

OSMASEM

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Contents

```
##### load R packages #####

library("metaSEM")

## Loading required package: OpenMx

## To take full advantage of multiple cores, use:
##   mxOption(NULL, 'Number of Threads', parallel::detectCores()) #now
##   Sys.setenv(OMP_NUM_THREADS=parallel::detectCores()) #before library(OpenMx)

## "SLSQP" is set as the default optimizer in OpenMx.
## mxOption(NULL, "Gradient algorithm") is set at "central".
## mxOption(NULL, "Optimality tolerance") is set at "6.3e-14".
## mxOption(NULL, "Gradient iterations") is set at "2".

library("foreign")
library("semPlot")
library("lavaan")

## This is lavaan 0.6-3
## lavaan is BETA software! Please report any bugs.
##
## Attaching package: 'lavaan'

## The following object is masked from 'package:OpenMx':
##
##   vech

mxOption(NULL, 'Number of Threads', 20)

##### Clean the data #####

dataset=read.spss("01 TSSEM_komplett.sav", use.value.labels=FALSE, to.data.frame=T)

head(dataset)

##   K_ID Zelle_1 Zelle_2 Zelle_3 Zelle_4 Zelle_5 Zelle_6 Zelle_7 Zelle_8
## 1     1     -99     -99 -99.000   0.280     -99     -99     -99     -99
## 2     2     -99     -99 -99.000   0.300     -99     -99     -99     -99
## 3     3     -99     -99 -99.000   0.237     -99     -99     -99     -99
## 4     4     -99     -99 -99.000   0.332     -99     -99     -99     -99
## 5     5     -99     -99   0.495   0.431     -99     -99     -99     -99
## 6     6     -99     -99 -99.000   0.395     -99     -99     -99     -99
##   Zelle_9 Zelle_10 Fallzahl ES   WR   HDI
```

```
## 1    -99 -99.000    219  1 86.5 0.788
## 2    -99 -99.000    205  1 86.5 0.788
## 3    -99 -99.000    224  2 86.5 0.792
## 4    -99 -99.000    487  2 86.5 0.792
## 5    -99  0.612    499  5 86.5 0.794
## 6    -99 -99.000    224  2 94.1 0.673
```

```
##Leere Felder
```

```
dataset <- dataset[-c(177, 178, 179, 180, 181, 182, 183, 184), ]
dataset
```

##	K_ID	Zelle_1	Zelle_2	Zelle_3	Zelle_4	Zelle_5
## 1	1	-99.0000000	-99.0000000	-99.0000000	0.2800000	-99.000
## 2	2	-99.0000000	-99.0000000	-99.0000000	0.3000000	-99.000
## 3	3	-99.0000000	-99.0000000	-99.0000000	0.2370000	-99.000
## 4	4	-99.0000000	-99.0000000	-99.0000000	0.3320000	-99.000
## 5	5	-99.0000000	-99.0000000	0.4950000	0.4310000	-99.000
## 6	6	-99.0000000	-99.0000000	-99.0000000	0.3950000	-99.000
## 7	7	-99.0000000	-99.0000000	0.3190000	0.2910000	-99.000
## 8	8	-99.0000000	-99.0000000	0.3770000	0.3520000	-99.000
## 9	9	-99.0000000	-99.0000000	0.3100000	0.3520000	-99.000
## 10	10	-99.0000000	-99.0000000	0.2880000	0.3040000	-99.000
## 11	11	-99.0000000	-99.0000000	-99.0000000	0.1860000	-99.000
## 12	12	-99.0000000	-99.0000000	-99.0000000	0.3950000	-99.000
## 13	13	-99.0000000	-99.0000000	-99.0000000	0.2670000	-99.000
## 14	14	-99.0000000	-99.0000000	-99.0000000	0.3160000	-99.000
## 15	15	-99.0000000	-99.0000000	-99.0000000	0.2820000	-99.000
## 16	16	-99.0000000	-99.0000000	-99.0000000	0.3030000	-99.000
## 17	17	-99.0000000	-99.0000000	-99.0000000	0.4555000	-99.000
## 18	18	-99.0000000	-99.0000000	-99.0000000	0.2950000	-99.000
## 19	19	-99.0000000	-99.0000000	-99.0000000	0.2620000	-99.000
## 20	20	-99.0000000	-99.0000000	-99.0000000	0.3025000	-99.000
## 21	21	-99.0000000	-99.0000000	-99.0000000	0.4790000	-99.000
## 22	22	-99.0000000	-99.0000000	-99.0000000	0.4330000	-99.000
## 23	23	-99.0000000	-99.0000000	-99.0000000	0.2705000	-99.000
## 24	24	-99.0000000	-99.0000000	-99.0000000	0.2000000	-99.000
## 25	25	-99.0000000	-99.0000000	-99.0000000	0.3500000	-99.000
## 26	26	-99.0000000	-99.0000000	-99.0000000	0.3500000	-99.000
## 27	27	-99.0000000	-99.0000000	-99.0000000	0.3900000	-99.000
## 28	28	-99.0000000	-99.0000000	-99.0000000	0.2500000	-99.000
## 29	29	-99.0000000	0.2500000	-99.0000000	-99.0000000	-99.000
## 30	30	-99.0000000	0.2200000	-99.0000000	-99.0000000	-99.000
## 31	31	-99.0000000	-88.0000000	-88.0000000	0.1940000	-99.000
## 32	32	-99.0000000	-99.0000000	-99.0000000	0.1725000	-99.000
## 33	33	-99.0000000	-99.0000000	-99.0000000	0.3905000	-99.000
## 34	34	-99.0000000	0.0700000	-99.0000000	0.1000000	-99.000
## 35	35	-99.0000000	-0.0900000	-99.0000000	0.3000000	-99.000
## 36	36	-99.0000000	0.1160000	-99.0000000	0.1820000	-99.000
## 37	37	-99.0000000	0.2530000	-99.0000000	0.3790000	-99.000
## 38	38	-99.0000000	0.0905000	0.0830000	0.2760000	-99.000
## 39	39	-99.0000000	0.2840000	0.2535000	0.2045000	-99.000
## 40	40	-99.0000000	-99.0000000	-99.0000000	0.1600000	-99.000
## 41	41	-99.0000000	-99.0000000	-99.0000000	0.2000000	-99.000
## 42	42	-99.0000000	-99.0000000	-99.0000000	0.1100000	-99.000
## 43	43	-99.0000000	-99.0000000	0.1425000	0.2800000	-99.000

## 44	44	-99.0000000	0.23200000	-99.00000000	-99.00000000	-99.000
## 45	45	0.1006667	0.02900000	-99.00000000	-99.00000000	0.356
## 46	46	-99.0000000	0.17700000	-99.00000000	-99.00000000	-99.000
## 47	47	-99.0000000	-99.00000000	-99.00000000	0.31000000	-99.000
## 48	48	-99.0000000	-99.00000000	0.19500000	0.31500000	-99.000
## 49	49	-99.0000000	-99.00000000	-99.00000000	-99.00000000	-99.000
## 50	50	-99.0000000	-99.00000000	-99.00000000	0.19333333	-99.000
## 51	51	-99.0000000	-99.00000000	-99.00000000	0.13000000	-99.000
## 52	52	-99.0000000	-99.00000000	-99.00000000	-99.00000000	-99.000
## 53	53	-99.0000000	-99.00000000	0.12000000	-99.00000000	-99.000
## 54	54	-0.1400000	-99.00000000	-99.00000000	-99.00000000	-99.000
## 55	55	-99.0000000	-99.00000000	-99.00000000	0.26000000	-99.000
## 56	57	-99.0000000	-99.00000000	-99.00000000	0.17500000	-99.000
## 57	58	-99.0000000	-99.00000000	-99.00000000	0.06000000	-99.000
## 58	59	-99.0000000	-99.00000000	-99.00000000	-99.00000000	-99.000
## 59	60	-99.0000000	-99.00000000	-99.00000000	-99.00000000	-99.000
## 60	61	-99.0000000	-99.00000000	-99.00000000	0.03000000	-99.000
## 61	62	-99.0000000	-99.00000000	-99.00000000	0.12000000	-99.000
## 62	63	-99.0000000	-99.00000000	-99.00000000	0.17800000	-99.000
## 63	64	-99.0000000	-99.00000000	-99.00000000	0.24000000	-99.000
## 64	65	0.1500000	-99.00000000	-99.00000000	0.12000000	-99.000
## 65	66	0.0700000	-99.00000000	-99.00000000	-99.00000000	-99.000
## 66	67	-99.0000000	0.24666667	0.18333333	-99.00000000	-99.000
## 67	68	0.0900000	-99.00000000	-99.00000000	0.06000000	-99.000
## 68	69	-99.0000000	-99.00000000	-99.00000000	0.30000000	-99.000
## 69	70	0.1120000	-99.00000000	-99.00000000	-99.00000000	-99.000
## 70	71	-99.0000000	-99.00000000	-99.00000000	0.42000000	-99.000
## 71	72	-99.0000000	-99.00000000	-0.05000000	0.07800000	-99.000
## 72	74	-99.0000000	-99.00000000	-99.00000000	0.24000000	-99.000
## 73	75	-99.0000000	-99.00000000	-99.00000000	0.08000000	-99.000
## 74	76	-99.0000000	-99.00000000	-99.00000000	0.07500000	-99.000
## 75	77	-99.0000000	0.36000000	0.25500000	0.32000000	-99.000
## 76	78	-99.0000000	-99.00000000	-99.00000000	0.25800000	-99.000
## 77	79	0.0900000	-99.00000000	-99.00000000	0.04000000	-99.000
## 78	80	0.0300000	-99.00000000	-99.00000000	-0.03000000	-99.000
## 79	81	-99.0000000	-99.00000000	-99.00000000	0.09000000	-99.000
## 80	82	-99.0000000	-99.00000000	-99.00000000	-99.00000000	-99.000
## 81	83	0.4760000	-99.00000000	-99.00000000	0.37100000	-99.000
## 82	84	-99.0000000	-99.00000000	-99.00000000	0.20500000	-99.000
## 83	85	-99.0000000	-88.00000000	-88.00000000	0.03000000	-99.000
## 84	86	-99.0000000	-99.00000000	-99.00000000	0.06500000	-99.000
## 85	87	-99.0000000	-99.00000000	-99.00000000	-99.00000000	-99.000
## 86	88	-99.0000000	-99.00000000	0.06000000	0.22000000	-99.000
## 87	89	-99.0000000	-99.00000000	-0.02000000	0.06000000	-99.000
## 88	90	-99.0000000	-99.00000000	0.08666667	-99.00000000	-99.000
## 89	91	-99.0000000	-99.00000000	0.15666667	-99.00000000	-99.000
## 90	92	-99.0000000	-99.00000000	-99.00000000	0.13000000	-99.000
## 91	93	-99.0000000	-99.00000000	-99.00000000	0.09500000	-99.000
## 92	94	0.1600000	-99.00000000	0.17000000	-99.00000000	-99.000
## 93	95	0.0500000	-99.00000000	0.03000000	-99.00000000	-99.000
## 94	96	0.1900000	-99.00000000	-99.00000000	0.19000000	-99.000
## 95	97	-99.0000000	-99.00000000	-99.00000000	0.11966667	-99.000
## 96	98	-99.0000000	-99.00000000	-99.00000000	0.08433333	-99.000
## 97	99	-99.0000000	-99.00000000	-99.00000000	0.19000000	-99.000

## 98	100	-99.0000000	-99.0000000	0.19000000	-99.0000000	-99.000
## 99	101	-99.0000000	-99.0000000	-99.0000000	0.21000000	-99.000
## 100	102	-99.0000000	-99.0000000	-99.0000000	-0.02800000	-99.000
## 101	103	-99.0000000	-99.0000000	-99.0000000	0.34800000	-99.000
## 102	104	-99.0000000	-99.0000000	-99.0000000	-99.0000000	-99.000
## 103	105	0.5800000	-99.0000000	-99.0000000	0.17000000	-99.000
## 104	106	-99.0000000	-99.0000000	-99.0000000	-99.0000000	-99.000
## 105	107	-99.0000000	-99.0000000	-99.0000000	0.19500000	-99.000
## 106	108	-99.0000000	-99.0000000	-99.0000000	-99.0000000	-99.000
## 107	109	-88.0000000	0.17000000	-99.0000000	-99.0000000	0.480
## 108	110	-99.0000000	0.10000000	-99.0000000	-99.0000000	-99.000
## 109	111	0.0880000	-99.0000000	-99.0000000	-99.0000000	-99.000
## 110	112	0.1800000	-99.0000000	-99.0000000	0.33000000	-99.000
## 111	113	0.1250000	-99.0000000	-99.0000000	0.09500000	-99.000
## 112	114	-99.0000000	-99.0000000	-99.0000000	0.17500000	-99.000
## 113	115	0.0675000	-99.0000000	-99.0000000	0.18350000	-99.000
## 114	116	0.1460000	-99.0000000	-99.0000000	-99.0000000	-99.000
## 115	117	-99.0000000	-99.0000000	-99.0000000	0.12666667	-99.000
## 116	118	-99.0000000	-99.0000000	0.14666667	-99.0000000	-99.000
## 117	119	0.1500000	-99.0000000	-99.0000000	-99.0000000	-99.000
## 118	120	-99.0000000	-99.0000000	0.27000000	-99.0000000	-99.000
## 119	121	-99.0000000	-99.0000000	-99.0000000	0.46100000	-99.000
## 120	122	-99.0000000	-99.0000000	-99.0000000	0.39900000	-99.000
## 121	123	-99.0000000	-0.05333333	-0.12000000	-99.0000000	-99.000
## 122	124	-99.0000000	0.03666667	0.09666667	-99.0000000	-99.000
## 123	125	-99.0000000	-99.0000000	-99.0000000	0.30000000	-99.000
## 124	128	0.2200000	-99.0000000	-99.0000000	-99.0000000	-99.000
## 125	129	-99.0000000	-99.0000000	-99.0000000	0.13500000	-99.000
## 126	130	-99.0000000	-99.0000000	-99.0000000	-0.00300000	-99.000
## 127	131	0.2200000	-99.0000000	-99.0000000	-99.0000000	-99.000
## 128	132	-99.0000000	-99.0000000	-99.0000000	-99.0000000	-99.000
## 129	133	-99.0000000	-99.0000000	-99.0000000	0.26000000	-99.000
## 130	134	-99.0000000	-99.0000000	-99.0000000	0.18700000	-99.000
## 131	135	-99.0000000	-99.0000000	-99.0000000	-0.03833333	-99.000
## 132	136	-99.0000000	-99.0000000	-99.0000000	0.21000000	-99.000
## 133	137	-99.0000000	-99.0000000	-0.00500000	-99.0000000	-99.000
## 134	138	-99.0000000	-99.0000000	0.07000000	-99.0000000	-99.000
## 135	139	-99.0000000	-99.0000000	0.04500000	-99.0000000	-99.000
## 136	140	-99.0000000	-99.0000000	0.07500000	-99.0000000	-99.000
## 137	141	0.2250000	-99.0000000	-99.0000000	0.24000000	-99.000
## 138	142	-99.0000000	-99.0000000	-99.0000000	-99.0000000	-88.000
## 139	143	0.1500000	-99.0000000	-99.0000000	0.15000000	-99.000
## 140	144	0.3400000	-99.0000000	-99.0000000	0.13000000	-99.000
## 141	145	0.0000000	-99.0000000	-99.0000000	-0.08000000	-99.000
## 142	146	-99.0000000	-99.0000000	-99.0000000	0.26000000	-99.000
## 143	147	0.0750000	-99.0000000	-99.0000000	-99.0000000	-99.000
## 144	148	-99.0000000	-99.0000000	-99.0000000	0.14000000	-99.000
## 145	149	-99.0000000	-99.0000000	-99.0000000	0.24000000	-99.000
## 146	150	-99.0000000	-99.0000000	-99.0000000	-99.0000000	-99.000
## 147	151	0.1775000	0.21000000	-99.0000000	0.20500000	0.480
## 148	152	0.2525000	0.20250000	-99.0000000	0.19250000	0.360
## 149	153	-99.0000000	-99.0000000	-99.0000000	0.16000000	-99.000
## 150	156	0.0600000	0.15000000	-99.0000000	-99.0000000	0.410
## 151	157	0.1900000	0.15000000	-99.0000000	-99.0000000	0.300

##	152	158	-99.0000000	-99.0000000	-99.0000000	0.1030000	-99.000			
##	153	159	-99.0000000	-99.0000000	-99.0000000	-99.0000000	-99.000			
##	154	160	-99.0000000	-99.0000000	-99.0000000	-0.0100000	-99.000			
##	155	161	-99.0000000	-99.0000000	-99.0000000	0.2000000	-99.000			
##	156	162	-99.0000000	-99.0000000	-99.0000000	0.0600000	-99.000			
##	157	163	-0.0100000	-99.0000000	0.0200000	0.1000000	-99.000			
##	158	164	-99.0000000	-99.0000000	0.2490000	-99.0000000	-99.000			
##	159	165	-99.0000000	-99.0000000	-99.0000000	0.2000000	-99.000			
##	160	166	-99.0000000	-99.0000000	-99.0000000	0.4806667	-99.000			
##	161	167	-0.2110000	-99.0000000	-99.0000000	-0.2350000	-99.000			
##	162	168	-99.0000000	-99.0000000	-99.0000000	-0.0925000	-99.000			
##	163	169	-99.0000000	-99.0000000	-99.0000000	0.2250000	-99.000			
##	164	170	-99.0000000	-99.0000000	-99.0000000	0.2225000	-99.000			
##	165	171	0.0700000	-99.0000000	-99.0000000	-99.0000000	-99.000			
##	166	172	-99.0000000	-99.0000000	-99.0000000	-99.0000000	-99.000			
##	167	173	-99.0000000	-99.0000000	-99.0000000	0.1900000	-99.000			
##	168	174	-99.0000000	-99.0000000	-99.0000000	0.1366667	-99.000			
##	169	175	-99.0000000	-99.0000000	-99.0000000	0.4800000	-99.000			
##	170	176	-99.0000000	-99.0000000	-99.0000000	-0.1200000	-99.000			
##	171	177	-99.0000000	-99.0000000	0.2300000	0.1700000	-99.000			
##	172	178	-99.0000000	-99.0000000	0.1300000	0.2300000	-99.000			
##	173	179	-99.0000000	-99.0000000	-99.0000000	-99.0000000	-99.000			
##	174	180	-99.0000000	-99.0000000	-99.0000000	-99.0000000	-99.000			
##	175	181	0.1050000	-99.0000000	-99.0000000	0.2200000	-99.000			
##	176	182	-99.0000000	-99.0000000	-99.0000000	0.1740000	-99.000			
##		Zelle_6	Zelle_7	Zelle_8	Zelle_9	Zelle_10	Fallzahl	ES	WR	HDI
##	1	-99.00	-99.0000	-99.000	-99.000	-99.000	219	1	86.5	0.788
##	2	-99.00	-99.0000	-99.000	-99.000	-99.000	205	1	86.5	0.788
##	3	-99.00	-99.0000	-99.000	-99.000	-99.000	224	2	86.5	0.792
##	4	-99.00	-99.0000	-99.000	-99.000	-99.000	487	2	86.5	0.792
##	5	-99.00	-99.0000	-99.000	-99.000	0.612	499	5	86.5	0.794
##	6	-99.00	-99.0000	-99.000	-99.000	-99.000	224	2	94.1	0.673
##	7	-99.00	-99.0000	-99.000	-99.000	0.499	214	3	94.1	0.681
##	8	-99.00	-99.0000	-99.000	-99.000	0.572	363	3	94.1	0.681
##	9	-99.00	-99.0000	-99.000	-99.000	0.546	332	3	86.5	0.796
##	10	-99.00	-99.0000	-99.000	-99.000	0.618	342	3	86.5	0.796
##	11	-99.00	-99.0000	-99.000	-99.000	-99.000	242	1	86.5	0.796
##	12	-99.00	-99.0000	-99.000	-99.000	-99.000	235	1	86.5	0.796
##	13	-99.00	-99.0000	-99.000	-99.000	-99.000	251	1	86.5	0.796
##	14	-99.00	-99.0000	-99.000	-99.000	-99.000	258	1	86.5	0.796
##	15	-99.00	-99.0000	-99.000	-99.000	-99.000	226	1	86.5	0.796
##	16	-99.00	-99.0000	-99.000	-99.000	-99.000	208	1	86.5	0.796
##	17	-99.00	-99.0000	-99.000	-99.000	-99.000	113	2	98.9	0.830
##	18	-99.00	-99.0000	-99.000	-99.000	-99.000	133	2	98.9	0.830
##	19	-99.00	-99.0000	-99.000	-99.000	-99.000	111	2	52.9	0.763
##	20	-99.00	-99.0000	-99.000	-99.000	-99.000	128	2	52.9	0.763
##	21	-99.00	-99.0000	-99.000	-99.000	-99.000	194	1	98.9	0.855
##	22	-99.00	-99.0000	-99.000	-99.000	-99.000	178	1	98.9	0.855
##	23	-99.00	-99.0000	-99.000	-99.000	-99.000	215	2	52.9	0.763
##	24	-99.00	-99.0000	-99.000	-99.000	-99.000	261	2	52.9	0.763
##	25	-99.00	-99.0000	-99.000	-99.000	-99.000	673	1	86.5	0.794
##	26	-99.00	-99.0000	-99.000	-99.000	-99.000	1264	1	86.5	0.794
##	27	-99.00	-99.0000	-99.000	-99.000	-99.000	452	1	87.5	0.674
##	28	-99.00	-99.0000	-99.000	-99.000	-99.000	557	1	87.5	0.674

## 29	-99.00	-99.0000	-99.000	-99.000	-99.000	460	1	86.5	0.787
## 30	-99.00	-99.0000	-99.000	-99.000	-99.000	274	1	47.0	0.892
## 31	-99.00	-99.0000	-88.000	0.512	0.453	234	6	86.5	0.792
## 32	-99.00	-99.0000	-99.000	-99.000	-99.000	158	2	40.4	0.915
## 33	-99.00	-99.0000	-99.000	-99.000	-99.000	192	2	86.5	0.796
## 34	-99.00	-99.0000	-99.000	0.620	-99.000	271	3	86.5	0.788
## 35	-99.00	-99.0000	-99.000	0.180	-99.000	205	3	20.7	0.895
## 36	-99.00	-99.0000	-99.000	0.420	-99.000	109	3	90.7	0.697
## 37	-99.00	-99.0000	-99.000	0.366	-99.000	135	3	90.7	0.697
## 38	-99.00	-99.0000	0.367	0.059	0.117	200	9	67.1	0.615
## 39	-99.00	-99.0000	0.352	0.135	0.159	200	9	67.1	0.615
## 40	-99.00	-99.0000	-99.000	-99.000	-99.000	2208	1	40.4	0.918
## 41	-99.00	-99.0000	-99.000	-99.000	-99.000	200	2	14.1	0.939
## 42	-99.00	-99.0000	-99.000	-99.000	-99.000	208	3	45.7	0.852
## 43	-99.00	-99.0000	-99.000	-99.000	0.430	474	9	78.2	0.774
## 44	-99.00	-99.0000	-99.000	-99.000	-99.000	226	1	56.9	0.860
## 45	-99.00	-99.0000	-99.000	-99.000	-99.000	481	7	40.4	0.916
## 46	-99.00	-99.0000	-99.000	-99.000	-99.000	453	1	47.0	0.890
## 47	-99.00	-99.0000	-99.000	-99.000	-99.000	199	1	40.4	0.920
## 48	-99.00	-99.0000	-99.000	-99.000	0.590	267	5	40.4	0.918
## 49	-99.00	-99.0000	0.390	0.430	0.420	1401	3	52.9	0.766
## 50	-99.00	-99.0000	-99.000	-99.000	-99.000	88	3	31.8	0.864
## 51	-99.00	-99.0000	-99.000	-99.000	-99.000	1003	1	84.8	0.783
## 52	-99.00	0.1400	-99.000	-99.000	-99.000	247	1	40.4	0.913
## 53	-99.00	-99.0000	-99.000	-99.000	-99.000	492	1	56.9	0.892
## 54	-99.00	-99.0000	-99.000	-99.000	-99.000	50	1	40.4	0.907
## 55	-99.00	-99.0000	-99.000	-99.000	-99.000	941	3	86.5	0.787
## 56	-99.00	-99.0000	-99.000	-99.000	-99.000	193	1	40.4	0.920
## 57	-99.00	-99.0000	-99.000	-99.000	-99.000	320	1	56.9	0.887
## 58	-99.00	-99.0000	0.570	0.340	0.410	362	3	85.9	0.679
## 59	-99.00	-99.0000	-99.000	-99.000	0.377	1024	1	40.4	0.887
## 60	-99.00	-99.0000	-99.000	-99.000	-99.000	373	1	56.9	0.889
## 61	-99.00	-99.0000	-99.000	-99.000	-99.000	619	1	40.4	0.920
## 62	-99.00	-99.0000	-99.000	-99.000	-99.000	191	3	13.1	0.912
## 63	-99.00	-99.0000	-99.000	-99.000	-99.000	150	3	56.9	0.884
## 64	-99.00	0.2000	-99.000	-99.000	-99.000	4128	3	40.4	0.881
## 65	-99.00	-99.0000	-99.000	-99.000	-99.000	1118	1	56.9	0.895
## 66	-99.00	-99.0000	-88.000	-99.000	-99.000	450	7	40.4	0.889
## 67	-99.00	0.0700	-99.000	-99.000	-99.000	324	3	14.1	0.910
## 68	-99.00	-99.0000	-99.000	-99.000	-99.000	130	1	47.0	0.898
## 69	-99.00	-99.0000	-99.000	-99.000	-99.000	1245	2	31.8	0.898
## 70	-99.00	-99.0000	-99.000	-99.000	-99.000	207	1	-999.0	0.884
## 71	-99.00	-99.0000	-99.000	-99.000	-88.000	472	11	-999.0	0.871
## 72	-99.00	-99.0000	-99.000	-99.000	-99.000	472	1	40.4	0.915
## 73	-99.00	-99.0000	-99.000	-99.000	-99.000	2432	1	40.4	0.905
## 74	-99.00	-99.0000	-99.000	-99.000	-99.000	637	2	40.4	0.916
## 75	-99.00	-99.0000	-88.000	-88.000	-88.000	119	9	47.0	0.907
## 76	-99.00	-99.0000	-99.000	-99.000	-99.000	120	1	56.9	0.884
## 77	-99.00	0.3400	-99.000	-99.000	-99.000	249	3	56.9	0.889
## 78	-99.00	0.4700	-99.000	-99.000	-99.000	93	3	56.9	0.889
## 79	-99.00	-99.0000	-99.000	-99.000	-99.000	397	3	55.9	0.860
## 80	-99.00	0.2300	-99.000	-99.000	-99.000	622	1	40.4	0.892
## 81	-99.00	0.3770	-99.000	-99.000	-99.000	251	3	47.0	0.901
## 82	-99.00	-99.0000	-99.000	-99.000	-99.000	312	2	-999.0	0.813

## 83	-99.00	-99.0000	-88.000	0.360	0.070	32	6	31.8	0.867
## 84	-99.00	-99.0000	-99.000	-99.000	-99.000	200	2	47.0	0.905
## 85	0.34	0.5600	-99.000	-99.000	0.560	200	3	47.0	0.901
## 86	-99.00	-99.0000	-99.000	-99.000	-0.440	249	3	17.1	0.821
## 87	-99.00	-99.0000	-99.000	-99.000	0.480	274	3	-999.0	0.829
## 88	-99.00	-99.0000	-99.000	-99.000	-99.000	274	3	40.4	0.910
## 89	-99.00	-99.0000	-99.000	-99.000	-99.000	127	3	40.4	0.910
## 90	-99.00	-99.0000	-99.000	-99.000	-99.000	177	1	40.4	0.913
## 91	-99.00	-99.0000	-99.000	-99.000	-99.000	20000	2	11.0	0.892
## 92	-99.00	-99.0000	0.100	-99.000	-99.000	289	3	19.2	0.921
## 93	-99.00	-99.0000	0.180	-99.000	-99.000	274	3	19.2	0.921
## 94	-99.00	0.4700	-99.000	-99.000	-99.000	284	3	40.4	0.907
## 95	-99.00	-99.0000	-99.000	-99.000	-99.000	391	3	75.6	0.579
## 96	-99.00	-99.0000	-99.000	-99.000	-99.000	902	3	75.6	0.579
## 97	-99.00	-99.0000	-99.000	-99.000	-99.000	527	1	40.4	0.913
## 98	-99.00	-99.0000	-99.000	-99.000	-99.000	2102	1	55.9	0.860
## 99	-99.00	-99.0000	-99.000	-99.000	-99.000	255	1	47.0	0.901
## 100	-99.00	-99.0000	-99.000	-99.000	-99.000	215	2	47.0	0.905
## 101	-99.00	-99.0000	-99.000	-99.000	-99.000	292	2	78.2	0.755
## 102	-99.00	-99.0000	-99.000	-99.000	0.510	320	1	78.2	0.774
## 103	-99.00	0.2000	-99.000	-99.000	-99.000	59	3	47.0	0.901
## 104	-99.00	0.5000	-99.000	-99.000	-99.000	210	1	78.2	0.774
## 105	-99.00	-99.0000	-99.000	-99.000	-99.000	615	4	47.0	0.905
## 106	-99.00	0.3600	-99.000	-99.000	-99.000	470	1	47.0	0.889
## 107	-99.00	-99.0000	-99.000	-99.000	-99.000	129	3	40.4	0.918
## 108	-99.00	-99.0000	-99.000	-99.000	-99.000	318	4	47.0	0.866
## 109	-99.00	-99.0000	-99.000	-99.000	-99.000	247	1	56.9	0.887
## 110	-99.00	0.3300	-99.000	-99.000	-99.000	353	3	56.9	0.892
## 111	-99.00	0.2900	-99.000	-99.000	-99.000	425	5	47.0	0.907
## 112	-99.00	-99.0000	-99.000	-99.000	-99.000	1581	2	45.7	0.822
## 113	-99.00	0.3330	-99.000	-99.000	-99.000	145	5	47.0	0.898
## 114	-99.00	-99.0000	-99.000	-99.000	-99.000	147	1	47.0	0.907
## 115	-99.00	-99.0000	-99.000	-99.000	-99.000	363	3	-999.0	0.859
## 116	-99.00	-99.0000	-99.000	-99.000	-99.000	205	3	55.9	0.881
## 117	-99.00	-99.0000	-99.000	-99.000	-99.000	188	1	40.4	0.918
## 118	-99.00	-99.0000	-99.000	-99.000	-99.000	100	1	-999.0	0.902
## 119	-99.00	-99.0000	-99.000	-99.000	-99.000	94	1	67.1	0.556
## 120	-99.00	-99.0000	-99.000	-99.000	-99.000	60	1	67.1	0.556
## 121	-99.00	-99.0000	0.210	-99.000	-99.000	172	7	20.7	0.866
## 122	-99.00	-99.0000	0.100	-99.000	-99.000	188	7	20.7	0.866
## 123	-99.00	-99.0000	-99.000	-99.000	-99.000	227	2	-999.0	0.837
## 124	-99.00	-99.0000	-99.000	-99.000	-99.000	143	2	40.4	0.920
## 125	-99.00	-99.0000	-99.000	-99.000	-99.000	1596	2	10.8	0.840
## 126	-99.00	-99.0000	-99.000	-99.000	-99.000	100	2	-999.0	0.910
## 127	-99.00	-99.0000	-99.000	-99.000	-99.000	121	1	40.4	0.920
## 128	-99.00	-99.0000	-99.000	0.162	-99.000	235	1	40.4	0.910
## 129	-99.00	-99.0000	-99.000	-99.000	-99.000	268	1	12.1	0.917
## 130	-99.00	-99.0000	-99.000	-99.000	-99.000	40	1	86.5	0.792
## 131	-99.00	-99.0000	-99.000	-99.000	-99.000	1486	3	18.7	0.915
## 132	-99.00	-99.0000	-99.000	-99.000	-99.000	169	1	47.0	0.898
## 133	-99.00	-99.0000	-99.000	-99.000	-99.000	1406	2	55.9	0.866
## 134	-99.00	-99.0000	-99.000	-99.000	-99.000	2922	2	55.9	0.866
## 135	-99.00	-99.0000	-99.000	-99.000	-99.000	2260	2	55.9	0.866
## 136	-99.00	-99.0000	-99.000	-99.000	-99.000	14024	2	55.9	0.866

```

## 137 -99.00  0.3700 -99.000 -99.000 -99.000      200  5  47.0 0.907
## 138 -99.00  0.0600 -99.000  0.421 -99.000      127  3  47.0 0.905
## 139 -99.00  0.1200 -99.000 -99.000 -99.000     1382  5  47.0 0.898
## 140 -99.00  0.3500 -99.000 -99.000 -99.000       30  3  56.9 0.892
## 141 -99.00  0.5400 -99.000 -99.000 -99.000       30  3  56.9 0.895
## 142 -99.00 -99.0000 -99.000 -99.000 -99.000      167  3  40.4 0.918
## 143 -99.00 -99.0000 -99.000 -99.000 -99.000     454  4  47.0 0.907
## 144 -99.00 -99.0000 -99.000 -99.000 -99.000      167  1  40.4 0.915
## 145 -99.00 -99.0000 -99.000 -99.000 -99.000      200  2  40.4 0.907
## 146 -99.00  0.2010 -99.000 -99.000 -99.000       17  1  47.0 0.907
## 147 -99.00  0.6100 -99.000  0.650 -99.000      217 15  47.0 0.898
## 148 -99.00  0.4800 -99.000  0.610 -99.000      159 15  47.0 0.898
## 149 -99.00 -99.0000 -99.000 -99.000 -99.000     265  1  19.2 0.921
## 150 -99.00 -99.0000 -99.000 -99.000 -99.000     289  3  40.4 0.905
## 151 -99.00 -99.0000 -99.000 -99.000 -99.000     259  3  40.4 0.905
## 152 -99.00 -99.0000 -99.000 -99.000 -99.000     290  1  31.8 0.920
## 153 -99.00  0.5000 -99.000 -99.000 -99.000     210  1  78.2 0.918
## 154 -99.00 -99.0000 -99.000 -99.000 -99.000     254  4  40.4 0.910
## 155 -99.00 -99.0000 -99.000 -99.000 -99.000     508  1  47.0 0.907
## 156 -99.00 -99.0000 -99.000 -99.000 -99.000     284  4  40.4 0.910
## 157  0.05  0.2100 -99.000 -99.000  0.012     973  6  81.8 0.487
## 158 -99.00 -99.0000 -99.000 -99.000 -99.000     214  1  25.7 0.870
## 159 -99.00 -99.0000 -99.000 -99.000 -99.000    3173  1  90.7 0.737
## 160 -99.00 -99.0000 -99.000 -99.000 -99.000     224  3  10.7 0.884
## 161 -99.00  0.5045 -99.000 -99.000 -99.000     340  5  40.4 0.920
## 162 -99.00 -99.0000 -99.000 -99.000 -99.000     259  2  40.4 0.916
## 163 -99.00 -99.0000 -99.000 -99.000 -99.000     111  1 -999.0 0.910
## 164 -99.00 -99.0000 -99.000 -99.000 -99.000     100  4  47.0 0.905
## 165 -99.00 -99.0000 -99.000 -99.000 -99.000    1812  2   2.6 0.734
## 166 -99.00 -99.0000 -99.000  0.390 -99.000     533  1  40.4 0.920
## 167 -99.00 -99.0000 -99.000 -99.000 -99.000       38  3  40.4 0.915
## 168 -99.00 -99.0000 -99.000 -99.000 -99.000     104  3  40.4 0.915
## 169 -99.00 -99.0000 -99.000 -99.000 -99.000       42  1  40.4 0.910
## 170 -99.00 -99.0000 -99.000 -99.000 -99.000     558  4  40.4 0.915
## 171 -99.00 -99.0000 -99.000 -99.000  0.570     418  3  40.4 0.920
## 172 -99.00 -99.0000 -99.000 -99.000  0.550     965  3  40.4 0.920
## 173 -99.00  0.2100 -99.000 -99.000 -99.000       50  1  45.7 0.759
## 174 -99.00  0.2570 -99.000 -99.000 -99.000    93679  1  56.9 0.892
## 175 -99.00  0.4300 -99.000 -99.000 -99.000      215  5  47.0 0.901
## 176 -99.00 -99.0000 -99.000 -99.000 -99.000     522  5  47.0 0.892

```

```

##Missings setzen
dataset$Zelle_1[dataset$Zelle_1==88] <- NA
dataset$Zelle_2[dataset$Zelle_2==88] <- NA
dataset$Zelle_3[dataset$Zelle_3==88] <- NA
dataset$Zelle_4[dataset$Zelle_4==88] <- NA
dataset$Zelle_5[dataset$Zelle_5==88] <- NA
dataset$Zelle_6[dataset$Zelle_6==88] <- NA
dataset$Zelle_7[dataset$Zelle_7==88] <- NA
dataset$Zelle_8[dataset$Zelle_8==88] <- NA
dataset$Zelle_9[dataset$Zelle_9==88] <- NA
dataset$Zelle_10[dataset$Zelle_10==88] <- NA
dataset$Zelle_1[dataset$Zelle_1==99] <- NA
dataset$Zelle_2[dataset$Zelle_2==99] <- NA

```



```

dataset$Zelle_3[dataset$Zelle_3==99] <- NA
dataset$Zelle_4[dataset$Zelle_4==99] <- NA
dataset$Zelle_5[dataset$Zelle_5==99] <- NA
dataset$Zelle_6[dataset$Zelle_6==99] <- NA
dataset$Zelle_7[dataset$Zelle_7==99] <- NA
dataset$Zelle_8[dataset$Zelle_8==99] <- NA
dataset$Zelle_9[dataset$Zelle_9==99] <- NA
dataset$Zelle_10[dataset$Zelle_10==99] <- NA
dataset$WR[dataset$WR==999] <- NA

##### Correlation matrices #####

nvar <- 5
varnames <- c("Religiosit", "soziale", "Optimismus", "Selbstwert", "Lebenszufriedenheit")
labels <- list (varnames, varnames)

cormatrices <- list ()

for (i in 1:nrow(dataset)) {
  cormatrices [[i]]<-vec2symMat(as.matrix(dataset[i,2:11]),
                              diag = FALSE)
  dimnames(cormatrices[[i]])<-labels
}

#head(cormatrices)

##### OSMASEM #####

#Cor matrices in Data-Frame

my.df <- Cor2DataFrame(cormatrices, dataset$Fallzahl)
# my.df

## Add the standardized HDI (moderator) to the data
my.df$data <- data.frame(my.df$data, HDI_Stand=scale(dataset$HDI), check.names=FALSE)
#head(my.df$data)

## Display the pairwise no. of studies
#pattern.na(my.df, show.na=FALSE, type="osmasem")

#Modell in lavaan-Code

vollModell <- 'soziale ~ b31*Religiosit
Optimismus ~ b32*Religiosit
Selbstwert ~ b33*Religiosit
Lebenszufriedenheit ~ b34*Religiosit
Lebenszufriedenheit ~ b35*soziale

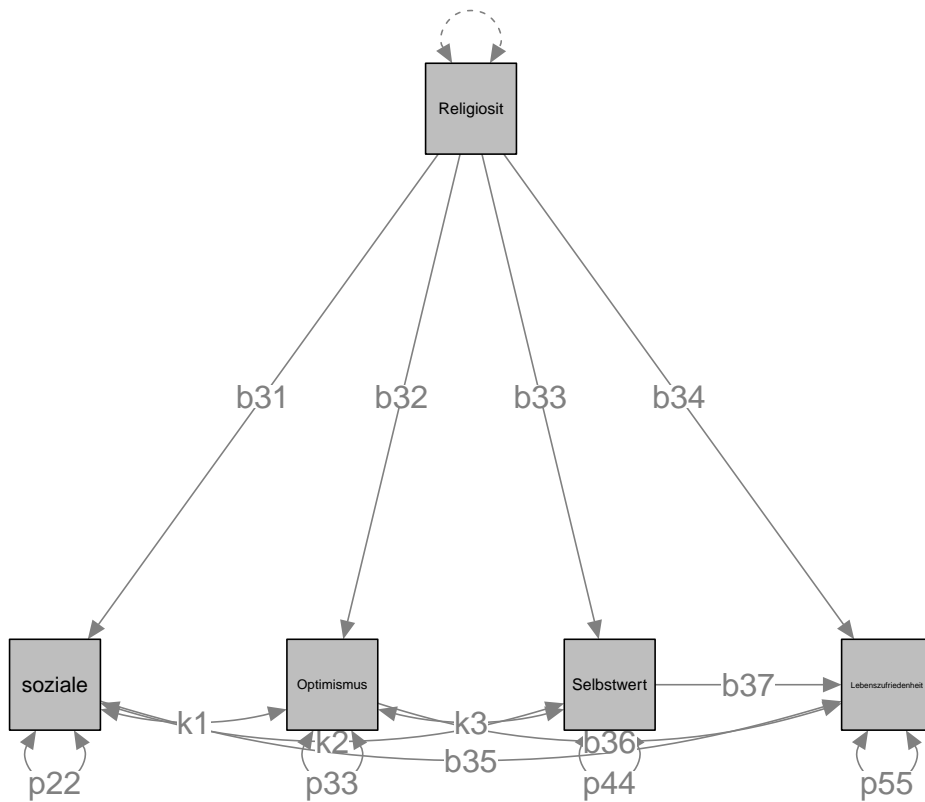
```

```

Lebenszufriedenheit ~ b36*Optimismus
Lebenszufriedenheit ~ b37*Selbstwert
soziale ~~ k1*Optimismus
soziale ~~ k2*Selbstwert
Optimismus ~~ k3*Selbstwert
Religiosit ~~ 1*Religiosit
soziale ~~ p22*soziale
Optimismus ~~ p33*Optimismus
Selbstwert ~~ p44*Selbstwert
Lebenszufriedenheit ~~p55*Lebenszufriedenheit

```

```
plot(vollModell, col="grey")
```



```
#Transform into RAM
```

```
RAM1 <- lavaan2RAM(vollModell, obs.variables=c("Religiosit", "soziale", "Optimismus",
"Selbstwert", "Lebenszufriedenheit"))
```

```
RAM1
```

```

## $A
##           Religiosit soziale Optimismus Selbstwert
## Religiosit      "0"      "0"      "0"      "0"
## soziale         "0*b31"    "0"      "0"      "0"
## Optimismus      "0*b32"    "0"      "0"      "0"
## Selbstwert      "0*b33"    "0"      "0"      "0"
## Lebenszufriedenheit "0*b34"  "0*b35" "0*b36"  "0*b37"
##
##           Lebenszufriedenheit
## Religiosit      "0"
## soziale         "0"

```

```

## Optimismus "0"
## Selbstwert "0"
## Lebenszufriedenheit "0"
##
## $S
##
## Religiösit soziale Optimismus Selbstwert
## Religiösit "1" "0" "0" "0"
## soziale "0" "0*p22" "0*k1" "0*k2"
## Optimismus "0" "0*k1" "0*p33" "0*k3"
## Selbstwert "0" "0*k2" "0*k3" "0*p44"
## Lebenszufriedenheit "0" "0" "0" "0"
##
## Lebenszufriedenheit
## Religiösit "0"
## soziale "0"
## Optimismus "0"
## Selbstwert "0"
## Lebenszufriedenheit "0*p55"
##
## $F
##
## Religiösit soziale Optimismus Selbstwert
## Religiösit 1 0 0 0
## soziale 0 1 0 0
## Optimismus 0 0 1 0
## Selbstwert 0 0 0 1
## Lebenszufriedenheit 0 0 0 0
##
## Lebenszufriedenheit
## Religiösit 0
## soziale 0
## Optimismus 0
## Selbstwert 0
## Lebenszufriedenheit 1
##
## $M
## Religiösit soziale Optimismus Selbstwert Lebenszufriedenheit
## 1 0 0 0 0 0
## Create the model implied correlation structure with implicit diagonal constraints
M0 <- create.vechSR(A0=RAM1$A, S0=RAM1$S)

## Create the heterogeneity variance-covariance matrix
T0 <- create.Tau2(RAM=RAM1, RE.type="Diag")

## Define an indirect effect b33*b37
ind <- mxAlgebra(b33*b37, name="ind")

## Fit the OSMASEM with the standard errors
fit0 <- osmasem(model.name="Just identified model", Mmatrix=M0,
               Tmatrix=T0, data=my.df,
               intervals.type = "z", mxModel.Args = list(ind))

## Running Just identified model with 20 parameters
## SE of the indirect effect
mxSE("ind", fit0$mx.fit)

## Treating first argument as character named entity in the model

```

```

##           [,1]
## [1,] 0.01128043

## Fit the OSMASEM with the LBCI
fit1 <- osmasem(model.name="Just identified model", Mmatrix=M0,
               Tmatrix=T0, data=my.df,
               intervals.type = "LB",
               mxModel.Args = list(ind, mxCI(c("ind"))))

## Running Just identified model with 20 parameters
summary(fit1)

## Summary of Just identified model
##
## free parameters:
##      name matrix          row      col  Estimate  Std.Error A
##  1   b31   A0          soziale Religiosit  0.1288149  0.01989682
##  2   b32   A0      Optimismus Religiosit  0.1495283  0.02181795
##  3   b33   A0      Selbstwert Religiosit  0.1470100  0.02197087
##  4   b34   A0 Lebenszufriedenheit Religiosit  0.1069707  0.01723578
##  5   b35   A0 Lebenszufriedenheit soziale  0.1893850  0.04872741
##  6   b36   A0 Lebenszufriedenheit Optimismus  0.2069733  0.06430131
##  7   b37   A0 Lebenszufriedenheit Selbstwert  0.2799252  0.06540052
##  8    k1    S0      Optimismus soziale  0.3615729  0.02321610
##  9    k2    S0      Selbstwert soziale  0.1541273  0.09297849
## 10   k3    S0      Selbstwert Optimismus  0.2712075  0.05526266
## 11 Tau1_1 vecTau1          1          1 -2.3501430  0.18953418
## 12 Tau1_2 vecTau1          2          1 -2.5661434  0.26113276
## 13 Tau1_3 vecTau1          3          1 -2.1931135  0.15153358
## 14 Tau1_4 vecTau1          4          1 -2.1855957  0.08189767
## 15 Tau1_5 vecTau1          5          1 -4.5375835  8.75541287
## 16 Tau1_6 vecTau1          6          1 -2.1287527  0.60576713
## 17 Tau1_7 vecTau1          7          1 -2.0149229  0.16336376
## 18 Tau1_8 vecTau1          8          1 -1.9260674  0.28211673
## 19 Tau1_9 vecTau1          9          1 -1.8043253  0.20628716
## 20 Tau1_10 vecTau1         10          1 -1.3999478  0.16235555
##      z value      Pr(>|z|)
##  1   6.4741449  9.535039e-11
##  2   6.8534539  7.208678e-12
##  3   6.6911328  2.214495e-11
##  4   6.2063148  5.424148e-10
##  5   3.8866222  1.016488e-04
##  6   3.2188031  1.287269e-03
##  7   4.2801679  1.867524e-05
##  8  15.5742299  0.000000e+00
##  9   1.6576657  9.738496e-02
## 10   4.9076087  9.219356e-07
## 11 -12.3995735  0.000000e+00
## 12  -9.8269683  0.000000e+00
## 13 -14.4727892  0.000000e+00
## 14 -26.6869102  0.000000e+00
## 15  -0.5182604  6.042766e-01
## 16  -3.5141436  4.411743e-04
## 17 -12.3339649  0.000000e+00

```

```

## 18 -6.8272003 8.658851e-12
## 19 -8.7466679 0.000000e+00
## 20 -8.6227280 0.000000e+00
##
## confidence intervals:
##
##           lbound      estimate      ubound
## Just identified model.Amatrix[1,1] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[2,1] 8.930527e-02 0.1288149191 0.17012205
## Just identified model.Amatrix[3,1] 1.045969e-01 0.1495283371 0.19439114
## Just identified model.Amatrix[4,1] 1.029997e-01 0.1470100386 0.19172864
## Just identified model.Amatrix[5,1] 7.147314e-02 0.1069706846 0.13973277
## Just identified model.Amatrix[1,2] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[2,2] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[3,2] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[4,2] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[5,2]          NA 0.1893850133 0.30838635
## Just identified model.Amatrix[1,3] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[2,3] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[3,3] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[4,3] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[5,3] 1.286657e-01 0.2069732526 0.33553762
## Just identified model.Amatrix[1,4] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[2,4] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[3,4] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[4,4] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[5,4] 1.439525e-01 0.2799252181 0.41231890
## Just identified model.Amatrix[1,5] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[2,5] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[3,5] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[4,5] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Amatrix[5,5] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Smatrix[1,1] 1.000000e+00 1.0000000000 1.00000000
## Just identified model.Smatrix[2,1] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Smatrix[3,1] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Smatrix[4,1] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Smatrix[5,1] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Smatrix[1,2] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Smatrix[2,2] 9.710584e-01 0.9834067166 0.99202454
## Just identified model.Smatrix[3,2] 3.176014e-01 0.3615729454 0.42180710
## Just identified model.Smatrix[4,2] -1.494041e-01 0.1541272531 0.37536693
## Just identified model.Smatrix[5,2] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Smatrix[1,3] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Smatrix[2,3] 3.176014e-01 0.3615729454 0.42180710
## Just identified model.Smatrix[3,3] 9.622120e-01 0.9776412764 0.98905948
## Just identified model.Smatrix[4,3] 1.477348e-01 0.2712074973 0.39229665
## Just identified model.Smatrix[5,3] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Smatrix[1,4] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Smatrix[2,4] -1.493961e-01 0.1541272531 0.37536693
## Just identified model.Smatrix[3,4] 1.477348e-01 0.2712074973 0.39229665
## Just identified model.Smatrix[4,4] 9.632402e-01 0.9783880486 0.98939106
## Just identified model.Smatrix[5,4] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Smatrix[1,5] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Smatrix[2,5] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Smatrix[3,5] 0.000000e+00 0.0000000000 0.00000000

```



```

## Just identified model.Tau2[3,6] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[4,6] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[5,6] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[6,6] 8.831018e-04 0.0141575771 NA
## Just identified model.Tau2[7,6] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[8,6] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[9,6] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[10,6] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[1,7] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[2,7] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[3,7] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[4,7] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[5,7] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[6,7] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[7,7] 9.555675e-03 0.0177770725 0.03470559
## Just identified model.Tau2[8,7] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[9,7] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[10,7] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[1,8] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[2,8] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[3,8] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[4,8] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[5,8] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[6,8] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[7,8] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[8,8] 7.607225e-03 0.0212343568 0.07448647
## Just identified model.Tau2[9,8] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[10,8] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[1,9] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[2,9] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[3,9] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[4,9] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[5,9] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[6,9] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[7,9] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[8,9] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[9,9] 1.264822e-02 0.0270883758 0.06540091
## Just identified model.Tau2[10,9] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[1,10] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[2,10] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[3,10] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[4,10] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[5,10] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[6,10] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[7,10] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[8,10] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[9,10] 0.000000e+00 0.0000000000 0.00000000
## Just identified model.Tau2[10,10] 3.380650e-02 0.0608164160 0.12227302
## Just identified model.ind[1,1] 2.041870e-02 0.0411518171 0.06641058
##
## note
## Just identified model.Amatrix[1,1] !!!
## Just identified model.Amatrix[2,1]
## Just identified model.Amatrix[3,1]
## Just identified model.Amatrix[4,1]

```

```

## Just identified model.Amatrix[5,1]
## Just identified model.Amatrix[1,2]   !!!
## Just identified model.Amatrix[2,2]   !!!
## Just identified model.Amatrix[3,2]   !!!
## Just identified model.Amatrix[4,2]   !!!
## Just identified model.Amatrix[5,2]   !!!
## Just identified model.Amatrix[1,3]   !!!
## Just identified model.Amatrix[2,3]   !!!
## Just identified model.Amatrix[3,3]   !!!
## Just identified model.Amatrix[4,3]   !!!
## Just identified model.Amatrix[5,3]
## Just identified model.Amatrix[1,4]   !!!
## Just identified model.Amatrix[2,4]   !!!
## Just identified model.Amatrix[3,4]   !!!
## Just identified model.Amatrix[4,4]   !!!
## Just identified model.Amatrix[5,4]
## Just identified model.Amatrix[1,5]   !!!
## Just identified model.Amatrix[2,5]   !!!
## Just identified model.Amatrix[3,5]   !!!
## Just identified model.Amatrix[4,5]   !!!
## Just identified model.Amatrix[5,5]   !!!
## Just identified model.Smatrix[1,1]   !!!
## Just identified model.Smatrix[2,1]   !!!
## Just identified model.Smatrix[3,1]   !!!
## Just identified model.Smatrix[4,1]   !!!
## Just identified model.Smatrix[5,1]   !!!
## Just identified model.Smatrix[1,2]   !!!
## Just identified model.Smatrix[2,2]
## Just identified model.Smatrix[3,2]
## Just identified model.Smatrix[4,2]
## Just identified model.Smatrix[5,2]   !!!
## Just identified model.Smatrix[1,3]   !!!
## Just identified model.Smatrix[2,3]
## Just identified model.Smatrix[3,3]
## Just identified model.Smatrix[4,3]
## Just identified model.Smatrix[5,3]   !!!
## Just identified model.Smatrix[1,4]   !!!
## Just identified model.Smatrix[2,4]
## Just identified model.Smatrix[3,4]
## Just identified model.Smatrix[4,4]
## Just identified model.Smatrix[5,4]   !!!
## Just identified model.Smatrix[1,5]   !!!
## Just identified model.Smatrix[2,5]   !!!
## Just identified model.Smatrix[3,5]   !!!
## Just identified model.Smatrix[4,5]   !!!
## Just identified model.Smatrix[5,5]
## Just identified model.Tau2[1,1]
## Just identified model.Tau2[2,1]     !!!
## Just identified model.Tau2[3,1]     !!!
## Just identified model.Tau2[4,1]     !!!
## Just identified model.Tau2[5,1]     !!!
## Just identified model.Tau2[6,1]     !!!
## Just identified model.Tau2[7,1]     !!!
## Just identified model.Tau2[8,1]     !!!

```



```
## Just identified model.Tau2[9,1]    !!!
## Just identified model.Tau2[10,1]   !!!
## Just identified model.Tau2[1,2]    !!!
## Just identified model.Tau2[2,2]
## Just identified model.Tau2[3,2]    !!!
## Just identified model.Tau2[4,2]    !!!
## Just identified model.Tau2[5,2]    !!!
## Just identified model.Tau2[6,2]    !!!
## Just identified model.Tau2[7,2]    !!!
## Just identified model.Tau2[8,2]    !!!
## Just identified model.Tau2[9,2]    !!!
## Just identified model.Tau2[10,2]   !!!
## Just identified model.Tau2[1,3]    !!!
## Just identified model.Tau2[2,3]    !!!
## Just identified model.Tau2[3,3]
## Just identified model.Tau2[4,3]    !!!
## Just identified model.Tau2[5,3]    !!!
## Just identified model.Tau2[6,3]    !!!
## Just identified model.Tau2[7,3]    !!!
## Just identified model.Tau2[8,3]    !!!
## Just identified model.Tau2[9,3]    !!!
## Just identified model.Tau2[10,3]   !!!
## Just identified model.Tau2[1,4]    !!!
## Just identified model.Tau2[2,4]    !!!
## Just identified model.Tau2[3,4]    !!!
## Just identified model.Tau2[4,4]
## Just identified model.Tau2[5,4]    !!!
## Just identified model.Tau2[6,4]    !!!
## Just identified model.Tau2[7,4]    !!!
## Just identified model.Tau2[8,4]    !!!
## Just identified model.Tau2[9,4]    !!!
## Just identified model.Tau2[10,4]   !!!
## Just identified model.Tau2[1,5]    !!!
## Just identified model.Tau2[2,5]    !!!
## Just identified model.Tau2[3,5]    !!!
## Just identified model.Tau2[4,5]    !!!
## Just identified model.Tau2[5,5]
## Just identified model.Tau2[6,5]    !!!
## Just identified model.Tau2[7,5]    !!!
## Just identified model.Tau2[8,5]    !!!
## Just identified model.Tau2[9,5]    !!!
## Just identified model.Tau2[10,5]   !!!
## Just identified model.Tau2[1,6]    !!!
## Just identified model.Tau2[2,6]    !!!
## Just identified model.Tau2[3,6]    !!!
## Just identified model.Tau2[4,6]    !!!
## Just identified model.Tau2[5,6]    !!!
## Just identified model.Tau2[6,6]    !!!
## Just identified model.Tau2[7,6]    !!!
## Just identified model.Tau2[8,6]    !!!
## Just identified model.Tau2[9,6]    !!!
## Just identified model.Tau2[10,6]   !!!
## Just identified model.Tau2[1,7]    !!!
## Just identified model.Tau2[2,7]    !!!
```

```

## Just identified model.Tau2[3,7]    !!!
## Just identified model.Tau2[4,7]    !!!
## Just identified model.Tau2[5,7]    !!!
## Just identified model.Tau2[6,7]    !!!
## Just identified model.Tau2[7,7]
## Just identified model.Tau2[8,7]    !!!
## Just identified model.Tau2[9,7]    !!!
## Just identified model.Tau2[10,7]   !!!
## Just identified model.Tau2[1,8]    !!!
## Just identified model.Tau2[2,8]    !!!
## Just identified model.Tau2[3,8]    !!!
## Just identified model.Tau2[4,8]    !!!
## Just identified model.Tau2[5,8]    !!!
## Just identified model.Tau2[6,8]    !!!
## Just identified model.Tau2[7,8]    !!!
## Just identified model.Tau2[8,8]
## Just identified model.Tau2[9,8]    !!!
## Just identified model.Tau2[10,8]   !!!
## Just identified model.Tau2[1,9]    !!!
## Just identified model.Tau2[2,9]    !!!
## Just identified model.Tau2[3,9]    !!!
## Just identified model.Tau2[4,9]    !!!
## Just identified model.Tau2[5,9]    !!!
## Just identified model.Tau2[6,9]    !!!
## Just identified model.Tau2[7,9]    !!!
## Just identified model.Tau2[8,9]    !!!
## Just identified model.Tau2[9,9]
## Just identified model.Tau2[10,9]   !!!
## Just identified model.Tau2[1,10]   !!!
## Just identified model.Tau2[2,10]   !!!
## Just identified model.Tau2[3,10]   !!!
## Just identified model.Tau2[4,10]   !!!
## Just identified model.Tau2[5,10]   !!!
## Just identified model.Tau2[6,10]   !!!
## Just identified model.Tau2[7,10]   !!!
## Just identified model.Tau2[8,10]   !!!
## Just identified model.Tau2[9,10]   !!!
## Just identified model.Tau2[10,10]
## Just identified model.ind[1,1]
## To investigate missing CIs, run summary() again, with verbose=T, to see CI details.
##
## Model Statistics:
##      | Parameters | Degrees of Freedom | Fit (-2lnL units)
## Model:      20          273          -332.5045
## Saturated:  65          228           NA
## Independence: 20          273           NA
## Number of observations/statistics: 205483/293
##
## Information Criteria:
##      | df Penalty | Parameters Penalty | Sample-Size Adjusted
## AIC:   -878.5045      -292.50454      -292.5005
## BIC:   -3672.1459     -87.84217      -151.4031
## To get additional fit indices, see help(mxRefModels)
## timestamp: 2018-12-11 17:59:08

```

```
## Wall clock time: 838.8408 secs
## optimizer: SLSQP
## OpenMx version number: 2.11.5
## Need help? See help(mxSummary)
```

sessionInfo()

```
## R version 3.5.1 (2018-07-02)
## Platform: x86_64-pc-linux-gnu (64-bit)
## Running under: Ubuntu 18.04.1 LTS
##
## Matrix products: default
## BLAS: /opt/microsoft/ropen/3.5.1/lib64/R/lib/libRblas.so
## LAPACK: /opt/microsoft/ropen/3.5.1/lib64/R/lib/libRlapack.so
##
## locale:
## [1] LC_CTYPE=en_US.UTF-8      LC_NUMERIC=C
## [3] LC_TIME=en_US.UTF-8       LC_COLLATE=en_US.UTF-8
## [5] LC_MONETARY=en_US.UTF-8   LC_MESSAGES=en_US.UTF-8
## [7] LC_PAPER=en_US.UTF-8     LC_NAME=C
## [9] LC_ADDRESS=C              LC_TELEPHONE=C
## [11] LC_MEASUREMENT=en_US.UTF-8 LC_IDENTIFICATION=C
##
## attached base packages:
## [1] stats      graphics  grDevices  utils      datasets  methods   base
##
## other attached packages:
## [1] lavaan_0.6-3      semPlot_1.1      foreign_0.8-71
## [4] metaSEM_1.2.0    OpenMx_2.11.5    RevoUtils_11.0.1
## [7] RevoUtilsMath_11.0.0
##
## loaded via a namespace (and not attached):
## [1] nlme_3.1-137      RColorBrewer_1.1-2  rprojroot_1.3-2
## [4] mi_1.0            tools_3.5.1        backports_1.1.2
## [7] R6_2.3.0         d3Network_0.5.2.1  rpart_4.1-13
## [10] Hmisc_4.1-1      lazyeval_0.2.1     colorspace_1.3-2
## [13] nnet_7.3-12      tidyselect_0.2.5   gridExtra_2.3
## [16] mnormt_1.5-5     compiler_3.5.1     qgraph_1.5
## [19] fdrtool_1.2.15   htmlTable_1.12     network_1.13.0.1
## [22] scales_1.0.0     checkmate_1.8.5    mvtnorm_1.0-8
## [25] psych_1.8.10     pbapply_1.3-4      sem_3.1-9
## [28] stringr_1.3.1    digest_0.6.18      pbivnorm_0.6.0
## [31] minqa_1.2.4      rmarkdown_1.10     base64enc_0.1-3
## [34] jpeg_0.1-8       pkgconfig_2.0.2    htmltools_0.3.6
## [37] lme4_1.1-19      lisrelToR_0.1.4    htmlwidgets_1.3
## [40] rlang_0.3.0.1    huge_1.2.7         rstudioapi_0.8
## [43] bindr_0.1.1      gtools_3.8.1       statnet.common_4.1.4
## [46] acepack_1.4.1    dplyr_0.7.8        zip_1.0.0
## [49] magrittr_1.5     Formula_1.2-3      Matrix_1.2-15
## [52] Rcpp_1.0.0       munsell_0.5.0     abind_1.4-5
## [55] rockchalk_1.8.129 whisker_0.3-2     stringi_1.2.4
## [58] yaml_2.2.0       carData_3.0-2     MASS_7.3-51.1
## [61] plyr_1.8.4       matrixcalc_1.0-3   grid_3.5.1
## [64] parallel_3.5.1  crayon_1.3.4      lattice_0.20-38
## [67] kutils_1.45      splines_3.5.1     sna_2.4
```

```
## [70] knitr_1.20          pillar_1.3.0          igraph_1.2.2
## [73] rjson_0.2.20          boot_1.3-20          corpcor_1.6.9
## [76] BDgraph_2.53          reshape2_1.4.3       stats4_3.5.1
## [79] XML_3.98-1.16         glue_1.3.0           evaluate_0.12
## [82] latticeExtra_0.6-28  data.table_1.11.8    png_0.1-7
## [85] nloptr_1.2.1          gtable_0.2.0         purrr_0.2.5
## [88] assertthat_0.2.0     ggplot2_3.1.0        openxlsx_4.1.0
## [91] xtable_1.8-3          semTools_0.5-1       coda_0.19-2
## [94] glasso_1.10           survival_2.43-1      tibble_1.4.2
## [97] arm_1.10-1            ggm_2.3              ellipse_0.4.1
## [100] bindrcpp_0.2.2       cluster_2.0.7-1
```