Latent Curve Class Assignment

Examine the following data for latent curve modeling. Participants were given a task to read a paragraph while hooked up to a biopac that measured heart rate. Each heart rate was subtracted from baseline. Here’s the covariance table for five time points.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | T1 | T2 | T3 | T4 | T5 |
| T1 | 3.59 |  |  |  |  |
| T2 | 3.11 | 3.10 |  |  |  |
| T3 | 2.91 | 2.80 | 2.82 |  |  |
| T4 | 3.22 | 3.05 | 2.86 | 3.30 |  |
| T5 | 2.88 | 2.63 | 2.62 | 2.82 | 2.71 |
| Time Mean | 11.97 | 11.72 | 12.03 | 11.96 | 12.10 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
| X2(df) | (18) = 1973.424 | (17) = 212.722 | (16) = 208.013 | (14) = 172.529 | (10) = 156.080 |
| RMSEA | .737 | .240 | .245 | .238 | .270 |
| SRMR | .664 | .077 | .087 | .058 | .056 |
| CFI | .000 | .900 | .902 | .919 | .925 |
| Change | n/a | .900\*\* | .002 | .017\*\* | .006 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
| Residuals | 3.105 | .233 | .217 | .211 | 1 = .326  2 = .228  3 = .172  4 = .181  5 = .177 |
| Intercept Mean | 11.956 | 11.956 | 11.934 | 11.856 | 11.835 |
| Intercept Variance | 0 (n/a) | 2.871 | 2.923 | 3.184 | 3.112 |
| Slope Mean | n/a | n/a | n/a | 0.050 | .059 |
| Slope Variance | n/a | n/a | 0.006 | 0.007 | .004 |
| Covariance | n/a | n/a | n/a | -0.084 | -0.067 |

*Note*. Not all spots will be filled.

Interpret your findings:

* Where do people start?
* What is the change over time?
* Which model is the best?
* What does that imply?

Slope positive

Covariance is positive

Slope: Increasing over time

Intercept increases slope also increasing

Slope positive

Covariance negative

Slope: Increasing over time

Lower intercepts have higher slopes

Slope is negative

Covariance is positive

Slope: decreasing over time

Intercept increases slope also increasing (more negative)

Slope is negative

Covariance is negative

Slope: decreasing over time

Higher intercepts are lower slopes (closer to zero) (lower intercepts have higher slopes)