

semmcci: Internal Tests

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Tests

```
#> test-semmcci-mc-generic-simple-med-defined
#> Test passed
#> Test passed
#> Test passed

#> test-semmcci-mc-latent-med-defined-none

#> Test passed
#> Test passed
#> Test passed

#> test-semmcci-mc-latent-med-defined

#> Test passed
#> Test passed
#> Test passed

#> test-semmcci-mc-latent-med-std-defined-none

#> Test passed
#> Test passed
#> Test passed

#> test-semmcci-mc-latent-med-std-defined

#> Test passed
#> Test passed
#> Test passed

#> test-semmcci-mc-moment

#> Test passed

#> test-semmcci-mc-simple-med-defined-equality

#> Test passed
#> Test passed
#> Test passed
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#> test-semmcci-mc-simple-med-defined-inequality
#> Test passed
#> Test passed
#> Test passed

#> test-semmcci-mc-simple-med-defined-meanstructure
#> Test passed
#> Test passed
#> Test passed

#> test-semmcci-mc-simple-med-defined-mi-amelia
#> Test passed

#> test-semmcci-mc-simple-med-defined-mi-list
#> Test passed

#> test-semmcci-mc-simple-med-defined-mi-mice
#> Test passed

#> test-semmcci-mc-simple-med-defined-none
#> Test passed
#> Test passed
#> Test passed

#> test-semmcci-mc-simple-med-defined
#> Test passed
#> Test passed
#> Test passed

#> test-semmcci-mc-simple-med-std-defined-meanstructure
#> Test passed
#> Test passed
#> Test passed

#> test-semmcci-mc-simple-med-std-defined-none-random-x
#> Test passed
#> Test passed
#> Test passed

#> test-semmcci-mc-simple-med-std-defined-none
#> Test passed
#> Test passed
#> Test passed

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```
#> test-semccci-mc-simple-med-std-defined

#> Test passed
#> Test passed
#> Test passed

#> test-semccci-mc-methods

#> Monte Carlo Confidence Intervals
#>
      est      se    R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> visual=~x1      1.0000 0.0000 100 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
#> visual=~x2      0.5535 0.0956 100 0.3053 0.3160 0.3784 0.7576 0.7773 0.7791
#> visual=~x3      0.7294 0.1059 100 0.4818 0.4977 0.5186 0.9238 0.9373 0.9416
#> textual=~x4      1.0000 0.0000 100 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
#> textual=~x5      1.1131 0.0625 100 0.9055 0.9145 0.9558 1.2124 1.2402 1.2625
#> textual=~x6      0.9261 0.0584 100 0.7991 0.8138 0.8348 1.0452 1.0788 1.0972
#> speed=~x7        1.0000 0.0000 100 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
#> speed=~x8        1.1800 0.1689 100 0.7842 0.7914 0.8700 1.5593 1.6323 1.6504
#> speed=~x9        1.0815 0.1491 100 0.7190 0.7261 0.7850 1.3423 1.4525 1.4925
#> x1~~x1           0.5491 0.1161 100 0.2221 0.2442 0.3614 0.8242 0.9092 0.9171
#> x2~~x2           1.1338 0.1085 100 0.8093 0.8656 0.9545 1.3548 1.3899 1.4001
#> x3~~x3           0.8443 0.0927 100 0.6395 0.6418 0.6639 1.0183 1.0317 1.0325
#> x4~~x4           0.3712 0.0462 100 0.2636 0.2703 0.2894 0.4611 0.4744 0.4792
#> x5~~x5           0.4463 0.0676 100 0.2696 0.2905 0.3195 0.5737 0.6150 0.6332
#> x6~~x6           0.3562 0.0415 100 0.2749 0.2751 0.2809 0.4396 0.4534 0.4630
#> x7~~x7           0.7994 0.0718 100 0.6238 0.6333 0.6664 0.9396 0.9512 0.9528
#> x8~~x8           0.4877 0.0757 100 0.3156 0.3238 0.3423 0.6330 0.6615 0.6732
#> x9~~x9           0.5661 0.0636 100 0.3836 0.4100 0.4422 0.6855 0.7262 0.7402
#> visual~~visual   0.8093 0.1266 100 0.4770 0.5004 0.5686 1.0440 1.0974 1.1155
#> textual~~textual 0.9795 0.1187 100 0.6964 0.6981 0.7324 1.1969 1.2778 1.3223
#> speed~~speed     0.3837 0.0847 100 0.1298 0.1468 0.2129 0.5272 0.5481 0.5585
#> visual~~textual  0.4082 0.0669 100 0.2455 0.2542 0.2658 0.5414 0.5536 0.5575
#> visual~~speed     0.2622 0.0506 100 0.1262 0.1309 0.1593 0.3510 0.3740 0.3751
#> textual~~speed    0.1735 0.0480 100 0.0678 0.0726 0.0830 0.2718 0.2826 0.2907
#> Monte Carlo Confidence Intervals (Multiple Imputation Estimates)
#>
      est      se    R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> visual=~x1      1.0000 0.0000 100 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
#> visual=~x2      0.5535 0.1001 100 0.3246 0.3417 0.3669 0.7558 0.7862 0.8020
#> visual=~x3      0.7294 0.1249 100 0.3207 0.3411 0.4374 0.9389 0.9755 0.9837
#> textual=~x4      1.0000 0.0000 100 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
#> textual=~x5      1.1131 0.0594 100 0.9655 0.9692 1.0110 1.2398 1.2741 1.2835
#> textual=~x6      0.9261 0.0572 100 0.7988 0.8030 0.8162 1.0351 1.0456 1.0478
#> speed=~x7        1.0000 0.0000 100 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
#> speed=~x8        1.1800 0.1649 100 0.8457 0.8694 0.9106 1.5339 1.6288 1.6621
#> speed=~x9        1.0815 0.1459 100 0.7956 0.8017 0.8261 1.3819 1.4592 1.5178
#> x1~~x1           0.5491 0.1245 100 0.1629 0.1990 0.2834 0.7322 0.7884 0.8222
#> x2~~x2           1.1338 0.1040 100 0.9057 0.9127 0.9279 1.3529 1.3901 1.4152
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#> x3~~x3      0.8443 0.0885 100 0.6726 0.6738 0.7003 1.0371 1.0721 1.0864
#> x4~~x4      0.3712 0.0500 100 0.2522 0.2613 0.2761 0.4635 0.5061 0.5300
#> x5~~x5      0.4463 0.0502 100 0.3286 0.3382 0.3568 0.5466 0.5668 0.5745
#> x6~~x6      0.3562 0.0425 100 0.2619 0.2676 0.2772 0.4291 0.4397 0.4485
#> x7~~x7      0.7994 0.0812 100 0.6327 0.6373 0.6616 0.9381 1.0537 1.0721
#> x8~~x8      0.4877 0.0750 100 0.2916 0.3197 0.3533 0.6372 0.6615 0.6781
#> x9~~x9      0.5661 0.0670 100 0.3313 0.3674 0.4334 0.6817 0.7045 0.7111
#> visual~~visual 0.8093 0.1514 100 0.3994 0.4160 0.5598 1.1018 1.1729 1.2049
#> textual~~textual 0.9795 0.1153 100 0.6524 0.6707 0.7473 1.1810 1.2813 1.2924
#> speed~~speed  0.3837 0.0786 100 0.1284 0.1523 0.2266 0.5213 0.5326 0.5375
#> visual~~textual 0.4082 0.0720 100 0.2596 0.2606 0.2818 0.5579 0.6155 0.6324
#> visual~~speed  0.2622 0.0505 100 0.1386 0.1470 0.1652 0.3599 0.3755 0.3776
#> textual~~speed  0.1735 0.0523 100 0.0209 0.0404 0.0815 0.2691 0.2866 0.2876
#> Standardized Monte Carlo Confidence Intervals
#>           est      se    R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> visual=~x1    0.7719 0.0532 100 0.6012 0.6252 0.6594 0.8532 0.8974 0.8977
#> visual=~x2    0.4236 0.0627 100 0.2487 0.2591 0.2996 0.5492 0.5819 0.5874
#> visual=~x3    0.5811 0.0574 100 0.4144 0.4235 0.4426 0.6764 0.6965 0.6995
#> textual=~x4    0.8516 0.0229 100 0.8034 0.8034 0.8049 0.8871 0.9026 0.9125
#> textual=~x5    0.8551 0.0262 100 0.7639 0.7799 0.8036 0.8966 0.9075 0.9097
#> textual=~x6    0.8380 0.0237 100 0.7593 0.7689 0.7950 0.8767 0.8832 0.8839
#> speed=~x7     0.5695 0.0558 100 0.3515 0.3731 0.4356 0.6456 0.6541 0.6562
#> speed=~x8     0.7230 0.0493 100 0.5552 0.5678 0.5914 0.7994 0.8068 0.8082
#> speed=~x9     0.6650 0.0500 100 0.5311 0.5359 0.5497 0.7535 0.7600 0.7600
#> x1~~x1        0.4042 0.0808 100 0.1942 0.1947 0.2719 0.5652 0.6084 0.6384
#> x2~~x2        0.8206 0.0532 100 0.6549 0.6614 0.6983 0.9102 0.9327 0.9381
#> x3~~x3        0.6623 0.0649 100 0.5107 0.5149 0.5425 0.8041 0.8205 0.8283
#> x4~~x4        0.2748 0.0389 100 0.1673 0.1852 0.2130 0.3521 0.3545 0.3545
#> x5~~x5        0.2689 0.0444 100 0.1724 0.1764 0.1961 0.3542 0.3914 0.4164
#> x6~~x6        0.2977 0.0395 100 0.2188 0.2200 0.2313 0.3679 0.4086 0.4235
#> x7~~x7        0.6757 0.0603 100 0.5693 0.5721 0.5832 0.8095 0.8602 0.8764
#> x8~~x8        0.4772 0.0689 100 0.3468 0.3491 0.3609 0.6502 0.6774 0.6917
#> x9~~x9        0.5578 0.0652 100 0.4224 0.4224 0.4323 0.6978 0.7128 0.7180
#> visual~~visual 1.0000 0.0000 100 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
#> textual~~textual 1.0000 0.0000 100 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
#> speed~~speed   1.0000 0.0000 100 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
#> visual~~textual 0.4585 0.0630 100 0.2932 0.3007 0.3457 0.5826 0.6171 0.6244
#> visual~~speed  0.4705 0.0780 100 0.2951 0.3014 0.3163 0.6361 0.6839 0.6974
#> textual~~speed  0.2830 0.0633 100 0.1546 0.1562 0.1668 0.3897 0.4073 0.4160
#> Standardized Monte Carlo Confidence Intervals
#>           est      se    R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> visual=~x1    0.7719 0.0615 100 0.5920 0.6038 0.6441 0.8867 0.9220 0.9383
#> visual=~x2    0.4236 0.0580 100 0.2713 0.2817 0.3149 0.5479 0.5550 0.5557
#> visual=~x3    0.5811 0.0636 100 0.3180 0.3391 0.4043 0.6647 0.7020 0.7102
#> textual=~x4    0.8516 0.0237 100 0.7789 0.7843 0.7968 0.8885 0.8996 0.9045
#> textual=~x5    0.8551 0.0196 100 0.8030 0.8080 0.8172 0.8877 0.8943 0.8947

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#> textual=~x6      0.8380 0.0243 100 0.7770 0.7823 0.7933 0.8851 0.8911 0.8943
#> speed=~x7        0.5695 0.0540 100 0.3483 0.3891 0.4479 0.6513 0.6603 0.6610
#> speed=~x8        0.7230 0.0520 100 0.5931 0.5955 0.6118 0.8143 0.8187 0.8196
#> speed=~x9        0.6650 0.0539 100 0.5261 0.5497 0.5824 0.7648 0.7967 0.8087
#> x1~~x1           0.4042 0.0947 100 0.1195 0.1495 0.2136 0.5849 0.6352 0.6495
#> x2~~x2           0.8206 0.0495 100 0.6912 0.6919 0.6998 0.9008 0.9205 0.9264
#> x3~~x3           0.6623 0.0680 100 0.4956 0.5071 0.5582 0.8365 0.8845 0.8988
#> x4~~x4           0.2748 0.0401 100 0.1819 0.1907 0.2106 0.3650 0.3849 0.3933
#> x5~~x5           0.2689 0.0333 100 0.1995 0.2003 0.2121 0.3321 0.3470 0.3552
#> x6~~x6           0.2977 0.0408 100 0.2003 0.2059 0.2165 0.3706 0.3879 0.3963
#> x7~~x7           0.6757 0.0583 100 0.5631 0.5640 0.5757 0.7994 0.8465 0.8783
#> x8~~x8           0.4772 0.0742 100 0.3283 0.3298 0.3370 0.6257 0.6454 0.6482
#> x9~~x9           0.5578 0.0721 100 0.3459 0.3651 0.4150 0.6608 0.6972 0.7231
#> visual~~visual   1.0000 0.0000 100 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
#> textual~~textual 1.0000 0.0000 100 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
#> speed~~speed     1.0000 0.0000 100 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
#> visual~~textual  0.4585 0.0617 100 0.3267 0.3288 0.3413 0.5954 0.6124 0.6134
#> visual~~speed    0.4705 0.0751 100 0.3126 0.3263 0.3585 0.6429 0.6667 0.6695
#> textual~~speed   0.2830 0.0790 100 0.0422 0.0865 0.1560 0.4405 0.4649 0.4761
#> Monte Carlo Confidence Intervals
#> Monte Carlo Confidence Intervals (Multiple Imputation Estimates)
#> Standardized Monte Carlo Confidence Intervals
#> Standardized Monte Carlo Confidence Intervals

#> test-semmcci-npd

#> Test passed
#> Test passed
#> Test passed
#> Test passed

#> test-semmcci-zzz-coverage
#> test-semmcci-zzz-heywood

#> lavaan 0.6.17 ended normally after 18 iterations
#>
#> Estimator ML
#> Optimization method NLMINB
#> Number of model parameters 8
#>
#> Number of observations 50
#>
#> Model Test User Model:
#>
#> Test statistic 0.000
#> Degrees of freedom 2
#> P-value (Chi-square) 1.000

```

```

#>
#> Parameter Estimates:
#>
#> Standard errors          Standard
#> Information              Expected
#> Information saturated (h1) model Structured
#>
#> Latent Variables:
#>      Estimate Std.Err z-value P(>|z|)
#> eta1 =~
#>   y1      1.000
#>   y2      0.991    0.152    6.524    0.000
#>   y3      0.901    0.138    6.537    0.000
#>   y4      1.399    0.143    9.814    0.000
#>
#> Variances:
#>      Estimate Std.Err z-value P(>|z|)
#>   .y1      0.000    0.055    0.000    1.000
#>   .y2      0.980    0.203    4.822    0.000
#>   .y3      0.807    0.167    4.820    0.000
#>   .y4      0.696    0.176    3.960    0.000
#>   eta1      0.980    0.204    4.815    0.000
#>
#> Standardized Monte Carlo Confidence Intervals
#>      est se R 0.05% 0.5% 2.5% 97.5% 99.5% 99.95%
#> eta1=~y1  1.0000 NA 0   NA   NA   NA   NA   NA   NA
#> eta1=~y2  0.7039 NA 0   NA   NA   NA   NA   NA   NA
#> eta1=~y3  0.7047 NA 0   NA   NA   NA   NA   NA   NA
#> eta1=~y4  0.8566 NA 0   NA   NA   NA   NA   NA   NA
#> y1~~y1    0.0000 NA 0   NA   NA   NA   NA   NA   NA
#> y2~~y2    0.5045 NA 0   NA   NA   NA   NA   NA   NA
#> y3~~y3    0.5034 NA 0   NA   NA   NA   NA   NA   NA
#> y4~~y4    0.2662 NA 0   NA   NA   NA   NA   NA   NA
#> eta1~~eta1 1.0000 NA 0   NA   NA   NA   NA   NA   NA
#> [[1]]
#> [[1]][[1]]
#> [[1]][[1]]$value
#> [[1]][[1]]$value[[1]]
#>      est se R 0.05% 0.5% 2.5% 97.5% 99.5% 99.95%
#> x * m -0.0016 0.003 2000 -0.0168 -0.0116 -0.0086 0.0038 0.0062 0.008
#>
#>
#> [[1]][[1]]$visible
#> [1] TRUE
#>
#>

```

```

#> [[1]][[2]]
#> [[1]][[2]]$value
#> [[1]][[2]]$value[[1]]
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#>
#>
#> [[1]][[2]]$visible
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#>
#> [[1]][[3]]
#> [[1]][[3]]$value
#> [[1]][[3]]$value[[1]]
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#>
#>
#> [[1]][[3]]$visible
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#>
#>
#> [[1]][[4]]
#> [[1]][[4]]$value
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#>
#> [[1]][[4]]$visible
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#>
#> [[1]][[5]]
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#> [[1]][[5]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[5]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[6]]
#> [[1]][[6]]$value
#> [[1]][[6]]$value[[1]]
#> Monte Carlo Confidence Intervals
#>

```

	est	se	R	0.05%	0.5%	2.5%

```

#> ses=~education      1.0000  0.0000 20000   1.0000   1.0000   1.0000
#> ses=~sei            5.2195  0.4225 20000   3.8295   4.1130   4.3932
#> alien67=~anomia67    1.0000  0.0000 20000   1.0000   1.0000   1.0000
#> alien67=~powerless67 0.9787  0.0615 20000   0.7758   0.8222   0.8584
#> alien71=~anomia71    1.0000  0.0000 20000   1.0000   1.0000   1.0000
#> alien71=~powerless71 0.9221  0.0594 20000   0.7236   0.7695   0.8045
#> alien71~alien67      0.6070  0.0504 20000   0.4422   0.4787   0.5095
#> alien71~ses          -0.2268  0.0521 20000  -0.3968  -0.3610  -0.3292
#> alien67~ses          -0.5750  0.0562 20000  -0.7567  -0.7189  -0.6854
#> anomia67~~anomia71   1.6229  0.3143 20000   0.6178   0.8156   1.0005
#> powerless67~~powerless71 0.3387  0.2618 20000  -0.5003  -0.3291  -0.1769
#> education~~education 2.8013  0.5061 20000   1.2005   1.4831   1.8137
#> sei~~sei            264.5971 17.9753 20000 205.9819 218.0126 229.0729
#> anomia67~~anomia67   4.7307  0.4552 20000   3.2364   3.5684   3.8491
#> powerless67~~powerless67 2.5634  0.4022 20000   1.2245   1.4999   1.7691
#> anomia71~~anomia71   4.3992  0.5163 20000   2.7306   3.0641   3.3780
#> powerless71~~powerless71 3.0699  0.4378 20000   1.6079   1.9281   2.2118
#> ses~~ses            6.7983  0.6534 20000   4.7148   5.1068   5.5333
#> alien67~~alien67     4.8415  0.4668 20000   3.3506   3.6668   3.9210
#> alien71~~alien71     4.0832  0.4009 20000   2.7606   3.0631   3.3059
#>
#>      97.5%    99.5%   99.95%
#> ses=~education      1.0000   1.0000   1.0000
#> ses=~sei            6.0432   6.3131   6.5932
#> alien67=~anomia67    1.0000   1.0000   1.0000
#> alien67=~powerless67 1.0996   1.1367   1.1826
#> alien71=~anomia71    1.0000   1.0000   1.0000
#> alien71=~powerless71 1.0385   1.0754   1.1273
#> alien71~alien67      0.7064   0.7393   0.7716
#> alien71~ses          -0.1253  -0.0916  -0.0549
#> alien67~ses          -0.4642  -0.4328  -0.3992
#> anomia67~~anomia71   2.2408   2.4341   2.6483
#> powerless67~~powerless71 0.8494   1.0170   1.1800
#> education~~education 3.7814   4.1119   4.5058
#> sei~~sei            299.6877 310.9253 322.3381
#> anomia67~~anomia67   5.6197   5.9368   6.2182
#> powerless67~~powerless67 3.3523   3.5980   3.9101
#> anomia71~~anomia71   5.3980   5.7268   6.0725
#> powerless71~~powerless71 3.9248   4.2116   4.4791
#> ses~~ses            8.0680   8.4773   8.9187
#> alien67~~alien67     5.7477   6.0417   6.4364
#> alien71~~alien71     4.8700   5.1581   5.4682
#>
#>
#> [[1]][[6]]$visible
#> [1] TRUE
#>

```



```

#>
#> [[1]][[7]]
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#>
#>
#> [[1]][[7]]$visible
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#>
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#>
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#>
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#>
#>
#> [[1]][[11]]
#> [[1]][[11]]$value
#> [[1]][[11]]$value[[1]]
#> [1] TRUE
#>

```

```

#>
#> [[1]][[11]]$visible
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#> [1] TRUE
#>
#>
#> [[1]][[12]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[13]]
#> [[1]][[13]]$value
#> [[1]][[13]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[13]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[14]]
#> [[1]][[14]]$value
#> [[1]][[14]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[14]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[15]]
#> [[1]][[15]]$value
#> [[1]][[15]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[15]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[16]]

```

```
#> [[1]][[16]]$value
#> [[1]][[16]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[16]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[17]]
#> [[1]][[17]]$value
#> [[1]][[17]]$value[[1]]
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#>
#>
#> [[1]][[17]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[18]]
#> [[1]][[18]]$value
#> [[1]][[18]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[18]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[19]]
#> [[1]][[19]]$value
#> [[1]][[19]]$value[[1]]
#>
#> 2.5 % 97.5 %
#> visual=~x1 0.6441475 0.8866728
#> visual=~x2 0.3149232 0.5479174
#> visual=~x3 0.4042896 0.6647178
#> textual=~x4 0.7968444 0.8885021
#> textual=~x5 0.8172286 0.8876561
#> textual=~x6 0.7933454 0.8851332
#> speed=~x7 0.4479168 0.6513404
#> speed=~x8 0.6118252 0.8142694
#> speed=~x9 0.5824452 0.7648454
#> x1~~x1 0.2136134 0.5848976
#> x2~~x2 0.6997655 0.9008158
#> x3~~x3 0.5581501 0.8365268
```

```

#> x4~~x4          0.2105615 0.3650051
#> x5~~x5          0.2120667 0.3321374
#> x6~~x6          0.2165379 0.3705912
#> x7~~x7          0.5757177 0.7993697
#> x8~~x8          0.3369643 0.6256699
#> x9~~x9          0.4150083 0.6607562
#> visual~~visual  1.0000000 1.0000000
#> textual~~textual 1.0000000 1.0000000
#> speed~~speed    1.0000000 1.0000000
#> visual~~textual 0.3413348 0.5953853
#> visual~~speed   0.3584734 0.6428746
#> textual~~speed  0.1559934 0.4405097
#>
#>
#> [[1]][[19]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[20]]
#> [[1]][[20]]$value
#> [[1]][[20]]$value[[1]]
#> [[1]][[20]]$value[[1]]$thetahatstar
#>
#>          y1          y2          y3
#> [1,] -4.246806e-01 -0.5674344544 -0.844470405
#> [2,]  1.285923e+00  1.3721426626  2.365001749
#> [3,]  1.163091e-01 -1.0861272136 -0.457720098
#> [4,] -3.702629e-01  0.0087967812 -0.456828435
#> [5,]  1.718771e-01  0.4957076624  0.489424273
#> [6,] -3.411976e-02  0.9067666709  0.460670898
#> [7,]  9.358973e-01  0.8692087206  1.649419308
#> [8,]  2.606123e-01 -0.7845996957 -0.110441820
#> [9,]  3.114685e-01 -0.0535844114  0.358657813
#> [10,] 9.897516e-01  0.5705621874  1.550838124
#> [11,] -1.526909e+00 -1.4936898671 -2.732960029
#> [12,]  1.092488e+00  0.8953888500  1.859214133
#> [13,] -1.256035e+00 -1.2760443405 -2.274401072
#> [14,]  2.394827e-01  0.8643377866  0.778301301
#> [15,] -1.821778e-01 -0.5833480251 -0.550905729
#> [16,]  1.567170e+00  1.9744495497  3.049966084
#> [17,]  6.338543e-01  2.4703094599  2.161321764
#> [18,]  1.391986e+00  2.2150786670  2.965053675
#> [19,] -3.775255e-01 -1.3658394759 -1.228750318
#> [20,] -1.665505e-01 -0.3868979388 -0.422397255
#> [21,] -6.810469e-01 -1.2718366106 -1.555067624
#> [22,]  1.574423e+00  1.4567694279  2.771719317
#> [23,] -5.414014e-01  0.3340344021 -0.489741369

```

```

#> [24,] 1.067092e+00 3.1023927751 3.052340146
#> [25,] 1.004737e+00 1.2216146971 1.930831486
#> [26,] -6.375036e-02 0.0525931144 -0.050308420
#> [27,] 8.723528e-01 2.5689393198 2.513459921
#> [28,] 1.073842e+00 1.4806232742 2.160742598
#> [29,] 3.228785e-01 0.0111139123 0.408790598
#> [30,] -9.964082e-01 -1.4121892694 -2.026206560
#> [31,] 9.750292e-01 1.7286461249 2.175167703
#> [32,] -2.641183e+00 -5.6837326372 -6.447734615
#> [33,] 1.035778e-01 0.0813528760 0.174306817
#> [34,] -2.909126e-01 -0.5379891968 -0.661323533
#> [35,] 2.373802e+00 3.6007962879 4.958374092
#> [36,] 1.424798e+00 2.4344197578 3.127694820
#> [37,] 1.949218e-01 2.2931584136 1.515670423
#> [38,] 9.535264e-02 0.5650217926 0.432466230
#> [39,] 2.875480e+00 5.1368035275 6.436375300
#> [40,] 9.874190e-01 1.6623678919 2.153835985
#> [41,] 2.795543e+00 6.1613362479 6.905269085
#> [42,] 8.079498e-02 -0.4093790103 -0.126438513
#> [43,] -2.187906e+00 -3.0390072179 -4.414795628
#> [44,] 1.678974e+00 2.9193718438 3.713775208
#> [45,] -2.651958e-01 0.0307554419 -0.313625806
#> [46,] 1.606499e-01 0.2963384546 0.364782531
#> [47,] -1.324144e+00 -1.8681300179 -2.687914663
#> [48,] 6.344300e-01 1.5371237237 1.644160519
#> [49,] -2.699770e+00 -4.0509676021 -5.614675478
#> [50,] 9.905222e-02 -0.3274457675 -0.058202590
#> [51,] 3.272955e-01 0.5980031453 0.739997499
#> [52,] -8.337031e-01 -2.3033357652 -2.317865663
#> [53,] -4.818745e-02 0.4095994074 0.167221749
#> [54,] 3.361049e-01 1.7334477628 1.381106894
#> [55,] 2.998949e-01 0.1026549873 0.430932101
#> [56,] 5.450611e-01 0.0501875922 0.707532142
#> [57,] 8.746309e-02 -1.4153983649 -0.676422141
#> [58,] 7.552542e-01 1.5836766764 1.820660860
#> [59,] -1.025963e+00 -2.2365345124 -2.520538097
#> [60,] 9.907188e-02 -0.5338005578 -0.172696346
#> [61,] -9.838347e-02 -0.8525640781 -0.595819554
#> [62,] 3.155431e-01 0.0017227112 0.394431784
#> [63,] -1.954378e+00 -5.1369835017 -5.287879945
#> [64,] 1.501999e+00 2.4498420073 3.232521265
#> [65,] -3.457712e-01 -1.6899558612 -1.369024352
#> [66,] -3.318195e+00 -5.5655149109 -7.226348882
#> [67,] 1.642618e+00 2.7951972354 3.599527994
#> [68,] -2.293105e+00 -4.8326848299 -5.541393089

```

```

#> [69,] 1.125354e+00 3.0106136085 3.074058286
#> [70,] 3.651434e-02 0.8173336197 0.499118578
#> [71,] 2.894378e-01 -0.2561143782 0.218790334
#> [72,] 7.783488e-01 1.5770565970 1.845785450
#> [73,] -9.790518e-01 -1.8906287698 -2.270077480
#> [74,] 3.601769e-01 1.7163647709 1.401643848
#> [75,] -1.558294e+00 -3.6293568919 -3.957302147
#> [76,] -7.348388e-02 -0.6288763206 -0.440632927
#> [77,] 8.764688e-02 -0.1623914062 0.019173444
#> [78,] -9.891151e-01 -1.0850557136 -1.835566833
#> [79,] -3.655801e-01 -1.3490349707 -1.204528812
#> [80,] -1.368797e+00 -2.6970252112 -3.203597713
#> [81,] -6.587049e-01 -0.6158615716 -1.163168937
#> [82,] 1.661865e+00 2.6976956370 3.569419533
#> [83,] 1.523454e-01 0.8387330721 0.655433386
#> [84,] 5.122381e-02 0.5498720600 0.369031021
#> [85,] 1.279672e+00 3.2563981170 3.402889358
#> [86,] 1.049299e+00 0.6768178926 1.684060197
#> [87,] 2.574452e-01 0.3516376273 0.516173065
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#> [89,] -6.834880e-01 -1.0993424416 -1.462384657
#> [90,] 1.573710e+00 2.4485276826 3.321214380
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#> [92,] 2.284738e-02 -0.9978945398 -0.525299473
#> [93,] 9.178086e-01 1.5804506351 2.021572517
#> [94,] 7.582010e-01 0.6021365224 1.279621778
#> [95,] 8.892111e-02 0.0623609583 0.145490528
#> [96,] -1.345773e+00 -1.6758189125 -2.608160733
#> [97,] -7.022393e-01 -0.9639956134 -1.410655248
#> [98,] -3.241345e-01 -0.8927555622 -0.899631110
#> [99,] -1.592216e+00 -2.5465306492 -3.398678583
#> [100,] -1.235637e+00 -0.9412125032 -2.063147423
#> [101,] -7.721154e-01 -1.5473754479 -1.821540720
#> [102,] -1.318354e+00 -2.2232776927 -2.877787163
#> [103,] -1.332118e+00 -3.2392120162 -3.458751575
#> [104,] 1.163599e+00 2.5828514980 2.884358275
#> [105,] -3.680232e-01 -0.9040213164 -0.960611389
#> [106,] 1.392745e+00 2.4089728248 3.073603315
#> [107,] -8.511085e-01 -1.5595808416 -1.926817019
#> [108,] -1.998420e+00 -3.3217859186 -4.335440475
#> [109,] 1.282522e+00 2.1808300360 2.809548056
#> [110,] 1.292492e-01 0.4065028225 0.386763206
#> [111,] 6.601911e-01 -0.4597792488 0.568086649
#> [112,] 2.077097e-01 -0.8048703122 -0.187659551
#> [113,] 2.400029e+00 3.7103095606 5.051853744

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#> [114,] -6.012069e-01 -1.6650647180 -1.673733999
#> [115,] 2.703609e+00 3.9186938029 5.546055819
#> [116,] -7.728166e-01 -1.9525422907 -2.047265718
#> [117,] -1.711421e+00 -4.3465462265 -4.546258477
#> [118,] 1.307784e+00 1.6555484862 2.549539666
#> [119,] -3.032432e-01 0.0961820725 -0.324761020
#> [120,] 1.394082e+00 1.1904709896 2.399053597
#> [121,] 1.017682e+00 2.5846551325 2.703404028
#> [122,] 6.947103e-01 0.7668016609 1.291832416
#> [123,] 6.558163e-01 1.9350582392 1.891665887
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#> [128,] 5.362015e-01 0.5336026653 0.964759527
#> [129,] 1.105121e+00 1.8913800292 2.427700048
#> [130,] 1.324506e+00 2.2285941459 2.888408919
#> [131,] 8.861135e-01 2.5033361888 2.494212271
#> [132,] 8.819398e-01 2.6193017292 2.553363784
#> [133,] -9.555726e-02 -1.2694873580 -0.823670286
#> [134,] 7.348624e-01 1.0000639634 1.471352026
#> [135,] -2.774682e-01 -1.5944426596 -1.230846112
#> [136,] -5.329887e-01 -0.5280684713 -0.957681921
#> [137,] -1.042850e+00 -2.1409758567 -2.488564781
#> [138,] 1.987515e+00 4.1848343921 4.800798260
#> [139,] 1.082528e+00 1.1237307322 1.973513923
#> [140,] -1.369158e+00 -1.9317011853 -2.779324859
#> [141,] -1.773405e+00 -4.1386283777 -4.508164787
#> [142,] -1.033128e+00 -2.5848280513 -2.722761025
#> [143,] -2.816424e+00 -3.6107902440 -5.515860990
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#> [145,] 9.187832e-01 0.3701867547 1.351142117
#> [146,] -4.730818e-01 -0.8044236036 -1.036344715
#> [147,] -2.795169e+00 -4.6809350051 -6.083242073
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#> [149,] 7.027981e-01 1.8842381009 1.922048167
#> [150,] 4.453580e-01 0.9150729699 1.063179591
#> [151,] -1.369027e+00 -1.6156477119 -2.603766054
#> [152,] -1.418097e+00 -2.3150418199 -3.053089044
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#> [154,] 5.600098e-01 1.3057058038 1.422932904
#> [155,] -1.144720e+00 -2.3862252121 -2.751697899
#> [156,] -1.602339e+00 -2.8563421971 -3.583234609
#> [157,] -1.619794e+00 -2.0673862043 -3.167162491
#> [158,] -2.473715e-01 0.0096865264 -0.303091582

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#> [159,] -6.361763e-01 -1.0177376865 -1.358100735
#> [160,] -1.448368e+00 -1.6412250821 -2.716896887
#> [161,] 2.406347e+00 4.1119359026 5.282617687
#> [162,] 1.398565e+00 3.2719748842 3.559790494
#> [163,] -9.227862e-02 -0.4751028056 -0.378731719
#> [164,] -1.708932e+00 -2.7091045144 -3.634442911
#> [165,] -4.559985e-01 0.4693725532 -0.308138654
#> [166,] -2.253622e+00 -4.4515434193 -5.280640470
#> [167,] 1.113106e+00 0.6280225305 1.736546516
#> [168,] -1.217251e+00 -2.4419115981 -2.873046192
#> [169,] -4.938643e-01 -1.9705592141 -1.709416618
#> [170,] 1.793389e+00 3.8983074586 4.399716673
#> [171,] 2.661480e-01 1.2107281599 1.003784518
#> [172,] -1.145682e+00 -2.5990820865 -2.871023974
#> [173,] 6.150889e-01 1.1042720956 1.379828068
#> [174,] 2.410041e+00 3.0303128073 4.686968497
#> [175,] 8.849246e-01 0.8820856995 1.593003513
#> [176,] 1.224204e+00 1.6741328522 2.455630505
#> [177,] -9.759834e-01 -2.1869926168 -2.430720739
#> [178,] -3.110317e+00 -5.8459402041 -7.122754310
#> [179,] 4.570654e-01 0.7580907314 0.990659841
#> [180,] -1.454782e+00 -3.2324907824 -3.607980384
#> [181,] 1.481044e+00 2.7139421393 3.352955445
#> [182,] 1.364860e+00 2.1964623985 2.920897279
#> [183,] -4.211436e-01 -0.8986566564 -1.023874283
#> [184,] 1.318787e-01 1.1699177899 0.813705388
#> [185,] 8.989654e-01 1.4122401808 1.904725701
#> [186,] -4.029777e-01 -0.3998129592 -0.724384427
#> [187,] -1.988870e+00 -4.5910114767 -5.027899328
#> [188,] -1.177661e-01 -0.2791048555 -0.301743488
#> [189,] 3.380480e-01 0.2763727380 0.574914237
#> [190,] 6.644748e-01 0.6461436793 1.187169235
#> [191,] -2.254166e-01 -0.1589093927 -0.369277979
#> [192,] -1.328241e+00 -0.9128154374 -2.162864143
#> [193,] -1.052798e+00 -0.5873204798 -1.638756326
#> [194,] 6.161067e-01 0.0645647874 0.804103181
#> [195,] -2.886879e-02 0.1054947446 0.022546371
#> [196,] 7.050448e-01 1.6154788808 1.775699568
#> [197,] -1.347606e+00 -2.6189456754 -3.133841865
#> [198,] -2.859314e-01 0.4653734651 -0.098287882
#> [199,] 1.772397e-01 -0.2519759217 0.081178171
#> [200,] 6.208782e-01 0.1051235778 0.832561586
#> [201,] -1.816967e-01 -0.0577651381 -0.258629267
#> [202,] 9.045226e-02 0.0488066975 0.139877792
#> [203,] -3.901156e-01 1.1905772597 0.174254360

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#> [204,] 1.264831e+00 2.4620180080 2.943534924
#> [205,] 2.458979e-01 0.2541117744 0.447651102
#> [206,] 1.510236e+00 2.5435382878 3.294790945
#> [207,] 2.285016e+00 3.4311146923 4.753493114
#> [208,] -7.054226e-01 -1.4108212912 -1.662594361
#> [209,] -6.947608e-01 -0.9266899670 -1.380626618
#> [210,] 4.567817e-02 0.3321752279 0.241303094
#> [211,] -5.003589e-01 -1.3506037101 -1.373465876
#> [212,] -6.654979e-01 -2.2378836945 -2.071794122
#> [213,] -4.484275e-01 -0.9605768081 -1.092259799
#> [214,] 1.355855e+00 1.7695192014 2.672732894
#> [215,] -5.862595e-01 -2.4113357088 -2.069243993
#> [216,] -1.449195e+00 -3.1952993978 -3.580373542
#> [217,] 1.198602e-01 0.4266853738 0.386255692
#> [218,] -1.492266e+00 -2.4745823835 -3.234114747
#> [219,] 1.193678e+00 3.6992418305 3.541416926
#> [220,] 4.234361e-01 0.8580646476 1.004206158
#> [221,] 8.249953e-01 1.7532846346 2.001751828
#> [222,] -1.674403e+00 -2.7118157212 -3.592890150
#> [223,] 1.837502e+00 3.5902555692 4.283769027
#> [224,] -4.151013e-02 0.0363436358 -0.031593084
#> [225,] 1.296065e+00 1.9552063591 2.701223805
#> [226,] -1.178542e+00 -0.9415400868 -1.992133762
#> [227,] 4.253631e-01 1.7928206959 1.525359563
#> [228,] -1.002814e+00 -2.6492514055 -2.720712828
#> [229,] -3.384915e+00 -4.9556958783 -6.971123804
#> [230,] 1.621955e+00 1.8924498522 3.072774701
#> [231,] 1.914679e+00 2.7071160456 3.889901473
#> [232,] 5.847866e-01 -0.1481836620 0.646981198
#> [233,] -2.083926e+00 -4.6790469908 -5.195288405
#> [234,] 1.694159e-01 -0.4270757282 -0.025750995
#> [235,] 1.429179e+00 1.8255601371 2.795265929
#> [236,] -4.531221e-01 -0.4303542800 -0.803862586
#> [237,] 2.815940e+00 5.4500553943 6.535972423
#> [238,] 3.341308e-01 -0.2804798626 0.260999763
#> [239,] 5.044355e-01 0.6073959329 0.966100049
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#> [1068,]  1.732511e+00  2.7702436679  3.697775267
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#> [1597,] -1.574646e+00 -2.9950605536 -3.625684668
#> [1598,] 2.124245e-01 0.7286232114 0.669244339

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#> [1602,] -8.358784e-01 -2.6882209408 -2.534173417
#> [1603,] -2.082754e+00 -3.8433620741 -4.730056702
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#> [1642,]  1.015022e-01 -0.2992329317 -0.039490628
#> [1643,]  6.351954e-01  1.6363256432  1.700167917

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#> [1649,] 2.591389e+00 3.5358907960 5.193681007
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#> [1734,] -1.617749e+00 -2.5932392310 -3.456439411
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#> [1824,] 9.694197e-01 2.1547678663 2.404652493
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#> [1859,] 6.100916e-01 1.1905040934 1.421451692
#> [1860,] -1.726063e+00 -2.4527730318 -3.513551323
#> [1861,] 1.980609e+00 2.7634558377 4.003380786
#> [1862,] 1.981767e-02 -0.0675257971 -0.012761756
#> [1863,] 2.207322e-01 0.6983375886 0.662796643
#> [1864,] 7.568137e-01 1.0566685406 1.530138074
#> [1865,] 1.245167e+00 2.5241990787 2.953523131
#> [1866,] -3.001144e-01 0.1176940031 -0.308921323
#> [1867,] -1.172445e+00 -1.8872043604 -2.509334182
#> [1868,] 2.317781e-01 1.6743961670 1.218242318

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#> [1869,] -8.306281e-01 -2.4798128651 -2.411968579
#> [1870,] -8.494284e-01 -0.5099515742 -1.342221700
#> [1871,] -6.920945e-01 -1.0001160503 -1.418050204
#> [1872,] -7.019204e-01 -1.7094091083 -1.823930948
#> [1873,] 7.083018e-01 0.8472281507 1.353413988
#> [1874,] 1.513100e+00 2.6190729446 3.340280728
#> [1875,] 5.393668e-01 0.7220872918 1.073307599
#> [1876,] 1.570542e+00 2.4400138201 3.312539766
#> [1877,] 1.385532e+00 2.6793681422 3.214667674
#> [1878,] 4.897640e-01 0.8173910028 1.064343517
#> [1879,] 2.245749e+00 4.0861126886 5.068024928
#> [1880,] 1.850450e-01 -1.2231174897 -0.448031640
#> [1881,] 1.502703e+00 2.0956481569 3.036837162
#> [1882,] 1.786055e+00 1.7843490377 3.217413023
#> [1883,] -1.306063e-01 1.1272612394 0.462719364
#> [1884,] -4.985731e-01 -1.2851109972 -1.334893306
#> [1885,] -1.539934e+00 -2.7664346300 -3.455521956
#> [1886,] -4.162679e-01 -0.8090390793 -0.968060354
#> [1887,] 8.996779e-01 0.8126721776 1.572878973
#> [1888,] 1.084997e+00 1.8917872891 2.402831385
#> [1889,] -2.470742e-01 -1.7607040242 -1.285213469
#> [1890,] 1.584463e+00 1.9397306842 3.052261801
#> [1891,] -1.936260e+00 -4.4039497322 -4.858484445
#> [1892,] 5.618165e-01 0.9113296334 1.206323555
#> [1893,] -1.680325e+00 -1.8004579217 -3.094509994
#> [1894,] 1.342447e-01 0.1366046405 0.243210307
#> [1895,] -2.205224e+00 -2.5215234527 -4.149209379
#> [1896,] 3.464779e-01 1.0851931686 1.034287624
#> [1897,] 8.616328e-01 1.6485736347 1.989327859
#> [1898,] -1.491266e-01 0.1911124485 -0.079898374
#> [1899,] -1.251428e+00 -2.7310706847 -3.076135650
#> [1900,] -6.581081e-01 -0.2543508525 -0.961801402
#> [1901,] 5.184317e-02 0.2705653547 0.214799817
#> [1902,] 3.259528e-01 1.5485174610 1.265818844
#> [1903,] 2.168287e-01 1.2694548573 0.974875214
#> [1904,] 1.477220e+00 2.9611431909 3.485373648
#> [1905,] 1.645627e+00 2.7676437325 3.587989726
#> [1906,] 3.425769e-01 -0.2825448796 0.270385867
#> [1907,] 1.792409e-01 0.0384298558 0.244836739
#> [1908,] 6.083347e-01 1.2244351384 1.438091230
#> [1909,] -1.308000e+00 -2.4281036078 -2.978545553
#> [1910,] -4.943796e-01 -0.1909064223 -0.722426328
#> [1911,] -9.786356e-01 -2.1123511485 -2.392605065
#> [1912,] 2.857161e-01 0.5568770712 0.665325561
#> [1913,] -1.946338e+00 -1.8946928540 -3.478518825

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#> [1914,] 3.849135e-01 0.8018557345 0.924975695
#> [1915,] -4.767156e-02 0.1975269506 0.050173721
#> [1916,] -8.549068e-01 -1.6380243526 -1.975086318
#> [1917,] -4.533790e-01 -0.2550966835 -0.706922355
#> [1918,] 3.534257e-01 0.4441079691 0.687175914
#> [1919,] 2.094577e+00 4.0226574468 4.844300802
#> [1920,] 4.806472e-01 1.0075764994 1.158519984
#> [1921,] -2.892735e+00 -4.4175286744 -6.058725344
#> [1922,] -1.011067e+00 -0.9719458506 -1.800168574
#> [1923,] 9.390341e-01 0.9397931712 1.692502261
#> [1924,] -8.077082e-01 -1.0493995387 -1.589568401
#> [1925,] -5.354221e-01 -0.4108082768 -0.895641794
#> [1926,] -1.615704e-01 0.8420010072 0.265800284
#> [1927,] -6.045557e-01 -1.2092156535 -1.424932666
#> [1928,] -1.218597e+00 -2.7957586602 -3.071094204
#> [1929,] 5.907800e-01 0.7880813965 1.174042828
#> [1930,] -4.050491e-01 -1.2733691101 -1.211754478
#> [1931,] -2.354610e+00 -3.6489655353 -4.961173392
#> [1932,] 1.251537e+00 1.5532219781 2.422614775
#> [1933,] -1.014775e+00 -2.7121171565 -2.770514642
#> [1934,] 9.893625e-02 1.0348772313 0.697685022
#> [1935,] -7.161154e-01 -1.3875481892 -1.663012412
#> [1936,] 6.644394e-01 0.3438304733 1.019353847
#> [1937,] 2.214262e-01 1.3179067710 1.007497030
#> [1938,] -1.386690e+00 -2.1737317325 -2.935503872
#> [1939,] 8.644289e-01 1.6334770308 1.984436558
#> [1940,] 1.097050e-01 -0.2360071705 0.005825856
#> [1941,] 1.265274e-01 -0.8702786002 -0.325191124
#> [1942,] -8.372518e-01 -1.2919386918 -1.761007851
#> [1943,] -3.347568e-01 -1.3904009241 -1.189049218
#> [1944,] 2.161592e-01 0.1696572965 0.363698797
#> [1945,] -1.084723e+00 -0.8298860991 -1.813179997
#> [1946,] 3.306022e-02 0.3226199251 0.220265967
#> [1947,] -6.629877e-01 -1.8393806530 -1.847511341
#> [1948,] 1.089397e+00 1.7300331242 2.318552106
#> [1949,] -7.923771e-01 -2.8004096705 -2.542188160
#> [1950,] 1.480753e+00 1.4980399353 2.677818209
#> [1951,] -1.587792e+00 -2.3974445248 -3.310425286
#> [1952,] 5.830965e-01 2.8900480422 2.330965111
#> [1953,] 6.562020e-01 0.6533309581 1.180841893
#> [1954,] -1.621898e-01 -0.8813655537 -0.691368353
#> [1955,] 9.499440e-01 1.9509026061 2.267229998
#> [1956,] 6.908838e-01 2.1475779399 2.053333877
#> [1957,] 5.214413e-01 1.1368250658 1.281116941
#> [1958,] -9.223656e-01 -1.0189435270 -1.715642067

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#> [1959,] -9.539502e-01 -1.2505358122 -1.883551432
#> [1960,] -1.531442e+00 -3.0818437968 -3.619970852
#> [1961,] -3.395726e-02  1.1724339351  0.608307739
#> [1962,] -7.871690e-01 -1.0226524282 -1.549113002
#> [1963,] -2.186513e+00 -3.6101488035 -4.730018497
#> [1964,] -3.893720e-01 -1.2465786839 -1.177337982
#> [1965,] -2.806200e+00 -4.4052940609 -5.944027934
#> [1966,]  4.119151e-01  0.9703087646  1.052130447
#> [1967,]  7.796729e-01  0.8173819376  1.425848962
#> [1968,]  6.860902e-01  0.2260355623  0.980980813
#> [1969,]  1.296920e+00  1.4925881478  2.445556781
#> [1970,]  1.645752e+00  2.3462460143  3.354287407
#> [1971,] -4.638702e-01 -0.7246752698 -0.980601113
#> [1972,] -9.349258e-01 -0.2048858263 -1.279536414
#> [1973,] -5.216834e-01 -0.8416500049 -1.117609076
#> [1974,] -7.057597e-02  0.2980869487  0.077418987
#> [1975,] -1.408524e+00 -3.3066748157 -3.591467146
#> [1976,] -4.285182e-02 -0.2529623960 -0.193818884
#> [1977,] -1.594761e+00 -2.9523940715 -3.627089839
#> [1978,]  1.439954e+00  2.2265592977  3.031240020
#> [1979,] -1.702954e+00 -2.6458116710 -3.591863386
#> [1980,] -3.977133e-01  0.9812809438  0.048629498
#> [1981,]  1.618050e+00  3.6272844437  4.030666598
#> [1982,] -1.460555e+00 -3.1236674340 -3.554786792
#> [1983,] -4.506009e-01 -1.3024276916 -1.284683013
#> [1984,] -1.983810e-01  0.8990881290  0.251579235
#> [1985,] -5.258611e-01 -0.1834056624 -0.757520482
#> [1986,] -1.139864e+00 -1.5954386813 -2.306788704
#> [1987,]  3.660857e-02  0.0449265396  0.070582492
#> [1988,]  2.295783e+00  3.8844758685  5.018516275
#> [1989,] -5.540542e-01 -0.6766618100 -1.066413279
#> [1990,] -1.228960e+00 -2.4142150343 -2.872276672
#> [1991,]  1.904886e+00  2.5395997793  3.784725775
#> [1992,] -2.819741e-01 -0.7869651607 -0.788348693
#> [1993,]  3.961480e+00  5.6490117315  8.074849871
#> [1994,] -1.631457e+00 -2.1341136753 -3.218737342
#> [1995,] -1.214776e+00 -1.9786218079 -2.612853469
#> [1996,]  3.992245e-01  1.0953806010  1.105715126
#> [1997,]  2.540290e+00  3.5350541849  5.129497190
#> [1998,] -1.163480e+00 -0.7396546999 -1.861313802
#> [1999,]  6.990512e-01  2.0548380063  2.012051633
#> [2000,] -4.494133e-01 -1.2760224599 -1.268548255
#>
#> [[1]][[20]]$value[[1]]$decomposition
#> [1] "eigen"

```



```

#>
#>
#>
#> [[1]][[20]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[21]]
#> [[1]][[21]]$value
#> [[1]][[21]]$value[[1]]
#> [[1]][[21]]$value[[1]]$M
#> [1] 2
#>
#> [[1]][[21]]$value[[1]]$est
#> [1] 0 0 0
#>
#> [[1]][[21]]$value[[1]]$within
#>      [,1] [,2] [,3]
#> [1,]    1    0    0
#> [2,]    0    1    0
#> [3,]    0    0    1
#>
#> [[1]][[21]]$value[[1]]$between
#>      [,1] [,2] [,3]
#> [1,]    0    0    0
#> [2,]    0    0    0
#> [3,]    0    0    0
#>
#> [[1]][[21]]$value[[1]]$total
#>      [,1] [,2] [,3]
#> [1,]    1    0    0
#> [2,]    0    1    0
#> [3,]    0    0    1
#>
#> [[1]][[21]]$value[[1]]$ariv
#> [1] NA
#>
#> [[1]][[21]]$value[[1]]$total_adj
#> [1] NA
#>
#>
#>
#> [[1]][[21]]$visible
#> [1] TRUE
#>
#>

```

```

#> [[1]][[22]]
#> [[1]][[22]]$value
#> [[1]][[22]]$value[[1]]
#>               est se R 0.05% 0.5% 2.5% 97.5% 99.5% 99.95%
#> eta1=~y1      1.0000 NA 0      NA      NA      NA      NA      NA
#> eta1=~y2      0.7039 NA 0      NA      NA      NA      NA      NA
#> eta1=~y3      0.7047 NA 0      NA      NA      NA      NA      NA
#> eta1=~y4      0.8566 NA 0      NA      NA      NA      NA      NA
#> y1~~y1        0.0000 NA 0      NA      NA      NA      NA      NA
#> y2~~y2        0.5045 NA 0      NA      NA      NA      NA      NA
#> y3~~y3        0.5034 NA 0      NA      NA      NA      NA      NA
#> y4~~y4        0.2662 NA 0      NA      NA      NA      NA      NA
#> eta1~~eta1    1.0000 NA 0      NA      NA      NA      NA      NA
#>
#>
#> [[1]][[22]]$visible
#> [1] TRUE

```

Environment

```
ls()  
#> [1] "i"      "root"   "tex_file"
```

Class

```
#> [[1]]  
#> [1] "character"  
#>  
#> [[2]]  
#> [1] "root_criterion"  
#>  
#> [[3]]  
#> [1] "character"
```

References

- Pesigan, I. J. A., & Cheung, S. F. (2023). Monte Carlo confidence intervals for the indirect effect with missing data. *Behavior Research Methods*. <https://doi.org/10.3758/s13428-023-02114-4>
- R Core Team. (2023). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. Vienna, Austria. <https://www.R-project.org/>