**Structural equation modeling**

|  |  |
| --- | --- |
|  | model='knowledge =~ general+symptoms+treatmt |
|  | empathy =~ cognitiv+emotion+disposit+attitude |
|  | intervention =~ classrm+instruct |
|  | intervention ~ b\*empathy + c\*knowledge |
|  | empathy ~ a\*knowledge |
|  | indirect effect:=a\*b |
|  | total effect:=c+(a\*b)' |
|  | fit=sem(model,data=ADHD) |

**head(ADHD)**

| **id** | **gender** | **age** | **general** | **symptoms** | **treatmt** | **cognitiv** | **emotion** | **disposit** | **attitude** | **classrm** | **instruct** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 1 | 4 | 8 | 7 | 3 | 30 | 21 | 49 | 31 | 26 | 25 |
| 3 | 2 | 2 | 7 | 7 | 6 | 28 | 29 | 51 | 29 | 26 | 25 |
| 4 | 2 | 2 | 8 | 8 | 5 | 26 | 28 | 39 | 28 | 28 | 31 |
| 5 | 1 | 1 | 8 | 5 | 6 | 32 | 34 | 52 | 35 | 32 | 26 |
| 6 | 1 | 2 | 3 | 5 | 3 | 19 | 23 | 38 | 23 | 15 | 17 |
| 7 | 1 | 1 | 5 | 6 | 3 | 20 | 22 | 37 | 21 | 20 | 19 |

**Parameter Estimates Table**

| **lhs** | **op** | **rhs** | **label** | **est** | **se** | **z** | **pvalue** | **ci.lower** | **ci.upper** | **std.lv** | **std.all** | **std.nox** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| knowledge | =~ | general |  | 1.00 | 0.00 |  |  | 1.00 | 1.00 | 1.85 | 0.75 | 0.75 |
| knowledge | =~ | symptoms |  | 0.58 | 0.07 | 8.51 | 0.00 | 0.45 | 0.72 | 1.08 | 0.63 | 0.63 |
| knowledge | =~ | treatmt |  | 0.75 | 0.09 | 8.63 | 0.00 | 0.58 | 0.92 | 1.38 | 0.69 | 0.69 |
| empathy | =~ | cognitiv |  | 1.00 | 0.00 |  |  | 1.00 | 1.00 | 2.69 | 0.81 | 0.81 |
| empathy | =~ | emotion |  | 0.95 | 0.06 | 16.37 | 0.00 | 0.84 | 1.06 | 2.56 | 0.82 | 0.82 |
| empathy | =~ | disposit |  | 1.40 | 0.09 | 15.40 | 0.00 | 1.22 | 1.58 | 3.77 | 0.78 | 0.78 |
| empathy | =~ | attitude |  | 0.96 | 0.06 | 16.16 | 0.00 | 0.85 | 1.08 | 2.60 | 0.81 | 0.81 |
| intervention | =~ | classrm |  | 1.00 | 0.00 |  |  | 1.00 | 1.00 | 5.78 | 0.99 | 0.99 |
| intervention | =~ | instruct |  | 0.85 | 0.05 | 18.63 | 0.00 | 0.76 | 0.94 | 4.93 | 0.89 | 0.89 |
| intervention | ~ | empathy | b | 1.24 | 0.12 | 10.36 | 0.00 | 1.01 | 1.48 | 0.58 | 0.58 | 0.58 |
| intervention | ~ | knowledge | c | 0.11 | 0.17 | 0.61 | 0.54 | -0.23 | 0.45 | 0.03 | 0.03 | 0.03 |
| empathy | ~ | knowledge | a | 0.30 | 0.10 | 3.03 | 0.00 | 0.11 | 0.50 | 0.21 | 0.21 | 0.21 |
| general | ~~ | general |  | 2.69 | 0.40 | 6.65 | 0.00 | 1.90 | 3.48 | 2.69 | 0.44 | 0.44 |
| symptoms | ~~ | symptoms |  | 1.72 | 0.18 | 9.63 | 0.00 | 1.37 | 2.07 | 1.72 | 0.60 | 0.60 |
| treatmt | ~~ | treatmt |  | 2.08 | 0.25 | 8.24 | 0.00 | 1.58 | 2.57 | 2.08 | 0.52 | 0.52 |
| cognitiv | ~~ | cognitiv |  | 3.73 | 0.39 | 9.68 | 0.00 | 2.98 | 4.49 | 3.73 | 0.34 | 0.34 |
| emotion | ~~ | emotion |  | 3.16 | 0.33 | 9.47 | 0.00 | 2.51 | 3.82 | 3.16 | 0.33 | 0.33 |
| disposit | ~~ | disposit |  | 9.11 | 0.88 | 10.33 | 0.00 | 7.38 | 10.84 | 9.11 | 0.39 | 0.39 |
| attitude | ~~ | attitude |  | 3.48 | 0.36 | 9.69 | 0.00 | 2.78 | 4.18 | 3.48 | 0.34 | 0.34 |
| classrm | ~~ | classrm |  | 0.65 | 1.50 | 0.43 | 0.66 | -2.30 | 3.60 | 0.65 | 0.02 | 0.02 |
| instruct | ~~ | instruct |  | 6.64 | 1.21 | 5.49 | 0.00 | 4.27 | 9.01 | 6.64 | 0.21 | 0.21 |
| knowledge | ~~ | knowledge |  | 3.42 | 0.55 | 6.24 | 0.00 | 2.35 | 4.50 | 1.00 | 1.00 | 1.00 |
| empathy | ~~ | empathy |  | 6.93 | 0.81 | 8.54 | 0.00 | 5.34 | 8.52 | 0.96 | 0.96 | 0.96 |
| intervention | ~~ | intervention |  | 21.95 | 2.35 | 9.33 | 0.00 | 17.34 | 26.57 | 0.66 | 0.66 | 0.66 |
| indirecteffect | := | a\*b | indirecteffect | 0.38 | 0.13 | 2.95 | 0.00 | 0.13 | 0.63 | 0.12 | 0.12 | 0.12 |
| totaleffect | := | c+(a\*b) | totaleffect | 0.48 | 0.20 | 2.39 | 0.02 | 0.09 | 0.88 | 0.15 | 0.15 | 0.15 |

**Cronbach's alpha**

| **latentVars** | **indicators** | **alpha** | **lambda6** |
| --- | --- | --- | --- |
| knowledge | general+symptoms+treatmt | 0.72 | 0.65 |
| empathy | cognitiv+emotion+disposit+attitude | 0.86 | 0.85 |
| intervention | classrm+instruct | 0.93 | 0.88 |

**Reliability & Validity**

| **rowname** | **alpha** | **omega** | **omega2** | **omega3** | **AVE** | **sqrt(AVE)** | **Reliablity** | **convergenceValidity** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| knowledge | 0.72 | 0.74 | 0.74 | 0.74 | 0.50 | 0.71 | TRUE | TRUE |
| empathy | 0.86 | 0.87 | 0.87 | 0.88 | 0.64 | 0.80 | TRUE | TRUE |
| intervention | 0.93 | 0.94 | 0.94 | 0.94 | 0.89 | 0.94 | TRUE | TRUE |
| total | 0.82 | 0.93 | 0.93 | 0.93 | 0.75 | 0.86 | TRUE | TRUE |

**Discriminant Validity**

| **rowname** | **knowledge** | **empathy** | **intervention** | **AVE** | **sqrt(AVE)** | **discriminantValidity** |
| --- | --- | --- | --- | --- | --- | --- |
| knowledge | 1.00 | 0.21 | 0.15 | 0.50 | 0.71 | TRUE |
| empathy | 0.21 | 1.00 | 0.58 | 0.64 | 0.80 | TRUE |
| intervention | 0.15 | 0.58 | 1.00 | 0.89 | 0.94 | TRUE |

**Correlation among measured variables**

| **rowname** | **general** | **symptoms** | **treatmt** | **cognitiv** | **emotion** | **disposit** | **attitude** | **classrm** | **instruct** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| general | 1 |  |  |  |  |  |  |  |  |
| symptoms | 0.48\*\*\* | 1 |  |  |  |  |  |  |  |
| treatmt | 0.52\*\*\* | 0.43\*\*\* | 1 |  |  |  |  |  |  |
| cognitiv | 0.14\* | 0.12\* | 0.20\*\*\* | 1 |  |  |  |  |  |
| emotion | 0.12\* | 0.09 | 0.11\* | 0.70\*\*\* | 1 |  |  |  |  |
| disposit | 0.12\* | 0.08 | 0.17\*\* | 0.62\*\*\* | 0.62\*\*\* | 1 |  |  |  |
| attitude | 0.06 | 0.07 | 0.13\* | 0.64\*\*\* | 0.68\*\*\* | 0.65\*\*\* | 1 |  |  |
| classrm | 0.11\* | 0.09 | 0.11\* | 0.47\*\*\* | 0.43\*\*\* | 0.52\*\*\* | 0.47\*\*\* | 1 |  |
| instruct | 0.08 | 0.06 | 0.13\* | 0.43\*\*\* | 0.38\*\*\* | 0.46\*\*\* | 0.42\*\*\* | 0.88\*\*\* | 1 |

**Correlation Plot**

**Model Fit Table**

| **chisq** | **df** | **x2df** | **p** | **CFI** | **GFI** | **AGFI** | **TLI** | **RMR** | **SRMR** | **RMSEA(95% CI)** | **AIC** | **BIC** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 31.19 | 24.00 | 1.30 | 0.15 | 1.00 | 0.98 | 0.96 | 0.99 | 0.43 | 0.03 | 0.03(0-0.06) | 14179.06 | 14259.09 |

**Estimated in the Model**

| **Variables** | **Predictors** | **B** | **SE** | **z** | **p** | **β** |
| --- | --- | --- | --- | --- | --- | --- |
| knowledge | general | 1(1-1) | 0.00 |  |  | 0.75 |
| knowledge | symptoms | 0.58(0.45-0.72) | 0.07 | 8.51 | < 0.001 | 0.63 |
| knowledge | treatmt | 0.75(0.58-0.92) | 0.09 | 8.63 | < 0.001 | 0.69 |
| empathy | cognitiv | 1(1-1) | 0.00 |  |  | 0.81 |
| empathy | emotion | 0.95(0.84-1.06) | 0.06 | 16.37 | < 0.001 | 0.82 |
| empathy | disposit | 1.4(1.22-1.58) | 0.09 | 15.4 | < 0.001 | 0.78 |
| empathy | attitude | 0.96(0.85-1.08) | 0.06 | 16.16 | < 0.001 | 0.81 |
| intervention | classrm | 1(1-1) | 0.00 |  |  | 0.99 |
| intervention | instruct | 0.85(0.76-0.94) | 0.05 | 18.63 | < 0.001 | 0.89 |
| intervention | empathy | 1.24(1.01-1.48) | 0.12 | 10.36 | < 0.001 | 0.58 |
| intervention | knowledge | 0.11(-0.23-0.45) | 0.17 | 0.61 | 0.543 | 0.03 |
| empathy | knowledge | 0.3(0.11-0.5) | 0.10 | 3.03 | 0.002 | 0.21 |

**Mediation Table**

| **Variables** | **Predictors** | **label** | **B** | **SE** | **z** | **p** | **β** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| intervention | empathy | b | 1.24(1.01-1.48) | 0.12 | 10.36 | < 0.001 | 0.58 |
| intervention | knowledge | c | 0.11(-0.23-0.45) | 0.17 | 0.61 | 0.543 | 0.03 |
| empathy | knowledge | a | 0.3(0.11-0.5) | 0.10 | 3.03 | 0.002 | 0.21 |
| indirect effect | a\*b | indirecteffect | 0.38(0.13-0.63) | 0.13 | 2.95 | 0.003 | 0.12 |
| total effect | c+(a\*b) | totaleffect | 0.48(0.09-0.88) | 0.20 | 2.39 | 0.017 | 0.15 |