**Supplemental Materials 2: LLPA Profile Selection Process**

Research using LLPA often assumes that profile indicators have equal variance across classes (Masyn, 2013; Tein et al., 2013). However, this assumption is often violated (Tein et al., 2013), and freeing indicator variances can lead to different profile solutions with respect to profile number and form. Because profile solutions can differ when freeing indicator variances, efforts were made to free item variances in a pragmatic fashion that balanced model fit with model complexity (Hallquist & Wright, 2014; Masyn, 2013; Wright & Hallquist, 2014). Accordingly, a multistep approach was taken to estimate our LLPA such that models were first estimated with indicator variances constrained across profiles and then the 12 indicator variances were allowed to vary across profiles, one at time. Next, AIC, BIC, LRT, BLRT, entropy, class size, and class interpretability, were used to compare these LLPA models to determine the best profile solution.

Across LLPA modeling strategies (indicator variances constrained across profiles and individual indicator variances freely estimated across profiles) the BIC consistently favored the 5 and 6 profile solutions, whereas the AIC, aBIC, and BLRT consistently favored the 6 profile solutions (see Table A1). These fit indices suggested that the 5 and 6 profile solutions be considered as potential final LLPA solutions. Of the 5 profile solutions, only the model where the variance for parental responsiveness at W3 was freely estimated across profiles resulted in a decrease in BIC[[1]](#footnote-1). The increase in BIC for all other indicators relative to the fully constrained variances model indicated that freeing all other indicator variances across profiles did not improve model fit. Further, consistent with the BIC, the lowest AIC and aBIC values were obtained for the 5 profile solution with the variance for W3 parental responsiveness freely estimated. Similar findings were observed for the 6 profile solutions such that a lower BIC relative to the fully constrained LLPA only occurred when the variances for parental responsiveness at W2 and W3 were freely estimated. The 6 class solution with the indicator variance for W2 parental responsiveness freely estimated yielded a class with 12 individuals (3.1% of the sample). Considering the small size of this profile, this solution was not considered as for the final LLPA solution (Hallquist & Wright, 2014).

These results led to us to consider the 5 and 6 profile solutions where the variance for W3 parental responsiveness was freely estimated across profiles as potential final profile solutions. Although AIC, BIC, aBIC, and BLRT favored the 6 profile solution, visual inspection of the 6 profile solutions indicated that two profiles were characterized by the same pattern of social goals and parenting. Specifically, two profiles had low levels of communal goal, average levels of agentic social goals, low levels of parental responsiveness, and low levels of parental demandingness. Considering these profiles differed only in mean levels of social goals and parenting and the pattern of social goals style and parenting style were identical, the 5-profile solution was selected as the final LLPA solution.

Table B1. Model fit information for LLPA across modeling strategies

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| LLPA Method | Profiles | AIC | BIC | aBIC | BLRT | Smallest Class | Entropy |
| Demandingness W1 Variance Free Across Classes | 1 | 12132 | 12227 | 12151 | - | N=387, 100% | 1.00 |
| 2 | 11595 | 11745 | 11625 | 564.89(14), p<.0001 | N=167, 43.15% | 0.77 |
| 3 | 11425 | 11631 | 11466 | 197.64(14), p<.0001 | N=34, 8.78% | 0.85 |
| 4 | 11318 | 11579 | 11370 | 135.17(14), p<.0001 | N=32, 8.26% | 0.83 |
| 5 | 11241 | 11557 | 11304 | 105.48(14), p<.0001 | N=27, 6.97% | 0.80 |
| 6 | 11187 | 11559 | 11261 | 81.99(14), p<.0001 | N=27, 6.97% | 0.83 |
| Demandingness W2 Variance Free Across Classes | 1 | 12132 | 12227 | 12151 | - | N=387, 100% | 1.00 |
| 2 | 11599 | 11749 | 11629 | 561.05(14), p<.0001 | N=163, 42.11% | 0.77 |
| 3 | 11429 | 11635 | 11470 | 197.99(14), p<.0001 | N=36, 9.30% | 0.85 |
| 4 | 11321 | 11582 | 11373 | 136.02(14), p<.0001 | N=33, 8.52% | 0.83 |
| 5 | 11242 | 11558 | 11305 | 107.07(14), p<.0001 | N=32, 8.26% | 0.79 |
| 6 | 11184 | 11556 | 11258 | 85.54(14), p<.0001 | N=27, 6.97% | 0.83 |
| Demandingness W3 Variance Free Across Classes | 1 | 12132 | 12227 | 12151 | - | N=387, 100% | 1.00 |
| 2 | 11602 | 11753 | 11632 | 557.69(14), p<.0001 | N=170, 43.92% | 0.77 |
| 3 | 11436 | 11642 | 11477 | 194.06(14), p<.0001 | N=34, 8.78% | 0.84 |
| 4 | 11320 | 11581 | 11372 | 144.33(14), p<.0001 | N=32, 8.26% | 0.83 |
| 5 | 11245 | 11561 | 11307 | 103.27(14), p<.0001 | N=29, 7.49% | 0.82 |
| 6 | 11187 | 11559 | 11261 | 85.14(14), p<.0001 | N=12, 3.1% | 0.82 |
| Responsiveness W1 Variance Free Across Classes | 1 | 12132 | 12227 | 12151 | - | N=387, 100% | 1.00 |
| 2 | 11575 | 11726 | 11605 | 584.57(14), p<.0001 | N=151, 39.01% | 0.80 |
| 3 | 11403 | 11609 | 11444 | 200.60(14), p<.0001 | N=33, 8.52% | 0.86 |
| 4 | 11310 | 11572 | 11362 | 120.37(14), p<.0001 | N=34, 8.78% | 0.85 |
| 5 | 11239 | 11556 | 11302 | 99.32(14), p<.0001 | N=26, 6.71% | 0.80 |
| 6 | 11175 | 11548 | 11249 | 91.58(14), p<.0001 | N=27, 6.97% | 0.84 |
| Responsiveness W2 Variance Free Across Classes | 1 | 12132 | 12227 | 12151 | - | N=387, 100% | 1.00 |
| 2 | 11575 | 11725 | 11605 | 585.11(14), p<.0001 | N=161, 41.60% | 0.79 |
| 3 | 11427 | 11633 | 11468 | 175.81(14), p<.0001 | N=37. 9.56% | 0.85 |
| 4 | 11310 | 11571 | 11362 | 144.91(14), p<.0001 | N=34, 8.78% | 0.84 |
| 5 | 11231 | 11548 | 11294 | 106.62(14), p<.0001 | N=40, 10.33% | 0.80 |
| 6 | 11168 | 11540 | 11242 | 91.68(14), p<.0001 | N=12, 3.1% | 0.83 |
| Responsiveness W3 Variance Free Across Classes | 1 | 12132 | 12227 | 12151 | - | N=387, 100% | 1.00 |
| 2 | 11592 | 11742 | 11622 | 568.12(14), p<.0001 | N=154, 39.79% | 0.78 |
| 3 | 11433 | 11639 | 11474 | 186.64(14), p<.0001 | N=38, 9.81% | 0.84 |
| 4 | 11284 | 11545 | 11336 | 177.33(14), p<.0001 | N=40, 10.33% | 0.85 |
| 5 | 11204 | 11521 | 11267 | 107.45(14), p<.0001 | N=45, 11.62% | 0.82 |
| 6 | 11132 | 11504 | 11206 | 100.44(14), p<.0001 | N=28, 7.23% | 0.81 |
| Agency W1 Variance Free Across Classes | 1 | 12132 | 12227 | 12151 | - | N=387, 100% | 1.00 |
| 2 | 11601 | 11752 | 11631 | 558.46(14), p<.0001 | N=172, 44.44% | 0.77 |
| 3 | 11436 | 11642 | 11477 | 193.00(14), p<.0001 | N=34, 8.78% | 0.85 |
| 4 | 11332 | 11593 | 11384 | 132.21(14), p<.0001 | N=33, 8.52% | 0.83 |
| 5 | 11251 | 11568 | 11314 | 108.89(14), p<.0001 | N=26, 6.71% | 0.80 |
| 6 | 11199 | 11571 | 11273 | 80.60(14), p<.0001 | N=26, 6.71% | 0.83 |
| Agency W2 Variance Free Across Classes | 1 | 12132 | 12227 | 12151 | - | N=387, 100% | 1.00 |
| 2 | 11602 | 11752 | 11631 | 558.27(14), p<.0001 | N=178, 45.99% | 0.77 |
| 3 | 11438 | 11643 | 11478 | 192.03(14), p<.0001 | N=34, 8.78% | 0.85 |
| 4 | 11331 | 11592 | 11382 | 135.06(14), p<.0001 | N=33, 8.52% | 0.82 |
| 5 | 11250 | 11567 | 11313 | 108.07(14), p<.0001 | N=26, 6.71% | 0.80 |
| 6 | 11194 | 11566 | 11268 | 84.17(14), p<.0001 | N=27, 6.97% | 0.83 |
| Agency W3 Variance Free Across Classes | 1 | 12132 | 12227 | 12151 | - | N=387, 100% | 1.00 |
| 2 | 11602 | 11752 | 11632 | 557.86(14), p<.0001 | N=169, 43.67% | 0.77 |
| 3 | 11437 | 11643 | 11478 | 192.76(14), p<.0001 | N=34, 8.78% | 0.85 |
| 4 | 11324 | 11585 | 11375 | 141.71(14), p<.0001 | N=30, 7.75% | 0.84 |
| 5 | 11241 | 11558 | 11304 | 110.44(14), p<.0001 | N=27, 6.97% | 0.80 |
| 6 | 11188 | 11560 | 11262 | 80.90(14), p<.0001 | N=28, 7.23% | 0.83 |
| Communion W1 Variance Free Across Classes | 1 | 12132 | 12227 | 12151 | - | N=387, 100% | 1.00 |
| 2 | 11594 | 11745 | 11624 | 565.70(14), p<.0001 | N=173, 44.70% | 0.77 |
| 3 | 11431 | 11636 | 11471 | 191.59(14), p<.0001 | N=34, 8.78% | 0.84 |
| 4 | 11328 | 11590 | 11380 | 130.18(14), p<.0001 | N=31, 8.01% | 0.82 |
| 5 | 11249 | 11566 | 11312 | 106.99(14), p<.0001 | N=28, 7.23% | 0.79 |
| 6 | 11192 | 11565 | 11266 | 84.99(14), p<.0001 | N=26, 6.71% | 0.81 |
| Communion W2 Variance Free Across Classes | 1 | 12132 | 12227 | 12151 | - | N=387, 100% | 1.00 |
| 2 | 11598 | 11748 | 11628 | 562.25(14), p<.0001 | N=172, 44.44% | 0.77 |
| 3 | 11435 | 11641 | 11476 | 190.61(14), p<.0001 | N=34, 8.78% | 0.85 |
| 4 | 11322 | 11583 | 11374 | 141.07(14), p<.0001 | N=34, 8.78% | 0.80 |
| 5 | 11248 | 11565 | 11311 | 101.68(14), p<.0001 | N=29, 7.49% | 0.79 |
| 6 | 11194 | 11566 | 11268 | 82.40(14), p<.0001 | N=26, 6.71% | 0.81 |
| Communion W3 Variance Free Across Classes | 1 | 12132 | 12227 | 12151 | - | N=387, 100% | 1.00 |
| 2 | 11598 | 11748 | 11628 | 561.97(14), p<.0001 | N=172, 44.44% | 0.77 |
| 3 | 11434 | 11640 | 11475 | 191.91(14), p<.0001 | N=36, 9.30% | 0.84 |
| 4 | 11329 | 11590 | 11381 | 133.32(14), P<.0001 | N=31, 8.01% | 0.82 |
| 5 | 11251 | 11567 | 11314 | 105.98(14), p<.0001 | N=29, 7.49% | 0.80 |
| 6 | 11190 | 11562 | 11264 | 88.48(14), p<.0001 | N=26, 6.71% | 0.82 |
| All Variances Constrained Across Classes | 1 | 12132 | 12227 | 12151 | - | N=387, 100% | 1.00 |
| 2 | 11602 | 11748 | 11631 | 555.96(13), p<.0001 | N=164, 42.38% | 0.77 |
| 3 | 11434 | 11632 | 11473 | 194.21(13), P<.0001 | N=34, 8.78% | 0.85 |
| 4 | 11328 | 11577 | 11377 | 131.92(13), P<.0001 | N=33, 8.52% | 0.83 |
| 5 | 11246 | 11546 | 11305 | 108.18(13), p<.0001 | N=26, 6.71% | 0.80 |
| 6 | 11192 | 11544 | 11261 | 80.05(13), p<.0001 | N=27, 6.97% | 0.83 |

*Note*. LLPA=longitudinal latent profile analysis, W=wave, BLRT=bootstrapped likelihood ratio test.

**References**

Olivera-Aguilar, M., & Rikoon, S. H. (2018). Assessing measurement invariance in multiple-group latent profile analysis. *Structural Equation Modeling: A Multidisciplinary Journal*, *25*(3), 439-452. <https://doi.org/10.1080/10705511.2017.1408015>

1. A chi-square difference test using log-likelihood values was initially used to compare 5-profile solutions with individual indicator variances freely. The chi-square test using log-likelihood values yielded negative values. Because negative values are uninterpretable, the BIC was used to compare profile solutions (Olivera-Aguilar & Rikoon, 2018). [↑](#footnote-ref-1)