semmcci: Internal Tests

Ivan Jacob Agaloos Pesigan

Tests

```
\#> 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
\textit{\#> test-semmcci-mc-simple-med-defined-inequality}
#> Test passed
#> Test passed
#> Test passed
```

```
#> test-semmcci-mc-simple-med-defined-none-mi-adj
#> Test passed
#> test-semmcci-mc-simple-med-defined-none-mi
#> Test passed
#> Test passed
#> test-semmcci-mc-simple-med-defined-none
#> Test passed
#> Test passed
#> Test passed
#> Monte Carlo Confidence Intervals
#> est se R 0.05%
                                  0.5%
                                          2.5% 97.5% 99.5% 99.95%
#> cp -0.0199 0.0325 2000 -0.1286 -0.1010 -0.0836 0.0431 0.0596 0.0750
#> b 0.0817 0.0331 2000 -0.0263 -0.0055 0.0176 0.1451 0.1653 0.1840
       0.1098 0.0312 2000 0.0215 0.0317 0.0514 0.1714 0.1907 0.2067
#> y~~y 1.0476 0.0461 2000 0.9101 0.9340 0.9562 1.1391 1.1727 1.1885
#> m~m 0.9615 0.0425 2000 0.8040 0.8546 0.8810 1.0438 1.0656 1.0963
#> x~~x 1.0040 0.0443 2000 0.8686 0.8979 0.9175 1.0935 1.1226 1.1334
#> y~1 -0.0038 0.0329 2000 -0.1208 -0.0914 -0.0689 0.0603 0.0826 0.0922
#> m~1 -0.0050 0.0303 2000 -0.1075 -0.0857 -0.0656 0.0561 0.0732 0.0938
#> x~1 -0.0258 0.0307 2000 -0.1239 -0.1056 -0.0863 0.0341 0.0516 0.0649
#> Standardized Monte Carlo Confidence Intervals
           est
                se R 0.05%
                                  0.5%
                                           2.5% 97.5% 99.5% 99.95%
#> cp -0.0194 0.0316 2000 -0.1275 -0.1005 -0.0797 0.0418 0.0585 0.0717
       0.0785 0.0318 2000 -0.0258 -0.0053 0.0167 0.1400 0.1591 0.1749
       0.1115 0.0314 2000 0.0217 0.0324 0.0519 0.1742 0.1892 0.2066
#> y~~y 0.9938 0.0052 2000 0.9688 0.9741 0.9791 0.9992 0.9998 1.0000
#> m~m 0.9876 0.0072 2000 0.9573 0.9642 0.9696 0.9973 0.9989 0.9995
#> x~~x 1.0000 0.0000 2000 1.0000 1.0000 1.0000 1.0000 1.0000
\#> test-semmcci-mc-simple-med-defined
#> 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
```

```
#> test-semmcci-mc-simple-med-std-defined
#> Test passed
#> Test passed
#> Test passed
#> test-semmcci-mc-methods
#> Monte Carlo Confidence Intervals
                    est se R 0.05% 0.5% 2.5% 97.5% 99.5% 99.95%
#> visual=~x2
                   0.5535 0.1024 100 0.2741 0.3099 0.3710 0.7331 0.8718 0.8897
#> visual=~x3
                  0.7294 0.1094 100 0.4218 0.4422 0.4934 0.9237 1.0062 1.0624
#> textual=~x5
                  1.1131 0.0637 100 0.9198 0.9323 0.9899 1.2458 1.2617 1.2628
                  0.9261 0.0539 100 0.8088 0.8148 0.8295 1.0378 1.0630 1.0788
#> textual=~x6
                  1.1800 0.1760 100 0.8378 0.8399 0.8544 1.4831 1.5799 1.5863
#> speed=~x8
#> speed=~x9
                   1.0815 0.1471 100 0.8191 0.8311 0.8504 1.3683 1.4748 1.4787
#> x1~~x1
                   0.5491 0.1208 100 0.1037 0.1780 0.2994 0.7663 0.8394 0.8666
#> x2~~x2
                  1.1338 0.1027 100 0.8460 0.8634 0.9189 1.3104 1.3596 1.3802
#> x3~~x3
                  0.8443 0.0995 100 0.5798 0.5930 0.6641 1.0363 1.0711 1.0916
#> x4~~x4
                  0.3712 0.0511 100 0.2393 0.2628 0.2941 0.4665 0.5220 0.5363
#> x5~~x5
                  0.4463 0.0631 100 0.2838 0.2890 0.3073 0.5609 0.5732 0.5755
#> x6~~x6
                  0.3562 0.0444 100 0.2154 0.2380 0.2837 0.4464 0.4767 0.4838
#> x7~~x7
                  0.7994 0.0851 100 0.5323 0.5700 0.6634 0.9386 0.9652 0.9777
#> x8~~x8
                   0.4877 0.0810 100 0.3112 0.3167 0.3350 0.6437 0.6939 0.7298
#> x9~~x9
                  0.5661 0.0682 100 0.3506 0.3808 0.4337 0.6795 0.7228 0.7456
#> visual~~visual 0.8093 0.1536 100 0.5273 0.5488 0.5764 1.1090 1.2915 1.3569
#> textual~~textual 0.9795 0.1307 100 0.6387 0.6622 0.7323 1.2193 1.2634 1.2801
                0.3837 0.0934 100 0.1844 0.1857 0.2013 0.5523 0.5671 0.5755
#> speed~~speed
#> visual~~textual 0.4082 0.0771 100 0.2089 0.2304 0.2628 0.5460 0.5611 0.5657
#> textual~~speed 0.1735 0.0402 100 0.0411 0.0640 0.1030 0.2439 0.2526 0.2567
#> Standardized Monte Carlo Confidence Intervals
                             se R 0.05% 0.5%
                                                  2.5% 97.5% 99.5% 99.95%
                     est
#> visual=~x2
                   0.4236 0.0650 100 0.2509 0.2620 0.2953 0.5242 0.6120 0.6386
#> visual=~x3
                   0.5811 0.0554 100 0.4389 0.4398 0.4500 0.6966 0.7028 0.7070
#> textual=~x5
                   0.8551 0.0243 100 0.7955 0.7983 0.8063 0.9032 0.9073 0.9098
                   0.8380 0.0259 100 0.7558 0.7588 0.7842 0.8791 0.8900 0.8949
#> textual=~x6
#> speed=~x8
                   0.7230 0.0587 100 0.5937 0.5981 0.6059 0.8020 0.8238 0.8324
#> speed=~x9
                   0.6650 0.0491 100 0.5448 0.5552 0.5717 0.7406 0.7582 0.7709
#> x1~~x1
                   0.4042 0.0898 100 0.0712 0.1235 0.2207 0.5606 0.5927 0.5994
#> x2~~x2
                  0.8206 0.0556 100 0.5920 0.6245 0.7252 0.9128 0.9312 0.9370
#> x3~~x3
                  0.6623 0.0640 100 0.5002 0.5060 0.5147 0.7974 0.8066 0.8074
#> x4~~x4
                  0.2748 0.0425 100 0.1580 0.1777 0.2133 0.3591 0.4030 0.4235
#> x5~~x5
                  0.2689 0.0416 100 0.1723 0.1768 0.1842 0.3499 0.3626 0.3672
                  0.2977 0.0430 100 0.1992 0.2079 0.2272 0.3850 0.4243 0.4288
#> x6~~x6
#> x7~~x7
                  0.6757 0.0655 100 0.5239 0.5407 0.5688 0.7978 0.8214 0.8217
                  0.4772 0.0831 100 0.3072 0.3213 0.3567 0.6329 0.6423 0.6475
#> x8~~x8
```

```
#> visual~~visual 1.0000 0.0000 100 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
#> visual~~textual 0.4585 0.0660 100 0.2926 0.3085 0.3299 0.5822 0.6343 0.6741
#> visual~~speed 0.4705 0.0742 100 0.3023 0.3147 0.3534 0.6210 0.7154 0.7849
#> Monte Carlo Confidence Intervals
#> Standardized Monte Carlo Confidence Intervals
\#> test-semmcci-npd
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> [[1]]
#> [[1]][[1]]
#> [[1]][[1]]$value
#> [[1]][[1]]$value[[1]]
#> [1] TRUE
#>
#> [[1]][[1]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[2]]
#> [[1]][[2]]$value
#> [[1]][[2]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[2]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[3]]
#> [[1]][[3]]$value
#> [[1]][[3]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[3]]$visible
#> [1] TRUE
#>
#>
```

```
#> [[1]][[4]]
#> [[1]][[4]]$value
#> [[1]][[4]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[4]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[5]]
#> [[1]][[5]]$value
#> [[1]][[5]]$value[[1]]
#> Monte Carlo Confidence Intervals
#>
                                     se R 0.05%
                                                       0.5%
                                                                 2.5%
                             est
#> ses=~sei
                          5.2195 0.4215 20000 3.8325
                                                              4.3893
                                                      4.1224
                          0.9787 0.0608 20000 0.7720 0.8221
#> alien67=~powerless67
                                                             0.8586
#> alien71=~powerless71
                          0.9221 0.0588 20000 0.7341
                                                     0.7723
                                                             0.8083
#> alien71~alien67
                          0.6070 0.0507 20000 0.4419
                                                      0.4768
                                                              0.5076
#> alien71~ses
                         -0.2268 0.0518 20000 -0.3942 -0.3579
                                                              -0.3279
#> alien67~ses
                         -0.5750 0.0563 20000 -0.7653 -0.7189 -0.6841
#> anomia67~~anomia71
                         1.6229 0.3126 20000 0.6212
                                                     0.8180
                                                              1.0041
-0.1750
                                                              1.7949
#> education~~education
                        2.8013 0.5069 20000 1.1623
                                                      1.4808
#> sei~~sei
                        264.5971 18.0767 20000 208.3123 219.0033 229.3231
#> anomia67~~anomia67 4.7307 0.4539 20000 3.2338
                                                       3.5504
                                                              3.8445
#> powerless67~~powerless67 2.5634 0.4019 20000 1.2726
                                                       1.5370
                                                               1.7775
#> anomia71~~anomia71 4.3992 0.5104 20000 2.7197
                                                       3.0768
                                                              3.4047
#> powerless71~~powerless71 3.0699 0.4275 20000 1.6275 1.9719
                                                             2.2383
#> ses~~ses
                         6.7983 0.6460 20000 4.6926 5.1664
                                                             5.5421
#> alien67~~alien67
                          4.8415 0.4685 20000
                                             3.3437
                                                      3.6184
                                                              3.9125
#> alien71~~alien71
                          4.0832 0.4032 20000 2.7503 3.0300
                                                              3.2810
#>
                          97.5%
                                 99.5%
                                         99.95%
#> ses=~sei
                          6.0509 6.2849
                                          6.5757
#> alien67=~powerless67
                          1.0973 1.1355
                                          1.1801
#> alien71=~powerless71
                         1.0375 1.0751
                                         1.1170
#> alien71~alien67
                          0.7059 0.7372
                                         0.7733
#> alien71~ses
                         -0.1234 -0.0910 -0.0515
#> alien67~ses
                         -0.4636 -0.4277 -0.3901
#> anomia67~~anomia71
                         2.2358 2.4308
                                         2.6389
#> powerless67~~powerless71   0.8493   1.0004
                                         1.1598
#> education~~education
                          3.7930 4.1148
                                          4.4655
#> sei~~sei
                        300.3985 310.7949 325.0713
#> anomia67~~anomia67
                      5.6236 5.9100
                                          6.2246
#> powerless67~~powerless67
                          3.3574
                                  3.6113
                                          3.8475
```

```
#> anomia71~~anomia71 5.3980 5.7022 6.0890
#> powerless71~~powerless71 3.9113 4.1421 4.4958
#> ses~~ses
               8.0771 8.4692 8.8594
                           5.7718 6.0397 6.3441
#> alien67~~alien67
                           4.8746 5.1222 5.3929
#> alien71~~alien71
#>
#>
#> [[1]][[5]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[6]]
#> [[1]][[6]]$value
#> [[1]][[6]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[6]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[7]]
#> [[1]][[7]]$value
#> [[1]][[7]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[7]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[8]]
#> [[1]][[8]]$value
#> [[1]][[8]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[8]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[9]]
#> [[1]][[9]]$value
#> [[1]][[9]]$value[[1]]
#> [1] TRUE
#>
```

```
#> [[1]][[9]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[10]]
#> [[1]][[10]]$value
#> [[1]][[10]]$value[[1]]
           est se R 0.05% 0.5% 2.5% 97.5% 99.5% 99.95%
#> cp -0.0194 0.0316 2000 -0.1275 -0.1005 -0.0797 0.0418 0.0585 0.0717
       0.0785 0.0318 2000 -0.0258 -0.0053 0.0167 0.1400 0.1591 0.1749
       0.1115 0.0314 2000 0.0217 0.0324 0.0519 0.1742 0.1892 0.2066
#> a
#> y~~y 0.9938 0.0052 2000 0.9688 0.9741 0.9791 0.9992 0.9998 1.0000
#> m~m 0.9876 0.0072 2000 0.9573 0.9642 0.9696 0.9973 0.9989 0.9995
#> x~~x 1.0000 0.0000 2000 1.0000 1.0000 1.0000 1.0000 1.0000
#>
#> [[1]][[10]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[11]]
#> [[1]][[11]]$value
#> [[1]][[11]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[11]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[12]]
#> [[1]][[12]]$value
#> [[1]][[12]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[12]]$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]]
#>
                    2.5%
                           97.5%
#> textual=~x5
               0.8062907 0.9032416
#> x2~~x2
               0.7251697 0.9127804
#> x3~~x3
               0.5146953 0.7974341
#> x4~~x4
               0.2132533 0.3591439
#> x5~~x5
               0.1841546 0.3498952
#> x6~~x6
               0.2272073 0.3849891
               0.5688253 0.7978487
#> x7~~x7
#> x8~~x8
               0.3567186 0.6328808
#> x9~~x9
               0.4515446 0.6731645
#> visual~~visual 1.0000000 1.0000000
#> textual~~textual 1.0000000 1.0000000
#> speed~~speed 1.0000000 1.0000000
#> visual~~textual 0.3299266 0.5821690
#> textual~~speed    0.1606454    0.3873657
#>
#>
#> [[1]][[15]]$visible
#> [1] TRUE
#>
#>
```

```
#> [[1]][[16]]
#> [[1]][[16]]$value
#> [[1]][[16]]$value[[1]]
#> [[1]][[16]]$value[[1]]$thetahatstar
#>
                                 y2
                    y1
      [1,] -0.244825643 -0.8112650455 -0.7555107176
#>
#>
      [2,] -1.489645645 -3.8624917569 -4.0010789473
#>
      [3,] -0.928558132 -0.5347081846 -1.4546337074
#>
      [4,] 2.400160834 2.8787379481 4.5905306403
#>
     [5,] 1.005636319 2.2616460905 2.5091268686
     [6,] 2.805581015 3.8480654376 5.6340175100
#>
      [7,] 1.890969758 3.2404669476 4.1563242035
#>
#>
     [8,] -0.509707607 -1.4241579947 -1.4259430509
#>
     [9,] 0.727593019 1.4735348944 1.7250438267
#>
     [10,] 1.796145538 2.9103955365 3.8549045214
     [11,] -0.861731751 -0.9312863868 -1.5913868706
#>
#>
     [12,] 0.786587300 -0.6939681749 0.5957350382
     [13,] 0.702997874 0.6976925911 1.2638141878
#>
     [14,] 0.653890909 1.3785860134 1.5804461456
#>
#>
     [15,] -1.062559037 -1.4463989925 -2.1276803304
#>
     [16,] -1.073943099 -3.0798183004 -3.0483553506
#>
     [17,] -1.110210390 -2.4403080532 -2.7386785110
     [18,] 0.819801830 1.7593860024 1.9986617300
#>
     #>
#>
     [20,] 1.100583900 1.9234297584 2.4398286609
     [21,] -1.638500436 -3.2122326466 -3.8258312538
#>
#>
     [22,] 1.012778564 1.2156073981 1.9375254233
#>
     [23,] 0.996350966 1.5841649969 2.1215745801
#>
     [24,] 0.877200416 1.4745336458 1.9121554649
     [25,] 0.794441507 1.2329787041 1.6749039142
#>
#>
     [26,] 0.028184881 0.4257356302 0.2714114221
#>
     [27,] 0.277716904 0.4170361414 0.5777449134
     [28,] -0.204573084   0.3046522716 -0.0860292081
#>
     [29,] -1.355686277 -2.4490859370 -3.0496532928
#>
     [30,] -1.269613546 -2.8065796175 -3.1407163779
#>
#>
     [31,] 1.976674832 3.4505913396 4.3798069235
     [32,] -1.672597460 -3.3530522753 -3.9464985455
#>
     [33,] 1.946173863 3.2310381190 4.2199299915
#>
#>
     [34,] 0.855896332 1.7921157940 2.0618345025
#>
     [35,] -0.020829514  0.3447653802  0.1653563717
#>
     [36,] 0.667993287 2.3561588677 2.1405435287
#>
     [37,] -2.273093168 -5.2071720699 -5.7242633027
#>
     [38,] -0.130067038 -0.2363822430 -0.2933731920
#>
     [39,] 0.750645490 1.6611215421 1.8578925244
     [40,] -0.213583729 -0.4145011064 -0.4963653136
#>
```

```
[41,] -1.005712274 -1.9379452942 -2.3295811936
     [42,] -0.545921363 -0.7615357423 -1.1033732580
#>
#>
     [43,] -0.048140719 -0.1540952468 -0.1455469054
     [44,] 0.908635224 1.4637815006 1.9453870385
#>
#>
     [45,] -0.112391674  0.0643544311 -0.1044361106
#>
     [46,] 1.686570023 1.9658903416 3.1941052507
#>
     [47,] -0.631288032 -0.2934497455 -0.9500556227
#>
     [48,] -0.343757205 -0.5660174866 -0.7427742298
#>
     [49,] -0.299007402 -0.3030471559 -0.5410346149
#>
     [50,] 0.726087543 0.6713299006 1.2779763440
     [51,] 0.496570647 0.7015731352 1.0085571859
#>
#>
     [52,] 0.637762626 1.5896911175 1.6774889995
#>
     [53,] 1.126342012 2.2287755864 2.6414026519
#>
     [54,] -0.524016845 -1.1505289390 -1.2919337081
#>
     [55,] -1.530840406 -1.3882268190 -2.6793345258
     [56,] -1.616032974 -2.4763884791 -3.3894520826
#>
#>
     [57,] -2.363870218 -3.1752834503 -4.7098473197
     [58,] -0.646423293   0.3034365121 -0.6376821012
#>
     [59,] 0.526078871 1.2125802478 1.3289408918
#>
#>
     [60,] -0.489565057  0.4767384178 -0.3459077785
#>
     [61,] -1.728356487 -1.0507966089 -2.7383734103
#>
     [62,] 0.402918389 0.2373836904 0.6341690227
#>
     [63,] -0.983072205 -1.8219862563 -2.2369970779
     [64,] -0.914940397 -1.0103208159 -1.7015977665
#>
#>
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#>
#>
#> [[1]][[16]]$visible
#> [1] TRUE
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Environment

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#> [1] "i" "root" "tex_file"
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Class

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#> [[1]]
#> [1] "character"

#>
#> [[2]]
#> [1] "root_criterion"

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

References

R Core Team. (2023). R: A language and environment for statistical computing. R Foundation for Statistical Computing. Vienna, Austria. https://www.R-project.org/