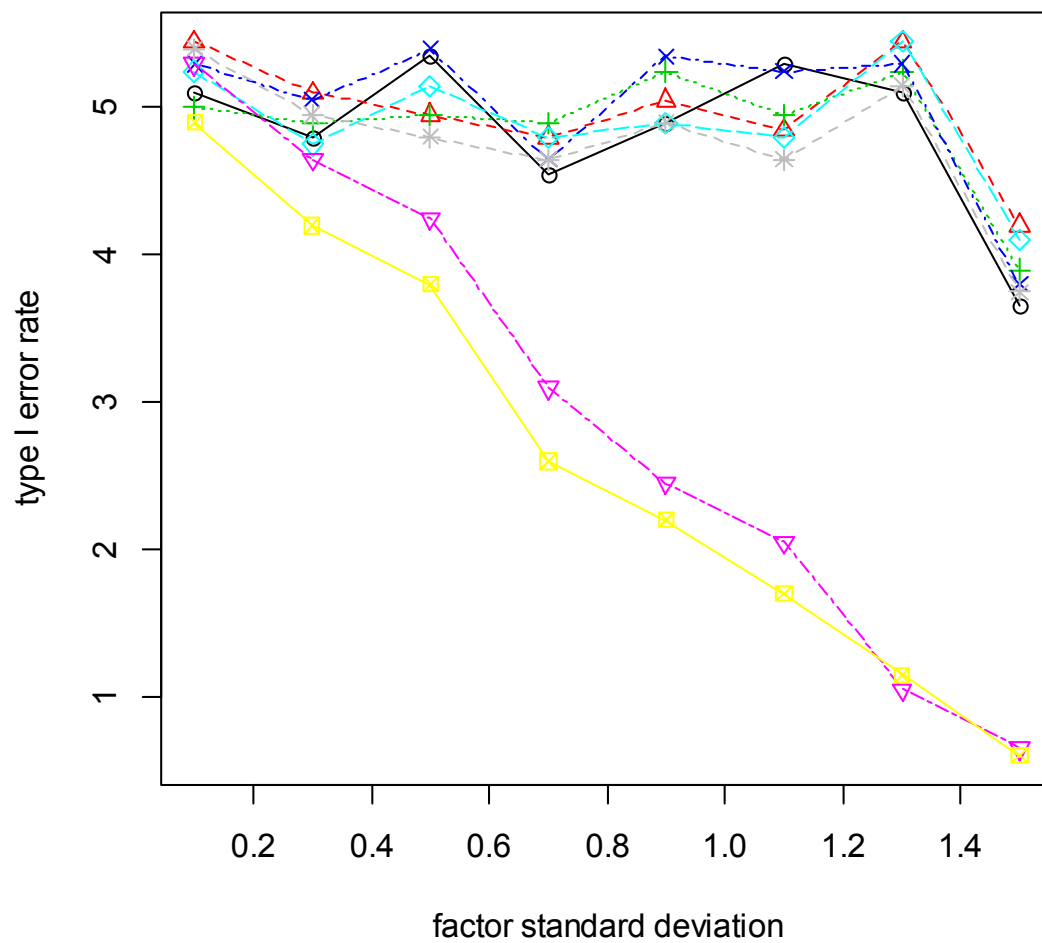
4. 5. 9   uniform distribution - discrete

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.60	5.00	5.30	4.70	5.25	5.25	4.90	4.20
RT	4.80	5.15	4.80	4.65	4.90	5.30	5.25	4.75
INT	5.15	5.25	5.05	4.70	4.95	5.15	4.95	4.55
ART	5.05	5.50	5.25	4.55	5.30	5.40	5.40	4.75
ART+INT	5.25	5.40	5.50	4.30	5.20	5.60	5.40	5.00
Puri & Sen	4.70	4.65	3.60	2.65	2.50	2.25	1.25	0.65
v.d.Waerden	4.95	4.40	3.85	2.10	2.20	1.90	0.85	0.50
ATS	4.70	4.95	4.55	4.45	4.75	5.10	5.05	4.40
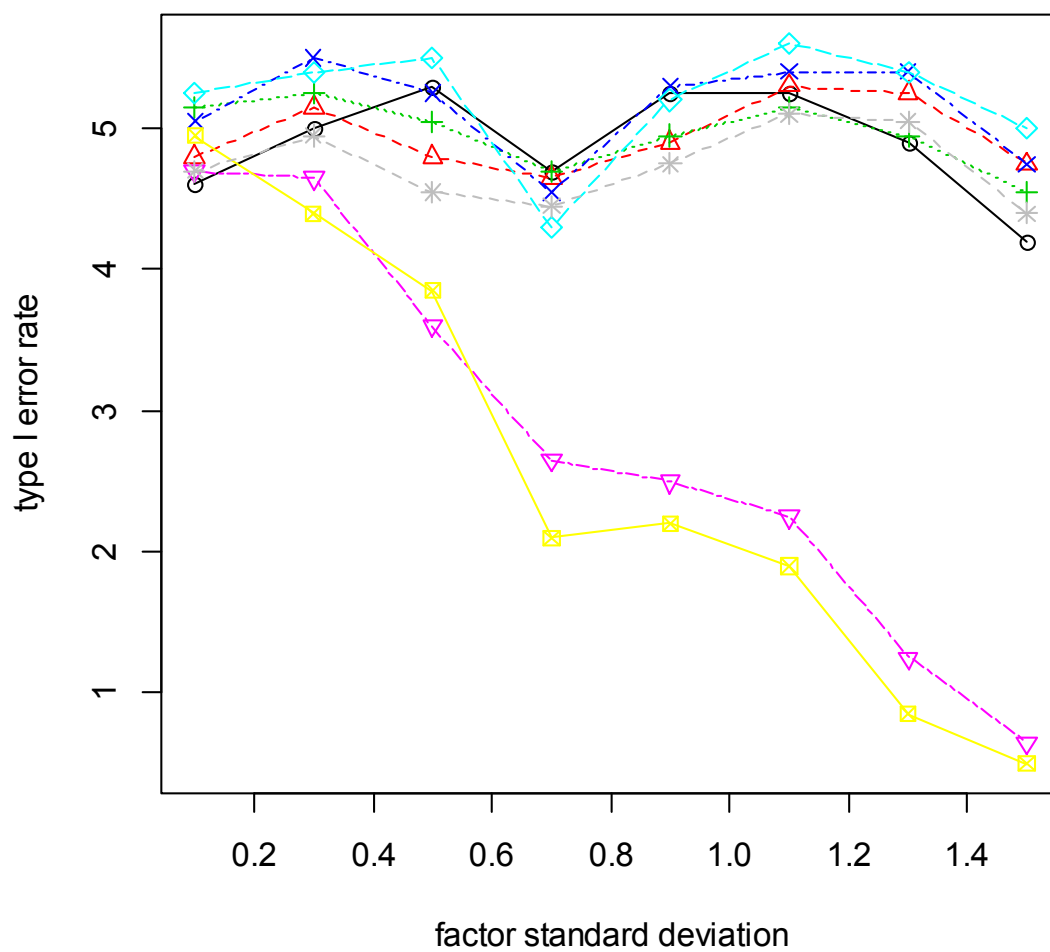
4. 5. 10   left/right skewed distribution

	factor standard deviation							
method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.75	4.80	4.50	4.85	5.15	5.15	4.70	4.50
RT	5.10	4.70	4.65	5.30	5.30	5.20	4.65	5.30
INT	4.95	4.95	4.60	5.25	4.85	4.90	4.30	5.15
ART	4.90	5.05	4.35	5.05	5.60	5.50	4.70	4.95
ART+INT	4.80	4.95	4.25	4.95	5.40	5.70	4.60	5.20
Puri & Sen	4.70	4.25	3.65	3.20	2.70	2.00	1.45	0.75
v.d.Waerden	4.65	4.35	3.60	3.05	1.85	1.75	1.25	0.60
ATS	4.85	4.40	4.60	4.90	5.00	5.00	4.35	5.10
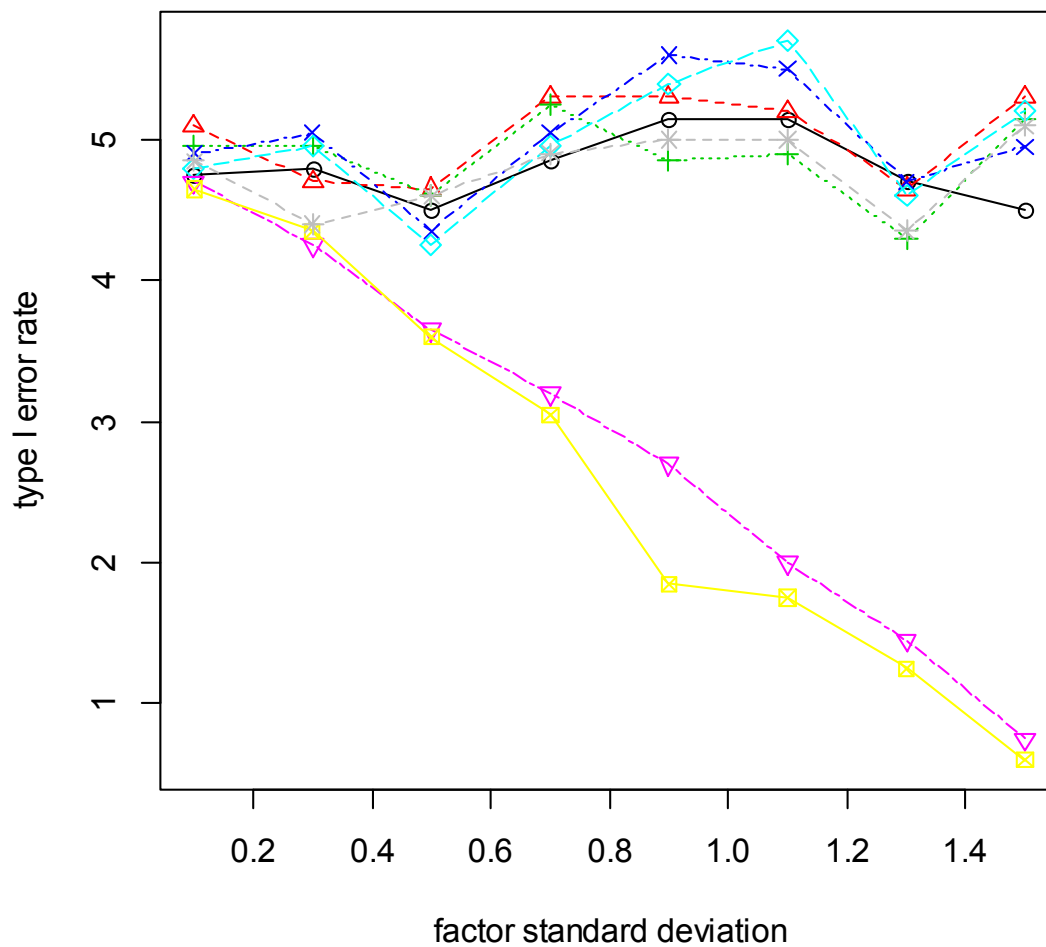
4. 5. 11   left skewed distribution - unequal variances (on B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	6.25	6.60	6.05	5.90	5.30	6.20	7.15	6.00
RT	5.65	5.70	5.85	5.75	6.85	7.60	8.95	8.65
INT	6.50	6.55	6.15	5.65	5.30	5.70	6.35	5.60
ART	6.40	6.95	7.10	6.25	5.70	6.95	7.00	6.50
ART+INT	6.05	7.30	6.45	5.70	5.65	6.00	6.35	6.15
Puri & Sen	5.25	5.15	5.00	4.15	3.85	3.65	3.65	2.15
v.d.Waerden	6.10	5.75	4.85	3.70	3.20	2.20	1.65	1.20
ATS	5.35	5.25	5.65	5.25	6.40	6.75	8.45	8.05
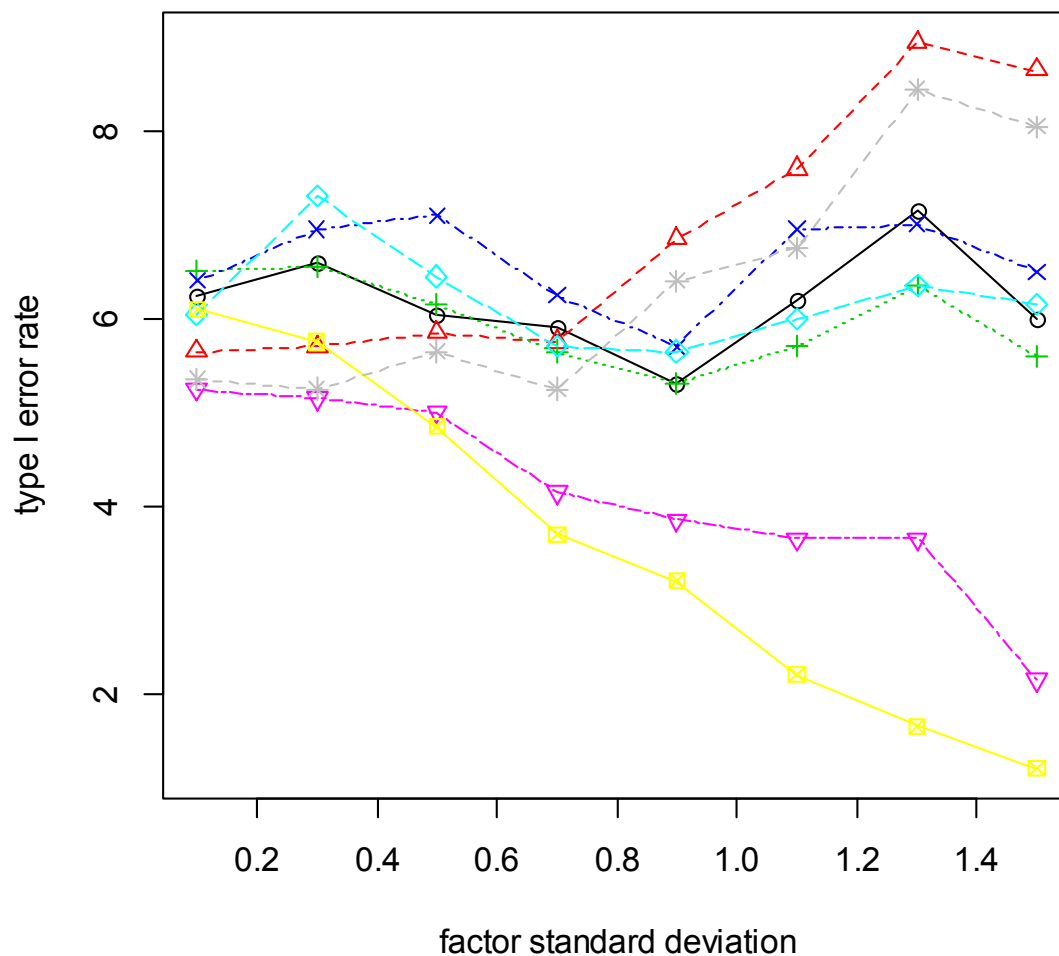
4. 5. 12   left skewed distribution - unequal variances (on A and B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.50	6.70	5.75	5.85	5.70	6.05	6.35	6.00
RT	5.40	6.10	5.75	5.75	5.90	7.05	8.25	8.05
INT	5.75	6.25	5.55	5.30	5.35	6.00	6.20	5.75
ART	6.50	6.65	7.15	6.30	6.55	7.25	7.30	7.15
ART+INT	5.90	6.80	6.65	6.00	6.10	6.30	6.30	6.40
Puri & Sen	5.05	5.15	4.50	3.70	3.65	3.30	2.90	1.85
v.d.Waerden	5.30	5.45	4.30	3.40	3.00	2.40	1.80	1.20
ATS	5.05	5.50	5.25	5.40	5.70	6.55	7.70	7.45
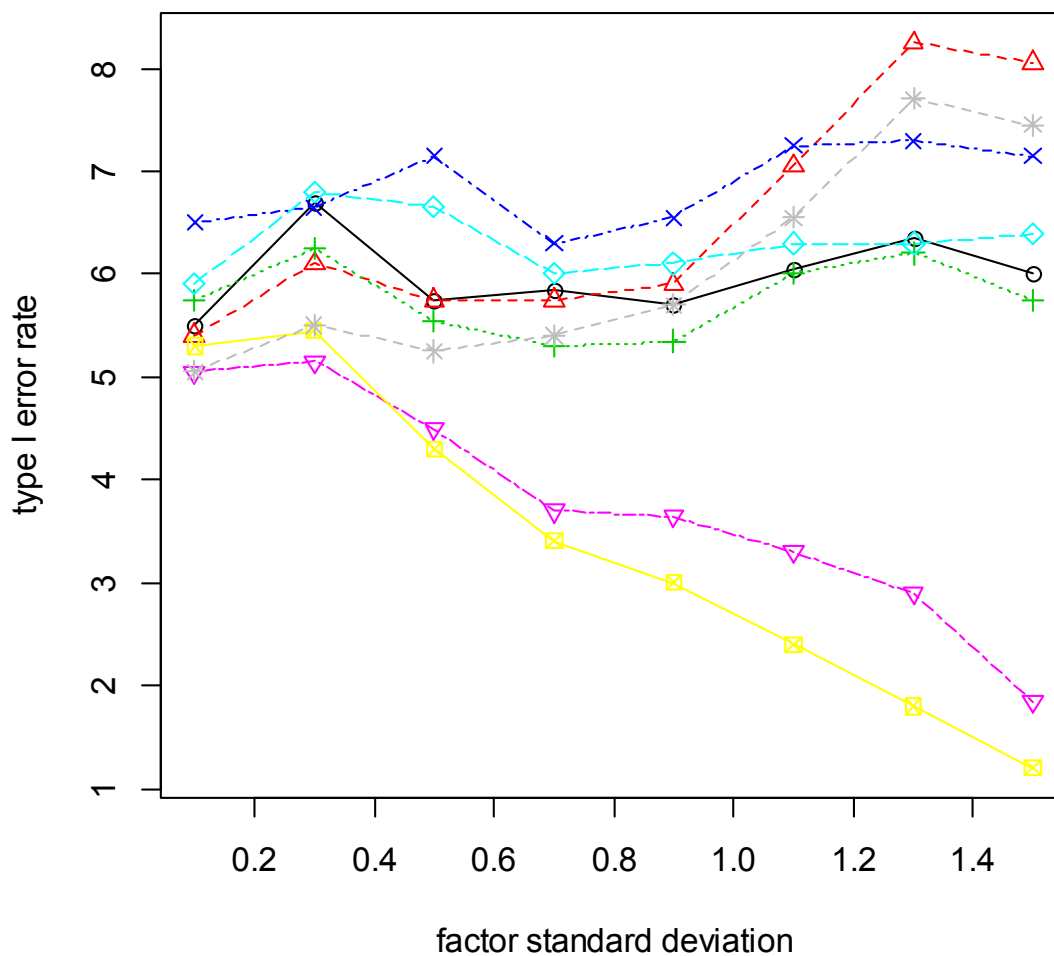
4. 6.   Interaction AB - A significant (unequal $n_i \sim 5$ / # levels = 4*5)

4. 6. 1   normal distribution - equal variances

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.75	5.40	4.45	5.05	5.30	5.50	5.50	4.25
RT	5.15	4.40	4.65	4.70	4.70	5.05	5.30	4.65
INT	5.65	4.85	4.35	5.05	5.10	5.20	5.25	4.50
ART	4.80	4.60	4.70	4.55	4.95	5.05	5.50	4.20
ART+INT	5.85	5.00	4.65	5.15	4.95	5.75	5.35	4.50
Puri & Sen	4.10	3.10	2.50	1.80	1.10	0.55	0.60	0.10
v.d.Waerden	4.45	3.50	2.25	1.45	1.10	0.65	0.50	0.05
ATS	4.25	4.55	3.95	4.50	4.20	3.95	4.45	3.95
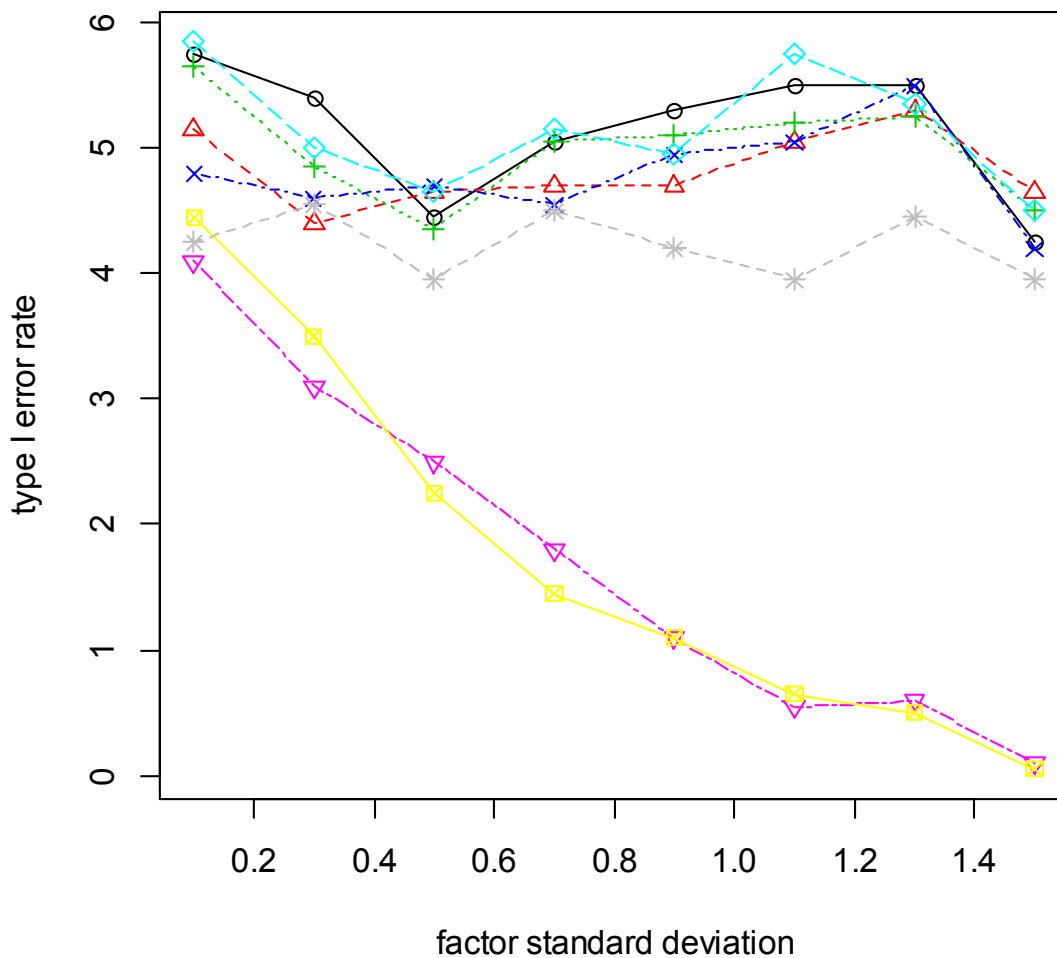
4. 6. 2   normal distribution - unequal variances (on B)

4. 6. 3   normal distribution - unequal variances (on A and B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	8.55	8.20	8.05	7.90	8.65	9.45	8.70	8.05
RT	5.50	4.95	5.35	5.70	6.20	6.95	7.35	6.35
INT	6.90	6.70	6.55	6.15	6.70	7.40	7.05	6.10
ART	6.70	6.40	6.30	6.00	7.05	7.85	7.55	6.30
ART+INT	7.60	7.60	7.20	6.70	7.70	8.35	8.20	6.35
Puri & Sen	4.40	3.35	3.05	2.35	2.10	1.65	1.30	0.35
v.d.Waerden	5.30	5.05	3.50	3.15	1.90	2.00	1.25	0.35
ATS	3.50	4.15	3.55	4.00	3.90	3.95	3.90	3.35
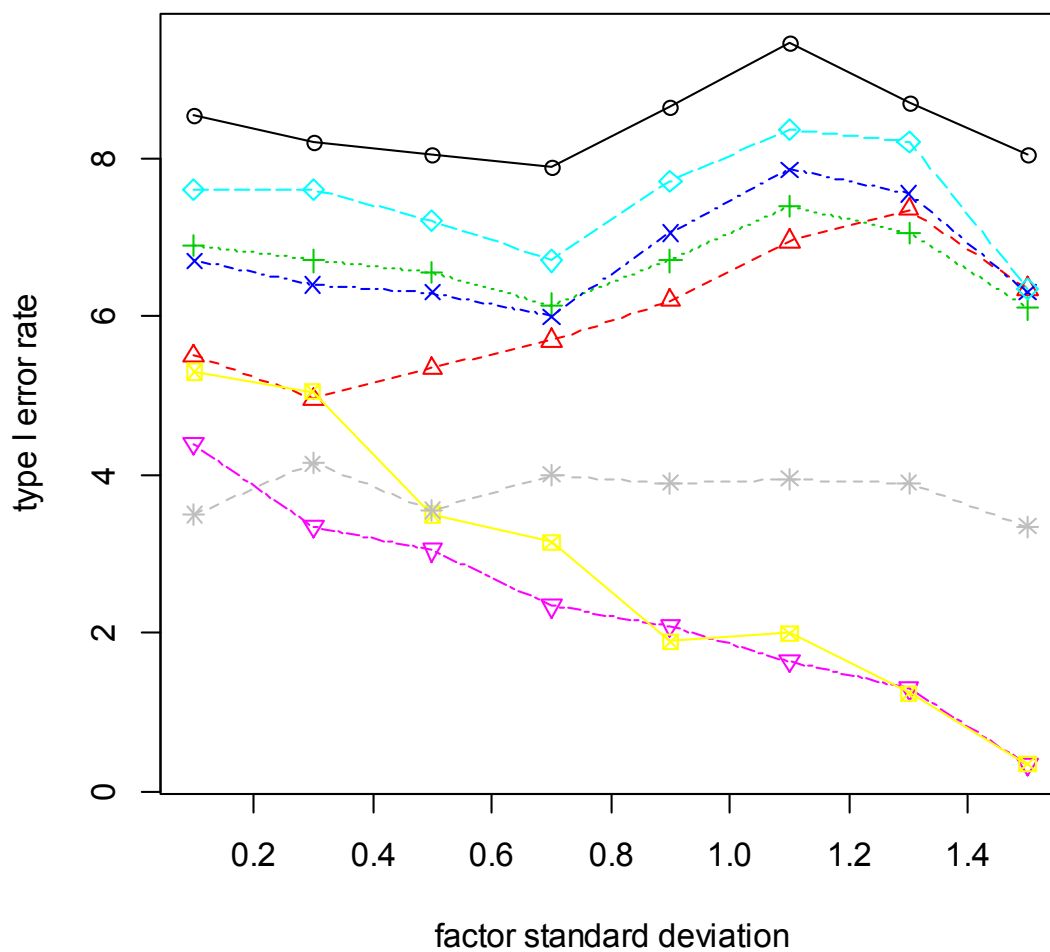
4. 6. 4   right skewed distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.65	5.15	4.30	4.85	5.90	4.80	4.90	5.40
RT	5.60	5.00	4.20	5.45	6.15	5.85	6.30	6.20
INT	6.65	4.90	4.35	5.05	5.80	5.25	5.50	5.75
ART	5.40	5.25	4.20	4.90	6.00	5.80	5.75	5.15
ART+INT	5.85	5.15	3.90	5.00	6.75	5.80	5.95	5.60
Puri & Sen	4.35	2.75	2.30	1.90	1.40	0.70	0.30	0.30
v.d.Waerden	5.05	3.00	1.80	2.00	1.15	0.90	0.60	0.20
ATS	4.10	4.45	5.20	4.50	5.40	5.10	5.70	4.50
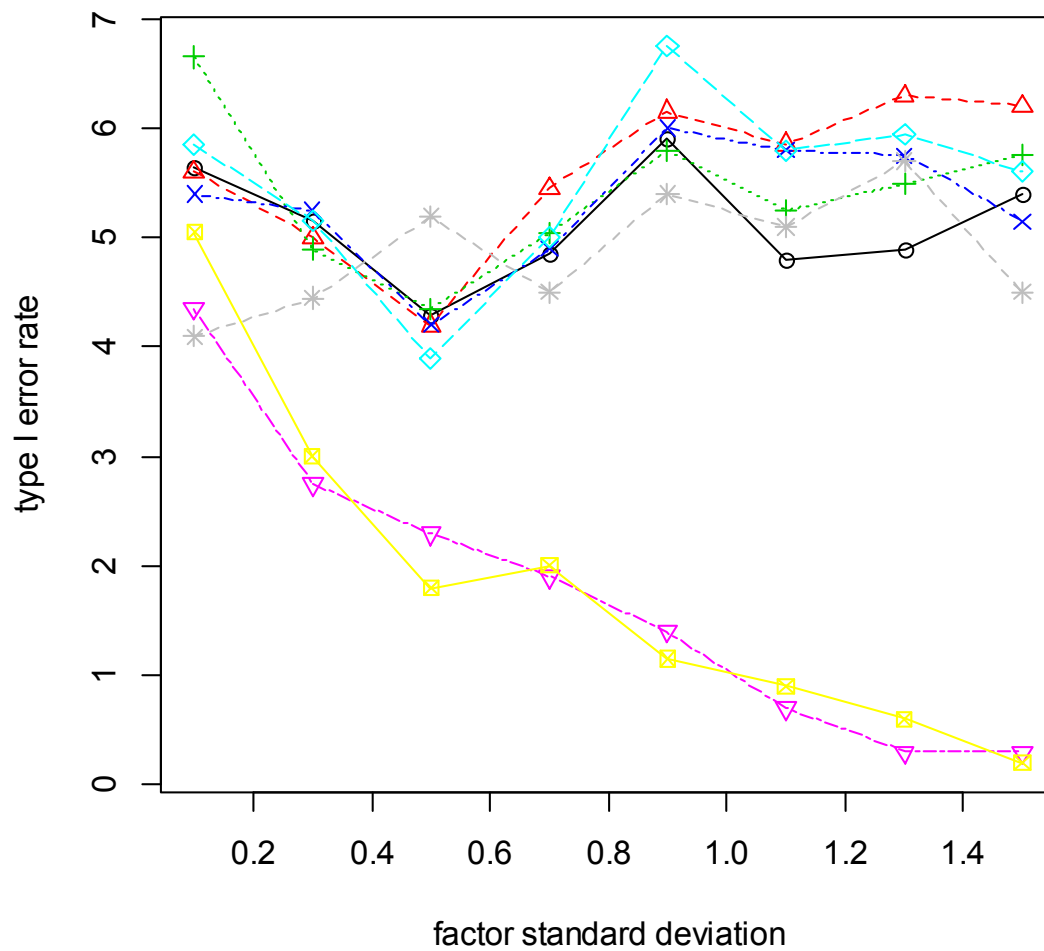
4. 6. 5   exponential distribution - continous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.25	6.00	4.75	5.10	4.55	4.90	4.25	4.45
RT	5.10	6.25	3.55	3.50	4.55	4.35	3.75	3.95
INT	5.05	6.35	4.15	3.75	4.35	4.25	3.55	3.75
ART	5.85	6.30	4.70	5.25	6.20	6.50	5.95	7.25
ART+INT	5.30	6.20	4.25	4.40	4.65	4.40	4.20	4.70
Puri & Sen	3.70	4.70	2.10	2.15	2.15	1.40	0.90	1.25
v.d.Waerden	3.90	4.85	2.65	2.20	1.95	1.60	0.90	1.15
ATS	5.00	4.40	4.30	4.25	3.85	3.90	4.40	4.55
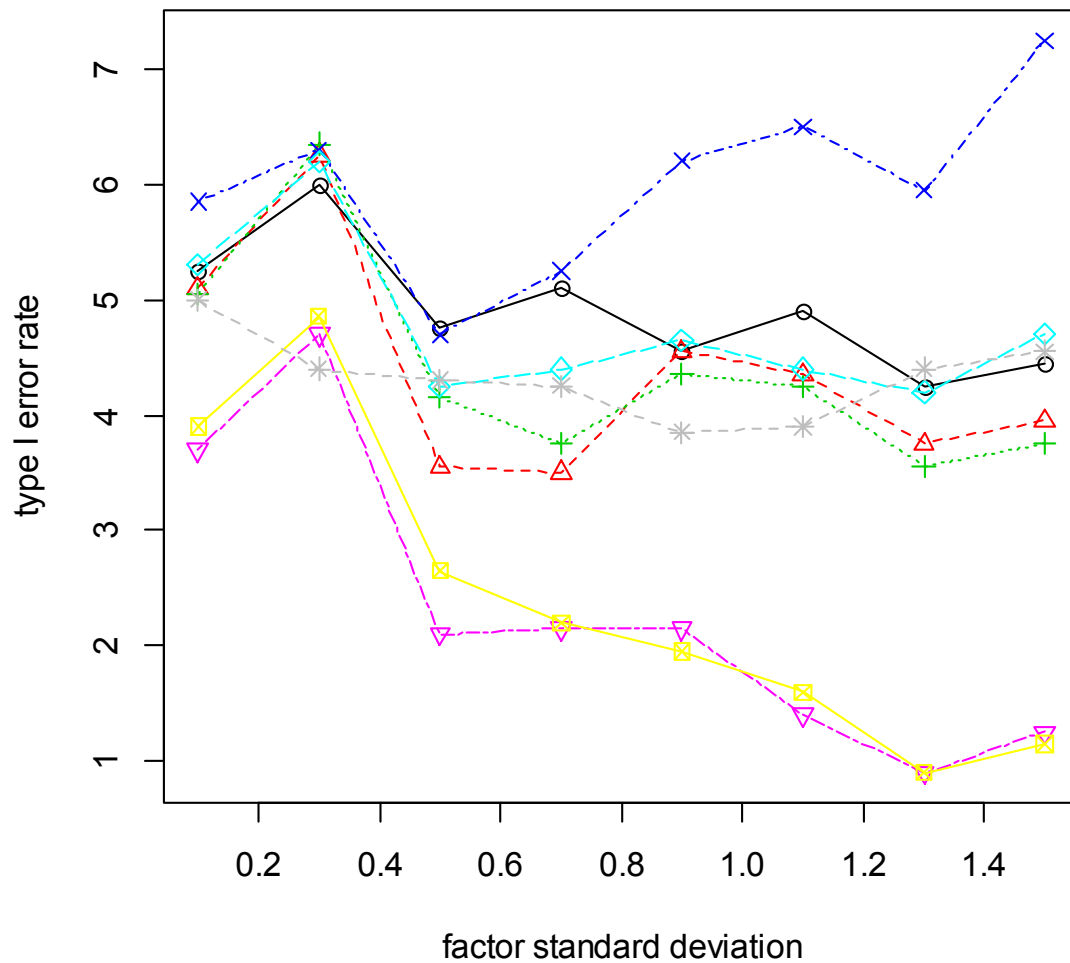
4. 6. 6 exponential distribution - discrete

	factor standard deviation							
method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.05	5.95	4.85	4.85	4.65	4.80	4.15	4.45
RT	5.00	5.75	3.75	3.75	4.25	4.05	4.00	3.80
INT	5.00	5.50	4.00	3.95	4.25	4.25	3.80	4.30
ART	6.25	6.55	5.00	5.05	6.05	6.90	6.15	7.60
ART+INT	5.90	5.70	4.40	4.75	4.35	4.95	4.15	4.90
Puri & Sen	4.05	4.35	2.45	1.95	1.95	1.50	0.90	1.05
v.d.Waerden	4.00	4.00	2.80	1.90	1.80	1.65	0.95	1.05
ATS	4.50	4.85	4.10	4.40	3.95	3.90	4.95	4.55
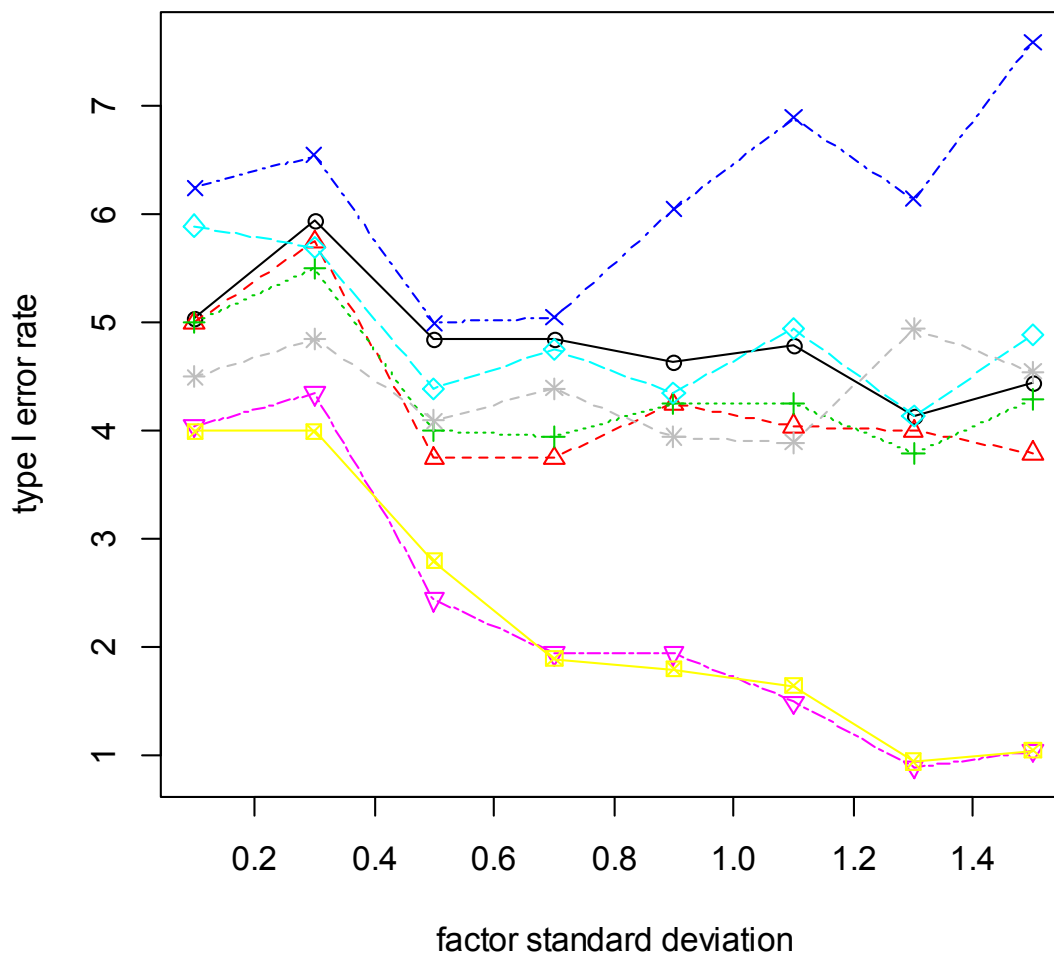
4. 6. 7 lognormal distribution

	factor standard deviation							
method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.80	4.95	5.90	4.70	4.90	5.35	5.70	5.05
RT	4.90	4.60	5.90	5.05	4.50	6.10	5.35	6.00
INT	4.95	4.50	6.35	5.35	4.75	6.60	5.95	6.40
ART	4.80	4.35	5.35	4.40	4.60	5.85	4.90	5.30
ART+INT	5.25	4.70	5.75	4.55	4.75	5.85	5.65	5.35
Puri & Sen	3.80	2.95	2.80	1.50	0.80	0.55	0.15	0.05
v.d.Waerden	4.15	3.45	3.15	1.60	0.75	0.40	0.25	0.05
ATS	4.35	4.95	5.00	4.15	3.95	3.95	3.60	4.35
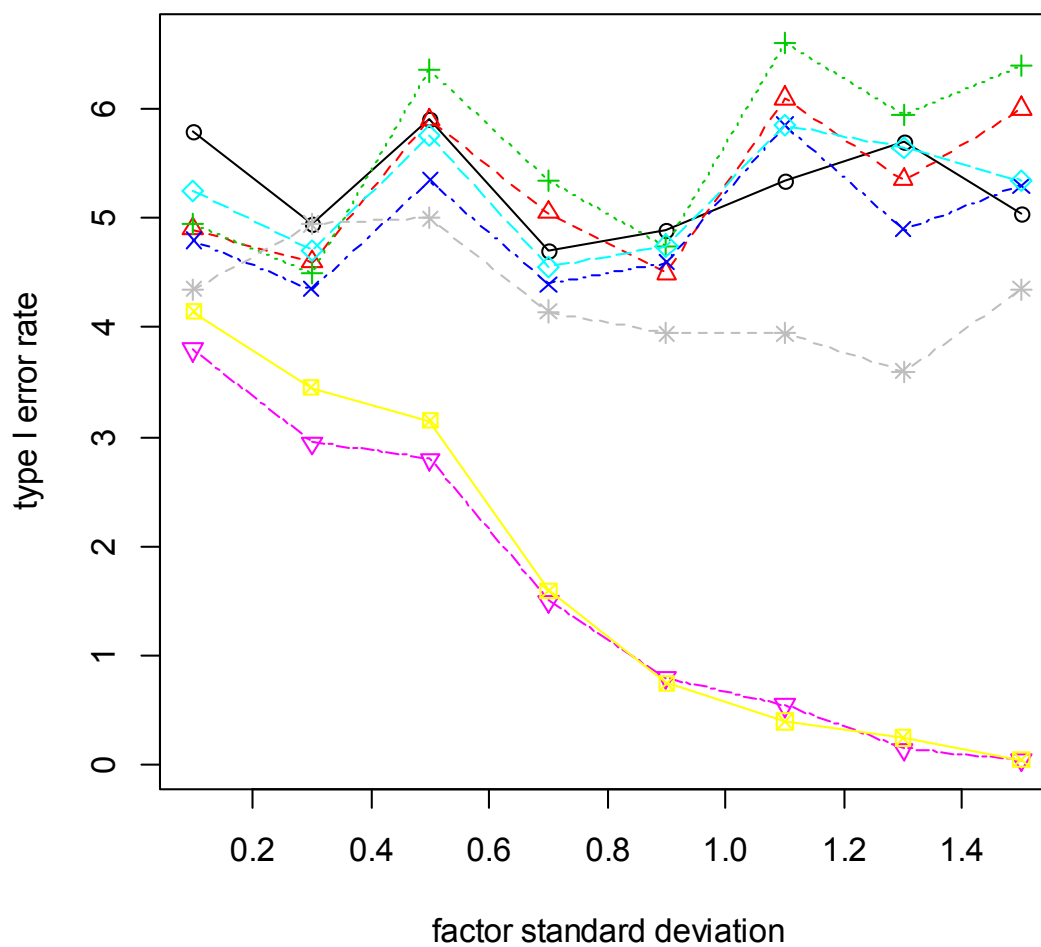
4. 6. 8   uniform distribution - continous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.55	4.35	3.55	4.90	5.05	4.70	4.80	4.40
RT	5.75	4.15	3.75	4.80	5.55	4.80	4.80	4.60
INT	6.55	4.35	3.65	4.85	5.65	4.45	4.35	4.55
ART	5.45	4.30	3.85	4.55	5.05	5.00	4.95	4.15
ART+INT	5.80	4.00	3.90	4.85	5.25	4.85	4.85	4.65
Puri & Sen	4.35	2.40	1.95	1.90	1.60	0.90	0.45	0.50
v.d.Waerden	4.75	2.85	1.40	1.45	1.30	0.70	0.35	0.30
ATS	4.05	3.70	4.70	3.80	4.60	4.95	5.65	4.15
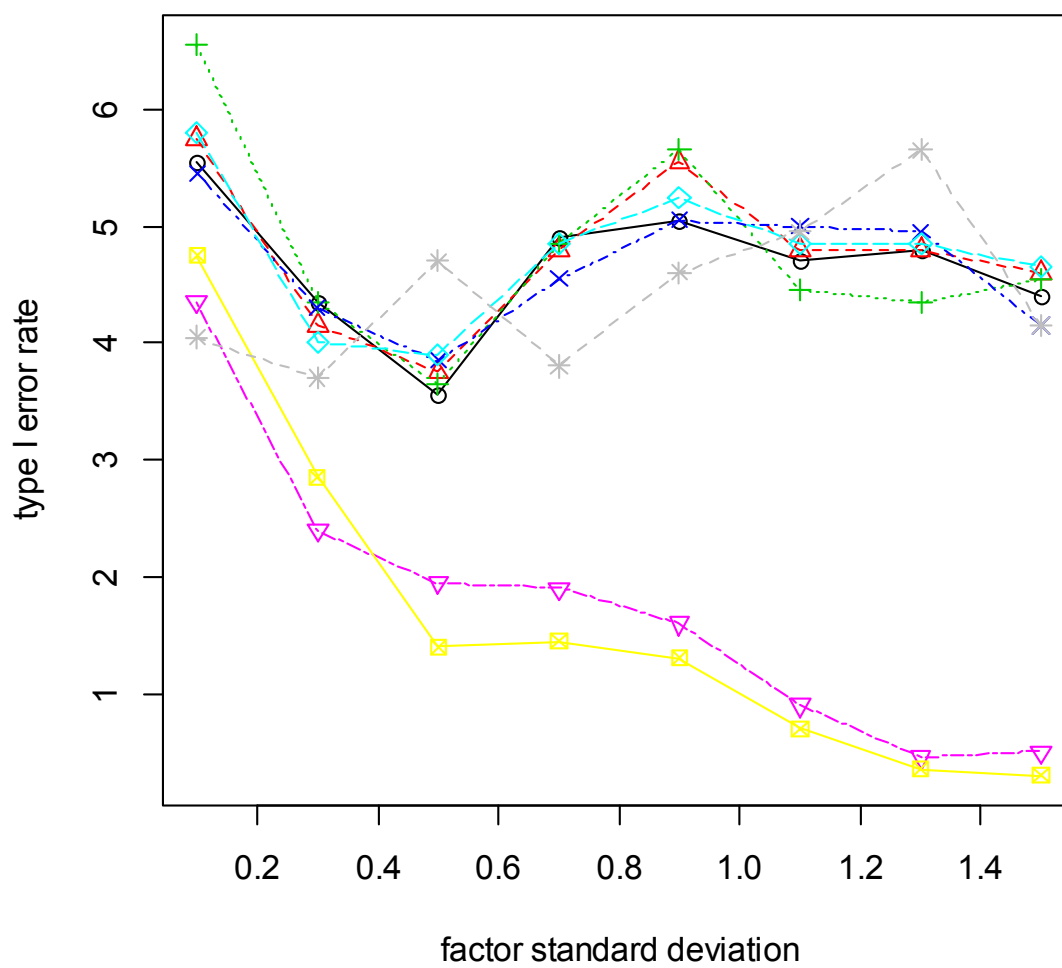
4. 6. 9   uniform distribution - discrete

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.50	3.85	4.65	5.05	4.70	4.30	5.05	4.20
RT	5.50	3.95	4.35	5.25	5.05	4.50	5.25	4.30
INT	5.50	3.80	4.50	5.05	4.55	4.60	4.65	4.10
ART	6.10	4.25	4.60	5.25	5.00	5.10	5.40	4.35
ART+INT	5.65	4.25	5.20	6.00	4.65	4.90	4.70	4.30
Puri & Sen	4.15	2.45	2.25	2.25	1.60	0.80	0.40	0.40
v.d.Waerden	4.20	2.35	2.35	1.70	1.25	0.45	0.30	0.20
ATS	4.35	3.95	5.10	4.40	4.65	4.50	5.80	3.65
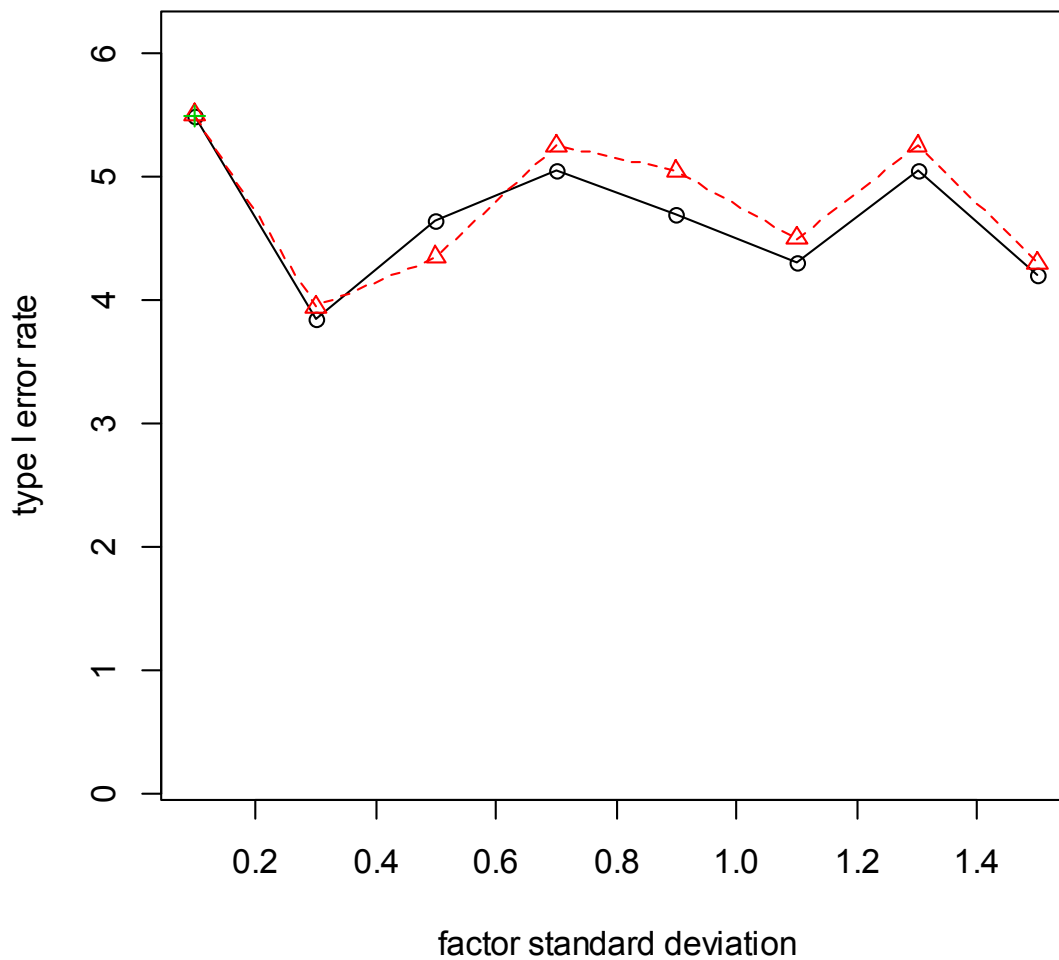
4. 6. 10   left/right skewed distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	6.10	4.55	4.80	4.45	5.50	4.40	5.00	4.70
RT	6.10	4.15	4.15	4.20	5.45	4.25	5.10	5.05
INT	6.30	5.00	4.60	4.25	5.80	4.85	5.25	5.60
ART	5.70	4.45	4.65	4.55	5.20	4.25	5.05	4.60
ART+INT	6.00	4.80	4.70	4.20	6.15	4.15	5.35	4.85
Puri & Sen	4.55	2.85	2.20	1.75	1.25	0.75	0.50	0.20
v.d.Waerden	4.45	3.10	2.10	1.45	1.30	0.55	0.45	0.25
ATS	4.60	3.20	4.75	3.80	4.70	4.55	5.00	4.55
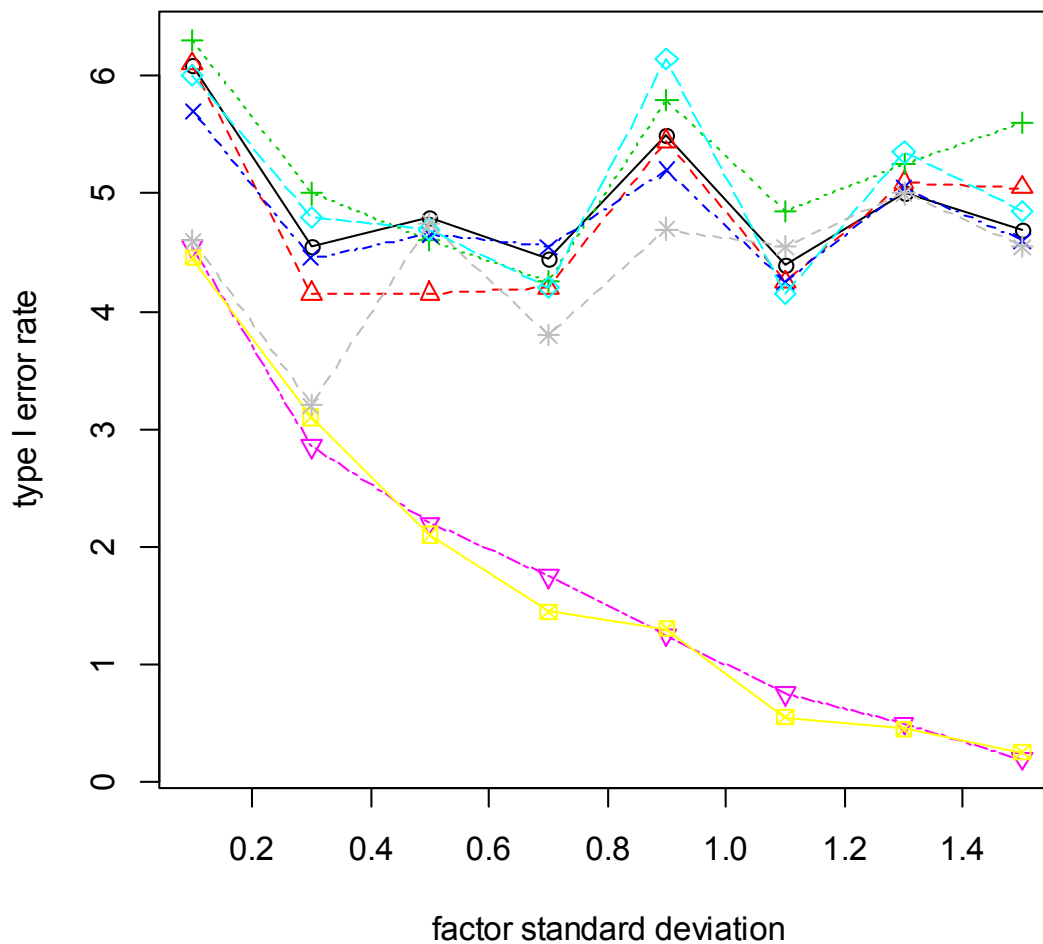
4. 6. 11 left skewed distribution - unequal variances (on B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	6.45	6.75	5.20	5.60	5.85	6.00	6.35	5.30
RT	5.20	5.05	4.55	4.50	5.65	6.25	6.70	5.80
INT	7.10	7.30	5.40	5.50	5.70	6.10	5.90	5.15
ART	6.50	6.70	5.85	6.20	5.90	6.70	6.85	5.80
ART+INT	6.80	6.85	5.45	5.80	6.10	6.30	6.50	5.55
Puri & Sen	4.35	3.25	2.75	2.00	2.15	1.35	1.05	0.50
v.d.Waerden	5.30	4.80	3.20	2.15	2.10	1.10	0.60	0.35
ATS	3.50	3.65	4.05	2.95	4.20	4.85	5.60	3.45
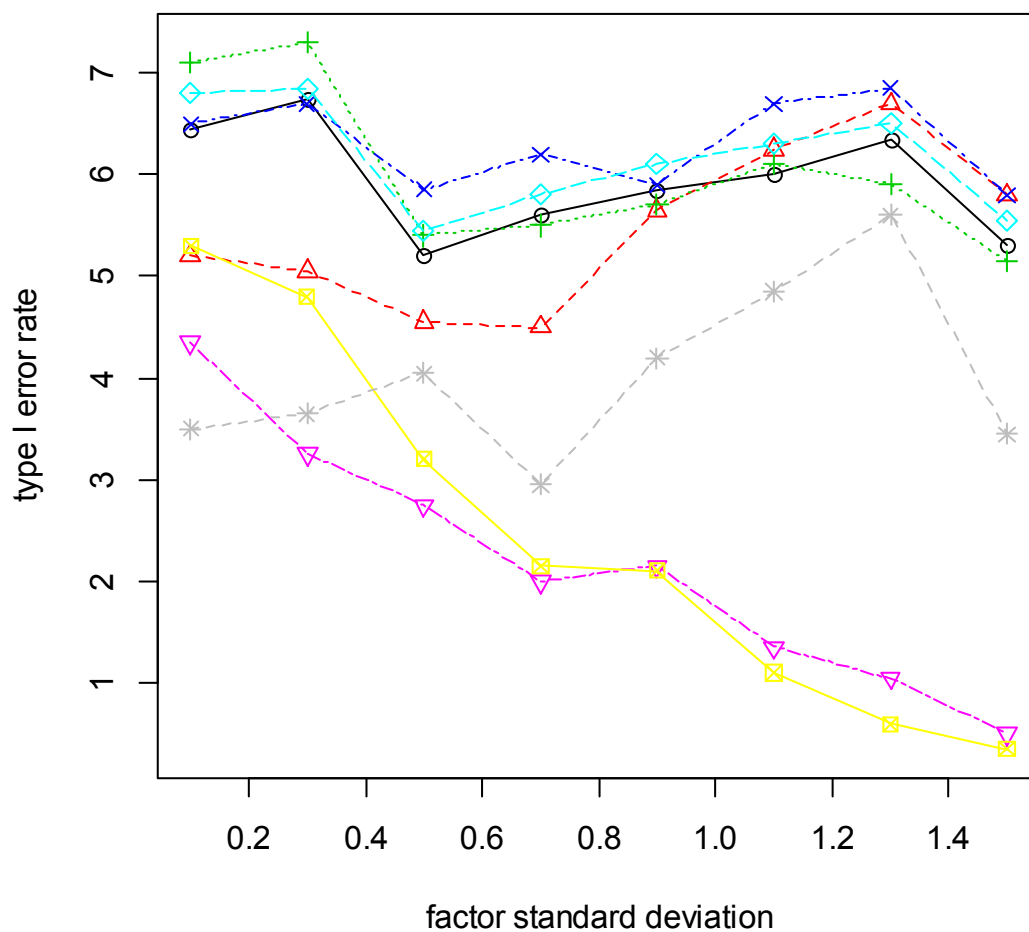
4. 6. 12   left skewed distribution - unequal variances (on A and B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	10.40	8.90	8.50	6.95	8.30	9.45	8.60	9.05
RT	6.50	5.30	5.15	5.85	6.80	6.85	7.30	7.15
INT	9.50	7.65	6.60	6.40	7.15	7.20	7.25	7.05
ART	8.80	7.30	6.60	6.40	7.35	7.55	7.55	6.80
ART+INT	11.00	8.70	8.15	7.10	8.25	9.30	8.80	8.80
Puri & Sen	5.20	3.75	2.85	2.35	2.85	2.15	1.50	1.00
v.d.Waerden	7.55	5.25	3.85	2.85	3.00	1.85	1.55	0.60
ATS	4.20	3.50	4.15	3.70	3.75	4.10	4.80	3.45

factor standard deviation
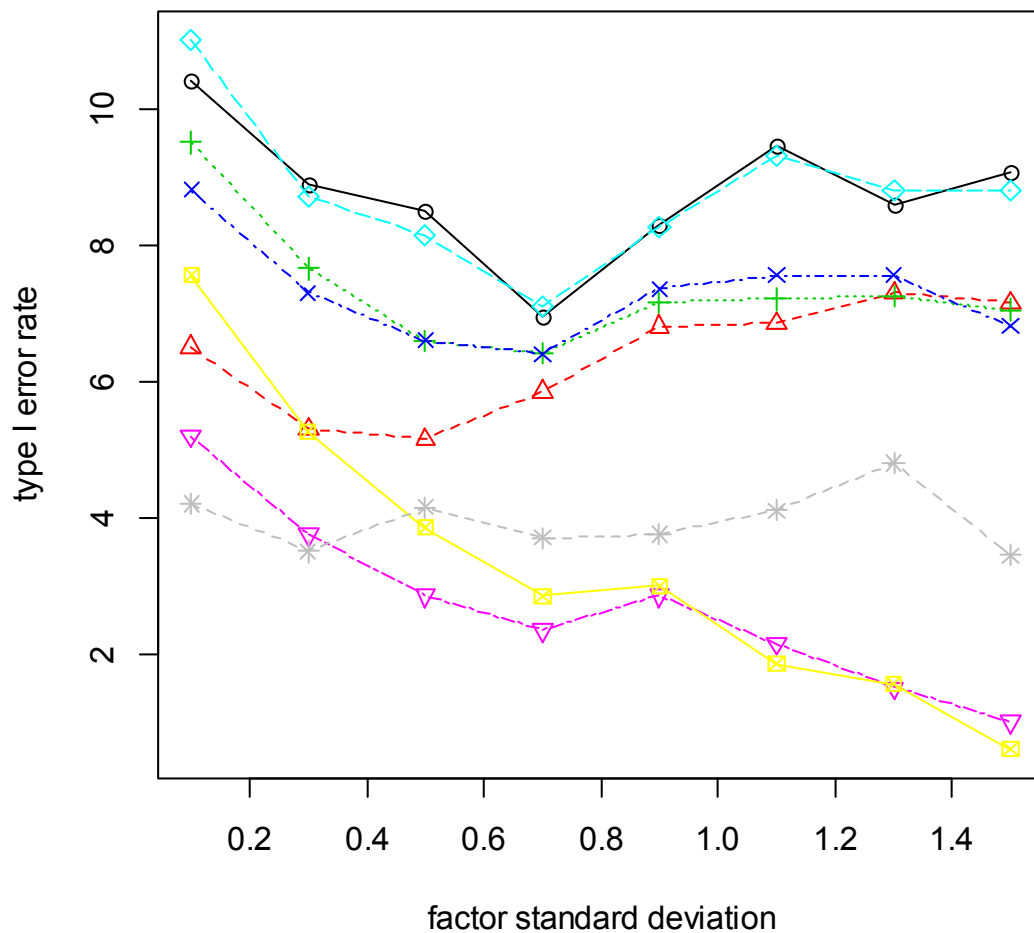
4. 6. 13 normal distribution - unequal variances (small n_i ~ small s_i)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	1.20	1.15	0.90	0.95	1.05	1.25	1.65	1.20
RT	2.15	1.75	1.65	1.70	1.60	1.75	2.30	1.90
INT	1.35	1.15	0.85	1.00	1.10	1.30	1.55	1.25
ART	2.45	2.05	1.75	2.05	2.45	1.75	2.95	1.90
ART+INT	1.65	1.10	1.30	1.10	1.50	1.30	2.15	1.40
Puri & Sen	1.45	1.00	0.80	0.60	0.30	0.25	0.35	0.05
v.d.Waerden	0.85	0.85	0.45	0.50	0.10	0.20	0.25	0.05
ATS	3.80	3.75	3.50	4.05	3.80	3.75	3.80	3.70
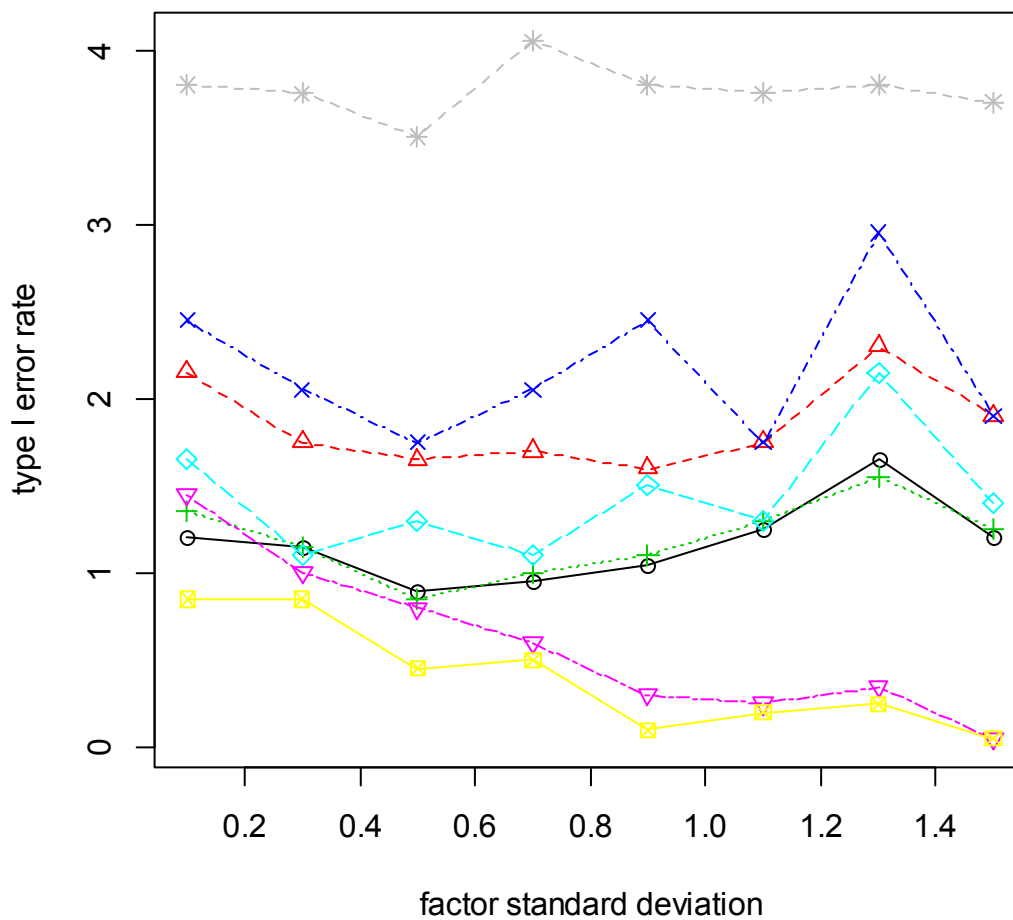
4. 6. 14   normal distribution - unequal variances (small n_i ~ large s_i)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	23.85	24.75	22.70	22.95	25.35	25.10	24.95	23.65
RT	11.25	12.25	12.30	12.40	12.95	14.45	15.95	15.15
INT	17.35	19.00	17.10	17.90	19.35	20.35	21.55	20.30
ART	13.95	15.15	13.65	13.25	13.75	15.50	14.95	13.70
ART+INT	19.35	20.00	17.70	19.05	20.40	20.85	20.50	18.60
Puri & Sen	9.30	8.25	6.70	5.60	3.70	2.85	1.95	0.75
v.d.Waerden	13.95	13.70	10.60	9.35	6.50	5.45	2.95	1.65
ATS	5.15	5.75	4.95	5.25	5.45	5.50	6.15	5.30
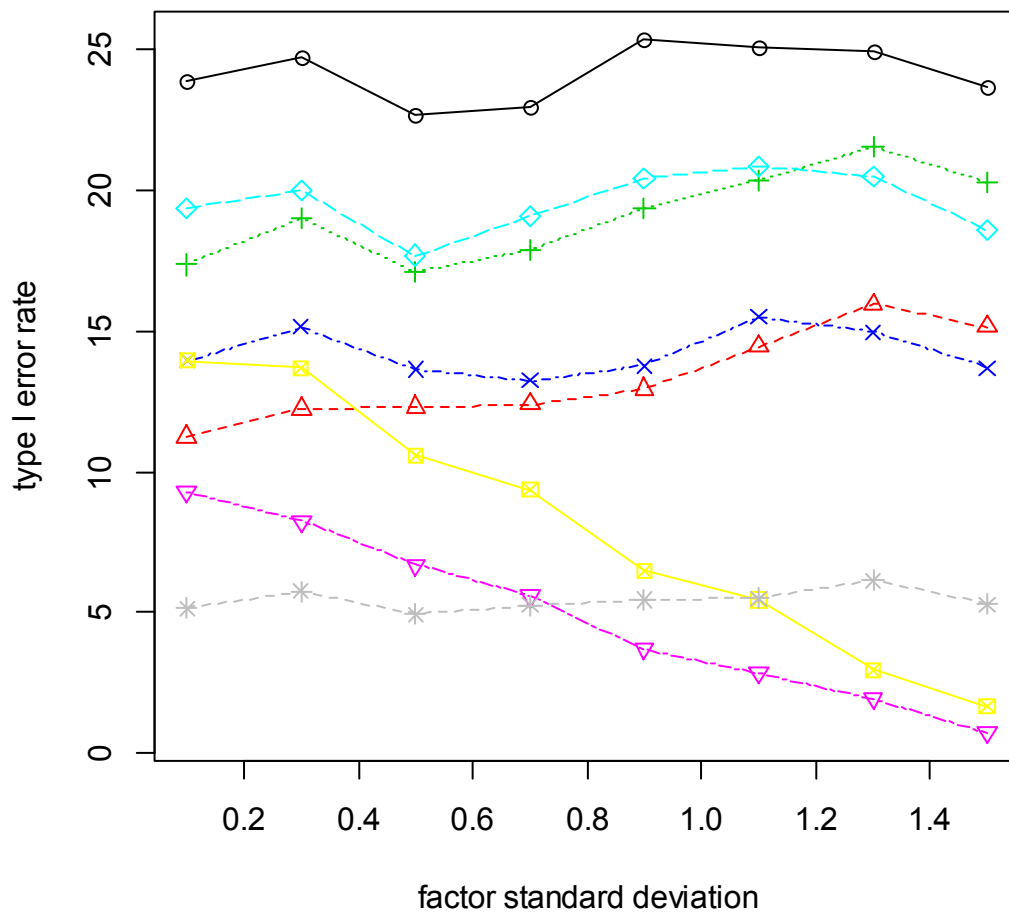
4. 6. 15   left skewed distribution - unequal variances (small n_i ~ small s_i)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	1.55	1.05	0.80	1.00	1.10	1.20	1.40	1.40
RT	2.10	1.35	1.15	1.40	1.25	1.55	1.90	2.05
INT	1.25	1.05	0.55	0.80	1.00	0.90	0.95	1.40
ART	2.60	1.60	1.20	1.80	1.70	1.80	2.40	2.30
ART+INT	1.35	1.05	0.45	0.55	0.90	1.00	1.15	1.15
Puri & Sen	1.30	0.85	0.45	0.60	0.45	0.25	0.05	0.10
v.d.Waerden	0.65	0.55	0.25	0.15	0.20	0.15	0.05	0.05
ATS	3.70	2.85	2.90	3.05	3.50	3.65	4.35	3.50
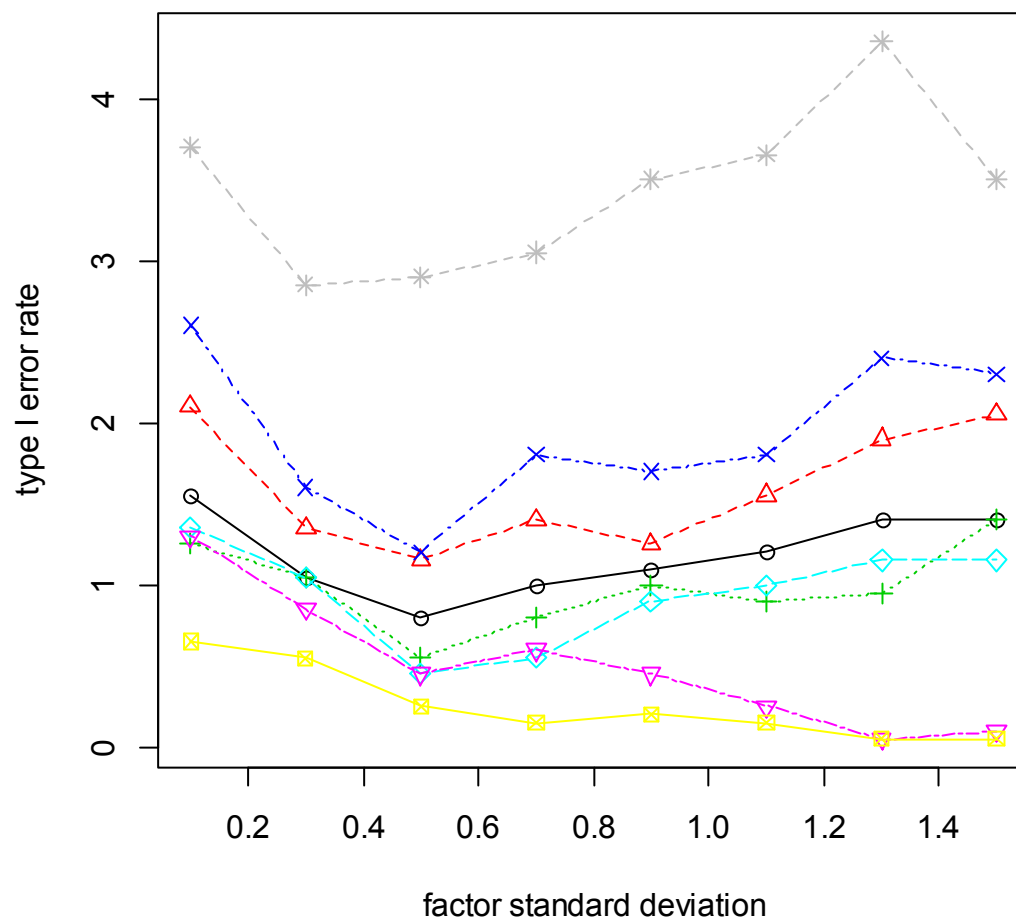
4. 6. 16   left skewed distribution - unequal variances (small n$_i$ ~ large s$_i$)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	24.10	23.00	24.10	23.30	25.70	24.15	23.50	23.50
RT	15.30	13.90	15.00	15.55	17.05	17.50	18.35	16.70
INT	27.55	25.40	26.95	23.90	26.35	24.20	23.85	22.75
ART	17.85	15.55	16.95	16.30	17.60	17.45	17.05	16.35
ART+INT	26.20	24.45	26.10	24.20	27.15	25.30	25.60	24.30
Puri & Sen	12.60	10.10	8.90	7.15	6.35	4.00	3.00	1.15
v.d.Waerden	23.40	18.90	17.60	12.90	10.20	6.15	4.35	2.00
ATS	5.15	5.00	6.50	5.20	5.80	5.55	6.30	4.95
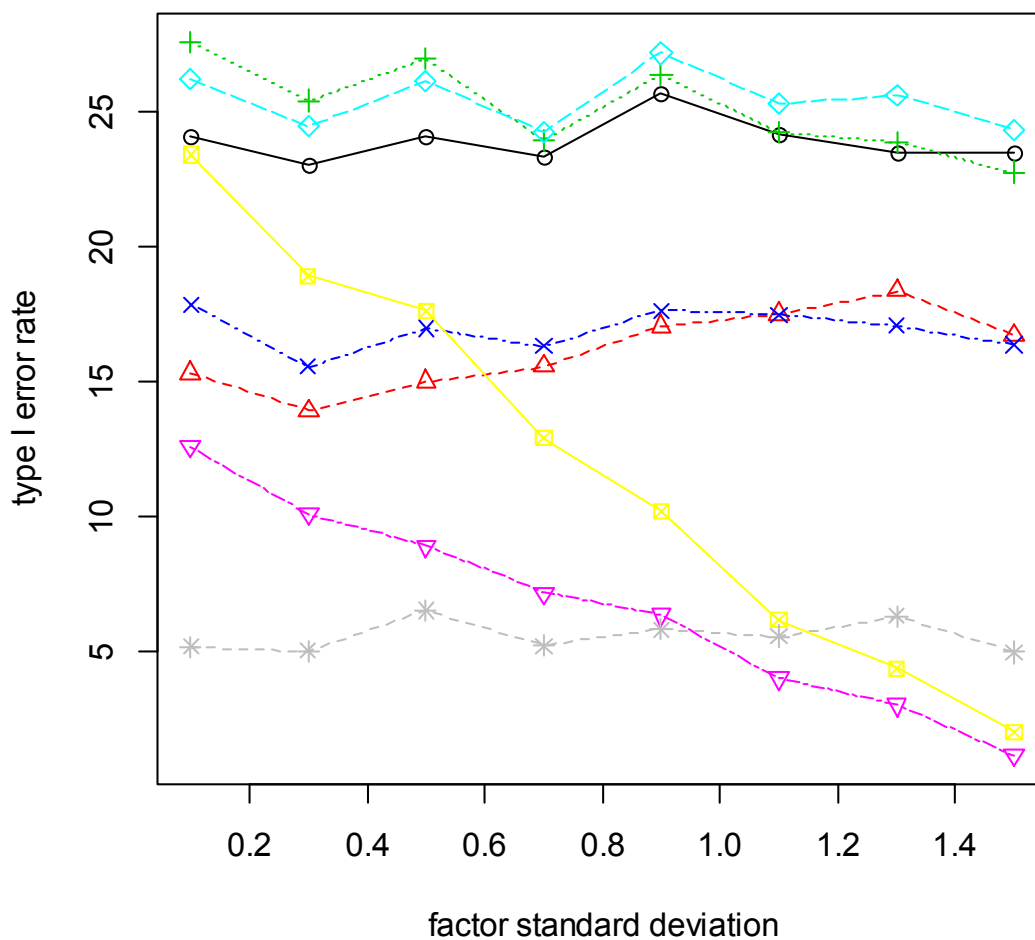
4. 7. Interaction AB - A and B significant (equal n$_i$=10 / # levels = 2*4)

4. 7. 1   normal distribution - equal variances

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.65	4.20	4.65	5.70	5.00	5.30	4.95	4.95
RT	5.00	4.80	4.45	5.35	4.45	4.00	4.95	3.95
INT	5.40	4.60	4.65	5.20	4.70	4.40	4.20	3.55
ART	5.50	4.65	4.75	5.80	5.10	5.10	5.30	4.90
ART+INT	5.25	4.40	4.60	5.60	5.45	5.35	4.75	4.85
Puri & Sen	4.40	3.75	2.65	2.00	1.30	0.50	0.05	0.01
v.d.Waerden	4.65	3.30	3.05	2.15	1.00	0.55	0.25	0.10
ATS	4.70	4.70	4.20	5.20	4.15	3.80	4.65	3.60
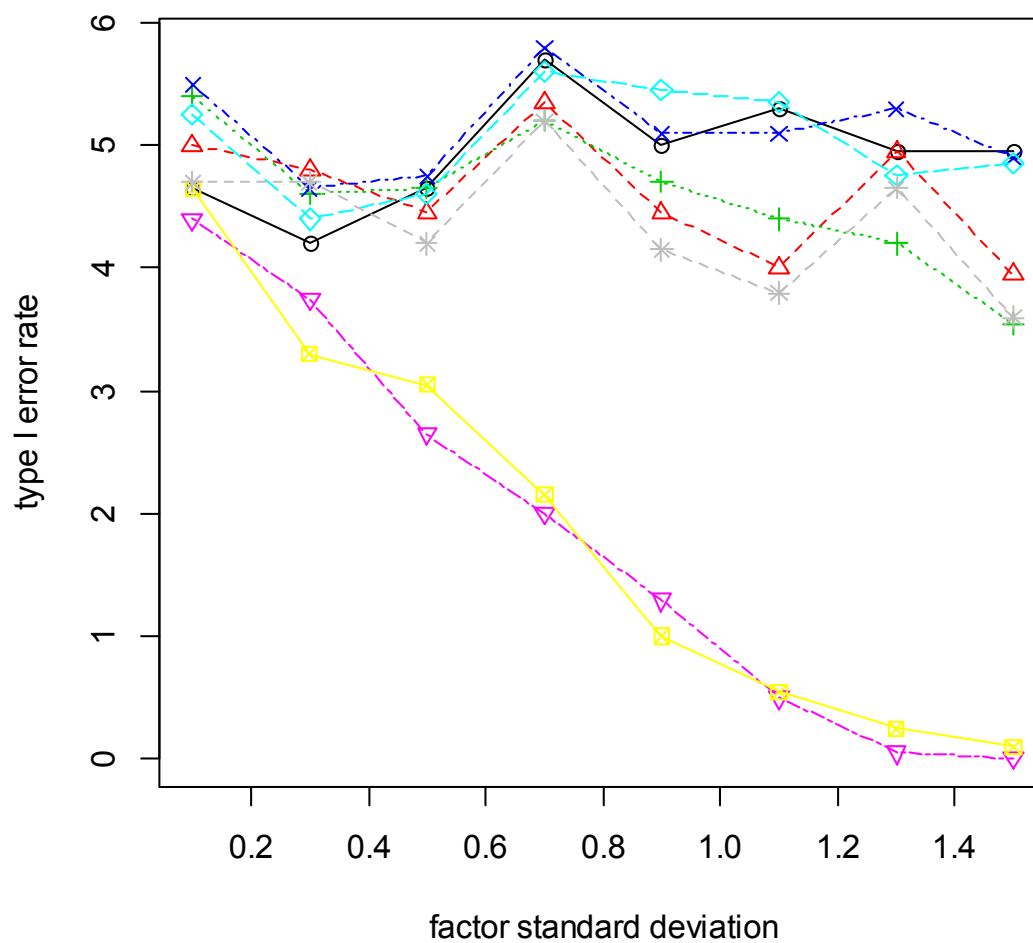
4. 7. 2   normal distribution - unequal variances (on B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.85	5.85	6.05	6.50	5.45	6.30	5.55	5.55
RT	4.65	5.30	5.30	6.55	7.05	7.35	7.30	6.30
INT	5.15	6.05	5.60	5.65	5.40	5.75	5.35	5.15
ART	6.15	6.45	5.85	6.60	6.05	6.75	6.05	5.50
ART+INT	5.70	6.00	5.70	6.45	5.45	6.40	5.95	5.40
Puri & Sen	4.25	4.40	3.40	2.70	1.60	1.30	0.90	0.45
v.d.Waerden	4.70	5.00	3.05	2.75	1.60	1.00	0.45	0.35
ATS	4.55	5.10	5.10	6.20	6.65	6.30	6.40	5.40
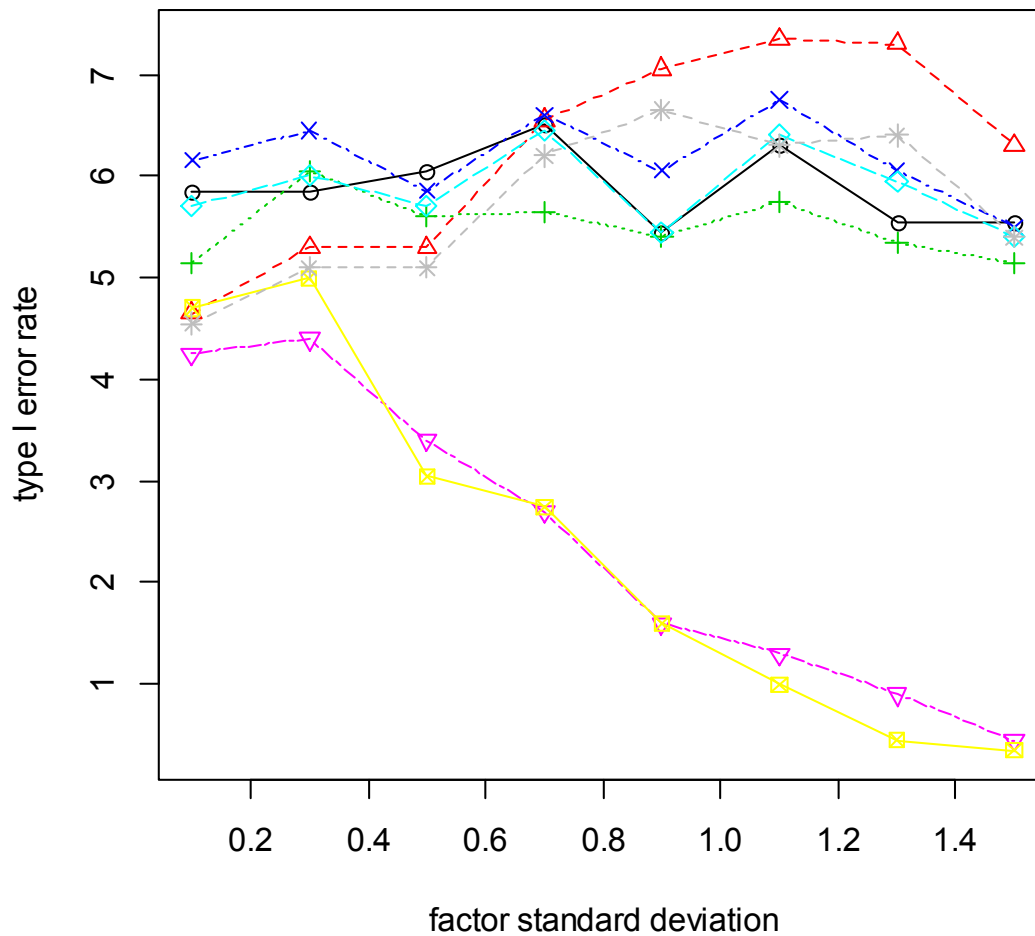
4. 7. 3   normal distribution - unequal variances (on A and B)

	factor standard deviation							
method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.60	5.75	5.40	5.65	5.45	6.70	5.70	5.55
RT	5.30	5.40	5.90	7.15	7.95	8.90	8.75	8.65
INT	5.40	5.10	4.90	6.15	5.75	6.05	6.40	6.15
ART	6.75	6.40	5.90	7.00	6.50	6.75	6.75	6.35
ART+INT	5.90	5.85	5.15	6.50	5.75	6.40	6.60	5.60
Puri & Sen	4.75	4.60	4.05	3.55	2.55	1.45	1.25	0.55
v.d.Waerden	5.10	4.35	3.50	3.05	2.00	1.15	0.55	0.30
ATS	5.00	5.10	5.60	6.95	7.55	8.25	8.05	8.10
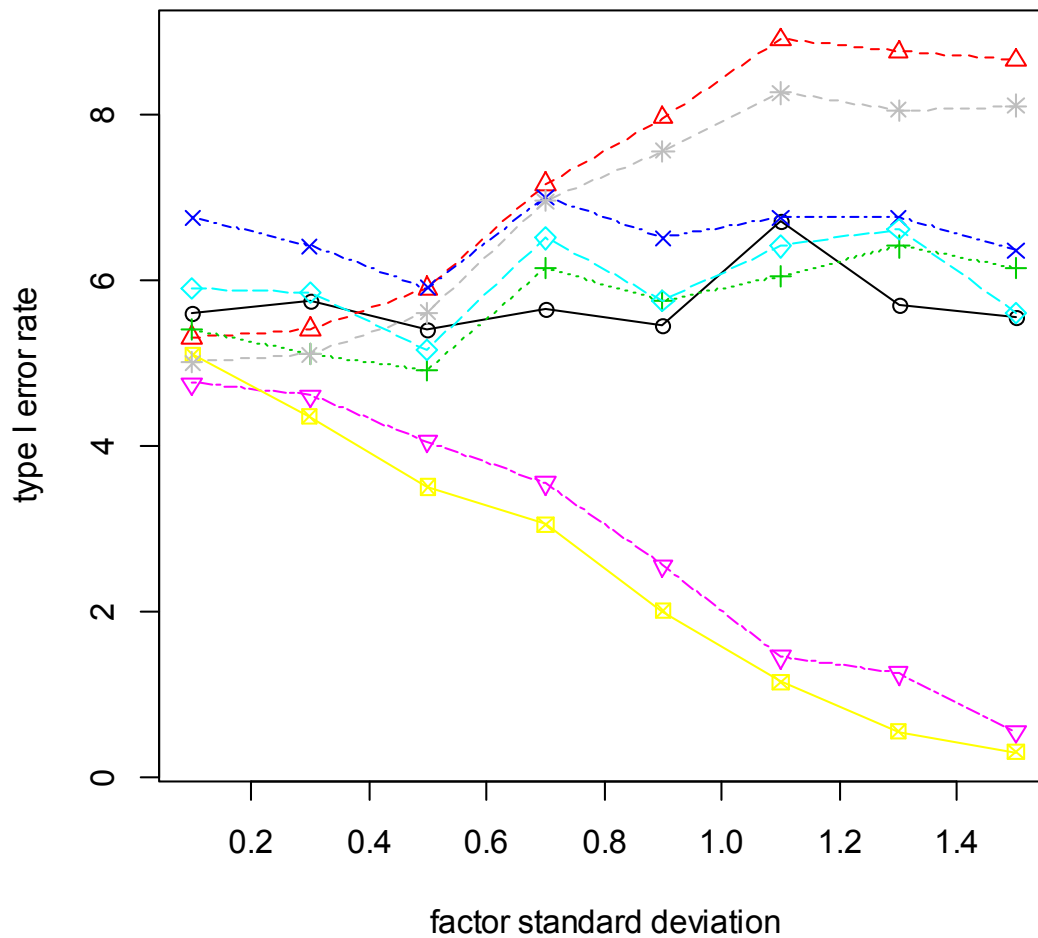
4. 7. 4   right skewed distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.00	5.05	5.15	4.85	5.20	5.35	5.65	3.90
RT	5.05	4.90	5.80	5.15	4.65	4.65	5.35	3.45
INT	5.15	4.95	5.95	5.05	5.05	4.75	4.90	3.20
ART	4.90	5.60	5.80	4.80	5.05	5.45	5.40	4.15
ART+INT	4.90	5.30	5.45	4.45	4.80	4.70	5.65	4.00
Puri & Sen	4.85	3.65	3.40	1.40	1.05	0.55	0.30	0.01
v.d.Waerden	4.75	3.70	2.80	1.20	0.70	0.30	0.20	0.01
ATS	4.85	4.70	5.45	4.55	4.40	4.15	4.90	2.85
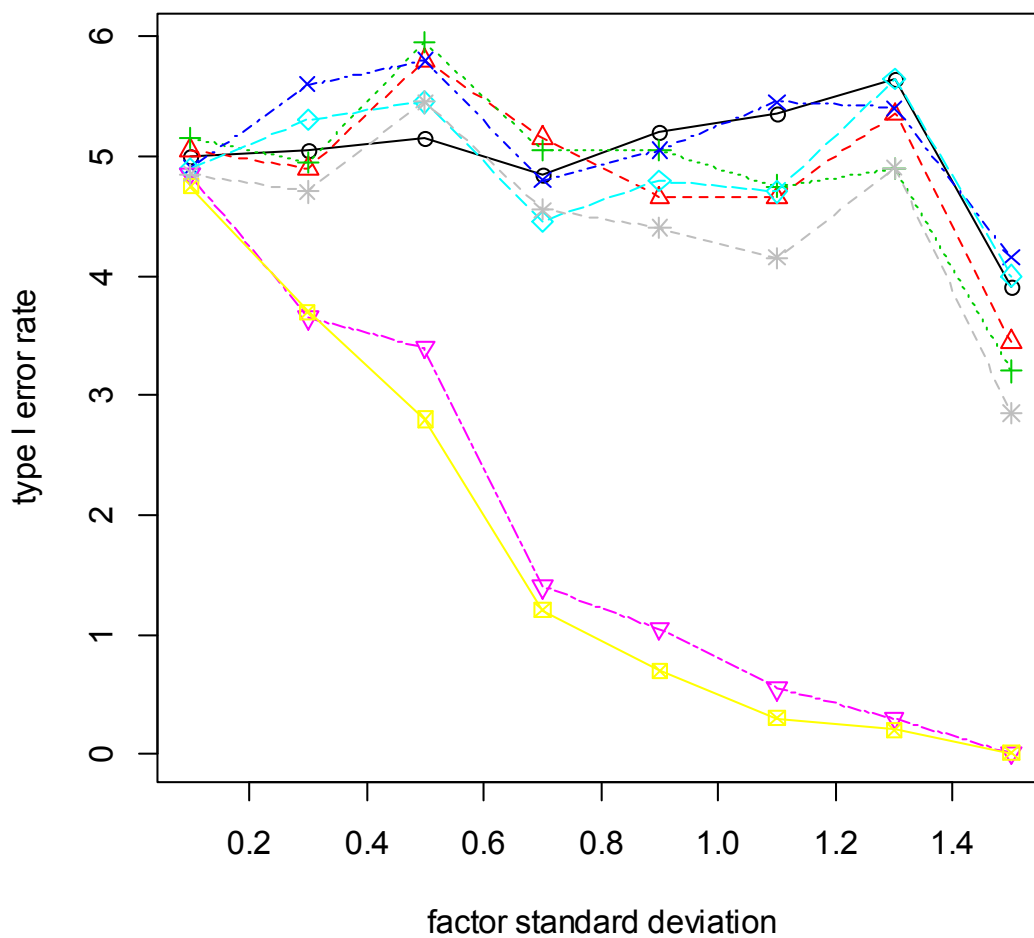
4. 7. 5   exponential distribution - continous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.90	5.45	4.20	5.50	5.70	5.50	5.70	6.15
RT	4.95	5.75	5.50	5.25	5.85	6.80	8.10	8.95
INT	4.90	5.55	5.20	5.05	5.70	6.30	6.75	7.50
ART	5.90	6.60	6.10	7.60	8.30	8.70	8.60	9.20
ART+INT	5.30	6.10	4.70	5.75	5.85	5.45	5.85	6.60
Puri & Sen	4.70	5.20	4.50	3.80	4.15	4.25	4.85	4.90
v.d.Waerden	4.55	5.15	4.05	3.65	4.10	3.80	4.25	4.45
ATS	4.75	5.45	5.25	5.00	5.55	6.45	7.70	8.30
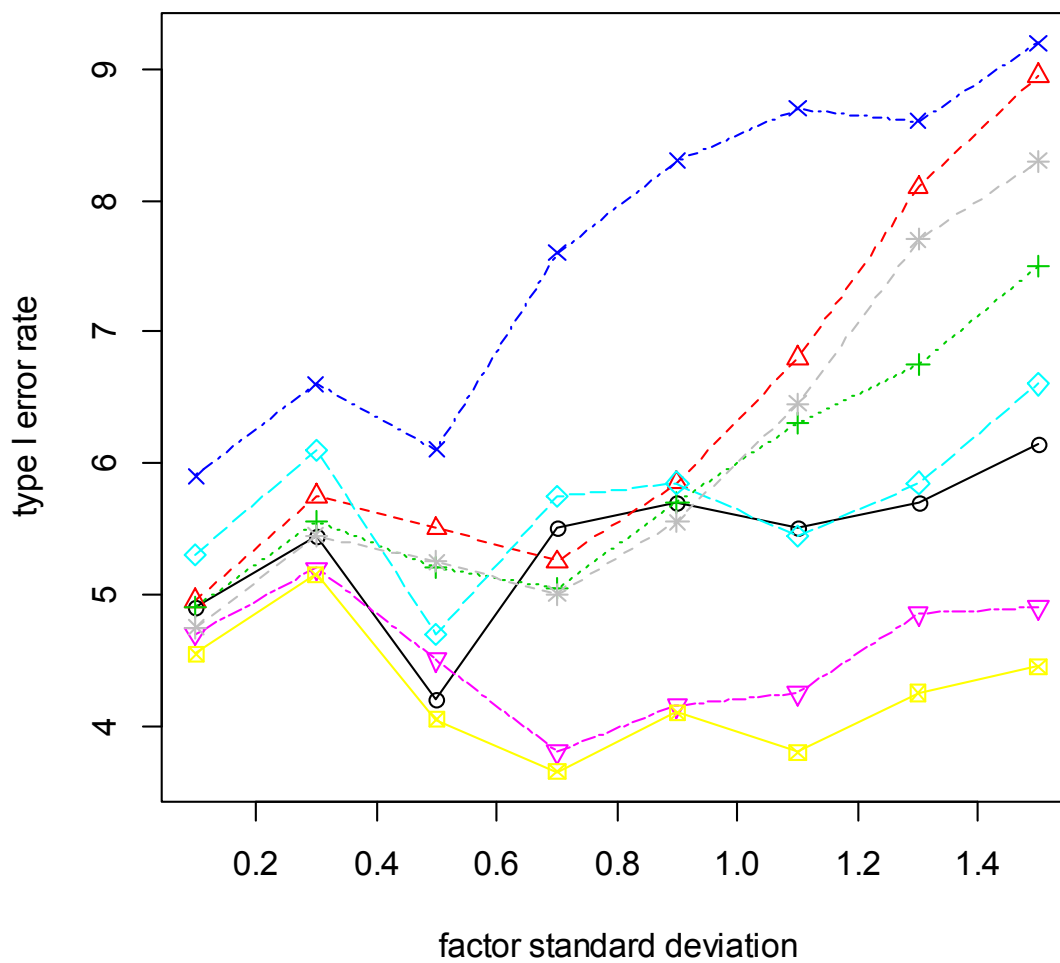
4. 7. 6　　exponential distribution - discrete

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.30	5.20	4.25	5.90	5.70	5.40	5.35	6.00
RT	5.60	5.95	5.20	5.25	5.80	6.50	8.45	8.95
INT	5.75	5.65	4.95	5.20	5.65	6.10	6.30	7.30
ART	6.30	7.20	6.80	8.05	7.80	8.85	8.30	9.60
ART+INT	5.85	6.05	4.75	5.55	5.40	5.60	6.05	6.55
Puri & Sen	5.10	5.20	4.30	3.75	4.35	4.20	4.60	4.75
v.d.Waerden	5.35	5.15	3.70	3.85	3.95	3.40	4.05	4.20
ATS	5.45	5.80	5.05	5.05	5.35	6.25	8.05	8.30

4. 7. 7   lognormal distribution

factor standard deviation

method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.00	4.95	4.95	4.65	5.10	5.05	4.45	5.55
RT	4.50	5.10	5.70	5.65	4.45	4.20	3.50	4.05
INT	4.50	4.80	5.20	5.25	4.65	4.80	3.70	3.75
ART	4.85	4.65	5.35	4.85	4.95	5.40	4.60	5.50
ART+INT	4.50	5.00	5.10	4.80	5.05	5.15	4.75	5.45
Puri & Sen								

1erdSen

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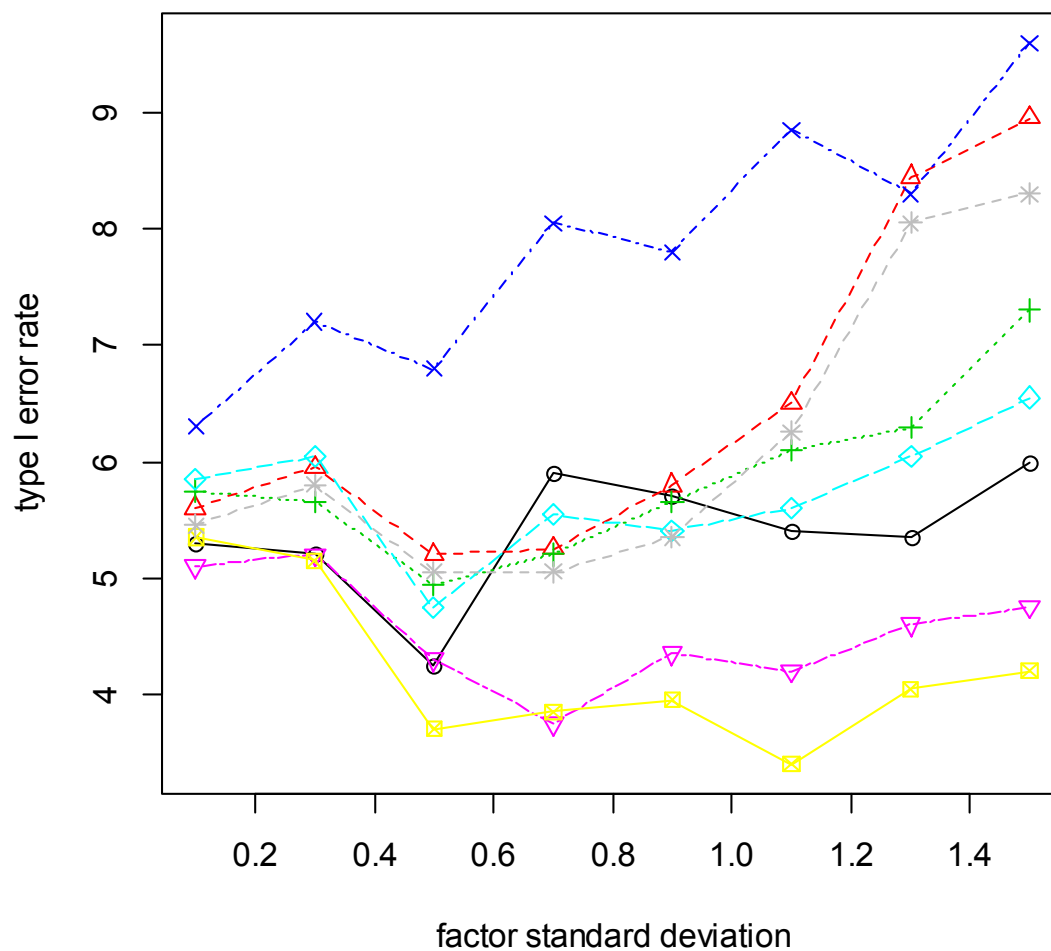
4. 7. 8   uniform distribution - continous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.10	4.80	5.35	4.55	4.90	5.30	5.10	3.65
RT	5.50	4.90	4.85	4.35	4.60	5.05	4.05	3.60
INT	5.05	4.60	5.30	4.00	4.50	4.35	3.85	3.10
ART	5.30	5.05	5.40	4.65	5.35	5.25	5.30	3.80
ART+INT	5.25	4.75	5.15	4.80	4.90	4.80	5.45	4.10
Puri & Sen	5.25	4.10	3.50	1.80	1.05	0.70	0.25	0.10
v.d.Waerden	5.10	3.65	3.10	1.35	0.75	0.45	0.20	0.10
ATS	5.35	4.70	4.80	4.10	4.35	4.80	3.90	3.35
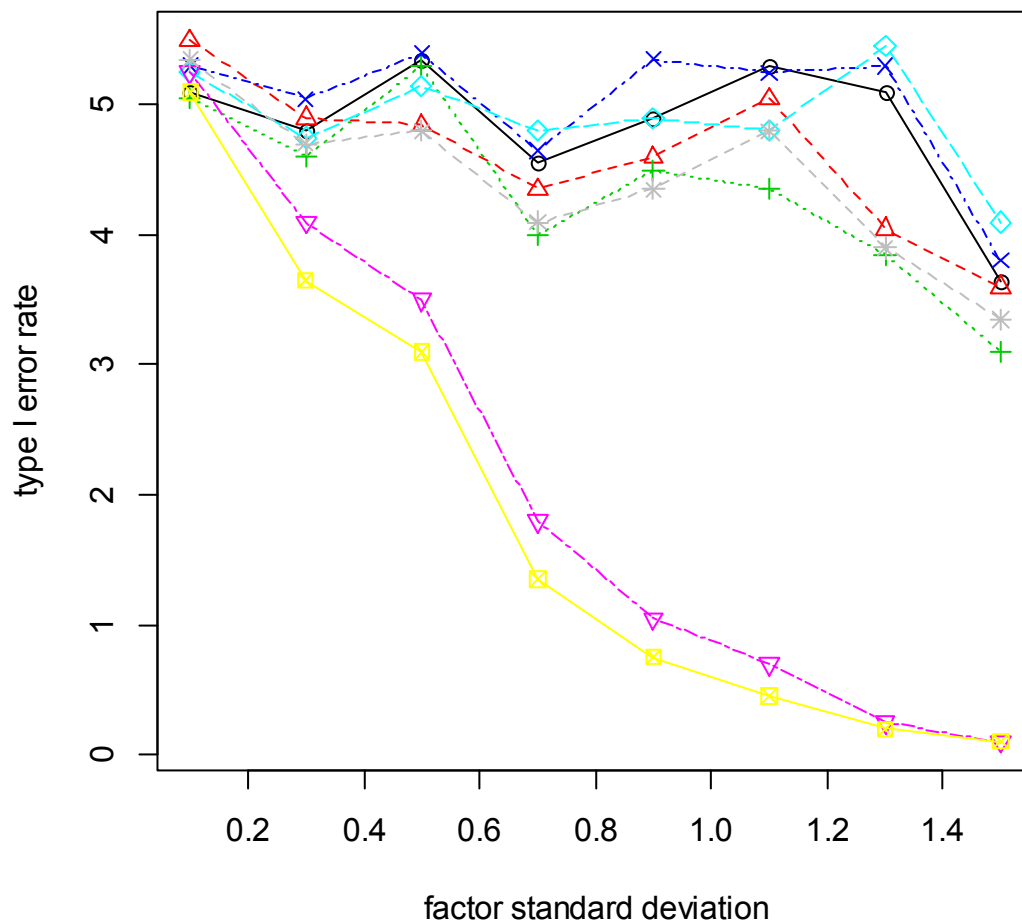
4. 7. 9   uniform distribution - discrete

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.75	5.00	5.30	5.15	4.95	4.75	4.85	4.45
RT	4.80	4.80	5.10	4.65	4.60	4.80	3.90	3.80
INT	5.00	5.25	5.15	4.30	4.60	4.25	3.80	3.55
ART	4.85	5.40	5.40	4.80	5.35	5.10	5.25	4.55
ART+INT	4.85	5.10	5.15	4.25	5.55	4.55	5.10	4.80
Puri & Sen	4.55	4.40	3.55	1.55	1.05	0.80	0.25	0.05
v.d.Waerden	4.60	4.00	3.25	0.80	0.80	0.55	0.20	0.05
ATS	4.55	4.65	5.00	4.55	4.30	4.60	3.50	3.45
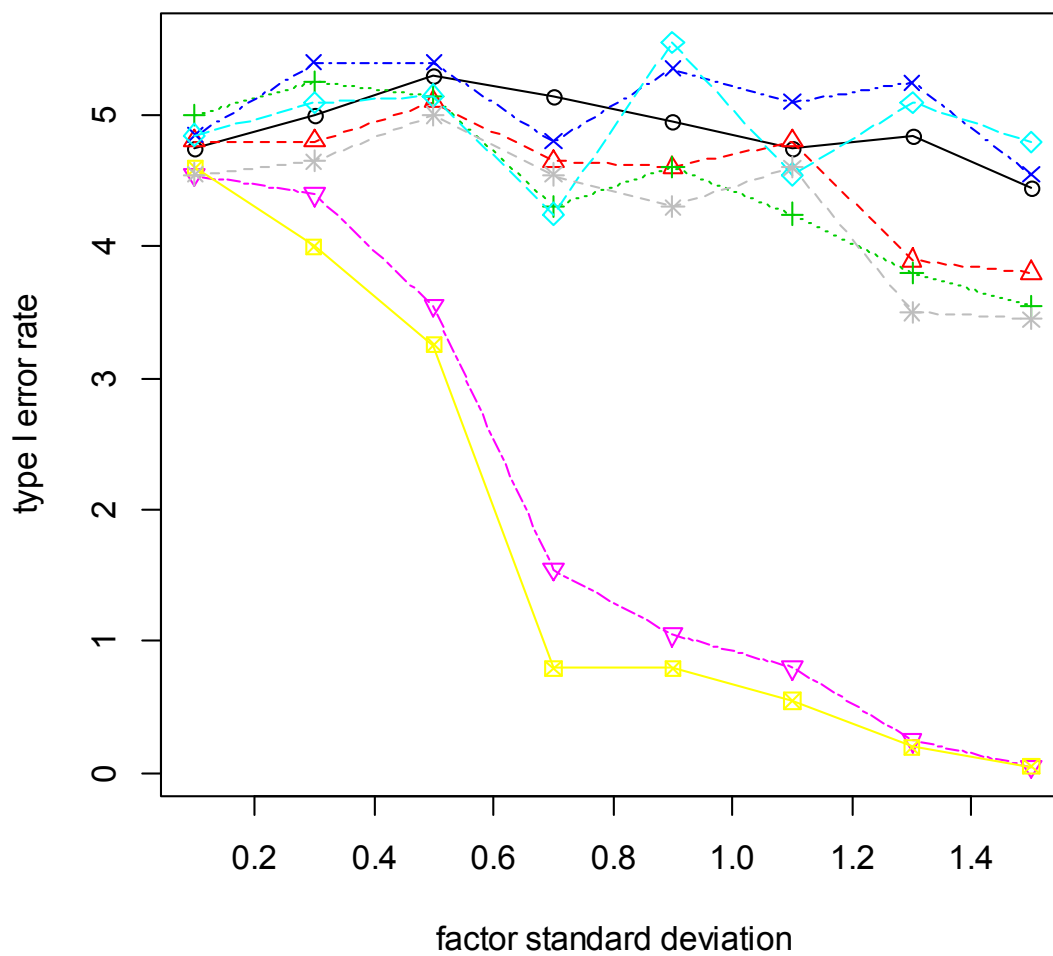
4. 7. 10   left/right skewed distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	4.75	4.80	4.50	4.85	5.15	5.15	4.70	4.50
RT	5.20	5.20	4.65	5.05	5.00	5.35	4.00	4.00
INT	4.80	4.85	4.80	4.80	4.45	4.15	3.60	3.60
ART	4.90	5.05	4.35	5.05	5.60	5.50	4.70	4.95
ART+INT	4.80	4.95	4.25	4.95	5.40	5.70	4.60	5.20
Puri & Sen	4.65	4.10	3.35	1.80	1.10	0.60	0.40	0.05
v.d.Waerden	4.35	3.90	2.75	1.70	1.00	0.50	0.35	0.10
ATS	4.85	4.85	4.60	4.80	4.60	5.15	4.00	3.75
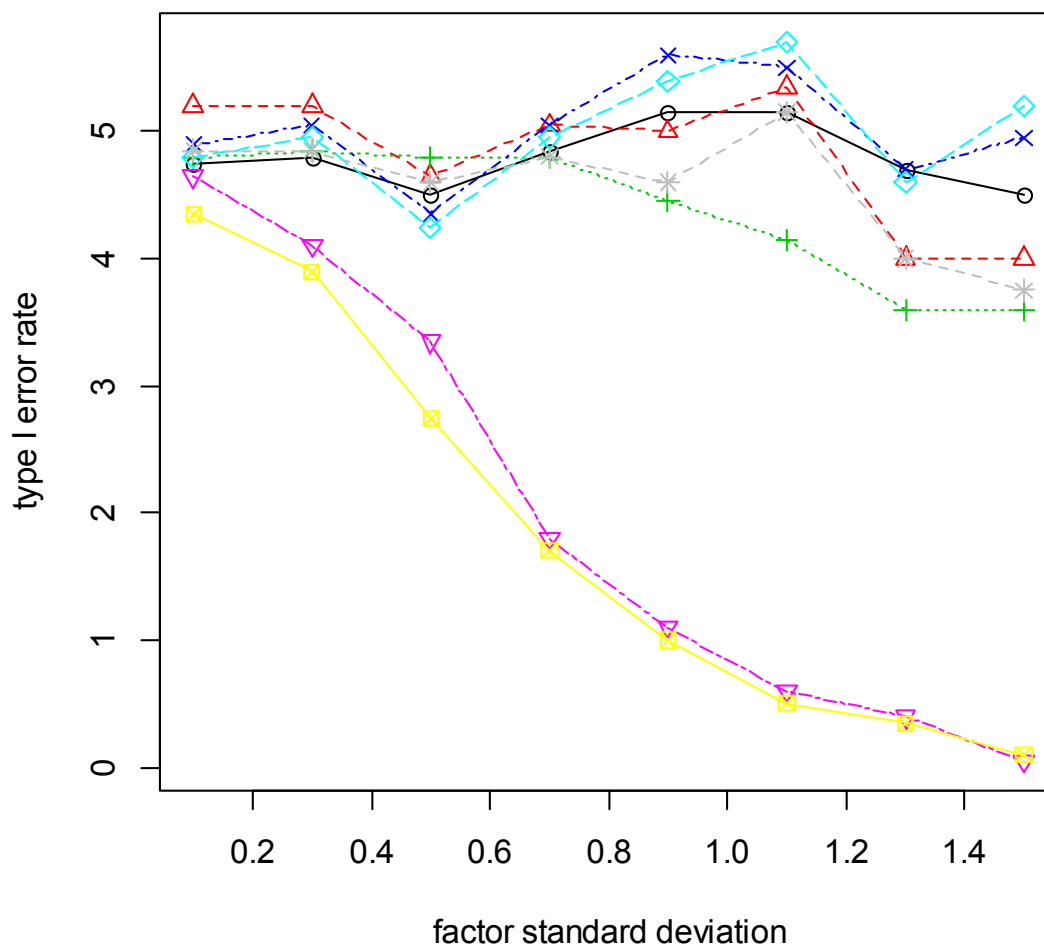
4. 7. 11   left skewed distribution - unequal variances (on B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	6.25	6.60	6.05	5.90	5.30	6.20	7.15	6.00
RT	5.50	6.05	5.80	5.85	6.40	7.50	8.00	7.75
INT	6.35	6.70	6.05	5.35	4.90	5.60	5.70	5.55
ART	6.40	6.95	7.10	6.25	5.70	6.95	7.00	6.50
ART+INT	6.05	7.30	6.45	5.70	5.65	6.00	6.35	6.15
Puri & Sen	5.05	5.15	4.35	2.95	2.45	1.90	1.10	0.60
v.d.Waerden	6.05	5.75	3.95	2.60	1.55	0.90	0.70	0.10
ATS	5.25	5.65	5.45	5.40	6.20	7.10	7.70	7.10
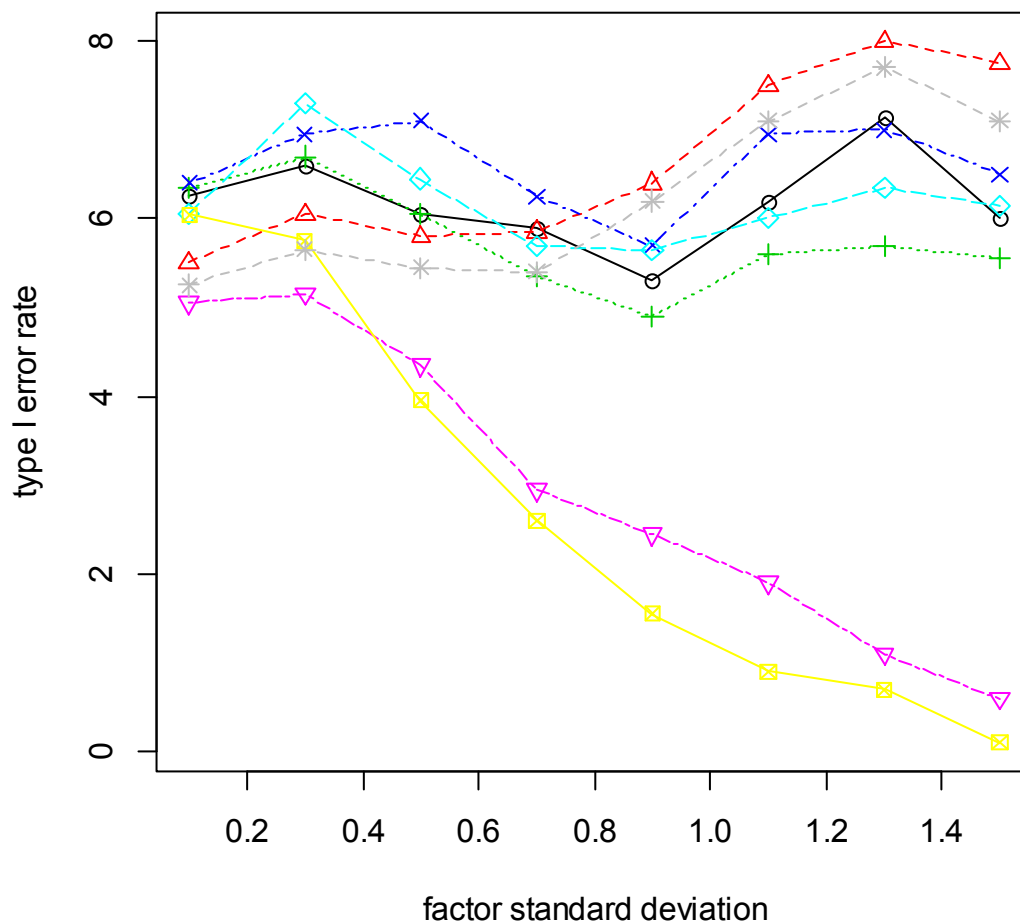
4. 7. 12   left skewed distribution - unequal variances (on A and B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.5	6.70	5.75	5.85	5.70	6.05	6.35	6.00
RT	5.0	6.35	6.45	6.40	7.35	9.35	10.50	10.60
INT	5.7	6.05	5.55	4.85	5.75	6.05	6.90	6.60
ART	6.5	6.65	7.15	6.30	6.55	7.25	7.30	7.15
ART+INT	5.9	6.80	6.65	6.00	6.10	6.30	6.30	6.40
Puri & Sen	4.7	5.05	4.50	3.45	3.45	2.55	1.65	0.95
v.d.Waerden	4.9	5.55	3.95	2.40	1.80	1.20	0.60	0.20
ATS	4.8	5.85	6.15	5.90	6.95	8.70	9.70	9.55
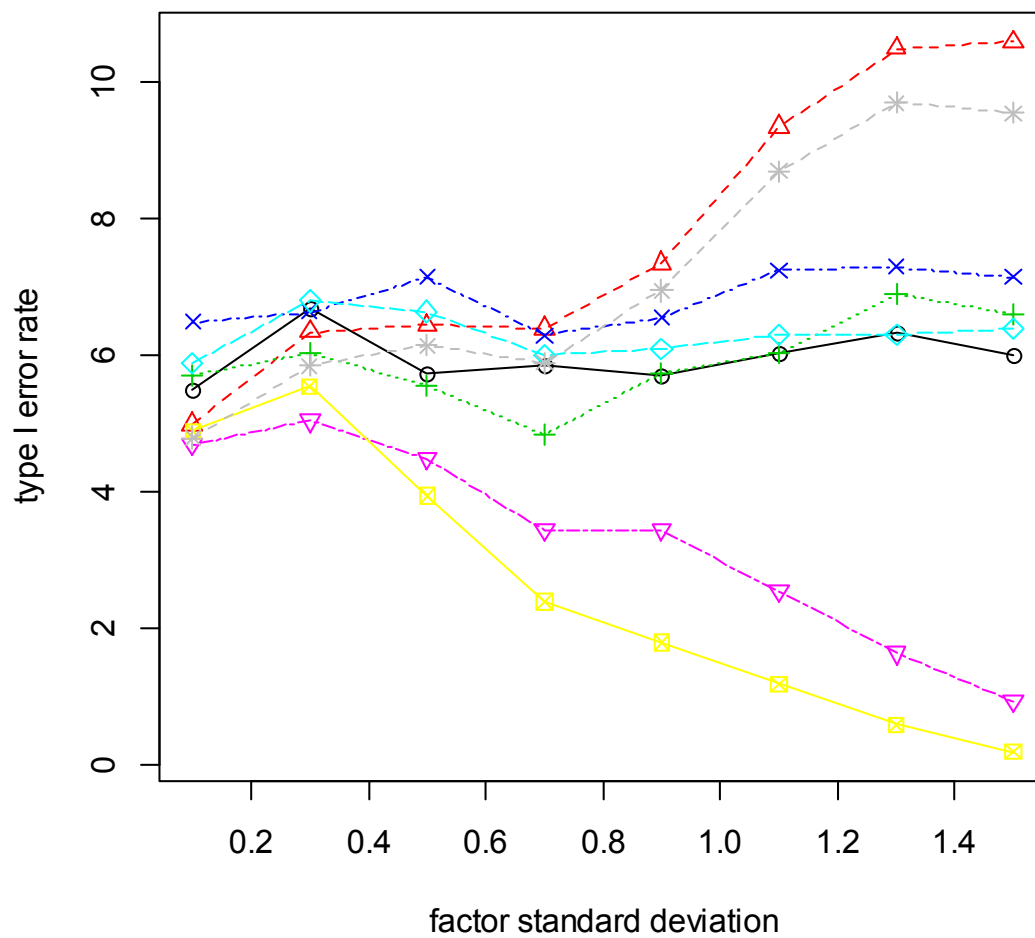
4. 8. Interaction AB - A and B significant (unequal n$_i$ ~ 5 / # levels = 4*5)

4. 8. 1   normal distribution - equal variances

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.75	5.40	4.45	5.05	5.30	5.50	5.50	4.25
RT	5.00	4.15	4.20	4.05	4.35	3.50	3.70	3.70
INT	5.70	4.90	4.35	4.55	4.80	4.85	4.20	3.85
ART	4.90	4.85	4.80	4.45	5.25	4.95	5.10	3.90
ART+INT	6.05	4.90	4.60	5.00	5.15	5.55	5.40	4.40
Puri & Sen	3.70	2.75	1.60	1.05	0.25	0.20	0.01	0.05
v.d.Waerden	4.40	3.25	1.85	1.05	0.30	0.10	0.01	0.05
ATS	4.05	4.85	3.70	4.55	4.00	4.40	4.60	4.00
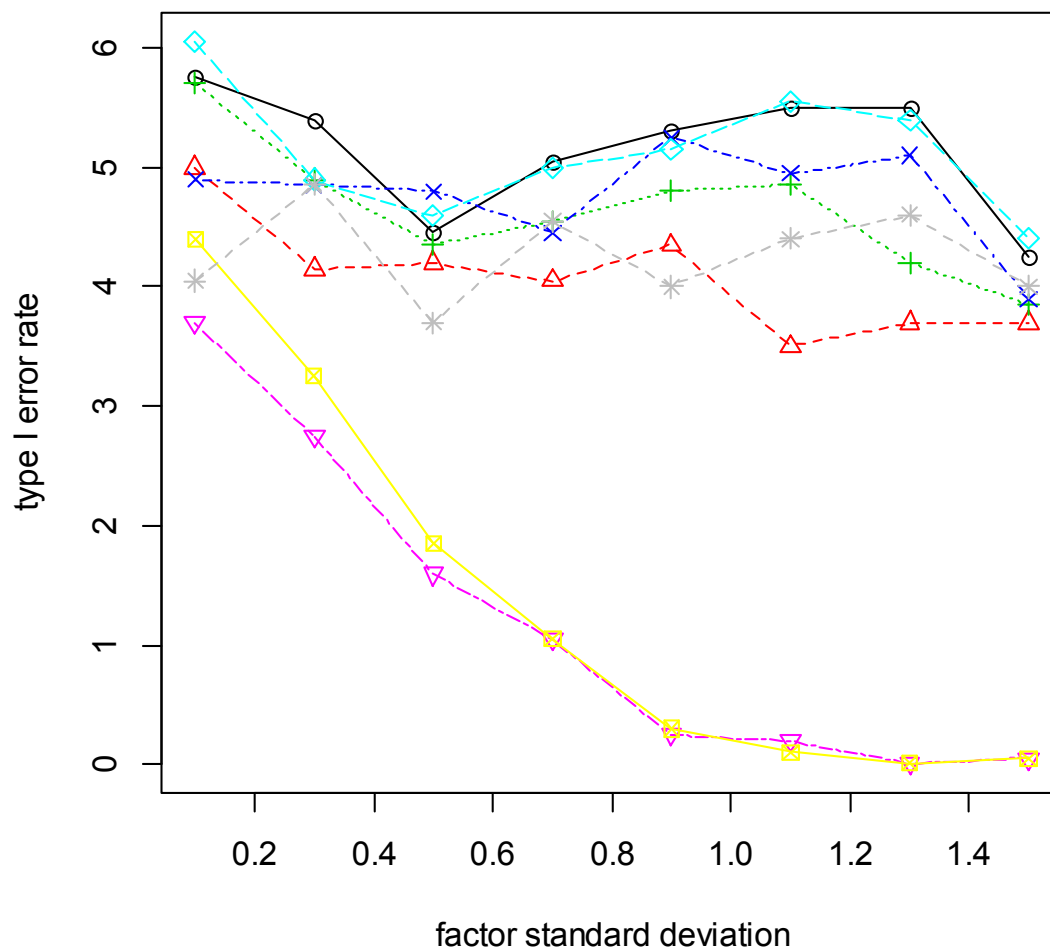
4. 8. 2   normal distribution - unequal variances (on B)

	factor standard deviation							
method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	6.00	6.40	5.55	4.75	6.0	7.40	6.60	5.55
RT	5.05	4.90	4.00	4.25	5.6	5.10	6.15	6.50
INT	5.75	6.00	4.55	4.30	5.3	5.40	5.90	5.45
ART	6.45	6.30	5.85	4.60	6.1	6.25	6.00	4.50
ART+INT	6.45	6.40	5.60	4.85	6.2	6.60	5.85	4.95
Puri & Sen	3.60	2.85	1.90	1.00	0.6	0.20	0.01	0.05
v.d.Waerden	4.20	3.75	2.20	1.00	0.7	0.45	0.01	0.05
ATS	4.15	4.05	3.35	3.50	4.3	4.60	5.80	5.95
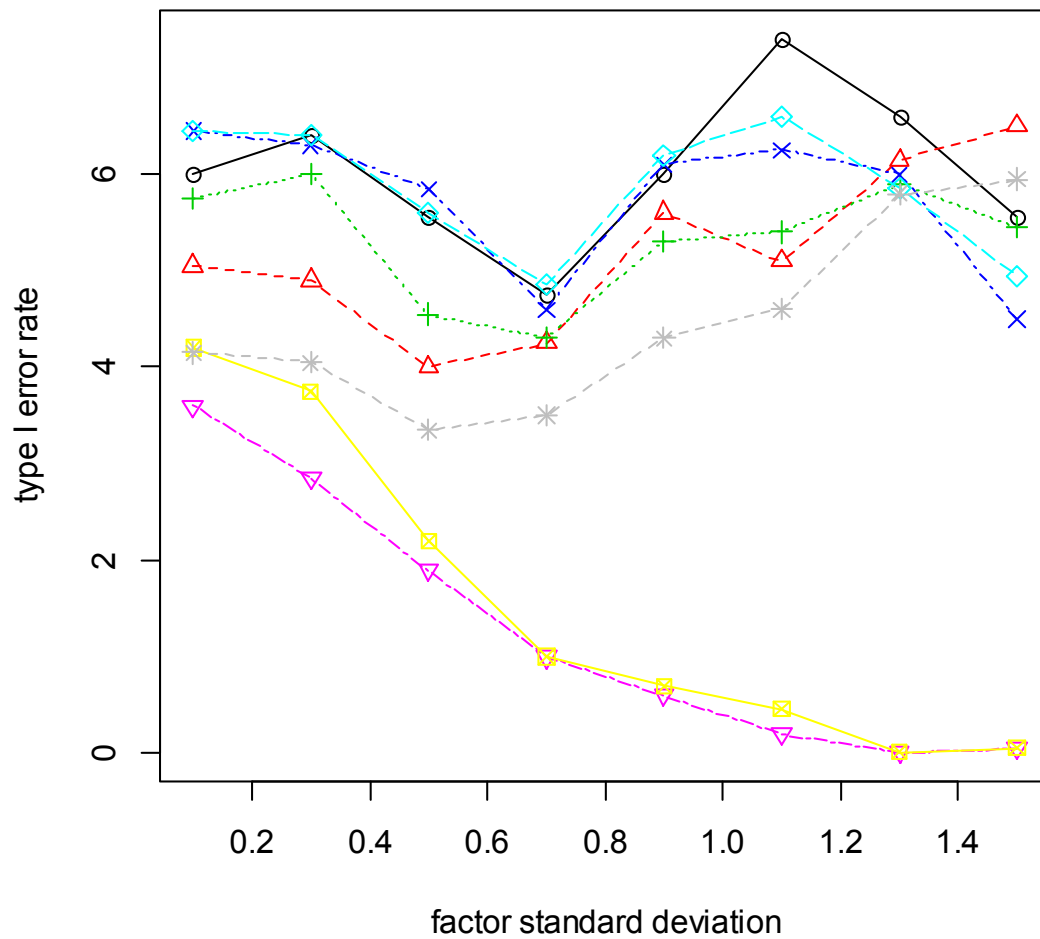
4. 8. 3   normal distribution - unequal variances (on A and B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	8.55	8.20	8.05	7.90	8.65	9.45	8.70	8.05
RT	5.55	5.25	5.55	6.20	6.45	7.95	9.45	8.25
INT	6.70	6.70	6.45	6.00	6.30	6.90	6.95	6.10
ART	6.75	6.50	6.40	6.15	7.25	7.80	7.25	6.15
ART+INT	7.45	7.25	7.15	6.65	7.55	8.45	8.30	6.10
Puri & Sen	4.35	3.45	2.60	2.45	1.00	0.90	0.40	0.20
v.d.Waerden	5.15	4.85	3.15	2.65	1.00	0.95	0.25	0.10
ATS	3.75	4.30	4.05	4.30	3.45	4.80	5.30	5.25
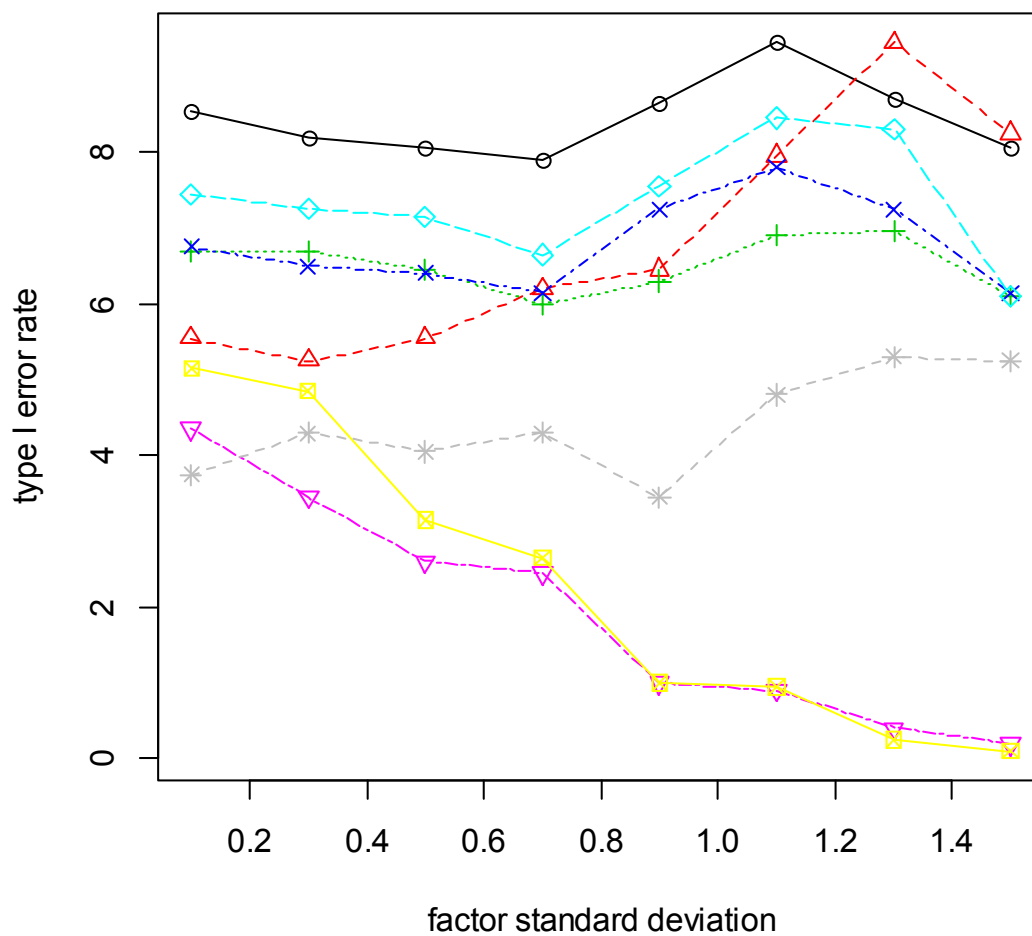
4. 8. 4   right skewed distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.65	5.15	4.30	4.85	5.90	4.80	4.90	5.40
RT	5.85	4.90	5.25	5.30	6.40	5.55	5.15	5.85
INT	7.25	6.35	6.45	6.60	8.00	7.00	6.55	5.80
ART	5.50	5.30	4.45	5.00	6.15	5.25	5.80	5.05
ART+INT	6.15	5.55	4.35	5.20	6.35	5.80	6.30	6.25
Puri & Sen	4.30	2.55	1.45	1.20	0.60	0.35	0.01	0.01
v.d.Waerden	5.20	3.00	1.40	1.10	0.55	0.25	0.01	0.01
ATS	4.65	4.60	5.60	5.50	5.55	5.35	6.15	5.55
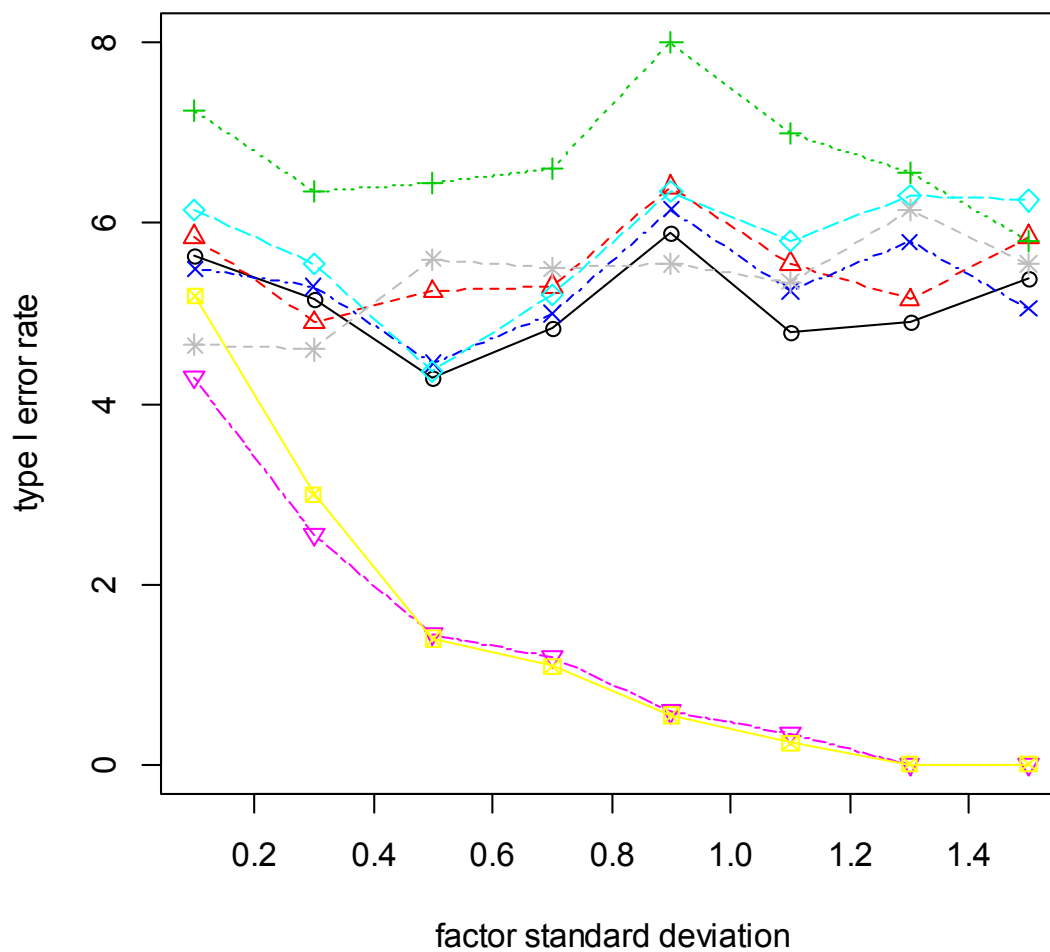
4. 8. 5   exponential distribution - continous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.80	4.70	4.25	4.30	5.15	5.45	5.20	4.60
RT	4.75	4.75	4.20	4.80	5.65	3.95	4.45	4.85
INT	4.95	4.55	4.05	5.00	5.55	3.45	3.65	4.35
ART	5.40	5.05	5.05	5.50	6.25	5.60	6.10	6.60
ART+INT	5.35	4.60	3.65	4.35	4.75	4.15	5.05	4.55
Puri & Sen	3.70	3.25	2.35	1.95	2.55	1.65	1.55	1.60
v.d.Waerden	4.25	3.15	2.35	2.05	2.25	1.45	1.35	1.80
ATS	4.30	4.50	5.20	4.00	5.20	4.25	4.45	4.70
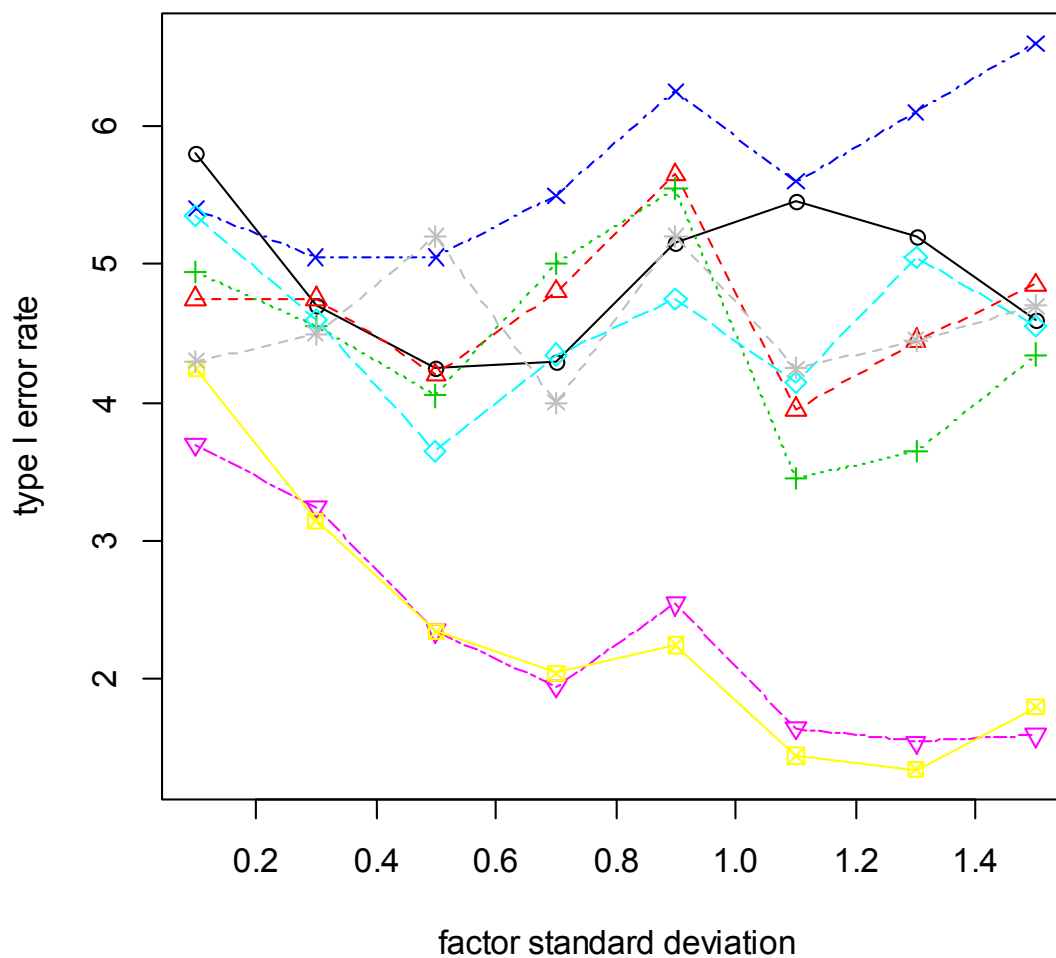
4. 8. 6   exponential distribution - discrete

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.80	4.60	4.30	4.30	5.40	5.30	5.40	4.85
RT	4.10	5.15	4.10	4.70	5.55	4.50	4.50	4.95
INT	4.60	4.95	4.10	4.30	4.70	3.85	3.75	4.15
ART	5.45	5.55	4.90	5.65	6.25	5.70	6.50	6.65
ART+INT	5.70	4.80	4.15	4.35	4.65	4.30	5.20	4.55
Puri & Sen	3.10	3.30	2.25	2.00	2.45	1.80	1.45	1.70
v.d.Waerden	3.55	3.05	2.15	2.05	2.35	1.50	1.25	1.60
ATS	4.05	5.05	4.90	3.90	4.20	4.40	4.75	4.65
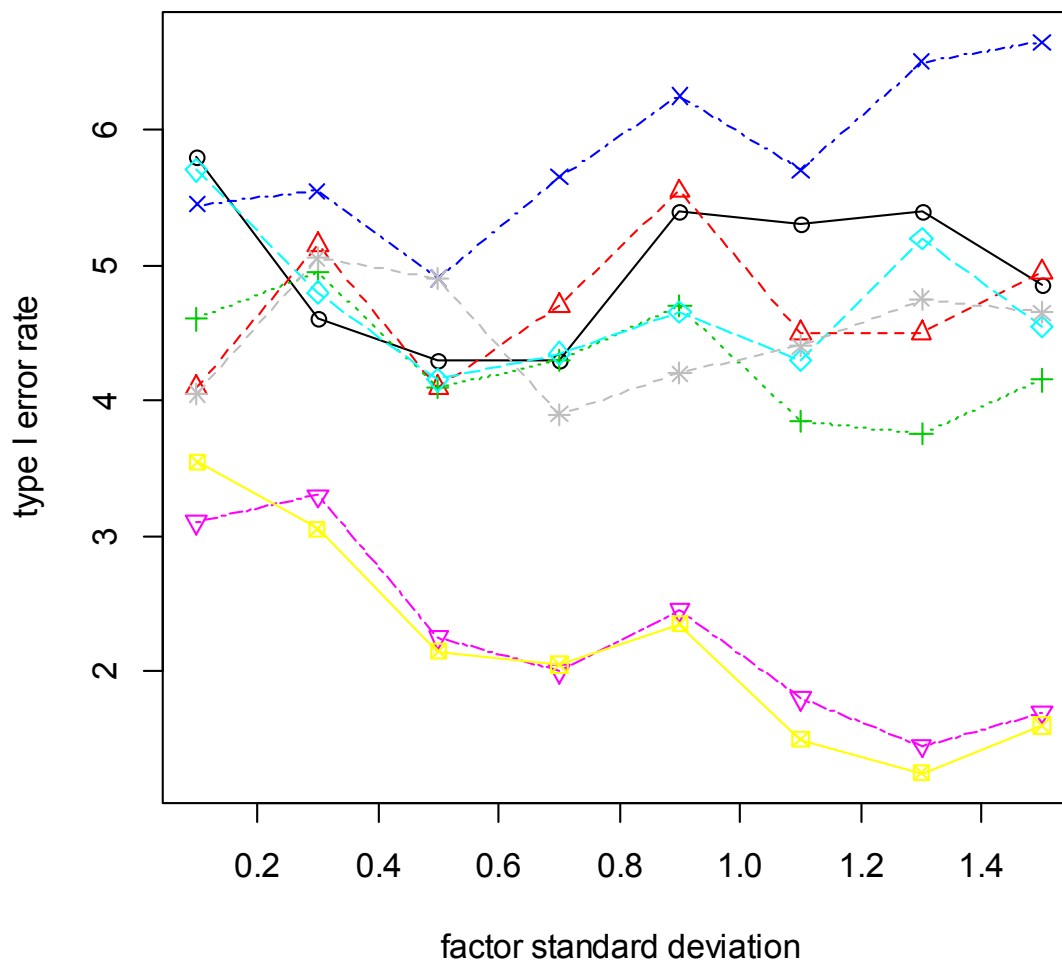
4. 8. 7   lognormal distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.80	4.95	5.90	4.70	4.90	5.35	5.70	5.05
RT	4.80	4.35	6.20	4.40	4.35	5.30	4.40	4.70
INT	4.85	4.85	6.55	5.45	5.25	6.10	5.55	5.65
ART	4.85	4.45	5.30	4.30	4.50	5.65	4.30	5.45
ART+INT	5.25	4.65	5.70	4.75	5.05	6.00	5.30	5.75
Puri & Sen	3.60	2.55	1.70	0.65	0.25	0.05	0.05	0.05
v.d.Waerden	3.90	3.05	2.10	0.60	0.25	0.05	0.05	0.05
ATS	4.15	5.00	5.20	3.55	4.25	4.35	3.45	3.75
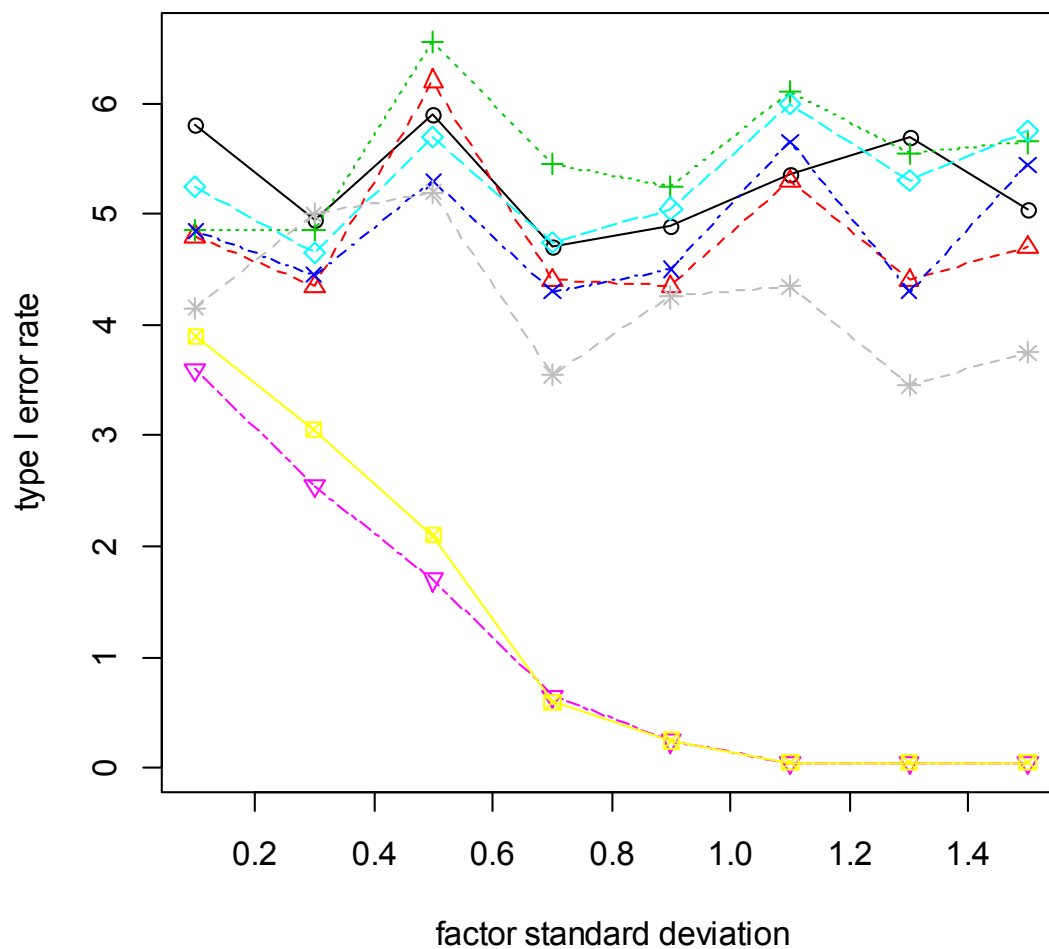
4. 8. 8   uniform distribution - continous

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.55	4.35	3.55	4.90	5.05	4.70	4.80	4.40
RT	5.40	4.25	3.35	4.50	4.25	3.65	3.35	3.30
INT	6.70	4.35	4.35	4.90	5.60	4.80	4.70	4.45
ART	5.45	4.35	3.60	4.60	4.95	5.20	4.50	4.15
ART+INT	5.70	4.15	3.95	4.70	5.55	4.55	4.80	4.70
Puri & Sen	4.30	2.10	1.20	1.00	0.40	0.15	0.05	0.01
v.d.Waerden	4.90	2.15	1.40	0.90	0.35	0.10	0.05	0.01
ATS	3.75	3.80	4.95	4.05	4.55	5.35	5.70	4.00
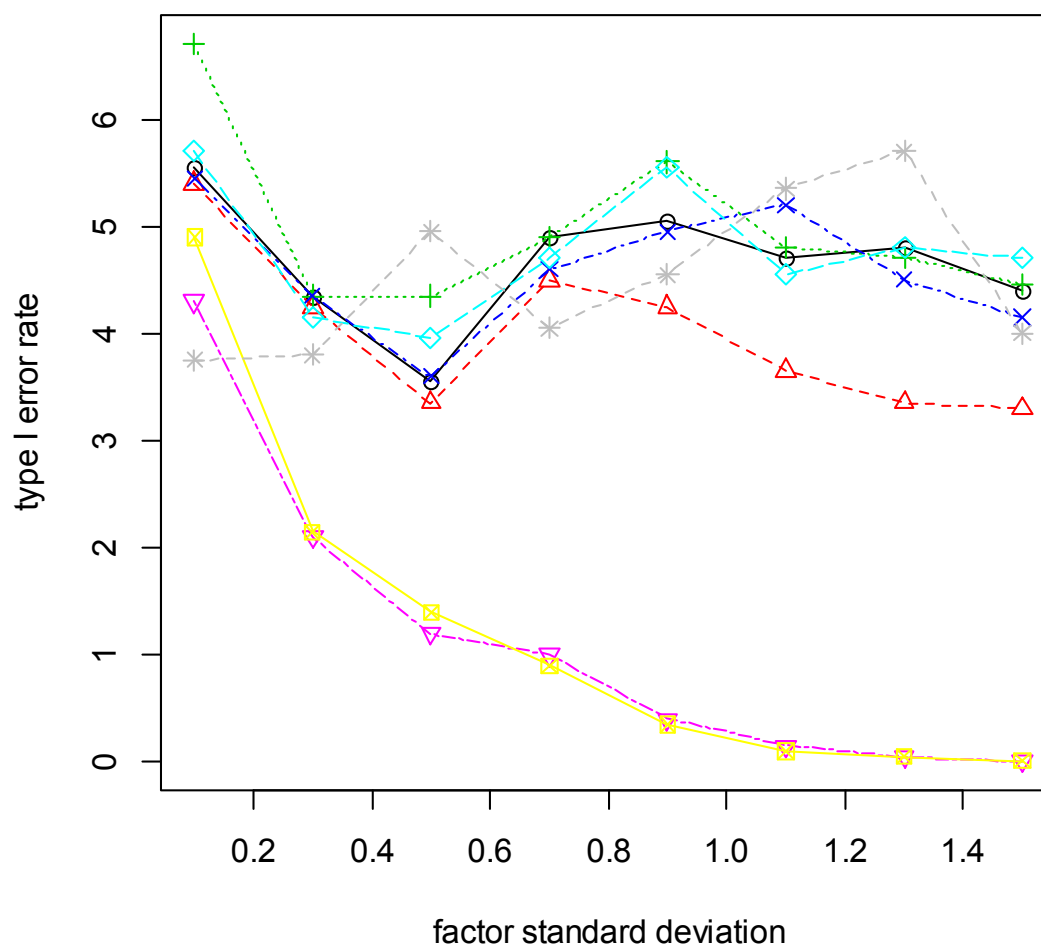
4. 8. 9   uniform distribution - discrete

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	5.60	4.15	4.55	4.75	4.65	4.05	5.00	4.20
RT	5.60	4.00	3.60	4.50	4.30	3.20	3.95	3.40
INT	5.50	3.85	4.35	4.95	4.65	4.20	4.65	4.10
ART	5.50	4.75	4.40	5.25	4.65	4.30	5.35	4.35
ART+INT	6.00	4.50	4.65	5.75	5.10	4.05	5.15	4.80
Puri & Sen	3.95	2.30	1.45	1.15	0.40	0.15	0.15	0.01
v.d.Waerden	4.15	2.10	1.35	0.80	0.40	0.15	0.10	0.01
ATS	4.05	4.15	4.90	4.10	4.45	5.15	5.50	4.10
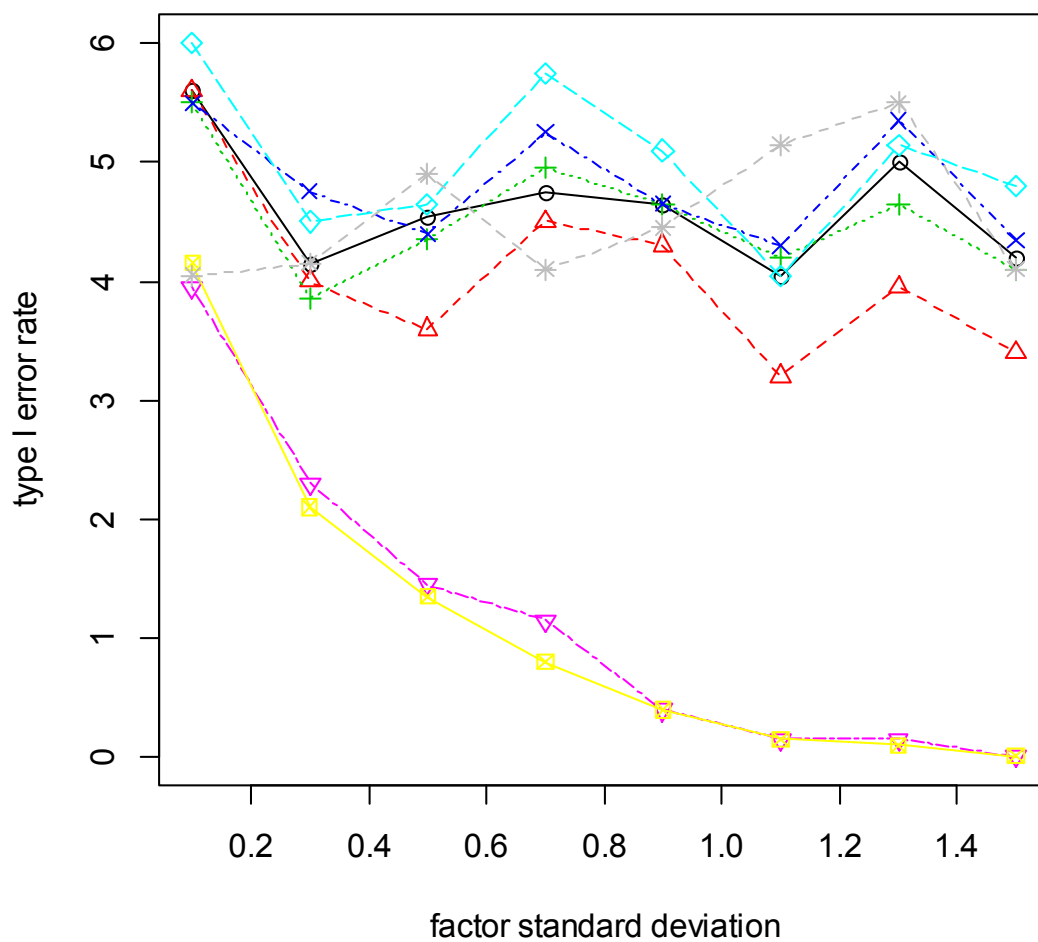
4. 8. 10   left/right skewed distribution

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	6.10	4.55	4.80	4.45	5.50	4.40	5.00	4.70
RT	5.95	3.75	3.70	3.50	3.90	3.00	3.20	2.80
INT	6.40	4.90	4.15	4.10	5.25	4.10	4.50	4.05
ART	5.75	4.65	4.50	4.30	5.30	3.95	4.95	4.45
ART+INT	5.95	4.95	4.95	4.30	5.95	4.80	5.40	5.15
Puri & Sen	4.50	2.35	1.85	0.85	0.50	0.25	0.05	0.01
v.d.Waerden	4.40	2.50	1.70	0.80	0.40	0.05	0.10	0.01
ATS	4.40	3.30	4.45	3.95	4.55	4.80	4.70	3.95
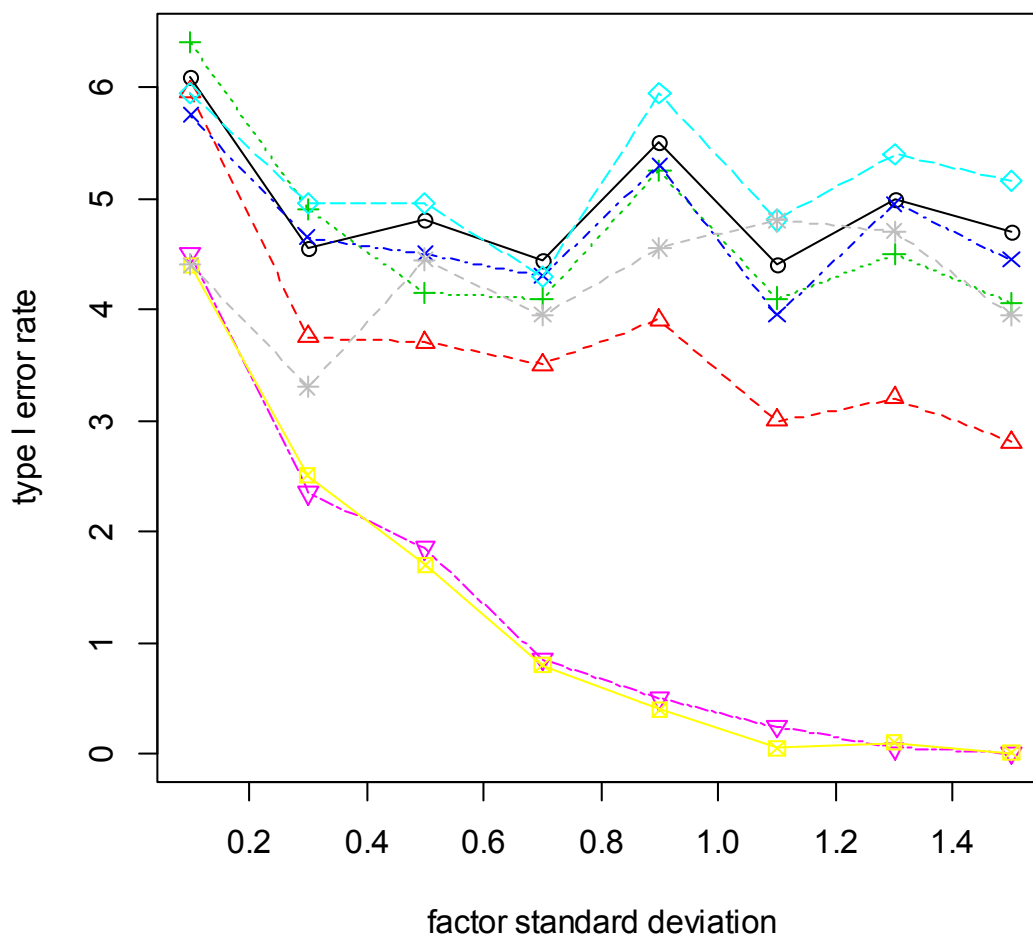
4. 8. 11   left skewed distribution - unequal variances (on B)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	6.45	6.75	5.20	5.60	5.85	6.00	6.35	5.30
RT	5.40	5.45	4.50	4.75	5.00	5.60	6.05	5.20
INT	6.85	6.85	5.15	5.05	5.75	5.45	6.35	5.05
ART	6.35	6.70	6.00	5.90	5.80	6.20	7.00	5.50
ART+INT	6.80	6.80	5.70	5.75	5.75	6.10	6.70	5.50
Puri & Sen	4.15	2.95	2.10	1.35	1.05	0.50	0.05	0.01
v.d.Waerden	5.10	4.50	2.55	1.30	1.15	0.45	0.05	0.01
ATS	3.50	3.40	3.70	3.25	4.60	5.55	5.95	5.15
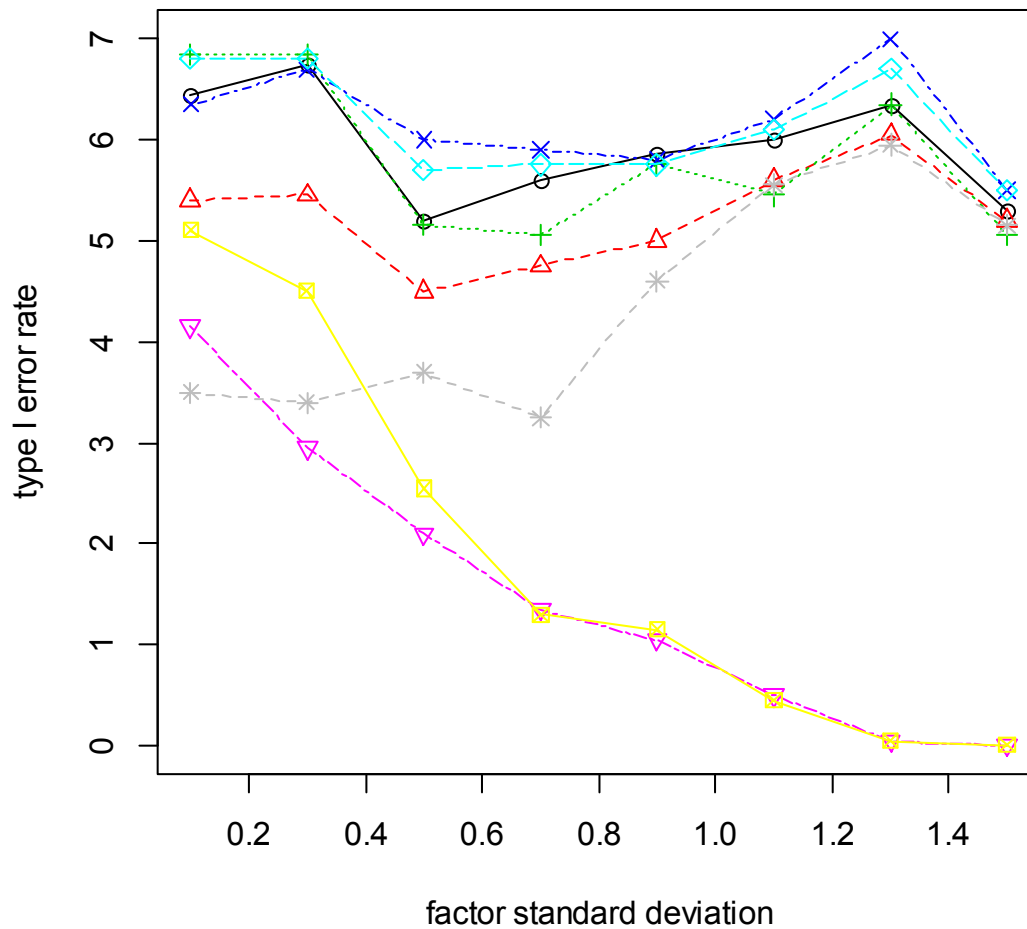
4. 8. 12   left skewed distribution - unequal variances (on A and B)

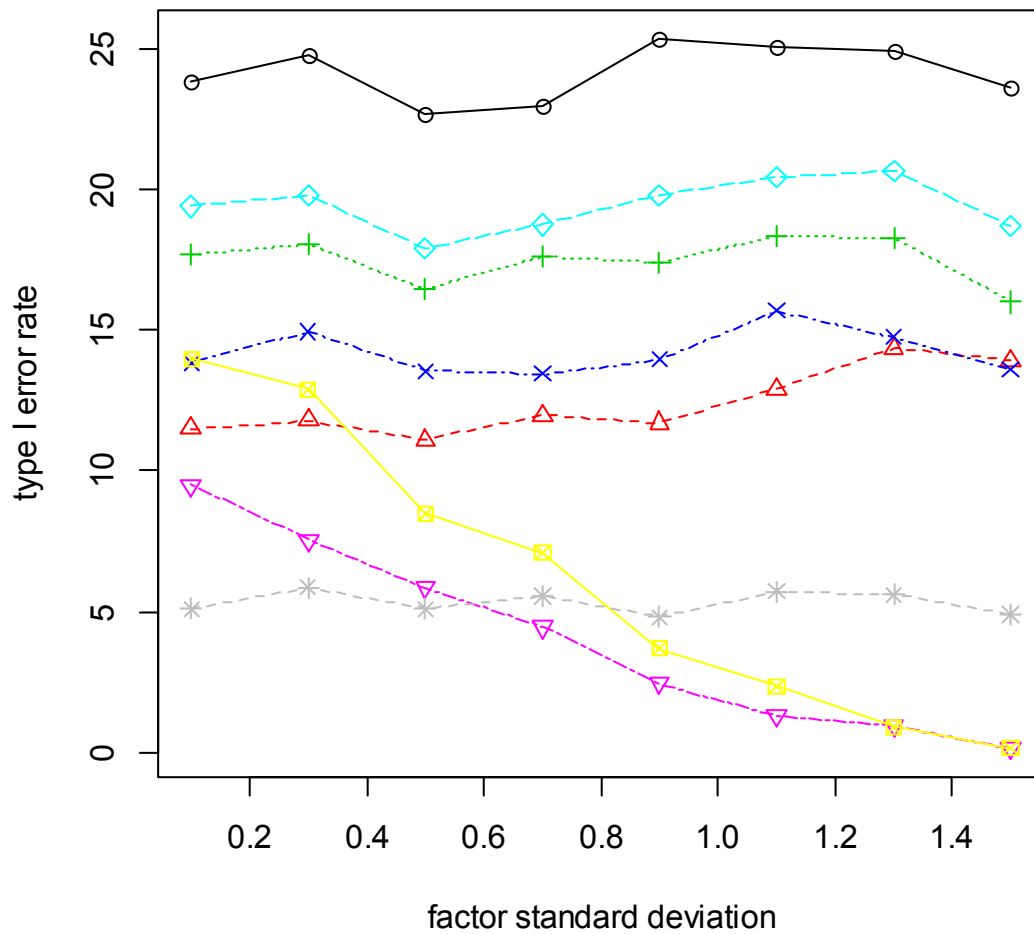| method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	10.40	8.90	8.50	6.95	8.30	9.45	8.60	9.05
RT	6.15	4.70	5.25	6.10	6.85	7.60	8.00	8.50
INT	9.55	7.60	6.65	5.90	6.90	6.45	6.80	6.65
ART	9.00	7.25	6.60	6.55	7.45	7.10	7.80	6.90
ART+INT	11.20	9.00	8.45	7.25	8.75	9.00	8.90	8.25
Puri & Sen	5.00	3.05	2.50	2.30	2.15	1.10	0.75	0.15
v.d.Waerden	7.45	4.60	3.55	2.00	2.05	0.80	0.50	0.05
ATS	4.10	3.60	4.20	3.85	4.25	4.55	5.50	5.10
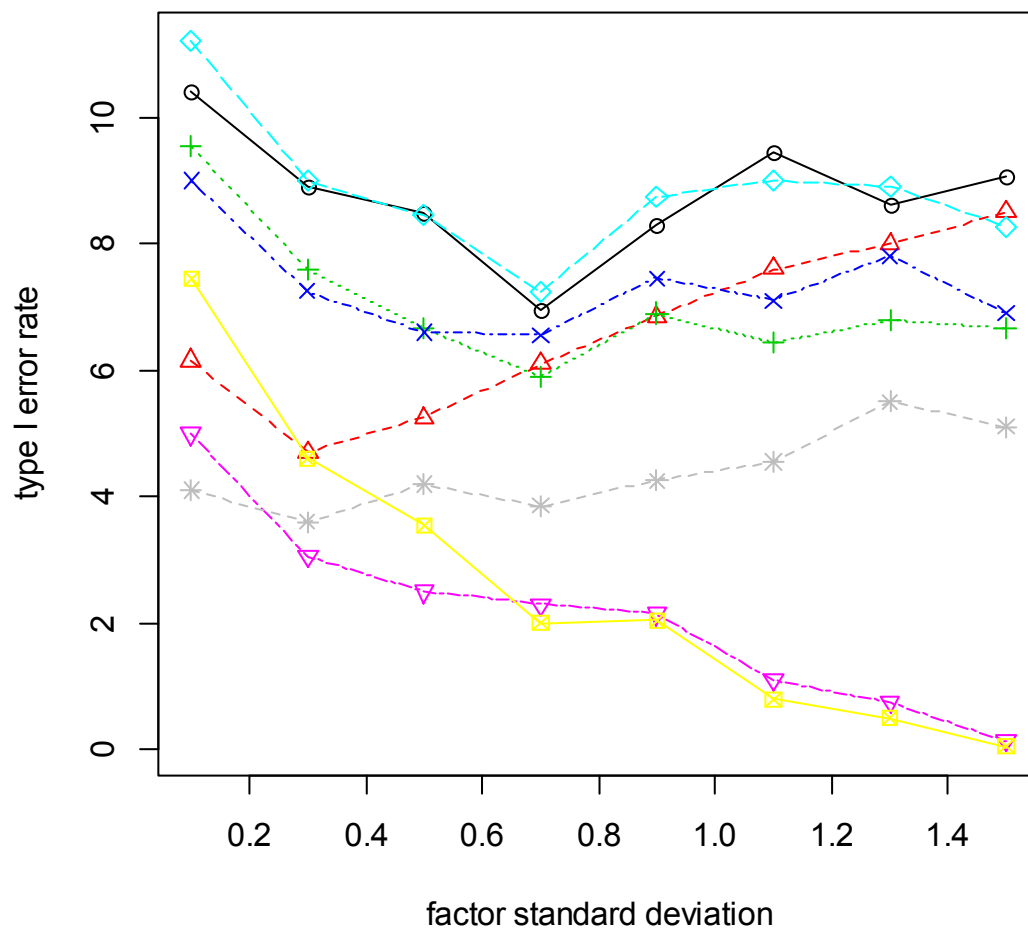
4. 8. 13   normal distribution - unequal variances (small $n_i \sim$ small s_i)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	1.20	1.15	0.90	0.95	1.05	1.25	1.65	1.20
RT	2.15	1.50	1.50	1.60	1.35	1.30	1.75	1.45
INT	1.65	1.00	0.90	1.15	1.10	1.05	1.65	1.20
ART	2.45	1.95	1.60	1.75	2.25	1.80	2.70	1.85
ART+INT	1.60	1.15	1.20	1.15	1.45	1.20	2.10	1.40
Puri & Sen	1.45	0.95	0.60	0.30	0.10	0.10	0.10	0.10
v.d.Waerden	0.90	0.80	0.45	0.30	0.10	0.10	0.10	0.10
ATS	3.50	3.75	3.45	3.70	3.75	3.60	4.25	4.10
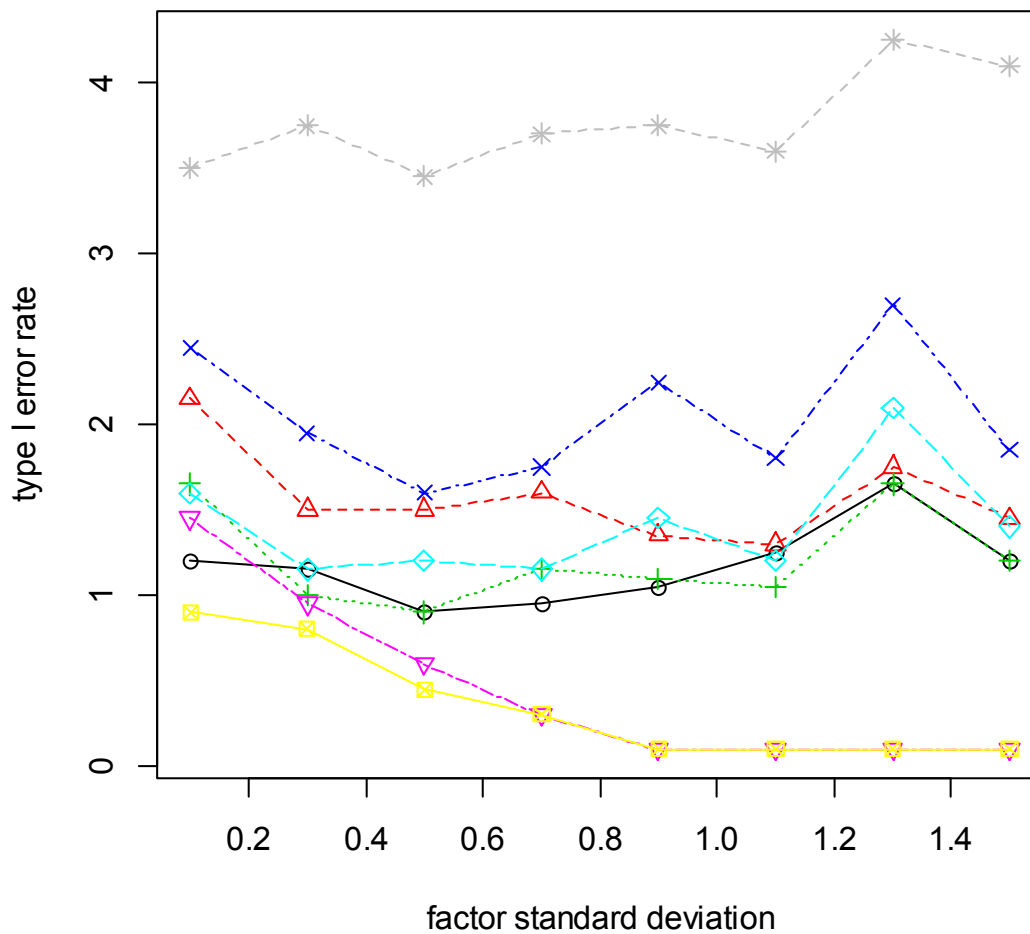
4. 8. 14   normal distribution - unequal variances (small n_i ~ large s_i)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	23.85	24.75	22.70	22.95	25.35	25.10	24.95	23.65
RT	11.50	11.80	11.10	11.95	11.70	12.90	14.35	13.90
INT	17.70	18.05	16.45	17.60	17.40	18.35	18.30	16.00
ART	13.85	14.95	13.55	13.45	13.95	15.70	14.75	13.60
ART+INT	19.40	19.80	17.90	18.75	19.80	20.45	20.65	18.70
Puri & Sen	9.50	7.55	5.85	4.45	2.45	1.30	0.95	0.15
v.d.Waerden	14.00	12.90	8.50	7.10	3.70	2.35	0.90	0.15
ATS	5.10	5.85	5.10	5.55	4.80	5.70	5.60	4.90

4. 8. 15   left skewed distribution - unequal variances (small $n_i \sim$ small s_i)

method	factor standard deviation							
	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	1.55	1.05	0.80	1.00	1.10	1.20	1.40	1.40
RT	2.05	1.40	1.10	1.20	1.50	1.35	1.40	1.15
INT	1.25	1.00	0.70	0.85	1.40	1.20	1.20	1.30
ART	2.55	1.60	1.40	1.80	1.50	2.00	2.40	2.10
ART+INT	1.30	0.95	0.60	0.65	1.00	0.90	1.05	1.20
Puri & Sen	1.35	0.70	0.10	0.15	0.05	0.05	0.05	0.05
v.d.Waerden	0.75	0.50	0.10	0.05	0.05	0.05	0.05	0.05
ATS	3.45	2.85	3.15	3.60	3.70	3.80	3.75	3.00
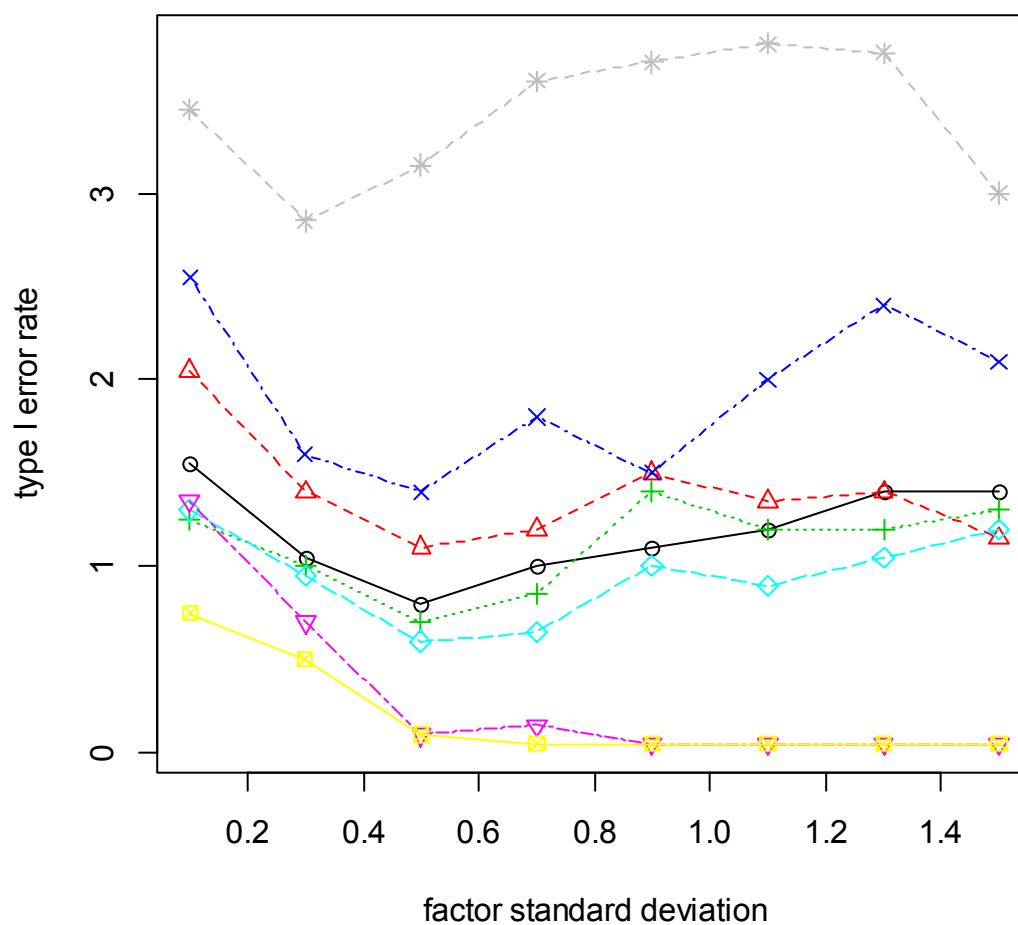
4. 8. 16   left skewed distribution - unequal variances (small n_i ~ large s_i)

	factor standard deviation							
method	0.1	0.3	0.5	0.7	0.9	1,1	1.3	1.5
parametric	24.10	23.00	24.10	23.30	25.70	24.15	23.50	23.50
RT	15.45	13.90	14.35	14.60	15.05	13.85	13.45	12.45
INT	26.85	24.35	24.10	21.60	22.45	19.60	17.85	16.85
ART	17.70	15.65	16.75	16.60	17.95	17.25	16.75	15.10
ART+INT	26.75	24.80	25.90	24.35	26.80	25.15	24.85	23.25
Puri & Sen	12.20	9.55	7.10	5.60	3.55	1.55	1.25	0.10
v.d.Waerden	22.55	17.10	13.40	8.70	4.65	1.30	0.85	0.20
ATS	5.10	5.10	6.15	5.00	5.90	6.15	6.55	4.90