

fitDTVARMx: Internal Tests

Ivan Jacob Agaloos Pesigan

Tests

```
#> test-external-fitDTVARMx-fit-dt-var-id-mx-psi-diag
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 759.332723034266
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=759.33272 (started at 2818.8767) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.716461594268781,0.461130103434526,-0.111058104052503,0.00301990065158215,0.627962466371071,0.4
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 811.221283431467
#>
#> Solution found
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#>
#> Solution found! Final fit=811.22128 (started at 2588.505) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.644376822379958,0.498319862422355,-0.160138757853946,0.0339457523281381,0.60202505558271,0.438
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
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#>
#> Lowest minimum so far: 851.056191919888
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=851.05619 (started at 2728.4921) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.650804152587558,0.500936223533729,-0.117869966244044,0.0358584466671872,0.581033255621994,0.45
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 758.939240001087
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=758.93924 (started at 2854.9595) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.694252482747568,0.50825471211776,-0.105604057104861,0.00403646757951646,0.632271243648902,0.45
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 755.237014820988
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=755.23701 (started at 2812.8936) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.655922071168991,0.48579877687836,-0.0839744194072475,0.0298173300980825,0.656191959996754,0.38
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 767.863852470668
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#>
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```
#> Solution found
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#>
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```
#> Solution found! Final fit=767.86385 (started at 2522.5355) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.6661111148917,0.464519076919049,-0.0655319370278874,0.0379815425135491,0.576484188972957,0.401
```

```
#> Running DTVAR with 12 parameters
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#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
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#>
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```
#> Lowest minimum so far: 807.608080756468
```

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#>
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```
#> Solution found
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#>
```

```
#> Solution found! Final fit=807.60808 (started at 3214.4662) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.7095130550531,0.512499712173206,-0.0692805896211676,0.0311077019364299,0.614389046595127,0.379
```

```
#> Running DTVAR with 12 parameters
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#>
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```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
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#>
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```
#> Lowest minimum so far: 828.951705065187
```

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#>
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```
#> Solution found
```

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#>
```

```
#> Solution found! Final fit=828.95171 (started at 3126.4497) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.733264788863225,0.473562971107431,-0.173022757515241,-0.0104990839461825,0.625703544856902,0.4
```

```
#> Running DTVAR with 12 parameters
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#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
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#>
```

```
#> Lowest minimum so far: 746.033688503384
```

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#>
```

```
#> Solution found
```

```

#>
#> Solution found! Final fit=746.03369 (started at 2638.9239) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.668484301092742,0.51138621629638,-0.0225537318120472,-0.0555161115431583,0.637385379142246,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 851.374280350207
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=851.37428 (started at 3004.5656) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.718825722836537,0.48235380270807,-0.169307336880467,-0.00202819864122296,0.619552406230925,0.4
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 799.274821858165
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=799.27482 (started at 2962.9231) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.708588261228634,0.475388229135813,-0.0854309590011715,-0.0141769414286767,0.629365493947916,0.
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 840.483916141231
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=840.48392 (started at 3098.1221) (1 attempt(s): 1
valid, 0 errors)

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```

#> Start values from best fit:
#> 0.720735518069381,0.499551991405701,-0.149780544748022,-0.00930202643115042,0.574215681169346,0.2
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 718.539233542402
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=718.53923 (started at 2186.5411) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.677880341672318,0.431826450749655,-0.166188298322661,-0.0373797352663127,0.594622543905395,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 779.766644444407
#>
#> Solution found

```

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#>
#> Solution found! Final fit=779.76664 (started at 2675.0592) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.609971646719175,0.53934777450201,-0.112605660413882,0.0157158111595143,0.616305811402161,0.424
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 850.752343563444
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=850.75234 (started at 3142.1671) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.691623804012226,0.471544485897595,-0.0100294723327233,0.0250565521854465,0.633323731032243,0.4
#> Running DTVAR with 12 parameters

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#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 872.34306757139
#>
#> Solution found

```

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#>
#> Solution found! Final fit=872.34307 (started at 2583.8942) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.627986746606938,0.50335892249985,-0.108103630273034,0.0109464645923342,0.592093464791283,0.384
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 764.239047454334
#>
#> Solution found

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#>
#> Solution found! Final fit=764.23905 (started at 2962.0687) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.67105294053085,0.449887649000752,-0.143458815256208,0.0768224346437029,0.627515746666162,0.396
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 957.924375737505
#>
#> Solution found

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#>
#> Solution found! Final fit=957.92438 (started at 3332.8123) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.739922346378846,0.485927042232824,-0.0717538017632368,-0.0342026956014292,0.6240774938083,0.40
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters

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```
#>
#> Lowest minimum so far: 633.011904428566
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=633.0119 (started at 2223.8663) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.690213513068111,0.466362670344152,-0.0879599163745913,-0.0170226181885829,0.624374818924666,0.38
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 694.317115186718
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=694.31712 (started at 2880.1989) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.674456574145247,0.531884168814988,-0.0838788035112604,0.0242219856483305,0.605791688734476,0.4
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 706.595319003195
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=706.59532 (started at 2831.2135) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.696198361443529,0.47033350806689,-0.0677346577381333,0.0443111669122736,0.641500229796633,0.38
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 750.698512473323
```

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#>
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```
#> Solution found
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#>
```

```
#> Solution found! Final fit=750.69851 (started at 2617.189) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.671673577610027,0.553223041143065,-0.0309216980368968,0.027945584674691,0.576180619805424,0.38
```

```
#> Running DTVAR with 12 parameters
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#>
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```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
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#>
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```
#> Lowest minimum so far: 833.816258681054
```

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#>
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```
#> Solution found
```

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#>
```

```
#> Solution found! Final fit=833.81626 (started at 2874.4152) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.640499564483478,0.521837363160335,-0.133809910294518,0.00875136386287813,0.60751373070868,0.35
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
```

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#>
```

```
#> Lowest minimum so far: 863.215725480729
```

```
#>
```

```
#> Solution found
```

```
#>
```

```
#> Solution found! Final fit=863.21573 (started at 2735.9084) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.702336925380831,0.526763645809178,-0.10302942237239,-0.0646796395406807,0.566209899448809,0.41
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
```

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#>
```

```
#> Lowest minimum so far: 782.276989787587
```

```
#>
```

```
#> Solution found
```



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#>
#> Solution found! Final fit=782.27699 (started at 2818.3029) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.751079842826758,0.515348162651717,-0.0856261602381017,-0.0423177565833913,0.565376921520485,0.2
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 885.400081850406
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=885.40008 (started at 3108.7275) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.711902034855524,0.492753831090941,-0.0766983681358221,0.0284133659575973,0.592131565493811,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 870.776467535204
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=870.77647 (started at 2947.4234) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.717342945794694,0.483864010973883,-0.0377741740801736,-0.00846860357385741,0.59273073403503,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 825.091328764683
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=825.09133 (started at 2726.9105) (1 attempt(s): 1
valid, 0 errors)

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```

#> Start values from best fit:
#> 0.671378784761566,0.495755549187164,-0.106318495635697,0.0223503756046088,0.58423655700464,0.439
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 732.657907507978
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=732.65791 (started at 2991.6161) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.764032648283235,0.471287001814766,-0.082229982090093,-0.00101245837563025,0.622298962927359,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 726.376014908232
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=726.37601 (started at 2487.1488) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.698020505561103,0.540256679924573,-0.130671049333998,0.0219015717434524,0.536368805316912,0.39
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 743.06253438225
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=743.06253 (started at 2694.1576) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.731754835793631,0.460965075767634,-0.1434716820242,-0.0216993813992399,0.6049383953541,0.42084
#> Running DTVAR with 12 parameters

```

```

#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 797.484023499137
#>
#> Solution found

#>
#> Solution found! Final fit=797.48402 (started at 2668.9238) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.676277694793617,0.501583771707843,-0.06187973035375,-0.0193575825688431,0.614583065520855,0.40
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 770.977494676037
#>
#> Solution found

#>
#> Solution found! Final fit=770.97749 (started at 2648.519) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.706895800327194,0.511010577888189,-0.0872678711618278,0.0314694503916333,0.601610168470179,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 749.349505885161
#>
#> Solution found

#>
#> Solution found! Final fit=749.34951 (started at 2244.6977) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.653912522999667,0.510586048106383,-0.100988573067708,-0.0413976764995652,0.545606806035989,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters

```

```
#>
#> Lowest minimum so far: 889.861676502077
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=889.86168 (started at 2694.2373) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.664289371279109,0.510244936756276,-0.101676667621902,-0.00118367999328859,0.569508402437711,0.
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 725.595924157009
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=725.59592 (started at 2203.3335) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.611388349409092,0.524511358890167,-0.124184584243865,0.0219294400932992,0.542040604736846,0.39
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 812.090920433365
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=812.09092 (started at 3110.0582) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.741751912941588,0.469320559388466,-0.0879921988685319,-0.0380914370049528,0.654436793094238,0.
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 815.197848341689
```

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#>
```

```
#> Solution found
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#>
```

```
#> Solution found! Final fit=815.19785 (started at 2666.7364) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.693227460778832,0.409815304298299,-0.0514572211617755,-0.0205940886660018,0.635597773482195,0.2
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Lowest minimum so far: 820.593168415493
```

```
#>
```

```
#> Solution found
```

```
#>
```

```
#> Solution found! Final fit=820.59317 (started at 2295.3086) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.643304825135551,0.397856735560794,-0.0386468193218034,-0.00783303145434867,0.661822704299331,0.2
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Lowest minimum so far: 752.466226469855
```

```
#>
```

```
#> Solution found
```

```
#>
```

```
#> Solution found! Final fit=752.46623 (started at 2484.7537) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.664098311347438,0.53099071164222,-0.106972800626957,0.0260199511752171,0.584333638614264,0.378
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Lowest minimum so far: 766.219955415809
```

```
#>
```

```
#> Solution found
```

```

#>
#> Solution found! Final fit=766.21996 (started at 2540.8022) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.624786762223102,0.480327062303527,-0.141720219803405,0.0410521888955309,0.634241889450656,0.44
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 768.771638793145
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=768.77164 (started at 2411.4559) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.744386847205346,0.465935456534318,-0.0692189873376725,-0.0676241295919464,0.568648772015181,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 741.223147927192
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=741.22315 (started at 2324.9388) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.66217885362191,0.438474928833818,-0.011144207357192,0.0120288807502441,0.594398291774759,0.328
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 780.836285441667
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=780.83629 (started at 2722.6984) (1 attempt(s): 1
valid, 0 errors)

```

```

#> Start values from best fit:
#> 0.690347402204549,0.490311341041875,-0.146390022374425,-0.0195401602514742,0.627402518041284,0.4
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 798.994200370794
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=798.9942 (started at 2724.6975) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.679564030022408,0.477657702995945,-0.037910120568797,0.0154876263593496,0.616824927873006,0.37
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 787.032257794103
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=787.03226 (started at 2825.0508) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.716093080348548,0.554203770132493,-0.123075968768171,-0.0417698302704187,0.571815555828147,0.4
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 751.084607795309
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=751.08461 (started at 2890.0689) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.66130950231391,0.532629819541967,-0.101641409043792,0.00192165906897013,0.614479809469556,0.39
#> Running DTVAR with 12 parameters

```

```
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 807.680486764465
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=807.68049 (started at 2653.0473) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.711536873275276,0.486718967297324,-0.182176023621629,-0.0261125305270112,0.599294484813252,0.4
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 767.418593752537
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=767.41859 (started at 3168.4061) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.771433701226941,0.515790796170361,-0.0891381959878861,-0.0397577895392098,0.579395644538703,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 838.480905826361
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=838.48091 (started at 3078.7657) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.746043240966985,0.531610392262968,-0.101115749197125,-0.0485678713783249,0.598258784644551,0.3
#>
#> Means of the estimated paramaters per individual.
#>      beta_11      beta_21      beta_31      beta_12      beta_22      beta_32
#> 0.689789887 0.492516179 -0.097208291 -0.001160441 0.603969442 0.400473459
```



```

#>      beta_13      beta_23      beta_33      psi_11      psi_22      psi_33
#> -0.007541712 -0.004560371  0.502174347  0.099612947  0.097622042  0.099534970
#>
#> Estimated paramaters per individual.
#>      beta_11      beta_21      beta_31      beta_12      beta_22      beta_32
#> [1,] 0.7164616 0.4611301 -0.11105810 0.003019901 0.6279625 0.4261113
#> [2,] 0.6443768 0.4983199 -0.16013876 0.033945752 0.6020251 0.4385686
#> [3,] 0.6508042 0.5009362 -0.11786997 0.035858447 0.5810333 0.4552952
#> [4,] 0.6942525 0.5082547 -0.10560406 0.004036468 0.6322712 0.4501661
#> [5,] 0.6559221 0.4857988 -0.08397442 0.029817330 0.6561920 0.3855977
#> [6,] 0.6661111 0.4645191 -0.06553194 0.037981543 0.5764842 0.4011884
#> [7,] 0.7095131 0.5124997 -0.06928059 0.031107702 0.6143890 0.3797097
#> [8,] 0.7332648 0.4735630 -0.17302276 -0.010499084 0.6257035 0.4001882
#> [9,] 0.6684843 0.5113862 -0.02255373 -0.055516112 0.6373854 0.3820877
#> [10,] 0.7188257 0.4823538 -0.16930734 -0.002028199 0.6195524 0.4347762
#> [11,] 0.7085883 0.4753882 -0.08543096 -0.014176941 0.6293655 0.4134227
#> [12,] 0.7207355 0.4995520 -0.14978054 -0.009302026 0.5742157 0.4583398
#> [13,] 0.6778803 0.4318265 -0.16618830 -0.037379735 0.5946225 0.3642645
#> [14,] 0.6099716 0.5393478 -0.11260566 0.015715811 0.6163058 0.4240693
#> [15,] 0.6916238 0.4715445 -0.01002947 0.025056552 0.6333237 0.4381611
#> [16,] 0.6279867 0.5033589 -0.10810363 0.010946465 0.5920935 0.3841485
#> [17,] 0.6710529 0.4498876 -0.14345882 0.076822435 0.6275157 0.3968303
#> [18,] 0.7399223 0.4859270 -0.07175380 -0.034202696 0.6240775 0.4094839
#> [19,] 0.6902135 0.4663627 -0.08795992 -0.017022618 0.6243748 0.3692646
#> [20,] 0.6744566 0.5318842 -0.08387880 0.024221986 0.6057917 0.4026145
#> [21,] 0.6961984 0.4703335 -0.06773466 0.044311167 0.6415002 0.3819198
#> [22,] 0.6716736 0.5532230 -0.03092170 0.027945585 0.5761806 0.3866297
#> [23,] 0.6404996 0.5218374 -0.13380991 0.008751364 0.6075137 0.3509830
#> [24,] 0.7023369 0.5267636 -0.10302942 -0.064679640 0.5662099 0.4158082
#> [25,] 0.7510798 0.5153482 -0.08562616 -0.042317757 0.5653769 0.4564352
#> [26,] 0.7119020 0.4927538 -0.07669837 0.028413366 0.5921316 0.3655838
#> [27,] 0.7173429 0.4838640 -0.03777417 -0.008468604 0.5927307 0.3709144
#> [28,] 0.6713788 0.4957555 -0.10631850 0.022350376 0.5842366 0.4399083
#> [29,] 0.7640326 0.4712870 -0.08222998 -0.001012458 0.6222990 0.3766414
#> [30,] 0.6980205 0.5402567 -0.13067105 0.021901572 0.5363688 0.3970364
#> [31,] 0.7317548 0.4609651 -0.14347168 -0.021699381 0.6049384 0.4208462
#> [32,] 0.6762777 0.5015838 -0.06187973 -0.019357583 0.6145831 0.4066435
#> [33,] 0.7068958 0.5110106 -0.08726787 0.031469450 0.6016102 0.3810928
#> [34,] 0.6539125 0.5105860 -0.10098857 -0.041397676 0.5456068 0.3989759
#> [35,] 0.6642894 0.5102449 -0.10167667 -0.001183680 0.5695084 0.4201438
#> [36,] 0.6113883 0.5245114 -0.12418458 0.021929440 0.5420406 0.3953253
#> [37,] 0.7417519 0.4693206 -0.08799220 -0.038091437 0.6544368 0.3750018
#> [38,] 0.6932275 0.4098153 -0.05145722 -0.020594089 0.6355978 0.4059942
#> [39,] 0.6433048 0.3978567 -0.03864682 -0.007833031 0.6618227 0.3873891
#> [40,] 0.6640983 0.5309907 -0.10697280 0.026019951 0.5843336 0.3782343
#> [41,] 0.6247868 0.4803271 -0.14172022 0.041052189 0.6342419 0.4442859

```

```

#> [42,] 0.7443868 0.4659355 -0.06921899 -0.067624130 0.5686488 0.3592133
#> [43,] 0.6621789 0.4384749 -0.01114421 0.012028881 0.5943983 0.3289104
#> [44,] 0.6903474 0.4903113 -0.14639002 -0.019540160 0.6274025 0.4030966
#> [45,] 0.6795640 0.4776577 -0.03791012 0.015487626 0.6168249 0.3708391
#> [46,] 0.7160931 0.5542038 -0.12307597 -0.041769830 0.5718156 0.4239406
#> [47,] 0.6613095 0.5326298 -0.10164141 0.001921659 0.6144798 0.3987891
#> [48,] 0.7115369 0.4867190 -0.18217602 -0.026112531 0.5992945 0.4082521
#> [49,] 0.7714337 0.5157908 -0.08913820 -0.039757790 0.5793956 0.3691550
#> [50,] 0.7460432 0.5316104 -0.10111575 -0.048567871 0.5982588 0.3913953
#>          beta_13      beta_23      beta_33      psi_11      psi_22      psi_33
#> [1,] 3.766321e-02 -0.016345474 0.4934312 0.09236374 0.10442078 0.09418048
#> [2,] -2.868696e-02 -0.040651753 0.5059455 0.09910694 0.09980994 0.10212124
#> [3,] 3.475715e-02 0.010209415 0.4141094 0.10950856 0.09957811 0.09872075
#> [4,] -5.200307e-02 -0.030028889 0.5082318 0.08989099 0.10354565 0.09765059
#> [5,] 3.984700e-02 -0.069530113 0.4829112 0.10637743 0.08962865 0.09469661
#> [6,] -3.838135e-02 0.062856225 0.5273031 0.08918864 0.09647033 0.10745205
#> [7,] -1.012232e-03 0.001434448 0.5321423 0.09379959 0.10741337 0.09954281
#> [8,] 4.158243e-02 -0.002300319 0.4891234 0.10668354 0.09517969 0.10174689
#> [9,] 1.646599e-02 0.025818019 0.5040378 0.09348925 0.10122975 0.09241113
#> [10,] -3.142686e-02 -0.055668870 0.4925615 0.10216479 0.10046242 0.10672199
#> [11,] -1.377331e-02 0.025907029 0.4755864 0.10501065 0.09658652 0.09725175
#> [12,] -1.756893e-02 0.062898238 0.4615222 0.10523331 0.10042737 0.09981171
#> [13,] -1.745601e-02 -0.028148956 0.5578391 0.09167552 0.09960214 0.09100054
#> [14,] 3.289825e-02 0.025124176 0.4842028 0.09207020 0.10111288 0.10157440
#> [15,] -2.574228e-02 -0.001442593 0.4606027 0.10868707 0.09304484 0.10704468
#> [16,] -2.811782e-02 0.049230543 0.4904419 0.10454709 0.10199743 0.10707069
#> [17,] -8.776754e-02 -0.020012814 0.5466148 0.10586313 0.09201577 0.09419730
#> [18,] -2.300225e-02 0.032711410 0.4693977 0.10696340 0.11474110 0.10854458
#> [19,] 1.314096e-02 -0.047143700 0.5118070 0.09152075 0.09404615 0.08204455
#> [20,] -1.261897e-02 0.009616594 0.5179773 0.09687967 0.08237648 0.09978836
#> [21,] -6.815015e-02 0.007413786 0.5272664 0.09142694 0.09282330 0.09561401
#> [22,] -4.863634e-03 -0.016289743 0.4824611 0.09230807 0.09539849 0.10072420
#> [23,] 2.646204e-02 0.012030152 0.5436758 0.10145891 0.09874026 0.10415321
#> [24,] 3.288922e-02 0.013814703 0.4980909 0.09194537 0.10077807 0.11961502
#> [25,] -1.835506e-02 -0.012896623 0.5157920 0.09533227 0.08987374 0.11049795
#> [26,] -1.430443e-02 0.011062850 0.4992745 0.10674700 0.10481627 0.10395295
#> [27,] -9.382568e-03 -0.023171568 0.4975279 0.10483983 0.09547021 0.10984374
#> [28,] -4.853135e-02 0.044445689 0.4337791 0.10756680 0.09401982 0.10193023
#> [29,] -1.136324e-02 -0.027614476 0.4915875 0.09609721 0.09400949 0.09177987
#> [30,] -6.325697e-02 -0.030491618 0.5275732 0.09851278 0.09148029 0.09455103
#> [31,] 2.381838e-02 0.008561366 0.5415278 0.08655574 0.09611562 0.10603963
#> [32,] -3.632402e-02 -0.017130016 0.5211696 0.10597889 0.09529871 0.09550858
#> [33,] -5.560589e-03 -0.041299898 0.4505113 0.08773347 0.10669455 0.09956571
#> [34,] 1.180648e-02 0.055463831 0.5006901 0.09812655 0.10251583 0.08812632
#> [35,] 2.503484e-02 -0.014371468 0.4952391 0.10577503 0.09759036 0.11414251

```

```
#> [36,] -7.831177e-02 -0.027436482 0.5619025 0.09509774 0.10233767 0.08746661
#> [37,] 5.952974e-02 -0.071780270 0.5050928 0.10569403 0.09820242 0.09704947
#> [38,] 8.170450e-04 -0.016619533 0.5260316 0.10722676 0.10136290 0.09374135
#> [39,] 2.132885e-03 -0.048487951 0.5055569 0.10175729 0.09809730 0.10164009
#> [40,] -2.124955e-04 -0.026087009 0.4682442 0.09969266 0.09250747 0.09729284
#> [41,] -2.016216e-02 -0.033393474 0.5045044 0.09472485 0.09315185 0.10441220
#> [42,] 1.181564e-02 0.005592989 0.5117620 0.10172676 0.08670600 0.10468666
#> [43,] -2.858280e-06 0.028079578 0.5423085 0.09650685 0.09456595 0.09616732
#> [44,] -2.437575e-02 0.023280146 0.4698629 0.09555777 0.10526905 0.09385805
#> [45,] -2.282189e-02 0.003263234 0.5064732 0.09936083 0.10017878 0.09863568
#> [46,] -2.384668e-03 -0.016295694 0.4737930 0.10989716 0.09951131 0.08770628
#> [47,] 5.980008e-04 -0.003089513 0.5597720 0.09813157 0.09974433 0.09096459
#> [48,] -1.493488e-02 0.022705090 0.4872727 0.10268223 0.09593739 0.10178159
#> [49,] 1.132494e-02 0.015525783 0.5218082 0.10660438 0.07986420 0.10695280
#> [50,] 2.118627e-02 -0.047335018 0.5123770 0.10455737 0.10435109 0.09477486
```

```
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 759.332723034257
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=759.33272 (started at 767.23983) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.716461585428167,0.461130087272103,-0.111058101747436,0.00301995000147525,0.627962429370563,0.4
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 811.221283431381
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=811.22128 (started at 819.93175) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.644376917883203,0.498319815027411,-0.160138649888563,0.0339457279840114,0.602025160800339,0.43
#> Running DTVAR with 12 parameters
```

```
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 851.056191919858
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=851.05619 (started at 866.15931) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.650804232121634,0.500936239033408,-0.117869944184811,0.0358583580157441,0.581033136227764,0.45
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 758.939240001087
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=758.93924 (started at 772.80857) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.69425247833575,0.508254712519871,-0.105604056657861,0.00403646721373456,0.632271246543257,0.45
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 755.237014820981
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=755.23701 (started at 771.21109) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.655922064526889,0.485798758415577,-0.0839744808979841,0.0298172928302494,0.656191949541491,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
```

```
#>
#> Lowest minimum so far: 767.863852470667
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=767.86385 (started at 783.11641) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.666111127492906,0.464519086417875,-0.0655319230812842,0.0379815355531992,0.576484176671073,0.4
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 807.608080756468
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=807.60808 (started at 815.15868) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.709513062158392,0.512499708099355,-0.0692805796170135,0.0311076914010664,0.614389043033527,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 828.951705065182
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=828.95171 (started at 841.57206) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.733264749902263,0.473562995775331,-0.173022759603442,-0.0104990560166985,0.625703542569827,0.4
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 746.033688503379
```

```
#>
```

```
#> Solution found
```

```
#>
```

```
#> Solution found! Final fit=746.03369 (started at 764.8049) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.668484300948304, 0.511386214511344, -0.0225537199171085, -0.0555161395310054, 0.637385350117328, 0.3
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Lowest minimum so far: 851.374280350157
```

```
#>
```

```
#> Solution found
```

```
#>
```

```
#> Solution found! Final fit=851.37428 (started at 861.62867) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.718825604736078, 0.482353834528678, -0.169307271979635, -0.00202808228451628, 0.61955237324617, 0.4
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Lowest minimum so far: 799.274821858098
```

```
#>
```

```
#> Solution found
```

```
#>
```

```
#> Solution found! Final fit=799.27482 (started at 805.58759) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.708588218330156, 0.475388236341846, -0.0854308202552785, -0.0141769860920425, 0.629365591372229, 0.1
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Lowest minimum so far: 840.483916141223
```

```
#>
```

```
#> Solution found
```

```

#>
#> Solution found! Final fit=840.48392 (started at 851.00179) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.7207355111764,0.499551928552273,-0.14978054704757,-0.00930203523468703,0.574215742590509,0.458
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 718.539233542033
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=718.53923 (started at 741.63598) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.677879886561889,0.431826550789902,-0.166188403762372,-0.0373795473864487,0.594622470548096,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 779.766644444383
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=779.76664 (started at 793.31737) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.609971703606512,0.539347830163897,-0.112605600194933,0.0157157744132437,0.616305785508771,0.42
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 850.752343563441
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=850.75234 (started at 870.41089) (1 attempt(s): 1
valid, 0 errors)

```

```

#> Start values from best fit:
#> 0.691623842946204,0.471544492587184,-0.01002945583283,0.025056547442537,0.633323728415006,0.4381
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 872.343067571387
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=872.34307 (started at 882.368) (1 attempt(s): 1 valid,
0 errors)
#> Start values from best fit:
#> 0.627986713114911,0.503358910622752,-0.108103614997471,0.0109464800897341,0.592093469438707,0.38
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 764.239047454333
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=764.23905 (started at 784.80812) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.67105294959542,0.449887642591952,-0.143458786756119,0.0768224565147059,0.627515758592816,0.396
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 957.924375737499
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=957.92438 (started at 976.21158) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.739922367162102,0.48592706713264,-0.0717538245459881,-0.034202697660309,0.624077503132598,0.40
#> Running DTVAR with 12 parameters

```



```

#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 633.011904428516
#>
#> Solution found

#>
#> Solution found! Final fit=633.0119 (started at 649.09008) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.690213663823057,0.46636269930082,-0.0879598248789163,-0.0170226022112735,0.624374780340516,0.38
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 694.317115186692
#>
#> Solution found

#>
#> Solution found! Final fit=694.31712 (started at 706.63832) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.674456627932046,0.53188417705681,-0.0838787762828761,0.0242219079571848,0.605791639568043,0.40
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 706.595319002982
#>
#> Solution found

#>
#> Solution found! Final fit=706.59532 (started at 719.7453) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.696198214011712,0.470333597005126,-0.067734751668189,0.0443113891228755,0.641500260684122,0.38
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters

```

```
#>
#> Lowest minimum so far: 750.698512473295
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=750.69851 (started at 759.7683) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.671673609111645,0.553223089870081,-0.0309216931729336,0.0279455905537439,0.576180579623614,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 833.816258681048
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=833.81626 (started at 845.53725) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.640499502275901,0.521837377170588,-0.133809939141175,0.00875139451452418,0.607513714681973,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 863.215725480724
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=863.21573 (started at 880.21941) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.70233691503351,0.52676364141794,-0.103029350673975,-0.0646796152983735,0.566209875148732,0.415
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 782.27698978736
```

```
#>
```

```
#> Solution found
```

```
#>
```

```
#> Solution found! Final fit=782.27699 (started at 802.16016) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.751080033038349, 0.515348048019857, -0.0856262567981077, -0.0423177000638963, 0.565376873969739, 0.2
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Lowest minimum so far: 885.4000818504
```

```
#>
```

```
#> Solution found
```

```
#>
```

```
#> Solution found! Final fit=885.40008 (started at 891.24522) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.711902092021382, 0.492753826033058, -0.0766983353095619, 0.0284133293266239, 0.592131583550737, 0.3
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Lowest minimum so far: 870.776467535192
```

```
#>
```

```
#> Solution found
```

```
#>
```

```
#> Solution found! Final fit=870.77647 (started at 879.61589) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.717343023727884, 0.483863994996277, -0.037774213058378, -0.00846865630005986, 0.592730738847854, 0.1
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Lowest minimum so far: 825.091328764672
```

```
#>
```

```
#> Solution found
```

```

#>
#> Solution found! Final fit=825.09133 (started at 836.69057) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.671378801101552,0.495755542356324,-0.106318444891222,0.0223503254606083,0.584236589649017,0.43
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 732.657907507961
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=732.65791 (started at 743.57505) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.764032687703439,0.471287014221847,-0.0822300063767158,-0.00101252774380534,0.62229897574047,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 726.376014908232
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=726.37601 (started at 742.41338) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.698020502933625,0.540256680629718,-0.130671062767118,0.021901574828572,0.536368802056704,0.397
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 743.062534381883
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=743.06253 (started at 756.40648) (1 attempt(s): 1
valid, 0 errors)

```

```

#> Start values from best fit:
#> 0.731754806899753,0.460964906274982,-0.143471428894092,-0.0216994359253728,0.604938695643486,0.4
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 797.484023499046
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=797.48402 (started at 806.83396) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.676277609893595,0.501583766265347,-0.0618798951792299,-0.0193574397570838,0.614583011607736,0.
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 770.97749467596
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=770.97749 (started at 784.17806) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.706895709607195,0.511010671262467,-0.0872678739613862,0.0314695930810643,0.601610179752207,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 749.349505885138
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=749.34951 (started at 762.66042) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.653912563390342,0.510586038131102,-0.100988567723116,-0.0413977100766392,0.545606865185711,0.3
#> Running DTVAR with 12 parameters

```

```

#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 889.86167650208
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=889.86168 (started at 899.62257) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.664289357214513,0.510244947029733,-0.101676632875796,-0.00118367609196996,0.569508435314849,0.2
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 725.595924156994
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=725.59592 (started at 751.84398) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.611388387413602,0.524511305659563,-0.124184601280723,0.0219294512140722,0.542040628278474,0.39
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 812.090920433347
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=812.09092 (started at 825.67386) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.741751985990055,0.469320568926058,-0.08799220120145,-0.0380914980600275,0.654436815220724,0.37
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters

```

```
#>
#> Lowest minimum so far: 815.197848341626
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=815.19785 (started at 829.66831) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.693227358332933,0.409815382546601,-0.0514574408005689,-0.0205940175054711,0.635597713904742,0.2
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 820.593168415362
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=820.59317 (started at 838.4595) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.64330480856716,0.397856533791987,-0.0386467541729308,-0.00783303856946256,0.661822861740966,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 752.466226469853
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=752.46623 (started at 760.05983) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.664098292782441,0.530990710130654,-0.106972799788052,0.0260199662012602,0.584333638667574,0.37
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 766.219955415775
```

```
#>
```

```
#> Solution found
```

```
#>
```

```
#> Solution found! Final fit=766.21996 (started at 777.65895) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.624786753491203,0.480326983366548,-0.141720275922804,0.041052227184432,0.634241947184696,0.444
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Lowest minimum so far: 768.77163879313
```

```
#>
```

```
#> Solution found
```

```
#>
```

```
#> Solution found! Final fit=768.77164 (started at 784.45062) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.744386876914039,0.465935520562982,-0.0692190128049471,-0.0676241467206233,0.568648789348167,0.3
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Lowest minimum so far: 741.223147927187
```

```
#>
```

```
#> Solution found
```

```
#>
```

```
#> Solution found! Final fit=741.22315 (started at 755.42182) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.662178896542466,0.438474917081386,-0.0111442189404204,0.01202887882265,0.594398301245561,0.328
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 12 parameters
```

```
#>
```

```
#> Lowest minimum so far: 780.836285441667
```

```
#>
```

```
#> Solution found
```



```

#>
#> Solution found! Final fit=780.83629 (started at 791.00989) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.69034740431757,0.49031134831171,-0.146390033092329,-0.0195401623412294,0.627402508235676,0.403
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 798.99420037079
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=798.9942 (started at 803.52761) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.67956403208763,0.47765774431945,-0.0379101593064794,0.0154875956487848,0.616824904549432,0.370
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 787.032257794067
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=787.03226 (started at 800.57952) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.71609313261114,0.554203807091305,-0.123075940611452,-0.0417698485929651,0.571815552896042,0.42
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 751.084607795309
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=751.08461 (started at 761.5739) (1 attempt(s): 1
valid, 0 errors)

```

```

#> Start values from best fit:
#> 0.66130950018045,0.532629821554621,-0.101641402677008,0.00192166165092056,0.614479804396606,0.39
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 807.680486764455
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=807.68049 (started at 816.98743) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.71153682967932,0.486719003709776,-0.182176075602796,-0.0261125286606419,0.5992944461216,0.4082
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 767.418593752494
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=767.41859 (started at 787.98087) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.771433727134554,0.515790729464576,-0.089138196614291,-0.0397577183528818,0.579395652411828,0.3
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 838.480905826358
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=838.48091 (started at 847.96006) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.746043269189541,0.531610400000595,-0.101115741712202,-0.0485678796475715,0.598258794430362,0.3
#> test-external-fitDTVARMx-fit-dt-var-id-mx-psi-full-alpha

```

```
#> Running DTVAR with 21 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 21 parameters
#>
#> Lowest minimum so far: 130.860713212673
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=130.86071 (started at 611.92411) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.907007229936191,0.572596720070576,-0.182862604928905,-0.100081655724612,0.650075339802413,0.54
#> Running DTVAR with 21 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 21 parameters
#>
#> Lowest minimum so far: 139.32688570416
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=139.32689 (started at 522.26725) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.688944224187242,0.323709047517282,-0.115752554598636,-0.0451097560064444,0.705665692048061,0.5
#>
#> Means of the estimated paramaters per individual.
#>      beta_11      beta_21      beta_31      beta_12      beta_22
#> 7.979757e-01 4.481529e-01 -1.493076e-01 -7.259571e-02 6.778705e-01
#>      beta_32      beta_13      beta_23      beta_33      alpha_1
#> 5.565601e-01 -2.564633e-02 -6.116042e-02 4.168568e-01 -7.032956e-02
#>      alpha_2      alpha_3      psi_11      psi_21      psi_22
#> -7.478141e-02 3.616966e-02 6.885404e-02 -1.020105e-02 8.737757e-02
#>      psi_31      psi_32      psi_33      theta_11      theta_22
#> -2.155005e-03 -8.153513e-03 8.302782e-02 1.072575e-02 9.927406e-03
#>      theta_33
#> 2.225074e-308
#>
#> Estimated paramaters per individual.
#>      beta_11      beta_21      beta_31      beta_12      beta_22      beta_32      beta_13
#> [1,] 0.9070072 0.5725967 -0.1828626 -0.10008166 0.6500753 0.5445502 0.05538699
#> [2,] 0.6889442 0.3237090 -0.1157526 -0.04510976 0.7056657 0.5685701 -0.10667965
```

```

#>      beta_23  beta_33  alpha_1  alpha_2  alpha_3  psi_11
#> [1,]  0.01068892 0.3643206 -0.02853877 -0.08489982 0.05058161 0.05380210
#> [2,] -0.13300975 0.4693931 -0.11212035 -0.06466300 0.02175772 0.08390599
#>      psi_21  psi_22  psi_31  psi_32  psi_33  theta_11
#> [1,]  0.003243194 0.07543105  0.001439259  0.0005402401 0.08549315 0.020084579
#> [2,] -0.023645299 0.09932410 -0.005749269 -0.0168472654 0.08056248 0.001366913
#>      theta_22  theta_33
#> [1,] 0.008943096 2.225074e-308
#> [2,] 0.010911715 2.225074e-308

```

```

#> Running DTVAR with 21 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 21 parameters
#>
#> Lowest minimum so far: 130.860713212637
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=130.86071 (started at 258.45164) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.907007204309977,0.572596987786318,-0.182862254278148,-0.100081604525029,0.650074994301332,0.54
#> Running DTVAR with 21 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 21 parameters
#>
#> Lowest minimum so far: 139.326885704181
#>
#> Solution found

```

```

#>
#> Solution found! Final fit=139.32689 (started at 270.70682) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.688944186887408,0.323709081867955,-0.115752660001728,-0.0451097085798538,0.705665730422289,0.5
#> Running DTVAR with 21 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 21 parameters
#>
#> Lowest minimum so far: 130.860713212673
#>

```

```
#> Solution found
```

```
#>
#> Solution found! Final fit=130.86071 (started at 611.92411) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.907007229936191,0.572596720070576,-0.182862604928905,-0.100081655724612,0.650075339802413,0.54
#> Running DTVAR with 21 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 21 parameters
#>
#> Lowest minimum so far: 139.32688570416
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=139.32689 (started at 522.26725) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.688944224187242,0.323709047517282,-0.115752554598636,-0.0451097560064444,0.705665692048061,0.5
#> test-fitDTVARmx-fit-dt-var-id-mx-psi-full
#> Running DTVAR with 15 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 15 parameters
#>
#> Lowest minimum so far: 141.227445040053
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=141.22745 (started at 864.26372) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.75913259723725,0.5117467240654,-0.117001720448976,-0.00765252376376461,0.696207291827696,0.478
#> Running DTVAR with 15 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 15 parameters
#>
#> Lowest minimum so far: 152.427876381749
#>
#> Solution found
```

```

#>
#> Solution found! Final fit=152.42788 (started at 704.47502) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.763892338563301,0.383013731924256,-0.120352902982372,0.00499878077485043,0.70344260993121,0.53

#>
#> Means of the estimated paramaters per individual.
#>      beta_11      beta_21      beta_31      beta_12      beta_22      beta_32
#> 0.761512468 0.447380228 -0.118677312 -0.001326871 0.699824951 0.507138094
#>      beta_13      beta_23      beta_33      psi_11      psi_21      psi_22
#> -0.023866582 -0.030153805 0.428050275 0.091046873 -0.003051278 0.109030721
#>      psi_31      psi_32      psi_33
#> -0.003780057 -0.008290530 0.087063236
#>
#> Estimated paramaters per individual.
#>      beta_11      beta_21      beta_31      beta_12      beta_22      beta_32
#> [1,] 0.7591326 0.5117467 -0.1170017 -0.007652524 0.6962073 0.4789361
#> [2,] 0.7638923 0.3830137 -0.1203529 0.004998781 0.7034426 0.5353401
#>      beta_13      beta_23      beta_33      psi_11      psi_21      psi_22
#> [1,] -0.00573355 0.02068753 0.3880270 0.08903364 0.01356789 0.09988748
#> [2,] -0.04199961 -0.08099514 0.4680735 0.09306011 -0.01967044 0.11817396
#>      psi_31      psi_32      psi_33
#> [1,] -0.0004085943 -0.003218197 0.09006036
#> [2,] -0.0071515206 -0.013362864 0.08406612

#> Running DTVAR with 15 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 15 parameters
#>
#> Lowest minimum so far: 141.227445040052
#>
#> Solution found

#>
#> Solution found! Final fit=141.22745 (started at 155.30127) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.759132618087095,0.511746732947333,-0.117001718768712,-0.00765252326881371,0.696207294595838,0.
#> Running DTVAR with 15 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 15 parameters
#>
#> Lowest minimum so far: 152.427876381749

```

```
#>
```

```
#> Solution found
```

```
#>
```

```
#> Solution found! Final fit=152.42788 (started at 173.82468) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.763892345928953,0.383013729597576,-0.120352907158379,0.00499877965420416,0.703442611112905,0.5
```

```
#> test-fitDTVARm-fit-dt-var-id-mx-theta-diag
```

```
#> Running DTVAR with 15 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 15 parameters
```

```
#>
```

```
#> Lowest minimum so far: 141.007091765542
```

```
#>
```

```
#> Solution found
```

```
#>
```

```
#> Solution found! Final fit=141.00709 (started at 611.92411) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.874067073976316,0.560970873321944,-0.157379395224968,-0.060316286602635,0.691271352979595,0.50
```

```
#> Running DTVAR with 15 parameters
```

```
#>
```

```
#> Beginning initial fit attempt
```

```
#> Running DTVAR with 15 parameters
```

```
#>
```

```
#> Lowest minimum so far: 158.95495094583
```

```
#>
```

```
#> Solution found
```

```
#>
```

```
#> Solution found! Final fit=158.95495 (started at 522.26725) (1 attempt(s): 1  
valid, 0 errors)
```

```
#> Start values from best fit:
```

```
#> 0.762881202903151,0.381929333900888,-0.121087935820448,0.0059717522349965,0.703854338321474,0.53
```

```
#>
```

```
#> Means of the estimated paramaters per individual.
```

```
#>      beta_11      beta_21      beta_31      beta_12      beta_22
```

```
#> 8.184741e-01 4.714501e-01 -1.392337e-01 -2.717227e-02 6.975628e-01
```

```
#>      beta_32      beta_13      beta_23      beta_33      psi_11
```

```
#> 5.186768e-01 -2.890123e-03 -3.372155e-02 4.216677e-01 7.556594e-02
```

```
#>      psi_22      psi_33      theta_11      theta_22      theta_33
```

```
#> 1.031500e-01 8.625905e-02 9.121430e-03 2.428910e-03 1.086906e-15
#>
#> Estimated paramaters per individual.
#>      beta_11  beta_21  beta_31  beta_12  beta_22  beta_32
#> [1,] 0.8740671 0.5609709 -0.1573794 -0.060316287 0.6912714 0.5017106
#> [2,] 0.7628812 0.3819293 -0.1210879 0.005971752 0.7038543 0.5356429
#>      beta_13  beta_23  beta_33  psi_11  psi_22  psi_33
#> [1,] 0.03623910 0.01460806 0.3754179 0.05815627 0.08808056 0.0884348
#> [2,] -0.04201934 -0.08205117 0.4679174 0.09297562 0.11821939 0.0840833
#>      theta_11  theta_22  theta_33
#> [1,] 1.824286e-02 4.857820e-03 1.563815e-17
#> [2,] 4.106886e-16 2.225074e-308 2.158173e-15
```

```
#> Running DTVAR with 15 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 15 parameters
#>
#> Lowest minimum so far: 141.007091765538
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=141.00709 (started at 258.45164) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.874067142181008,0.5609708958694,-0.15737939309628,-0.0603162743016983,0.691271362120305,0.5017106
#> Running DTVAR with 15 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 15 parameters
#>
#> Lowest minimum so far: 158.954950945828
#>
#> Solution found
```

```
#>
#> Solution found! Final fit=158.95495 (started at 270.70682) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.762881282455708,0.381929306213834,-0.121087899520994,0.00597174192083925,0.703854337192701,0.5356429
#> test-fitDTVARmx-fit-dt-var-id-mx-theta-null
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
```



```

#>
#> Lowest minimum so far: 143.407404986776
#>
#> Solution found

#>
#> Solution found! Final fit=143.4074 (started at 864.26372) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.759698255386954,0.51293068501254,-0.117571330106502,-0.00831597103808483,0.695728660324113,0.4
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 158.954950945854
#>
#> Solution found

#>
#> Solution found! Final fit=158.95495 (started at 704.47502) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.762881446913649,0.381929224963492,-0.121087879936601,0.005971740759823,0.703854252822966,0.535
#>
#> Means of the estimated paramaters per individual.
#>      beta_11      beta_21      beta_31      beta_12      beta_22      beta_32
#> 0.761289851 0.447429955 -0.119329605 -0.001172115 0.699791457 0.507666249
#>      beta_13      beta_23      beta_33      psi_11      psi_22      psi_33
#> -0.023737292 -0.030511210 0.427704600 0.091023282 0.109070259 0.087071311
#>
#> Estimated paramaters per individual.
#>      beta_11      beta_21      beta_31      beta_12      beta_22      beta_32
#> [1,] 0.7596983 0.5129307 -0.1175713 -0.008315971 0.6957287 0.4796895
#> [2,] 0.7628814 0.3819292 -0.1210879 0.005971741 0.7038543 0.5356430
#>      beta_13      beta_23      beta_33      psi_11      psi_22      psi_33
#> [1,] -0.00545524 0.02102876 0.3874918 0.08907097 0.09992115 0.09005935
#> [2,] -0.04201934 -0.08205118 0.4679174 0.09297560 0.11821937 0.08408327
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 143.407404986772

```

```

#>
#> Solution found

#>
#> Solution found! Final fit=143.4074 (started at 155.30127) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.759698244277544,0.512930696767456,-0.11757139938928,-0.00831595469091632,0.695728628998621,0.4
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 158.954950945827
#>
#> Solution found

#>
#> Solution found! Final fit=158.95495 (started at 173.82468) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.762881277475544,0.381929289092408,-0.121087909101016,0.00597173839718756,0.703854341041715,0.5
#> test-fitDTVARmx-fit-dt-var-mx-theta-null
#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 314.833515756451
#>
#> Solution found

#>
#> Solution found! Final fit=314.83352 (started at 1681.6314) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.779809576758782,0.456449509059093,-0.149069435059919,-0.0215205293644486,0.709204637901126,0.4

#> Summary of DTVAR
#>
#> free parameters:
#>      name      matrix row col      Estimate Std.Error A
#> 1 beta_11 DTVAR_1.beta eta1 eta1 0.779809577 0.047072463
#> 2 beta_21 DTVAR_1.beta eta2 eta1 0.456449509 0.054243686
#> 3 beta_31 DTVAR_1.beta eta3 eta1 -0.149069435 0.048836546

```

```

#> 4  beta_12 DTVAR_1.beta eta1 eta2 -0.021520529 0.038964011
#> 5  beta_22 DTVAR_1.beta eta2 eta2  0.709204638 0.043964740
#> 6  beta_32 DTVAR_1.beta eta3 eta2  0.493807895 0.040264748
#> 7  beta_13 DTVAR_1.beta eta1 eta3  0.001827002 0.039865722
#> 8  beta_23 DTVAR_1.beta eta2 eta3 -0.027125794 0.044899602
#> 9  beta_33 DTVAR_1.beta eta3 eta3  0.453982960 0.040562888
#> 10 psi_11 DTVAR_1.psi eta1 eta1  0.087188163 0.008810128
#> 11 psi_22 DTVAR_1.psi eta2 eta2  0.111929802 0.011280144
#> 12 psi_33 DTVAR_1.psi eta3 eta3  0.089489071 0.009032654
#>
#>          lbound ubound
#> 1
#> 2
#> 3
#> 4
#> 5
#> 6
#> 7
#> 8
#> 9
#> 10 2.2250738585072e-308
#> 11 2.2250738585072e-308
#> 12 2.2250738585072e-308
#>
#> Model Statistics:
#>          | Parameters | Degrees of Freedom | Fit (-2lnL units)
#>      Model:          12          588          314.8335
#>   Saturated:          NA          NA          NA
#> Independence:          NA          NA          NA
#> Number of observations/statistics: 200/600
#>
#> Information Criteria:
#>          | df Penalty | Parameters Penalty | Sample-Size Adjusted
#> AIC:      -861.1665          338.8335          340.5020
#> BIC:      -2800.5771          378.4133          340.3961
#> CFI: NA
#> TLI: 1 (also known as NNFI)
#> RMSEA: 0 [95% CI (NA, NA)]
#> Prob(RMSEA <= 0.05): NA
#> To get additional fit indices, see help(mxRefModels)
#> timestamp: 2024-07-25 06:52:29
#> Wall clock time: 0.9093912 secs
#> optimizer: SLSQP
#> OpenMx version number: 2.21.11
#> Need help? See help(mxSummary)
#>
#> Summary of DTVAR

```

```

#>
#> free parameters:
#>      name      matrix row col      Estimate      Std.Error A
#> 1  beta_11 DTVAR_1.beta eta1 eta1  0.779809577 0.047072463
#> 2  beta_21 DTVAR_1.beta eta2 eta1  0.456449509 0.054243686
#> 3  beta_31 DTVAR_1.beta eta3 eta1 -0.149069435 0.048836546
#> 4  beta_12 DTVAR_1.beta eta1 eta2 -0.021520529 0.038964011
#> 5  beta_22 DTVAR_1.beta eta2 eta2  0.709204638 0.043964740
#> 6  beta_32 DTVAR_1.beta eta3 eta2  0.493807895 0.040264748
#> 7  beta_13 DTVAR_1.beta eta1 eta3  0.001827002 0.039865722
#> 8  beta_23 DTVAR_1.beta eta2 eta3 -0.027125794 0.044899602
#> 9  beta_33 DTVAR_1.beta eta3 eta3  0.453982960 0.040562888
#> 10 psi_11 DTVAR_1.psi eta1 eta1  0.087188163 0.008810128
#> 11 psi_22 DTVAR_1.psi eta2 eta2  0.111929802 0.011280144
#> 12 psi_33 DTVAR_1.psi eta3 eta3  0.089489071 0.009032654
#>      lbound ubound
#> 1
#> 2
#> 3
#> 4
#> 5
#> 6
#> 7
#> 8
#> 9
#> 10 2.2250738585072e-308
#> 11 2.2250738585072e-308
#> 12 2.2250738585072e-308
#>
#> Model Statistics:
#>      | Parameters | Degrees of Freedom | Fit (-2lnL units)
#>      Model:      12                      588              314.8335
#>      Saturated:   NA                      NA                NA
#>      Independence: NA                      NA                NA
#> Number of observations/statistics: 200/600
#>
#> Information Criteria:
#>      | df Penalty | Parameters Penalty | Sample-Size Adjusted
#>      AIC:      -861.1665              338.8335              340.5020
#>      BIC:      -2800.5771              378.4133              340.3961
#>      CFI: NA
#>      TLI: 1      (also known as NNFI)
#>      RMSEA: 0    [95% CI (NA, NA)]
#>      Prob(RMSEA <= 0.05): NA
#> To get additional fit indices, see help(mxRefModels)
#> timestamp: 2024-07-25 06:52:29

```

```

#> Wall clock time: 0.9093912 secs
#> optimizer: SLSQP
#> OpenMx version number: 2.21.11
#> Need help? See help(mxSummary)

#> Running DTVAR with 12 parameters
#>
#> Beginning initial fit attempt
#> Running DTVAR with 12 parameters
#>
#> Lowest minimum so far: 314.833515756454
#>
#> Solution found

#>
#> Solution found! Final fit=314.83352 (started at 335.05402) (1 attempt(s): 1
valid, 0 errors)
#> Start values from best fit:
#> 0.779809570696339,0.456449524879204,-0.149069418133212,-0.0215205227899933,0.709204639349302,0.4

#> [[1]]
#> [[1]][[1]]
#> [[1]][[1]]$value
#> [[1]][[1]]$value[[1]]
#>
#> Means of the estimated paramaters per individual.
#>      beta_11      beta_21      beta_31      beta_12      beta_22      beta_32
#> 0.689789886 0.492516178 -0.097208289 -0.001160432 0.603969448 0.400473465
#>      beta_13      beta_23      beta_33      psi_11      psi_22      psi_33
#> -0.007541716 -0.004560360 0.502174351 0.099612948 0.097622042 0.099534969
#>
#>
#> [[1]][[1]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[2]]
#> [[1]][[2]]$value
#> [[1]][[2]]$value[[1]]
#>
#> Means of the estimated paramaters per individual.
#>      beta_11      beta_21      beta_31      beta_12      beta_22
#> 7.979757e-01 4.481529e-01 -1.493076e-01 -7.259571e-02 6.778705e-01
#>      beta_32      beta_13      beta_23      beta_33      alpha_1
#> 5.565601e-01 -2.564633e-02 -6.116042e-02 4.168568e-01 -7.032956e-02
#>      alpha_2      alpha_3      psi_11      psi_21      psi_22

```

```

#> -7.478141e-02  3.616966e-02  6.885404e-02 -1.020105e-02  8.737757e-02
#>      psi_31      psi_32      psi_33      theta_11      theta_22
#> -2.155005e-03 -8.153513e-03  8.302782e-02  1.072575e-02  9.927406e-03
#>      theta_33
#> 2.225074e-308
#>
#>
#> [[1]][[2]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[3]]
#> [[1]][[3]]$value
#> [[1]][[3]]$value[[1]]
#>
#> Means of the estimated paramaters per individual.
#>      beta_11      beta_21      beta_31      beta_12      beta_22      beta_32
#> 0.761512482 0.447380231 -0.118677313 -0.001326872 0.699824953 0.507138098
#>      beta_13      beta_23      beta_33      psi_11      psi_21      psi_22
#> -0.023866568 -0.030153803 0.428050266 0.091046872 -0.003051278 0.109030718
#>      psi_31      psi_32      psi_33
#> -0.003780055 -0.008290528 0.087063235
#>
#>
#> [[1]][[3]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[4]]
#> [[1]][[4]]$value
#> [[1]][[4]]$value[[1]]
#>
#> Means of the estimated paramaters per individual.
#>      beta_11      beta_21      beta_31      beta_12      beta_22
#> 8.184742e-01 4.714501e-01 -1.392336e-01 -2.717227e-02 6.975628e-01
#>      beta_32      beta_13      beta_23      beta_33      psi_11
#> 5.186768e-01 -2.890133e-03 -3.372160e-02 4.216676e-01 7.556594e-02
#>      psi_22      psi_33      theta_11      theta_22      theta_33
#> 1.031499e-01 8.625905e-02 9.121433e-03 2.428920e-03 2.225074e-308
#>
#>
#> [[1]][[4]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[5]]

```

```

#> [[1]][[5]]$value
#> [[1]][[5]]$value[[1]]
#>
#> Means of the estimated paramaters per individual.
#>      beta_11      beta_21      beta_31      beta_12      beta_22      beta_32
#> 0.761289761 0.447429993 -0.119329654 -0.001172108 0.699791485 0.507666213
#>      beta_13      beta_23      beta_33      psi_11      psi_22      psi_33
#> -0.023737279 -0.030511209 0.427704612 0.091023290 0.109070270 0.087071328
#>
#>
#> [[1]][[5]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[6]]
#> [[1]][[6]]$value
#> [[1]][[6]]$value[[1]]
#> Summary of DTVAR
#>
#> free parameters:
#>      name      matrix row col      Estimate      Std.Error A
#> 1  beta_11 DTVAR_1.beta eta1 eta1 0.779809571 0.047072530
#> 2  beta_21 DTVAR_1.beta eta2 eta1 0.456449525 0.054243727
#> 3  beta_31 DTVAR_1.beta eta3 eta1 -0.149069418 0.048836629
#> 4  beta_12 DTVAR_1.beta eta1 eta2 -0.021520523 0.038964110
#> 5  beta_22 DTVAR_1.beta eta2 eta2 0.709204639 0.043964666
#> 6  beta_32 DTVAR_1.beta eta3 eta2 0.493807878 0.040264807
#> 7  beta_13 DTVAR_1.beta eta1 eta3 0.001826994 0.039865786
#> 8  beta_23 DTVAR_1.beta eta2 eta3 -0.027125777 0.044899552
#> 9  beta_33 DTVAR_1.beta eta3 eta3 0.453982989 0.040562957
#> 10 psi_11 DTVAR_1.psi eta1 eta1 0.087188176 0.008810130
#> 11 psi_22 DTVAR_1.psi eta2 eta2 0.111929803 0.011280145
#> 12 psi_33 DTVAR_1.psi eta3 eta3 0.089489077 0.009032656
#>
#> Model Statistics:
#>      | Parameters | Degrees of Freedom | Fit (-2lnL units)
#>      Model:      12      588      314.8335
#>      Saturated:   NA      NA      NA
#>      Independence: NA      NA      NA
#> Number of observations/statistics: 200/600
#>
#> Information Criteria:
#>      | df Penalty | Parameters Penalty | Sample-Size Adjusted
#>      AIC:      -861.1665      338.8335      340.5020
#>      BIC:      -2800.5771      378.4133      340.3961

```

```
#> CFI: NA
#> TLI: 1 (also known as NNFI)
#> RMSEA: 0 [95% CI (NA, NA)]
#> Prob(RMSEA <= 0.05): NA
#> To get additional fit indices, see help(mxRefModels)
#> timestamp: 2024-07-25 06:52:30
#> Wall clock time: 0.6703641 secs
#> optimizer: SLSQP
#> OpenMx version number: 2.21.11
#> Need help? See help(mxSummary)
#>
#>
#>
#> [[1]][[6]]$visible
#> [1] TRUE
```


Environment

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

Class

```
#> [[1]]  
#> [1] "root_criterion"
```

References

R Core Team. (2024). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. Vienna, Austria. <https://www.R-project.org/>