

Online Supplements for:

**The Impact of Total and Partial Inclusion or Exclusion of Active and Inactive Time Invariant
Covariates on the Class Enumeration Process of Growth Mixture Models**

Calculation of the Entropy

The entropy is based on the posterior probabilities which represent the fuzzy classification of the participants into classes conditioned on the growth mixture model. The standardized entropy, bounded by 0 and 1, is calculated as 1 minus the ratio of two terms: one related to the separation of classes and the other to the number of participants. The numerator of the ratio is a result of the double summation of the product of the posterior probability that participant i belongs to latent class k and its logarithm. The denominator is the product of the sample size and the logarithm of the class K . More precisely, for a GMM with a $K > 1$ classes, the standardized entropy is calculated as:

$$E_K = 1 - \left(\sum_{i=1}^N \sum_{k=1}^K (-p_{ik} \ln(p_{ik})) / N \ln(K) \right), \text{ where } p_{ik} \text{ is the posterior probability that subject } i$$

belongs to latent class k and N the number of observations.

Class Separation and Impact of Covariates Specifications

Covariates Specifications

Let's recall population models used in our studies. For **Study 1**, the model without covariate, Level-1 and Level-2 were specified as follows. Level-1:

$$y_{it}^k = \eta_{0i}^k + \eta_{1i}^k \cdot \lambda_t + \eta_{2i}^k \cdot \lambda_t^2 + \varepsilon_i$$

where y_{it}^k is the outcome variable for individual i in class k ($k = 1, 2$), $\lambda_t = t - 1$ is the time score at time t , η_{0i}^k is the random intercept, η_{1i}^k the random linear slope, η_{2i}^k the quadratic slope, and ε_i is the residual. For the Level-2:

$$\eta_{0i}^k = \gamma_{00}^k + \xi_{i0}^k$$

$$\eta_{1i}^k = \gamma_{01}^k + \xi_{i1}^k$$

$$\eta_{2i}^k = \gamma_{02}^k$$

where $\gamma_{00}^k, \gamma_{01}^k, \gamma_{02}^k$ are the means of the growth factors η_i in k^{th} class, and ξ_{i0}^k and ξ_{i1}^k are the multivariate normal distributed residuals of growth factors with a zero mean vector, $Var(\xi_{i0}^k) = \sigma_{00}^k, Var(\xi_{i1}^k) = \sigma_{11}^k$, and $Cov(\xi_{i0}^k, \xi_{i1}^k) = \sigma_{01}^k$.

For **Study 2**, the same Level-1 model as that in study 1 was used but two covariates influencing only the class membership were introduced in the population model.

For **Study 3**, the population model with the two covariates influencing class membership and the growth factors has the same Level-1 model as that in study 1 but the Level-2 model was specified as:

$$\eta_{0i}^k = \gamma_{00}^k + \gamma_{10}^k x_{i1} + \gamma_{20}^k x_{i2} + \xi_{i0}^k$$

$$\eta_{1i}^k = \gamma_{01}^k + \gamma_{11}^k x_{i1} + \gamma_{21}^k x_{i2} + \xi_{i1}^k$$

$$\eta_{2i}^k = \gamma_{02}^k$$

where x_{i1}, x_{i2} are level 2 covariates, $\gamma_{00}^k, \gamma_{01}^k, \gamma_{02}^k$ are the intercepts (or means when the covariates are centered at zero or omitted) of the growth factors η_i in k^{th} class, all the other γ_{mm}^k s are the linear regression coefficients of the growth factors η_i on the level 2 covariates in the k^{th} class; and ξ_{i0}^k and ξ_{i1}^k are the multivariate normal distributed residuals of growth factors with a zero mean vector, $Var(\xi_{i0}^k) = \sigma_{00}^k, Var(\xi_{i1}^k) = \sigma_{11}^k$, and $Cov(\xi_{i0}^k, \xi_{i1}^k) = \sigma_{01}^k$.

Class Separation Conditions Considered in this study

Mahalanobis distance (D) and Cohen's d (Cohen, 1998) are the two most commonly used measures to define class separation. Mahalanobis D evaluates the dissimilarity between two random vectors that have the same distribution and covariance matrix. Cohen's d is an effect size measure of the univariate mean difference between two groups, reflecting the difference between the means divided by the averaged population standard deviation of the two groups. Mahalanobis distance is often viewed as the multivariate expression of Cohen's d and as a multivariate effect size (McLachlan, 1999). Like others (Liu, 2011; Nylund et al. 2007; Tofighi & Enders, 2007; Tein et al., 2013) we used the Cohen's d measure to define class separation based on the intercept (or initial time point) in the current series of studies through this demonstration. In previous studies: (a) Nylund et al. (2007) examined a condition of two standard deviations (SD) difference between intercept means; (b) Liu (2011) selected two and three SD between the intercept means mimicking low and high separation between classes; (c) Tofighi and Enders (2007) contrasted a high (the intercept means for Class 1 differed from that of Class 2 by 2.40 SD and from that of Class 3 by 2.96 SD, while the intercept means of Class 2 and 3 differed by 0.55 SD) and low (respectively: 1.90 SD, 2.30 SD, and 0.44 SD) separation conditions across their 3 classes. Following in part from these previous studies, but wanting to consider slightly more extreme conditions, we selected class separation levels corresponding approximately to 0.50 SD (low class separation condition) and 3.00 SD (high class separation condition) between the intercept means of the two classes. These values roughly correspond to the minimum and maximum class separation conditions from previous studies.

In the current series of studies, conditions of high and low class separation had to be implemented in a slightly different manner in Studies 1-2 versus 3, due to the effects of covariates on the growth factors in Study 3. In studies 1 and 2, when the latent growth factors variance-covariance matrix was specified as invariant across classes, the choice of the parameters resulted in an intercept difference between the high and low class of 3.06 SD in the high separation condition, and of 0.52 SD in the low separation condition. When the variance-covariance matrix was specified as non-invariant, the choice of the parameters resulted in an intercept difference between the high and low class of 3.02 SD in the high separation condition (i.e., the same mean values were used as in the invariant conditions, but the

variance of the intercept factor differed across classes, resulting in this slight difference). Given the complexity of GMM, and the time required to estimate these models, we relied on a partial factorial design (e.g., Beauchaine & Beauchaine, 2002; Tofighi & Enders, 2007), described in the manuscript: No condition of low class separation was specified for non-invariant variance-covariance matrices.

In Study 3, the same mean values as in Studies 1 and 2 were used for the intercept factor. However, in Study 3 these values represent the intercept of the regression of the covariates on the intercept factors. In the invariance condition, the regression coefficients were chosen such that the two covariates accounted for 7% of the variation of the intercept and slope factors – a medium effect size (Cohen 1988) that is equal across classes. In the non-invariance condition, the regression coefficients were chosen such that the two covariates accounted for 3% of the variation of the growth factors for one class and 16% of the variation of the growth factors for the second class. These proportions respectively reflect small and large effect sizes (Cohen 1988). The exact values of the parameters used in these conditions are presented in Table S1- S5. To ensure that these values did indeed result in high and low levels of class separations, exploratory analyses based on the retained population values were conducted on 100000 cases, with one replication. One way to see how well individuals are classified in to classes is to look at the entropy of the GMM. The entropy captures the fuzziness, or accuracy, of the classification. It is impacted by the between trajectories separation and the within trajectory variance (e.g., Lubke & Muthén, 2007; Muthén, 2004) and can be measured on a zero to one scale with high values indicating better classification of individuals. Thus, for Study 1 and 2, these analyses resulted in entropy values of: (a) 0.94 for the condition of high class separation, invariance, and 0.50/0.50 mixing ratio; (b) 0.95 for the condition of high class separation, invariance, and 0.30/0.70 mixing ratio; (c) 0.52 for the conditions of low class separation, invariance, and 0.50/0.50 mixing ratio; (d) 0.56 for the conditions of low class separation, invariance, and 0.30/0.70 mixing ratio; (e) 0.90 for the conditions of high class separation, non-invariance, and 0.50/0.50 mixing ratio; (f) 0.91 for the conditions of high class separation, non-invariance, and 0.30/0.70 mixing ratio. Similar values were obtained for Study 3.

Technical Considerations Related to Class Separation and Covariate Specifications

For the population Cohen's effect size measure is:

$$\theta = \frac{\mu_1 - \mu_2}{\sigma}$$

where θ is the population effect size measure, μ_1 and μ_2 are the means for the two groups and σ is the standard deviation based of the two groups. For simplicity we will assume the same variance-covariance matrix (same regression coefficients) within the two classes through the demonstration.

The square of the class separation along the intercept can be expressed as:

$$\theta^2 = \frac{(\gamma_{00}^1 - \gamma_{00}^2)^2}{V(\eta_0)}$$

where $V(\eta_0)$ is the common variance of the intercept of the two groups.

For study 3, the two covariates are centered at zero with unit variance and have at least an effect on the intercept (i.e., $\gamma_{10} \neq 0$ and $\gamma_{20} \neq 0$). Let's first define the square of the class separation along the intercept without covariates, with uncorrelated covariates, and with correlated covariates.

Without covariate, $V(\eta_0) = \sigma_{00} = V_{woc}$. The class separation without covariate is expressed as:

$$\theta_{woc}^2 = \frac{(\gamma_{00}^1 - \gamma_{00}^2)^2}{V_{woc}}$$

When the two covariates influence the class membership and the growth factors, $V(\eta_0) = (\gamma_{10})^2 + (\gamma_{20})^2 + 2\gamma_{10}\gamma_{20}corr(x_1, x_2) + \sigma_{00}$. Thus, when covariates are correlated, the square of the class separation along the intercept, θ_{DC}^2 , is:

$$\theta_{DC}^2 = \frac{(\gamma_{00}^1 - \gamma_{00}^2)^2}{(\gamma_{10})^2 + (\gamma_{20})^2 + 2\gamma_{10}\gamma_{20}corr(x_1, x_2) + \sigma_{00}}$$

When the covariates are uncorrelated, $V(\eta_0) = (\gamma_{10})^2 + (\gamma_{20})^2 + \sigma_{00}$ and the corresponding square of the class separation along the intercept, θ_{IC}^2 is:

$$\theta_{IC}^2 = \frac{(\gamma_{00}^1 - \gamma_{00}^2)^2}{(\gamma_{10})^2 + (\gamma_{20})^2 + V_{IC}}$$

where $V_{IC} = \sigma_{00}$ with independent covariates.

Let's define $f:]-1, 1[\rightarrow \mathbb{R}^{*+}$ with $f(Z) = \frac{A}{B + CZ}$,

where $A = (\gamma_{00}^1 - \gamma_{00}^2)^2$, $B = (\gamma_{10})^2 + (\gamma_{20})^2 + \sigma_{00}$, $C = 2\gamma_{10}\gamma_{20}$, and $Z = \text{corr}(x_1, x_2)$. It's clear that $f(Z) > 0$ (the numerator and the denominator are strictly positives). Furthermore,

$$f(Z) = \theta_{DC}^2$$

And

$$f(0) = \theta_{IC}^2$$

f is a differentiable function as a quotient of differentiable functions and $f'(Z) = -\frac{AC}{(B + CZ)^2}$.

Consequently, f is strictly monotonic and the sign of f' depends on C , the product of the regression coefficients. In particular, f is strictly increasing ($f'(Z) > 0$) if $C < 0$ and strictly decreasing ($f'(Z) < 0$) if $C > 0$. Thus, if $C < 0$, $f(Z) < f(0)$, for $-1 < Z < 0$, and $f(0) < f(Z)$, for $0 < Z < 1$. If $C > 0$, $f(0) < f(Z)$, for $Z < 0$, and $f(Z) < f(0)$, for $0 < Z < 1$.

In summary, if $C < 0$, $\theta_{DC}^2 < \theta_{IC}^2$ for $-1 < Z < 0$, and $\theta_{IC}^2 < \theta_{DC}^2$ for $0 < Z < 1$. If $C > 0$, $\theta_{IC}^2 < \theta_{DC}^2$ for $-1 < Z < 0$, and $\theta_{DC}^2 < \theta_{IC}^2$ for $0 < Z < 1$. Thus, the study of f shows that the relationship between the squared of class separation and the link between the two covariates depends on the sign of the product of the two regression coefficients.

Class separation with covariates. As shown previously, f is strictly monotonic and the sign of f' depends on the product of the regression coefficients. In particular, class separation with correlated covariates is smaller (respectively greater) than class separation with independent covariates when the product of the two regression coefficients is negative (respectively positive) and the two covariates negatively (respectively positive) correlated in one hand, the product of the two regression coefficients is positive (respectively negative) and the two covariates positively (respectively negatively) correlated in the other hand.

Class separation with covariates versus without covariates. For simplicity, let's compare the effect of independent covariates on class separation with the case without covariate. Thus, we are comparing θ_{woc}^2 and θ_{IC}^2 . Because the two covariates were centered at zero, comparing these two quantities is equivalent to comparing the variance of the intercept with or without independent covariates. From the definition of these quantities, we see that

$$\theta_{IC}^2 \geq \theta_{woc}^2 \text{ if } V_{woc} \geq (\gamma_{10})^2 + (\gamma_{20})^2 + V_{IC}$$

It is more likely that V_{woc} would be higher than V_{IC} . However, we didn't expect the inequality from the above equation to always hold as the square of the regression coefficients γ_{10} and γ_{20} can be higher which will affect the variance of the intercept with covariates. Therefore, we don't expect the class separation with covariates to be always higher than that without covariates.

Technical Considerations About Models (Mis)Specifications

Let's denote $y_i = (y_{i1}, \dots, y_{iJ})'$ a series of repeated measures for individual i who is assumed to belong to different classes c_i (i.e., c_{ik} , where $c_{ik} = 1$ if individual i belongs to class k and zero otherwise for $k = 1, 2$). The covariates are denoted $x_i = (x_{i1}, x_{i2})$.

Study 2: The Population Generating Model with Covariates Influencing Class Membership Only

The GMM data used in study 2 is generated as follows. First, the covariates x_i are generated from a distribution $f(x_i)$. The class membership c_i is then generated from a multinomial distribution $f(c_i | x_i)$ conditional on x_i . Finally y_i is generated from a conditional normal growth model $f(y_i | c_i)$. The probability of the data can be expressed as:

$$f(y_i, c_i, x_i) = f(y_i | c_i) f(c_i | x_i) f(x_i) \quad (1.1)$$

$$f(y_i, c_i, x_i) = f(y_i | c_i) \cdot \prod_{k=1}^2 \pi_{ik}^{c_{ik}} f(x_i) \quad (1.2)$$

where π_{ik} , the probability of the i th case in class k conditional on x_i , can be expressed as:

$$P(c_{ik} = 1 | x_i) = \frac{\exp(a_k + \sum_{s=1}^2 b_{ks} \cdot x_{is})}{\sum_{k=1}^2 \exp(a_k + \sum_{s=1}^2 b_{ks} \cdot x_{is})} \quad (1.3)$$

with $a_2 = 0, b_{2s} = 0$, and a_k and b_{ks} are the logit intercept and slope, respectively.

By integrating equation (1.1) over the covariates x_i , the marginal distribution $f(y_i, c_i)$ can be expressed as:

$$f(y_i, c_i) = f(y_i | c_i) \dot{f}(c_i) \quad (1.4)$$

where $\dot{f}(c_i)$ is the marginal distribution of c_i after integrating over the covariates x_i .

Equation (1.4) is the population generating model of Study 1 and shows that fitting the model without the two covariates is consistent with the population generating model of Study 2. As noted by Li and Hser (2011), the correctly specified model of Study 2 would theoretically give the same number of classes as the model without covariates.

Furthermore, the population generating model can be integrated over x_{i1} and x_{i2} . Hence, by

integrating equation (1.1) over the covariates x_{i2} , the marginal distribution $f(y_i, c_i, x_{i1})$ can be expressed as

$$f(y_i, c_i, x_{i1}) = f(y_i | c_i) \dot{f}(c_i | x_{i1}) f(x_{i1}) \quad (1.5)$$

where $\dot{f}(c_i | x_{i1})$ is the multinomial logistic model for c_i given the covariate x_{i1} . However, $\dot{f}(c_i | x_{i1})$ from equation (1.5) may not have the same logistic model form as the model with x_{i1} influencing the class membership only. For instance, let's consider:

$$\int \frac{\exp(a_1 + b_{11}x_{i1} + b_{12}x_{i2})}{\exp(a_1 + b_{11}x_{i1} + b_{12}x_{i2}) + 1} dx_{i2} = A \int \frac{\exp(b_{12}x_{i2})}{A \exp(b_{12}x_{i2}) + 1} dx_{i2}, \text{ where } A = \exp(a_1 + b_{11}x_{i1}).$$

When we multiply the previous expression by $\exp(-b_{12}x_{i2})$, we get:

$$\int \frac{\exp(a_1 + b_{11}x_{i1} + b_{12}x_{i2})}{\exp(a_1 + b_{11}x_{i1} + b_{12}x_{i2}) + 1} dx_{i2} = A \int \frac{dx_{i2}}{A + \exp(-b_{12}x_{i2})}.$$

Let's denote $z = \exp(-b_{12}x_{i2})$. Thus:

$$\begin{aligned} \int \frac{\exp(a_1 + b_{11}x_{i1} + b_{12}x_{i2})}{\exp(a_1 + b_{11}x_{i1} + b_{12}x_{i2}) + 1} dx_{i2} &= \frac{1}{-b_{12}} A \int \frac{dz}{z(A + z)} \\ &= \frac{1}{-b_{12}} [\alpha + \log z - \log(A + z)] \\ &= \frac{1}{b_{12}} [b_{12}x_{i2} + \log(\exp(a_1 + b_{11}x_{i1}) + \exp(-b_{12}x_{i2})) - \alpha] \\ &\neq \beta \frac{\exp(a_1 + b_{11}x_{i1})}{\exp(a_1 + b_{11}x_{i1}) + 1}. \end{aligned}$$

Thus, $\dot{f}(c_i | x_{i1})$ may not have the same logistic model as the model with x_{i1} influencing class membership only. Consequently, in Study 2, all models with total covariates inclusion (i.e. the correctly specified model where the two covariates influenced the class membership only, as well as models where the two covariates influence the class membership, the intercept, and the slope factors in an invariant or non-invariant manner which are the over-specified through the inclusion of additional parameters equal to zero in the population) are consistent with the population generating model. The model without covariate is also consistent with the population model although not exactly specified. In contrast, models of partial covariate inclusion are inconsistent with the population model.

Table S1.

Population Parameters for Studies 1 and 2

Parameter	Class 1	Class 2
<u>High Separation</u>		
<i>Within class invariance</i>		
Growth factors means		
• Intercept mean for class 1 (γ^1_{00}) and 2 (γ^2_{00})	28	15
• Linear slope mean for class 1 (γ^1_{01}) and 2 (γ^2_{01})	2	6
• Quadratic slope mean, for class 1 (γ^1_{02}) and 2 (γ^2_{02})	-0.50	-0.50
Growth factors variances covariances		
• Intercept variance for class 1 (σ^1_{00}) and 2 (σ^2_{00})	15	15
• Linear slope variance for class 1 (σ^1_{11}) and 2 (σ^2_{11})	3	3
• Intercept/Linear slope covariance for class 1 (σ^1_{01}) and 2 (σ^2_{01})	5	5
<i>Within class non-invariance</i>		
Growth factors means		
• Intercept mean for class 1 (γ^1_{00}) and 2 (γ^2_{00})	28	15
• Linear slope mean for class 1 (γ^1_{01}) and 2 (γ^2_{01})	2	6
• Quadratic slope mean, for class 1 (γ^1_{02}) and 2 (γ^2_{02})	-0.50	-0.50
Growth factors variances covariances		
• Intercept variance for class 1 (σ^1_{00}) and 2 (σ^2_{00})	15	22
• Linear slope variance for class 1 (σ^1_{11}) and 2 (σ^2_{11})	1	3
• Intercept/Linear slope covariance for class 1 (σ^1_{01}) and 2 (σ^2_{01})	4.50	4
<u>Low Separation</u>		
<i>Within class invariance</i>		
Growth factors means		
• Intercept mean for class 1 (γ^1_{00}) and 2 (γ^2_{00})	17	15
• Linear slope mean for class 1 (γ^1_{01}) and 2 (γ^2_{01})	2	6
• Quadratic slope mean, for class 1 (γ^1_{02}) and 2 (γ^2_{02})	-0.50	-0.50
Growth factors variances covariances		
• Intercept variance for class 1 (σ^1_{00}) and 2 (σ^2_{00})	15	15
• Linear slope variance for class 1 (σ^1_{11}) and 2 (σ^2_{11})	3	3
• Intercept/Linear slope covariance for class 1 (σ^1_{01}) and 2 (σ^2_{01})	5	5
Residual variance (all models)		
$\psi_1 = \psi_2 = \psi_3 = \psi_4 = \psi_5 = \psi_6 = \psi_7$	2.75	2.75

Table S2.

Logit Intercepts and Slopes for the Prediction of Class Membership Population Parameters

Parameter
Logit Intercepts
• For mixing ratio of 0.50/0.50, $a_1 = 0$
• For mixing ratio of 0.30/0.70, $a_1 = -0.85$
Logit Slopes
• On X_1 , $b_{11} = 0.20$
• On X_2 , $b_{12} = 1.10$

Note. Covariates X_1 - X_2 were centered at zero with unit variance

Table S3.

Population Parameters for Study 3

Parameter	Class 1	Class 2
High Separation		
<i>Within class invariance and non invariance</i>		
Growth factors means		
• Intercept mean for class 1 (γ^1_{00}) and 2 (γ^2_{00})	28	15
• Linear slope mean for class 1 (γ^1_{01}) and 2 (γ^2_{01})	2	6
• Quadratic slope mean, for class 1 (γ^1_{02}) and 2 (γ^2_{02})	-0.50	-0.50
Growth factors variances covariances		
• Intercept variance for class 1 (σ^1_{00}) and 2 (σ^2_{00})	15	15
• Linear slope variance for class 1 (σ^1_{11}) and 2 (σ^2_{11})	3	3
• Intercept/Linear slope covariance for class 1 (σ^1_{01}) and 2 (σ^2_{01})	5	5
Low Separation		
<i>Within class invariance</i>		
Growth factors means		
• Intercept mean for class 1 (γ^1_{00}) and 2 (γ^2_{00})	17	15
• Linear slope mean for class 1 (γ^1_{01}) and 2 (γ^2_{01})	2	6
• Quadratic slope mean, for class 1 (γ^1_{02}) and 2 (γ^2_{02})	-0.50	-0.50
Growth factors variances covariances		
• Intercept variance for class 1 (σ^1_{00}) and 2 (σ^2_{00})	15	15
• Linear slope variance for class 1 (σ^1_{11}) and 2 (σ^2_{11})	3	3
• Intercept/Linear slope covariance for class 1 (σ^1_{01}) and 2 (σ^2_{01})	5	5
Residual variance (all models)		
$\psi_1 = \psi_2 = \psi_3 = \psi_4 = \psi_5 = \psi_6 = \psi_7$	2.75	2.75

Table S4.

Linear Regression Population Parameters for Study 3 (Correlation Between covariates of 0.20)

Parameter	Class 1	Class 2
High Separation		
<i>Within class invariance</i>		
Linear regression coefficients		
• For the intercept factor on X ₁ for class 1 (γ^1_{10}) and class 2 (γ^2_{10})	0.25	0.25
• For the linear slope factor on X ₁ for class 1 (γ^1_{11}) and class 2 (γ^2_{11})	-0.25	-0.25
• For the intercept factor on X ₂ for class 1 (γ^1_{20}) and class 2 (γ^2_{20})	1	1
• For the linear slope factor on X ₂ for class 1 (γ^1_{21}) and class 2 (γ^2_{21})	0.62	0.62
<i>Within class non invariance</i>		
Linear regression coefficients		
• For the intercept factor on X ₁ for class 1 (γ^1_{10}) and class 2 (γ^2_{10})	0.03	0.08
• For the linear slope factor on X ₁ for class 1 (γ^1_{11}) and class 2 (γ^2_{11})	-0.01	-1.05
• For the intercept factor on X ₂ for class 1 (γ^1_{20}) and class 2 (γ^2_{20})	0.71	1.65
• For the linear slope factor on X ₂ for class 1 (γ^1_{21}) and class 2 (γ^2_{21})	0.40	0.15

Table S5.

Linear Regression Population Parameters for Study 3 (Correlation Between covariates of 0.50)

Parameter	Class 1	Class 2
High Separation		
<i>Within class invariance</i>		
Linear regression coefficients		
• For the intercept factor on X ₁ for class 1 (γ^1_{10}) and class 2 (γ^2_{10})	-0.38	-0.38
• For the linear slope factor on X ₁ for class 1 (γ^1_{11}) and class 2 (γ^2_{11})	0.02	0.02
• For the intercept factor on X ₂ for class 1 (γ^1_{20}) and class 2 (γ^2_{20})	1.21	1.21
• For the linear slope factor on X ₂ for class 1 (γ^1_{21}) and class 2 (γ^2_{21})	-0.63	-0.63
<i>Within class non invariance</i>		
Linear regression coefficients		
• For the intercept factor on X ₁ for class 1 (γ^1_{10}) and class 2 (γ^2_{10})	-0.01	1.53
• For the linear slope factor on X ₁ for class 1 (γ^1_{11}) and class 2 (γ^2_{11})	0.01	0.05
• For the intercept factor on X ₂ for class 1 (γ^1_{20}) and class 2 (γ^2_{20})	-0.69	0.30
• For the linear slope factor on X ₂ for class 1 (γ^1_{21}) and class 2 (γ^2_{21})	-0.70	0.95

Table S6.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 1.

		Model without Covariates				Model with C on Inactive Covariate				Model with C, I S invariant on Inactive Covariate				Model with C, I S variant on Inactive Covariate			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=200	AIC	0	77.70	18.80	3.50	0	0	69.80	30.20	0	65.40	21.90	12.70	0	59.60	26.90	13.50
	CAIC	0	100	0	0	0	0	100	0	0	100	0	0	0	100	0	0
	SCAIC	0	95.80	3.90	0.30	0	0	95.30	4.70	0	94.70	5.20	0.10	0	95.80	4.10	0.10
	BIC	0	100	0	0	0	0	100	0	0	99.90	0.10	0	0	99.90	0.10	0
	SBIC	0	81.50	16.30	2.20	0	0	76.30	23.70	0	71.80	18.90	9.30	0	67.90	24.10	7.90
	LMR	0	81.10	16.50	2.40	0.10	80.50	16.40	3	0.10	78.50	18.10	3.30	0.10	77.50	20.60	1.80
	ALMR	0	82.90	15	2.10	0.10	81.20	15.80	2.80	0.10	79.50	17.40	3	0.10	78.60	19.70	1.60
	BLRT	0	90.40	9.10	0.50	0	87.20	11.20	1.60	0	85.80	12.30	1.90	0	86.60	12.50	0.90
N=400	AIC	0	72.50	22.40	5.10	0	68.70	22.60	8.80	0	68.80	21.20	10	0	64.40	22.10	13.50
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	98.80	1.20	0	0	98.80	1.10	0.10	0	98.50	1.50	0	0	99.40	0.60	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	91.80	8.20	0	0	91.20	8.10	0.70	0	91.60	7.60	0.80	0	93.10	6.60	0.30
	LMR	0	75.10	22.20	2.70	0	81.20	15.50	3.10	0	83	13.90	3	0	79.50	17.80	2.70
	ALMR	0	77.10	19.90	2.40	0	82.40	14.90	3	0	83.70	13.30	2.90	0	80.40	17.10	2.50
	BLRT	0	89.70	10.20	0.10	0	87.10	11.40	1.50	0	86.90	11.80	1.30	0	88.30	9.80	1.80

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S7.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 1.

		Model without Covariates				Model with C on Inactive Covariate				Model with C, I S invariant on Inactive Covariate				Model with C, I S variant on Inactive Covariate			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=1000	AIC	0	72.90	21.20	5.90	0	70.90	21	8.20	0	75.40	15.80	8.90	0	69.70	20.10	10.20
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.60	0.40	0	0	99.90	0.10	0	0	99.90	0.10	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	97.70	2.30	0	0	98.50	1.50	0	0	99.10	0.90	0	0	99.60	0.40	0
	LMR	0	74	23.70	2.30	0	85	13.10	1.90	0	88.70	9	2.30	0	84.70	13.20	2.10
	ALMR	0	75.40	22.80	1.80	0	85.50	12.60	1.80	0	89.30	8.90	1.90	0	85.70	12.40	1.90
	BLRT	0	90.20	9.10	0.70	0	87.10	11.20	1.70	0	91.30	7.70	0.90	0	92.60	6.80	0.60
N=2000	AIC	0	72.10	23.70	4.20	0	69.20	21.70	9.10	0	75.20	15.40	9.40	0	68.20	21.50	10.30
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	99.50	0.50	0	0	99.80	0.20	0	0	99.80	0.20	0	0	99.90	0.10	0
	LMR	0	73.60	22.80	3.60	0	85.20	13	1.80	0	87.60	10.30	2.10	0	86.30	12.30	1.40
	ALMR	0	75.30	21.10	3.60	0	85.70	12.40	1.80	0	88.20	9.80	2	0	86.90	11.70	1.40
	BLRT	0	86.20	12.90	0.90	0	85.70	12.80	1.40	0	88.90	9.80	1.30	0	92.10	7.20	0.70

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S8.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Mixing Ratio for Study 1.

		Model without Covariates				Model with C on Inactive Covariate				Model with C, I S invariant on Inactive Covariate				Model with C, I S variant on Inactive Covariate			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
0.50/0.50	AIC	0	72.90	21.20	5.90	0	70.90	21	8.20	0	75.40	15.80	8.90	0	69.70	20.10	10.20
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.60	0.40	0	0	99.90	0.10	0	0	99.90	0.10	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	97.70	2.30	0	0	98.50	1.50	0	0	99.10	0.90	0	0	99.60	0.40	0
	LMR	0	74	23.70	2.30	0	85	13.10	1.90	0	88.70	9	2.30	0	84.70	13.20	2.10
	ALMR	0	75.40	22.80	1.80	0	85.50	12.60	1.80	0	89.30	8.90	1.90	0	85.70	12.40	1.90
	BLRT	0	90.20	9.10	0.70	0	87.10	11.20	1.70	0	91.30	7.70	0.90	0	92.60	6.80	0.60
0.30/0.70	AIC	0	72.70	20	7.30	0	64.40	25.50	10.10	0	63.30	22.80	14	0	59.30	26.50	14.20
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.50	0.50	0	0	99.60	0.40	0	0	99.70	0.30	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.30	1.70	0	0	97.90	2.10	0	0	97.90	2.10	0	0	99.30	0.70	0
	LMR	0	72	25.20	2.80	0	82	13.80	4.10	0	82.30	14.80	2.80	0	78.50	18.50	2.90
	ALMR	0	74.10	23.30	2.60	0	83	13.10	3.90	0	83.20	14.20	2.60	0	80	17.50	2.50
	BLRT	0	88.40	10.80	0.80	0	87.90	10.60	1.50	0	85.50	13.30	1.20	0	90	9.40	0.50

Note: Mixing ratio was varied while holding other design factors constant as follows: Sample size $N = 1000$, same matrix variance of covariance, and high class separation. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S9.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Matrix of Variance-Covariance for Study 1.

		Model without Covariates				Model with C on Inactive Covariate				Model with C, I S invariant on Inactive Covariate				Model with C, I S variant on Inactive Covariate			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Same	AIC	0	72.90	21.20	5.90	0	70.90	21	8.20	0	75.40	15.80	8.90	0	69.70	20.10	10.20
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.60	0.40	0	0	99.90	0.10	0	0	99.90	0.10	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	97.70	2.30	0	0	98.50	1.50	0	0	99.10	0.90	0	0	99.60	0.40	0
	LMR	0	74	23.70	2.30	0	85	13.10	1.90	0	88.70	9	2.30	0	84.70	13.20	2.10
	ALMR	0	75.40	22.80	1.80	0	85.50	12.60	1.80	0	89.30	8.90	1.90	0	85.70	12.40	1.90
	BLRT	0	90.20	9.10	0.70	0	87.10	11.20	1.70	0	91.30	7.70	0.90	0	92.60	6.80	0.60
Different	AIC	0	89.90	6.60	3.50	0	93	3.90	3.10	0	92.40	3.50	4.10	0	92.20	3.50	4.30
	CAIC	0	99.60	0.40	0	0	99.90	0.10	0	0	99.90	0.10	0	0	100	0	0
	SCAIC	0	96.10	3.90	0	0	99.30	0.70	0	0	99.50	0.50	0	0	99.80	0.20	0
	BIC	0	98.70	1.30	0	0	99.90	0.10	0	0	99.90	0.10	0	0	100	0	0
	SBIC	0	93.30	6.60	0.10	0	98.10	1.90	0	0	98	2	0	0	99	1	0
	LMR	0	29.90	54.20	15.90	0	41.60	46.60	11.70	0	48.80	41.20	10	0	50.30	42.40	7.20
	ALMR	0	31.70	53.50	14.80	0	43	45.90	11	0	50.10	40.70	9.20	0	51.50	41.70	6.70
	BLRT	0	4.60	60.90	34.50	0	9	59.60	31.40	0	12.80	59	28.20	0	13.60	59.80	26.60

Note: Matrix variance-covariance structure was varied while holding other design factors constant as follows: Sample size N = 1000, high class separation, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S10.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 2 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=200	AIC	0	70.10	26.10	3.80	0	57.80	35.30	6.90	0	59.10	34.90	6	0	57.70	34.20	8.10
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	95	4.80	0.20	0	93.90	6.10	0	0	92.90	6.90	0.20	0	96	4	0
	BIC	0	99.90	0.10	0	0	100	0	0	0	99.90	0.10	0	0	100	0	0
	SBIC	0	75	22.30	2.70	0	65.20	31.10	3.70	0	65.60	29.60	4.80	0	64.70	29.90	5.40
	LMR	0	76.10	21.80	2.10	0	64.10	30.30	5.60	0	69.70	26.90	3.40	0	66.10	30.40	3.50
	ALMR	0	77.80	20.50	1.70	0	65.40	29.40	5.20	0	70.70	26	3.30	0	67.10	29.60	3.30
	BLRT	0	86.70	12.40	0.90	0	76.80	20.90	2.30	0	81.20	17.70	1.10	0	80.20	18	1.80
N=400	AIC	0	74.20	21.80	4	0	59	34	7	0	61.50	33.10	5.40	0	61.90	31.10	7
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	98	1.90	0.10	0	97.70	2.20	0.10	0	98	1.90	0.10	0	99.40	0.60	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	92.20	7.20	0.60	0	88	11.20	0.80	0	88.50	11	0.50	0	92.70	7.10	0.20
	LMR	0	74.70	22	3.30	0	64.30	30	5.70	0	68.10	28.70	3.20	0	65.90	30.30	3.80
	ALMR	0	76.20	21	2.80	0	65.60	29.20	5.20	0	70.10	27	2.90	0	67.30	29.20	3.50
	BLRT	0	88.80	9.90	1.30	0	78.30	19.80	1.90	0	80.40	18.80	0.80	0	84.30	13.80	1.90

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S11.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 2 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=200	AIC	0	70.10	26.10	3.80	0	56.20	33.90	9.80	0	59.3	32.90	7.70	0	55.80	36.70	7.50
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	95	4.80	0.20	0	93.90	5.80	0.30	0	95.10	4.80	0.10	0	95.60	4.40	0
	BIC	0	99.90	0.10	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	75	22.30	2.70	0	63.60	29.10	7.20	0	65.20	29.50	5.30	0	64.70	30.80	4.50
	LMR	0	76.10	21.80	2.10	0	60.70	32.10	7.10	0.10	65.30	29.90	4.70	0	67.30	28.80	3.80
	ALMR	0	77.80	20.50	1.70	0	62.50	31.10	6.40	0.10	66.90	28.70	4.30	0	68.60	27.70	3.60
	BLRT	0	86.70	12.40	0.90	0	84.70	13.10	2.20	0	81.30	17.10	1.60	0	80.90	17.50	1.50
N=400	AIC	0	74.20	21.80	4	0	54.90	35.60	9.50	0	60.10	34.70	5.20	0	58.90	34.50	6.60
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	98	1.90	0.10	0	98.80	1.20	0	0	98	2	0	0	99.50	0.50	0
	BIC	0	100	0	0	0	99.90	0.10	0	0	99.90	0.10	0	0	100	0	0
	SBIC	0	92.20	7.20	0.60	0	88.50	11	0.40	0	88.50	10.80	0.70	0	91.30	8.50	0.20
	LMR	0	74.70	22	3.30	0	61.20	31	7.80	0.10	68.20	28.20	3.50	0	65.60	30.40	4
	ALMR	0	76.20	21	2.80	0	62.10	30.60	7.30	0.10	69	27.60	3.30	0	66.80	29.50	3.70
	BLRT	0	88.80	9.90	1.30	0	84.70	14.50	0.80	0	82.40	17	0.60	0	82.70	15.90	1.40

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S12.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 2 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X1 X2				Model with C, I, S invariant on Covariate X1 X2				Model with C, I, S variant on Covariate X1 X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=200	AIC	0	70.10	26.10	3.80	0	39	46.20	14.80	0	36.10	54.50	9.40	0	41	46.50	12.50
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	99	0	0
	SCAIC	0	95	4.80	0.20	0	91.40	8.40	0.20	0	91	8.70	0.30	0	96.20	3.80	0
	BIC	0	99.90	0.10	0	0	100	0	0	0	99.90	0.10	0	0	100	0	0
	SBIC	0	75	22.30	2.70	0	49.90	40.50	9.60	0	45.60	47.40	6.90	0	53.50	39.70	6.80
	LMR	0	76.10	21.80	2.10	0	49	36.30	14.70	0	51.20	40.10	8.70	0	59	37.50	3.40
	ALMR	0	77.80	20.50	1.70	0	49.90	35.60	14.50	0	52.40	39.40	8.20	0	60	36.60	3.30
	BLRT	0	86.70	12.40	0.90	0	71.80	21.60	6.70	0	66.30	27.30	6.30	0	71.10	25.70	3.20
N=400	AIC	0	74.20	21.80	4	0	35.90	43.60	20.40	0	34.90	53.20	11.90	0	44.10	47	8.90
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	98	1.90	0.10	0	97.60	2.40	0	0	97.20	2.80	0	0	99.80	0.20	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	92.20	7.20	0.60	0	82.40	15.80	1.80	0	78.90	20.10	1	0	91	8.60	0.40
	LMR	0	74.70	22	3.30	0	48.20	36.80	15	0	50.40	38.80	10.80	0	55	40.60	4.50
	ALMR	0	76.20	21	2.80	0	49.20	36	14.80	0	51	38.60	10.50	0	55.60	40.20	4.20
	BLRT	0	88.80	9.90	1.30	0	72.40	22	5.70	0	66	28.70	5.30	0	73	24.60	2.40

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S13.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 2 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=1000	AIC	0	72.80	24.20	3	0	56.90	34.60	8.60	0	55.70	39.30	5	0	58.80	35.50	5.70
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.70	0.30	0	0	99.80	0.20	0	0	99.80	0.20	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.30	1.60	0.10	0	97.70	2.20	0.10	0	97.90	2.10	0	0	99.40	0.60	0
	LMR	0	71.40	25.30	3.30	0	66.70	28	5.30	0	68.80	28.40	2.80	0	65	30.20	4.80
	ALMR	0	72.70	24.30	3	0	67.90	27.10	5	0	69.80	27.60	2.60	0	65.80	29.50	4.70
	BLRT	0	86.10	13.10	0.80	0	84.30	14.20	1.50	0	80.50	18.60	0.90	0	81.60	17.10	1.30
N=2000	AIC	0	71.30	25.50	3.20	0	55.70	37	7.30	0	54.50	40.30	5.20	0	58.60	36	5.40
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	100	0	0	0	100	0	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	99.50	0.50	0	0	99.50	0.50	0	0	99.40	0.60	0	0	99.70	0.30	0
	LMR	0	71.20	25.30	3.50	0	69.40	26.40	4.30	0	68.70	29.20	2.10	0	65.30	29.90	4.80
	ALMR	0	73.30	24.10	2.60	0	70.80	25.10	4.10	0	69.70	28.50	1.80	0	65.90	29.40	4.70
	BLRT	0	85.70	13.60	0.70	0	83.20	15.40	1.30	0	78.20	20.80	1	0	82.60	16.10	1.30

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S14.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 2 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=1000	AIC	0	72.80	24.20	3	0	52.70	37.40	9.90	0	57	37.50	5.50	0	55	38.70	6.20
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.50	0.50	0	0	99.50	0.50	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.30	1.60	0.10	0	97.50	2.50	0	0	97.50	2.50	0	0	98.6	1.40	0
	LMR	0	71.40	25.30	3.30	0	62.10	30.20	7.70	0	68.70	28.20	3.10	0	64.9	30.20	4.80
	ALMR	0	72.70	24.30	3	0	63.60	29.70	6.70	0	69.70	27.80	2.50	0	66.5	28.90	4.50
	BLRT	0	86.10	13.10	0.80	0	83.40	15.10	1.50	0	81.60	17.50	0.90	0	84.9	13.80	1.30
N=2000	AIC	0	71.30	25.50	3.20	0	53.70	35.60	10.70	0	55.80	38.70	5.50	0	56.9	36.20	6.80
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	99.90	0.10	0	0	99.90	0.10	0	0	99.9	0.10	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	99.50	0.50	0	0	99.60	0.40	0	0	99.60	0.40	0	0	99.9	0.10	0
	LMR	0	71.20	25.30	3.50	0	66	28.70	5.30	0	70.20	26.90	2.90	0	71.9	24.60	3.50
	ALMR	0	73.30	24.10	2.60	0	67.60	27.50	5	0	71	26.20	2.80	0	72.7	24.10	3.30
	BLRT	0	85.70	13.60	0.70	0	83.40	15.30	1.20	0	80.80	18.60	0.50	0	88.5	11	0.50

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S15.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 2 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X1 X2				Model with C, I, S invariant on Covariate X1 X2				Model with C, I, S variant on Covariate X1 X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=1000	AIC	0	72.80	24.20	3	0	32.20	46.30	21.40	0	30.30	56.50	13.20	0	43.70	46.30	10
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.80	0.20	0	0	99.70	0.30	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.30	1.6	0.10	0	97.40	2.50	0.10	0	96.50	3.50	0	0	99.50	0.50	0
	LMR	0	71.40	25.30	3.30	0	52.20	34.60	13.20	0	48.80	39.20	12	0	57.30	39.10	3.60
	ALMR	0	72.70	24.30	3	0	53	34.20	12.80	0	50	38.70	11.30	0	57.70	38.80	3.50
	BLRT	0	86.10	13.10	0.80	0	73	22	5	0	65	30	5	0	74.70	22.90	2.40
N=2000	AIC	0	71.30	25.50	3.20	0	30.20	46.50	23.30	0	29.30	60.50	10.20	0	44.90	47.30	7.80
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	99.90	0.10	0	0	99.80	0.20	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	99.50	0.50	0	0	98.80	1.20	0	0	98.40	1.60	0	0	99.90	0.10	0
	LMR	0	71.20	25.30	3.50	0	53.90	35.20	10.90	0	50.70	40.80	8.50	0	61	37	2
	ALMR	0	73.30	24.10	2.60	0	54.50	35	10.50	0	51.40	40.20	8.40	0	61.40	36.60	2
	BLRT	0	85.70	13.60	0.70	0	73.40	21.70	4.90	0	67.20	29.10	3.70	0	79.50	19.20	1.30

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S16.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Class Separation for Study 2 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
High	AIC	0	72.80	24.20	3	0	56.90	34.60	8.60	0	55.70	39.30	5	0	58.80	35.50	5.70
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.70	0.30	0	0	99.80	0.20	0	0	99.80	.2	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.30	1.60	0.10	0	97.70	2.20	0.10	0	97.90	2.10	0	0	99.40	0.60	0
	LMR	0	71.40	25.30	3.30	0	66.70	28	5.30	0	68.80	28.40	2.80	0	65	30.20	4.80
	ALMR	0	72.70	24.30	3	0	67.90	27.10	5	0	69.80	27.60	2.60	0	65.80	29.50	4.70
	BLRT	0	86.10	13.10	0.80	0	84.30	14.20	1.50	0	80.50	18.60	0.90	0	81.60	17.10	1.30
Low	AIC	0.70	75.10	21.80	2.40	0	55.60	36.20	8.20	0.40	71.20	24.40	4	1.2	68	23.10	7.70
	CAIC	68.10	31.90	0	0	39.20	60.80	0	0	83	17	0	0	98.20	1.80	0	0
	SCAIC	20.10	79.70	0.20	0	3.90	95.90	0.20	0	27	73	0	0	55.60	44.30	0.10	0
	BIC	53.80	46.20	0	0	23.30	76.70	0	0	67.60	32.40	0	0	94	6	0	0
	SBIC	9	89.80	1.20	0	0.90	97.50	1.60	0	11.60	87.20	1.20	0	26.30	73.20	0.50	0
	LMR	8	73.10	15.70	3.20	2.70	62.10	28.70	6.50	13.20	69.20	13.50	4	16.30	63.90	17	2.70
	ALMR	8.70	73.80	14.80	2.70	2.70	63.10	28.50	5.70	13.60	69	13.40	3.90	17	63.60	16.60	2.70
	BLRT	2.10	88	9.80	0.10	0	74.90	22.20	2.90	6.50	76.90	14.90	1.80	11.10	72.70	14.90	1.30

Note: Class separation was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S17.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Class Separation for Study 2 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
High	AIC	0	72.80	24.20	3	0	52.70	37.40	9.90	0	57	37.50	5.50	0	55	38.70	6.20
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.7	0.30	0	0	99.50	0.50	0	0	99.50	0.50	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.30	1.60	0.10	0	97.50	2.50	0	0	97.50	2.50	0	0	98.60	1.40	0
	LMR	0	71.40	25.30	3.30	0	62.10	30.20	7.70	0	68.70	28.20	3.10	0	64.90	30.20	4.80
	ALMR	0	72.70	24.30	3	0	63.60	29.70	6.70	0	69.70	27.80	2.50	0	66.50	28.90	4.50
	BLRT	0	86.10	13.10	0.80	0	83.40	15.10	1.50	0	81.60	17.50	0.90	0	84.90	13.80	1.30
Low	AIC	0.70	75.10	21.80	2.40	0	54.20	37	8.70	0	63.50	30.20	6.30	0	59.40	31.20	9.40
	CAIC	68.10	31.90	0	0	0	100	0	0	38.20	61.80	0	0	77.10	22.90	0	0
	SCAIC	20.10	79.70	0.20	0	0	99.80	0.20	0	3.30	96.50	0.20	0	13.60	86.40	0	0
	BIC	53.80	46.20	0	0	0	100	0	0	22.60	77.40	0	0	58.50	41.50	0	0
	SBIC	9	89.80	1.20	0	0	97.60	2.30	0.10	0.60	96.80	2.50	0.10	3.80	95.50	0.70	0
	LMR	8	73.10	15.70	3.20	0	65.80	28.50	5.70	3.40	71.70	19.40	5.50	3.90	66.50	25.80	3.80
	ALMR	8.70	73.80	14.80	2.70	0	66.50	28.30	5.20	3.60	72.50	18.90	5.10	4.30	67.30	24.70	3.70
	BLRT	2.10	88	9.80	0.10	0	82.80	15.70	1.40	0.20	80.50	16.70	2.60	0.60	80	18.30	1.10

Note: Class separation was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S18.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Mixing Ratio for Study 2 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
0.50/0.50	AIC	0	72.80	24.20	3	0	56.90	34.60	8.60	0	55.70	39.30	5	0	58.80	35.50	5.70
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.70	0.30	0	0	99.80	0.20	0	0	99.80	0.20	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.30	1.6	0.10	0	97.70	2.20	0.10	0	97.90	2.10	0	0	99.40	0.60	0
	LMR	0	71.40	25.30	3.30	0	66.70	28	5.30	0	68.80	28.40	2.80	0	65	30.20	4.80
	ALMR	0	72.70	24.30	3	0	67.90	27.10	5	0	69.80	27.60	2.60	0	65.80	29.50	4.70
	BLRT	0	86.10	13.10	0.80	0	84.30	14.20	1.50	0	80.50	18.60	0.90	0	81.60	17.10	1.30
0.30/0.70	AIC	0	72.50	24	3.50	0	58.40	34	7.60	0	56	35.80	8.20	0	59.20	35.50	5.40
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.50	0.50	0	0	99.50	0.50	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.20	1.80	0	0	97.60	2.30	0.10	0	97.20	2.80	0	0	99.50	0.50	0
	LMR	0	71.60	24.80	3.60	0	67.20	26.70	6	0	66.10	29.10	4.80	0	62.60	33.80	3.60
	ALMR	0	72.90	23.60	3.50	0	68.50	26.20	5.20	0	67.20	28	4.80	0	63.40	33	3.60
	BLRT	0	87.80	11.30	0.90	0	84.10	15.20	0.70	0	81.30	17.60	1	0	84.60	14.80	0.60

Note: Mixing ratio was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and high class separation. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S19.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Mixing Ratio for Study 2 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
0.50/0.50	AIC	0	72.80	24.20	3	0	52.70	37.40	9.90	0	57	37.50	5.50	0	55	38.70	6.20
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.50	0.50	0	0	99.50	0.50	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.30	1.60	0.10	0	97.50	2.50	0	0	97.50	2.50	0	0	98.60	1.40	0
	LMR	0	71.40	25.30	3.30	0	62.10	30.20	7.70	0	68.70	28.20	3.10	0	64.90	30.20	4.80
	ALMR	0	72.70	24.30	3	0	63.60	29.70	6.70	0	69.70	27.80	2.50	0	66.50	28.90	4.50
	BLRT	0	86.10	13.10	0.80	0	83.40	15.10	1.50	0	81.60	17.50	0.90	0	84.90	13.80	1.30
0.30/0.70	AIC	0	72.50	24	3.50	0	51	40	9	0	54.50	35.70	9.70	0	55.60	36.90	7.50
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.60	0.40	0	0	99.50	0.50	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.20	1.80	0	0	97.80	2.20	0	0	97.80	2.20	0	0	98.70	1.30	0
	LMR	0	71.60	24.80	3.60	0	62.10	31.90	6	0	65.40	28.30	6.30	0	65.30	29.70	5.10
	ALMR	0	72.90	23.60	3.50	0	63.70	30.80	5.50	0	66.60	27.20	6.20	0	65.90	29.10	5
	BLRT	0	87.80	11.30	0.90	0	83.50	15.30	1.20	0	81.80	16.80	1.3	0	87.50	11.70	0.80

Note: Mixing ratio was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and high class separation. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S20.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Mixing Ratio for Study 2 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X1 X2				Model with C, I, S invariant on Covariate X1 X2				Model with C, I, S variant on Covariate X1 X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
0.50/0.50	AIC	0	72.80	24.20	3	0	32.20	46.30	21.40	0	30.30	56.50	13.20	0	43.70	46.30	10
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.80	0.20	0	0	99.70	0.30	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.30	1.60	0.10	0	97.40	2.50	0.10	0	96.50	3.50	0	0	99.50	0.50	0
	LMR	0	71.40	25.30	3.30	0	52.20	34.60	13.20	0	48.80	39.20	12	0	57.30	39.10	3.60
	ALMR	0	72.70	24.30	3	0	53	34.20	12.80	0	50	38.70	11.30	0	57.70	38.80	3.50
	BLRT	0	86.10	13.10	0.80	0	73	22	5	0	65	30	5	0	74.70	22.90	2.40
0.30/0.70	AIC	0	72.50	24	3.50	0	31.70	49	19.20	0	30	54.60	15.30	0	44.40	45.30	10.30
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.40	0.60	0	0	99.50	0.50	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.20	1.80	0	0	96.50	3.50	0	0	96.80	3	0.20	0	99.60	0.40	0
	LMR	0	71.60	24.80	3.60	0	46.80	40.60	12.60	0	50.10	41.60	8.30	0	62.10	34.90	3
	ALMR	0	72.90	23.60	3.50	0	47.60	40.40	12	0	51.40	40.50	8	0	62.50	34.60	2.90
	BLRT	0	87.80	11.30	0.90	0	73.90	22.40	3.70	0	72.40	24.30	3.30	0	79.40	18.20	2.40

Note: Mixing ratio was varied while holding other design factors constant as follows: Sample size $N = 1000$, same matrix variance of covariance, and high class separation. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S21.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Matrix of Variance-Covariance for Study 2 with an X1-X2

Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Same	AIC	0	72.80	24.20	3	0	56.90	34.60	8.60	0	55.70	39.30	5	0	58.80	35.50	5.70
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.70	0.30	0	0	99.80	0.20	0	0	99.80	0.20	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.30	1.60	0.10	0	97.70	2.20	0.10	0	97.90	2.10	0	0	99.40	0.60	0
	LMR	0	71.40	25.30	3.30	0	66.70	28	5.30	0	68.80	28.40	2.80	0	65	30.20	4.80
	ALMR	0	72.70	24.30	3	0	67.90	27.10	5	0	69.80	27.60	2.60	0	65.80	29.50	4.70
	BLRT	0	86.10	13.10	0.80	0	84.30	14.20	1.50	0	80.50	18.60	0.90	0	81.60	17.10	1.30
Different	AIC	0	18.20	18.20	63.60	0	16	20	64	0	25.80	20.60	53.60	0	11.50	7.70	80.80
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	90.90	9.10	0	0	100	0	0	0	100	0	0	0	100	0	0
	LMR	0	72.70	13.60	13.60	0	88	12	0	0	85.60	13.40	1	0	96.20	3.90	0
	ALMR	0	72.70	13.60	13.60	0	92	8	0	0	86.60	12.40	1	0	96.20	3.90	0
	BLRT	0	86.40	9.10	4.50	0	96	4	0	0	97.90	2.10	0	0	100	0	0

Note: Matrix variance covariance structure was varied while holding other design factors constant as follows: Sample size N = 1000, high class separation, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S22.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Matrix of Variance-Covariance for Study 2 with an X1-X2

Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Same	AIC	0	72.80	24.20	3	0	52.70	37.40	9.90	0	57	37.50	5.50	0	55	38.70	6.20
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.50	0.50	0	0	99.50	0.50	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.30	1.6	0.10	0	97.50	2.50	0	0	97.50	2.5	0	0	98.60	1.40	0
	LMR	0	71.40	25.30	3.30	0	62.10	30.20	7.70	0	68.70	28.20	3.10	0	64.90	30.20	4.80
	ALMR	0	72.70	24.30	3	0	63.60	29.70	6.70	0	69.70	27.80	2.50	0	66.50	28.90	4.50
	BLRT	0	86.10	13.10	0.80	0	83.40	15.10	1.50	0	81.60	17.50	0.90	0	84.90	13.80	1.30
Different	AIC	0	18.20	18.20	63.60	0	4.80	4.80	90.50	0	0	7.10	92.90	0	0	4.20	95.80
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	90.90	9.10	0	0	90.50	9.50	0	0	85.70	7.10	7.10	0	83.30	16.70	0
	LMR	0	72.70	13.60	13.60	0	81	14.30	4.80	0	57.10	28.60	14.30	0	62.50	33.30	4.20
	ALMR	0	72.70	13.60	13.60	0	81	14.30	4.80	0	64.30	28.60	7.10	0	70.80	25	4.20
	BLRT	0	86.40	9.10	4.50	0	81	19.10	0	0	92.90	7.10	0	0	87.50	12.50	0

Note: Matrix variance covariance structure was varied while holding other design factors constant as follows: Sample size N = 1000, high class separation, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S23.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Matrix of Variance-Covariance for Study 2 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariates X1 X2				Model with C, I S invariant on Covariates X1 X2				Model with C, I S variant on Covariate X1 X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Same	AIC	0	72.80	24.20	3	0	32.20	46.30	21.40	0	30.30	56.50	13.20	0	43.70	46.30	10
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.80	0.20	0	0	99.70	0.30	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.30	1.60	0.10	0	97.40	2.50	0.10	0	96.50	3.50	0	0	99.50	0.50	0
	LMR	0	71.40	25.30	3.30	0	52.20	34.60	13.20	0	48.80	39.20	12	0	57.30	39.10	3.60
	ALMR	0	72.70	24.30	3	0	53	34.20	12.80	0	50	38.70	11.30	0	57.70	38.80	3.50
	BLRT	0	86.10	13.10	0.80	0	73	22	5	0	65	30	5	0	74.70	22.90	2.40
Different	AIC	0	18.20	18.20	63.60	0	0	27	73	0	5.70	30.20	64.10	0	4.80	4.80	90.50
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	90.90	9.10	0	0	94.60	5.40	0	0	96.20	3.80	0	0	90.50	9.50	0
	LMR	0	72.70	13.60	13.60	0	75.70	18.90	5.40	0	62.30	28.30	9.40	0	85.70	9.50	4.80
	ALMR	0	72.70	13.60	13.60	0	75.70	18.90	5.40	0	62.30	30.20	7.50	0	85.70	9.50	4.80
	BLRT	0	86.40	9.10	4.50	0	73	24.30	2.70	0	79.20	13.20	7.50	0	100	0	0

Note: Matrix variance-covariance structure was varied while holding other design factors constant as follows: Sample size N = 1000, high class separation, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S24.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 2 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=200	AIC	0	71.20	25.20	3.60	0	56.40	35.10	8.50	0	58.60	41.40	0	0	55.50	35.50	9
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0.10	99.90	0	0
	SCAIC	0	94.60	5.30	0.10	0	93.20	6.50	0.30	0	93.70	6.30	0	0	96.10	3.80	0.10
	BIC	0	99.90	0.10	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	75.70	21.70	2.60	0	62.40	31.90	5.70	0	64.40	35.60	0	0	62.80	30.90	6.30
	LMR	0	76.70	21.20	2.10	0	64.80	28.70	6.40	0	69.20	30.30	0.50	0	67.20	29.70	3.10
	ALMR	0	78.50	19.60	1.90	0	66.90	27.20	5.80	0	69.90	29.60	0.50	0	68.60	28.70	2.70
	BLRT	0	87.20	12.20	0.60	0	81.20	17.10	1.70	0	81.80	18.20	0	0	81.30	17	1.70
N=400	AIC	0	75.70	21.10	3.20	0	56.90	35.50	7.60	0	60.40	39.60	0	0	60.60	33.60	5.80
	CAIC	0	99.90	0.10	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	97.90	2	0.10	0	97.50	2.50	0	0	97.70	2.30	0	0	99.20	0.80	0
	BIC	0	99.80	0.20	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	91.30	8	0.70	0	88.20	10.90	0.90	0	89.40	10.60	0	0	92.70	7	0.30
	LMR	0	73.40	22.90	3.70	0	65.50	28.10	6.40	0	70.80	29.10	0.10	0	64.40	30.90	4.70
	ALMR	0	75.10	21.90	3	0	66.70	27.50	5.80	0	71.70	28.20	0.10	0	65.10	30.30	4.60
	BLRT	0	89.30	9.40	1.30	0	82.70	15.60	1.70	0	82.70	17.30	0	0	82.20	16.10	1.70

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S25.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 2 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=200	AIC	0	71.20	25.20	3.60	0	56.90	31.80	11.20	0	57	36.60	6.40	0	56.80	37	6.20
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	94.60	5.30	0.10	0	94.20	5.50	0.30	0	93.20	6.70	0.10	0	95.10	4.90	0
	BIC	0	99.90	0.10	0	0	100	0	0	0	100	0	0	0	99.90	0.10	0
	SBIC	0	75.70	21.70	2.60	0	63.90	28.50	7.60	0	64.10	31.50	4.40	0	64.70	31	4.30
	LMR	0	76.70	21.20	2.10	0	62.50	30.60	6.90	0.30	66.50	29.50	3.70	0.10	68.20	28.50	3.20
	ALMR	0	78.50	19.60	1.90	0	64	29.70	6.30	0.30	67.90	28.30	3.50	0.10	69.60	27.30	3
	BLRT	0	87.20	12.20	0.60	0	84.40	13.70	1.90	0	80.60	18.10	1.30	0	80.30	18.80	0.90
N=400	AIC	0	75.70	21.10	3.20	0	57.30	33.30	9.40	0	58.40	35.60	5.90	0	56.50	37.10	6.40
	CAIC	0	99.90	0.10	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	97.90	2	0.10	0	97.80	2.20	0	0	97.70	2.30	0	0	99	1	0
	BIC	0	99.80	0.20	0	0	99.90	0.10	0	0	99.90	0.10	0	0	100	0	0
	SBIC	0	91.30	8	0.70	0	87.60	11.40	1	0	87.40	12	0.60	0	91.20	8.40	0.40
	LMR	0	73.40	22.90	3.70	0	61.20	31.10	7.70	0	68	27.90	4.10	0	65	30.90	4.10
	ALMR	0	75.10	21.90	3	0	62.70	30.20	7.10	0	68.90	27.20	3.90	0	66	29.90	4
	BLRT	0	89.30	9.40	1.30	0	84.90	13.60	1.50	0	81.60	17.10	1.30	0	82.20	16.30	1.50

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S26.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 2 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1 X2				Model with C, I, S invariant on Covariate X1 X2				Model with C, I, S variant on Covariate X1 X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=200	AIC	0	71.20	25.20	3.60	0	39.50	43.90	16.60	0	35.80	51.30	12.80	0	40.70	46.70	12.70
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0.50	99.50	0	0
	SCAIC	0	94.60	5.30	0.10	0	91	8.50	0.50	0	89.40	10.40	0.20	0	95.60	4.30	.10
	BIC	0	99.90	0.10	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	75.70	21.70	2.60	0	47.60	40.10	12.30	0	45.10	45.20	9.60	0	51.10	41.20	7.70
	LMR	0	76.70	21.20	2.10	0	48.50	35.70	15.80	0.10	54.90	37	8	0.10	57.70	39	3.20
	ALMR	0	78.50	19.60	1.90	0	49.60	35.20	15.20	0.10	55.30	36.70	7.90	0.10	58.10	38.60	3.20
	BLRT	0	87.20	12.20	0.60	0	70.80	22	7.20	0	66	28.90	5.10	0	67.40	29.20	3.40
N=400	AIC	0	75.70	21.10	3.20	0	35.10	45.20	19.80	0	33.40	51.80	14.80	0	43.80	46.60	9.60
	CAIC	0	99.90	0.10	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	97.90	2	0.10	0	97.90	2.10	0	0	96.90	3	0.10	0	99.90	0.10	0
	BIC	0	99.80	0.20	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	91.30	8	0.70	0	78.80	19.70	1.5	0	80.70	17.40	1.90	0	90.80	9.10	0.10
	LMR	0	73.40	22.90	3.70	0	46.20	38	15.80	0.10	51.30	36.20	12.40	0	58	38.90	3.10
	ALMR	0	75.10	21.90	3	0	47.30	37.60	15.10	0.20	52.50	35.40	11.90	0	58.30	38.60	3
	BLRT	0	89.30	9.40	1.30	0	70.50	23.80	5.80	0	66.30	26.30	7.40	0	69.20	28.10	2.70

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S27.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 2 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=1000	AIC	0	72.30	24.20	3.50	0	56.30	33.40	10.30	0	57.60	42.40	0	0	59	33.40	7.60
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.70	0.30	0	0	99.60	0.40	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.60	1.40	0	0	98.10	1.90	0	0	97.80	2.20	0	0	99.40	0.60	0
	LMR	0	73.10	22.7	4.20	0	66.80	25.90	7.20	0	70.40	29.50	0.10	0	70.20	26.40	3.40
	ALMR	0	74.80	21.40	3.80	0	68.40	24.80	6.80	0	70.90	29	0.10	0	70.70	26.20	3.10
	BLRT	0	87.40	11.50	1.10	0	86.10	12.30	1.50	0	81.60	18.40	0	0	85.30	14.10	0.60
N=2000	AIC	0	71.80	25.30	2.90	0	55.40	36.10	8.50	0	56.40	43.60	0	0	60.80	32.90	6.30
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.90	0.10	0	0	99.90	0.10	0	0	99.90	0.10	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	99.10	0.90	0	0	99.40	0.60	0	0	99.20	0.80	0	0	99.70	0.30	0
	LMR	0	73.60	22.50	3.90	0	68.80	25.40	5.90	0	73.70	26.20	0.10	0	69	26.80	4.20
	ALMR	0	74.50	21.90	3.60	0	69.90	24.70	5.50	0	75	24.90	0.10	0	69.50	26.50	4
	BLRT	0	86	13.50	0.50	0	84.20	13.70	2.20	0	80.50	19.50	0	0	84	15.40	0.60

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S28.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 2 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=1000	AIC	0	72.30	24.20	3.50	0	54.70	35.40	10	0	58.50	35.20	6.30	0	55.50	37.40	7.10
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.40	0.60	0	0	99.40	0.60	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	99.90	0.10	0	0	100	0	0	0	100	0	0
	SBIC	0	98.60	1.40	0	0	97.30	2.50	0.20	0	97	3	0	0	98.10	1.90	0
	LMR	0	73.10	22.70	4.20	0	64.20	28.80	7	0	69.60	26.30	4.10	0	67.30	27.90	4.90
	ALMR	0	74.80	21.40	3.80	0	65.40	28.30	6.40	0	71.10	25	3.90	0	68.50	26.80	4.80
	BLRT	0	87.40	11.50	1.10	0	85.70	12.40	1.80	0	82.90	16.40	0.70	0	84.10	14.80	1.10
N=2000	AIC	0	71.80	25.30	2.90	0	50.90	38.20	10.90	0	55.30	38.30	6.40	0	55.90	37.80	6.30
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.90	0.10	0	0	99.70	0.30	0	0	99.80	0.20	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	99.10	0.90	0	0	99.10	0.90	0	0	98.80	1.20	0	0	99.70	0.30	0
	LMR	0	73.60	22.50	3.90	0	66.80	26.20	7	0	74	22.80	3.20	0	72.20	23.30	4.50
	ALMR	0	74.50	21.90	3.60	0	67.60	25.90	6.50	0	75	21.90	3	0	72.80	22.80	4.40
	BLRT	0	86	13.50	0.50	0	84.80	14	1.20	0	82.40	16.80	0.80	0	87.10	12.10	0.80

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S29.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 2 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1 X2				Model with C, I, S invariant on Covariate X1 X2				Model with C, I, S variant on Covariate X1 X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=1000	AIC	0	72.30	24.20	3.50	0	33.40	46.30	20.40	0	71.30	23.10	5.60	0	45.40	45.70	8.90
	CAIC	0	100	0	0	0	100	0	0	0	99.80	0.20	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.20	0.80	0	0	95.70	4.30	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	99.60	0.40	0	0	100	0	0
	SBIC	0	98.60	1.40	0	0	96	4	0	0	91	8.90	0.10	0	99.30	0.70	0
	LMR	0	73.10	22.70	4.20	0	52.10	34.40	13.50	0	49.60	39.50	10.90	0	58.50	37.80	3.70
	ALMR	0	74.80	21.40	3.80	0	52.60	34.30	13.10	0	50.60	38.90	10.50	0	58.80	37.60	3.60
	BLRT	0	87.40	11.50	1.10	0	74	21.40	4.60	0	65.70	28.80	5.50	0	76.90	20.70	2.40
N=2000	AIC	0	71.80	25.30	2.90	0	30.50	46.30	23.20	0	30.90	55.60	13.50	0	46.40	44.50	9.10
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.90	0.10	0	0	99.90	0.10	0	0	99.90	0.10	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	99.10	.9	0	0	99.40	0.60	0	0	98.40	1.60	0	0	99.90	0.10	0
	LMR	0	73.60	22.50	3.90	0	51.30	36.20	12.60	0	50.90	42.50	6.60	0	63.60	33.30	3.10
	ALMR	0	74.50	21.90	3.60	0	51.60	36.20	12.20	0	51.50	42	6.50	0	63.80	33.10	3.10
	BLRT	0	86	13.50	0.50	0	71	25.20	3.80	0	67.30	28.50	4.20	0	81.10	16.80	2.10

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S30.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Class Separation for Study 2 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
High	AIC	0	72.30	24.20	3.50	0	56.30	33.40	10.30	0	57.60	42.40	0	0	59	33.40	7.60
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.70	0.30	0	0	99.60	0.40	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.60	1.40	0	0	98.10	1.90	0	0	97.80	2.20	0	0	99.40	0.60	0
	LMR	0	73.10	22.70	4.20	0	66.80	25.90	7.20	0	70.40	29.50	0.10	0	70.20	26.40	3.40
	ALMR	0	74.80	21.40	3.80	0	68.40	24.80	6.80	0	70.90	29	0.10	0	70.70	26.20	3.10
	BLRT	0	87.40	11.50	1.10	0	86.10	12.30	1.50	0	81.60	18.40	0	0	85.30	14.10	0.60
Low	AIC	0.50	76.10	19.60	3.80	0	55.80	36.90	7.30	0	71	26.90	2.10	0.60	64.70	28.90	5.80
	CAIC	69.10	30.90	0	0	1	99	0	0	71.60	28.40	0	0	95.50	4.50	0	0
	SCAIC	18.40	81.40	0.20	0	0	99.80	0.20	0	17.30	82.50	0.20	0	41.20	58.70	0.10	0
	BIC	51.50	48.50	0	0	0.30	99.70	0	0	54.40	45.60	0	0	86.30	13.70	0	0
	SBIC	7.90	91.10	1	0	0	98.10	1.90	0	5.80	92.50	1.70	0	17.70	81.80	0.50	0
	LMR	7.50	74.30	15.40	2.80	0.20	67.50	27	5.30	9.50	71.20	18.90	0.40	11.60	66.30	18.80	3.30
	ALMR	8.20	75.30	14.20	2.30	0.20	68.80	26.20	4.80	10.40	71	18.20	0.40	12	66.60	18.40	3
	BLRT	3.50	86.60	9.50	0.40	0.10	83.40	15	1.50	2.70	81.30	16	0	5.10	77.20	16	1.70

Note: Class separation was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S31.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Class Separation for Study 2 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
High	AIC	0	72.30	24.20	3.50	0	54.70	35.40	10	0	58.50	35.20	6.30	0	55.50	37.40	7.10
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.40	0.60	0	0	99.40	0.60	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	99.90	0.10	0	0	100	0	0	0	100	0	0
	SBIC	0	98.60	1.40	0	0	97.30	2.50	0.20	0	97	3	0	0	98.10	1.90	0
	LMR	0	73.10	22.70	4.20	0	64.20	28.80	7	0	69.60	26.30	4.10	0	67.30	27.90	4.90
	ALMR	0	74.80	21.40	3.80	0	65.40	28.30	6.40	0	71.10	25	3.90	0	68.50	26.80	4.80
	BLRT	0	87.40	11.50	1.10	0	85.70	12.40	1.80	0	82.90	16.40	0.70	0	84.10	14.80	1.10
Low	AIC	0.50	76.10	19.60	3.80	0	53.30	38.40	8.30	0	65.80	28.80	5.40	0	59.10	32	8.90
	CAIC	69.10	30.90	0	0	0	99.90	0.10	0	32.30	67.70	0	0	72.40	27.60	0	0
	SCAIC	18.40	81.40	0.20	0	0	99.40	0.60	0	2.90	96.80	0.30	0	11.50	88.50	0	0
	BIC	51.50	48.50	0	0	0	99.90	0.10	0	19.50	80.50	0	0	53.50	46.50	0	0
	SBIC	7.90	91.10	1	0	0	96.60	2.90	0.50	0.70	96.70	2.60	0	2.60	96.20	1.20	0
	LMR	7.50	74.30	15.40	2.80	0.10	66.80	28.50	4.60	3.40	73	19.20	4.40	2.90	68.10	25.30	3.70
	ALMR	8.20	75.30	14.20	2.30	0	67.90	27.50	4.60	3.40	74.40	18.20	4	2.90	68.90	24.80	3.40
	BLRT	3.50	86.60	9.50	0.40	0.10	83.80	14.50	1.60	0.20	80.60	16.80	2.40	0.70	79.30	18.60	1.40

Note: Class separation was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S32.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Class Separation for Study 2 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1 X2				Model with C, I, S invariant on Covariate X1 X2				Model with C, I, S variant on Covariate X1 X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
High	AIC	0	72.30	24.20	3.50	0	33.40	46.30	20.40	0	71.30	23.10	5.60	0	45.40	45.70	8.90
	CAIC	0	100	0	0	0	100	0	0	0	99.80	0.20	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.20	0.80	0	0	95.70	4.30	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	99.60	0.40	0	0	100	0	0
	SBIC	0	98.60	1.40	0	0	96	4	0	0	91	8.90	0.10	0	99.30	0.70	0
	LMR	0	73.10	22.70	4.20	0	52.10	34.40	13.50	0	49.60	39.50	10.90	0	58.50	37.80	3.70
	ALMR	0	74.80	21.40	3.80	0	52.60	34.30	13.10	0	50.60	38.90	10.50	0	58.80	37.60	3.60
	BLRT	0	87.40	11.50	1.10	0	74	21.40	4.60	0	65.70	28.80	5.50	0	76.90	20.70	2.40
Low	AIC	0.50	76.10	19.60	3.80	0	37.80	45.90	16.30	0	28.40	51.30	20.30	0	41.40	46.10	12.50
	CAIC	69.10	30.90	0	0	0	100	0	0	50.80	49.20	0	0	97.30	2.70	0	0
	SCAIC	18.40	81.40	0.20	0	0	99.70	0.30	0	5.30	94.10	0.60	0	38.60	61.40	0	0
	BIC	51.50	48.50	0	0	0	99.90	0.10	0	32.90	67.10	0	0	89	11	0	0
	SBIC	7.90	91.10	1	0	0	96.70	3	0.30	1.20	94.70	4	0.10	13.10	86.30	0.60	0
	LMR	7.50	74.30	15.40	2.80	0	51.80	35.90	12.30	5.10	45.60	41.60	7.70	7	54.80	33.80	4.40
	ALMR	8.20	75.30	14.20	2.30	0	52.20	35.60	12.20	5.20	46.20	41.20	7.40	7.50	54.50	33.70	4.30
	BLRT	3.50	86.60	9.50	0.40	0	67.80	26.60	5.60	0.60	51.10	36.20	12.10	2.60	56.80	34.60	6

Note: Class separation was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S33.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Mixing Ratio for Study 2 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
0.50/0.50	AIC	0	72.30	24.20	3.50	0	56.30	33.40	10.30	0	57.60	42.40	0	0	59	33.40	7.60
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.70	0.30	0	0	99.60	0.40	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.60	1.40	0	0	98.10	1.90	0	0	97.80	2.20	0	0	99.40	0.60	0
	LMR	0	73.10	22.70	4.20	0	66.80	25.90	7.20	0	70.40	29.50	0.10	0	70.20	26.40	3.40
	ALMR	0	74.80	21.40	3.80	0	68.40	24.80	6.80	0	70.90	29	0.10	0	70.70	26.20	3.10
	BLRT	0	87.40	11.50	1.10	0	86.10	12.30	1.50	0	81.60	18.40	0	0	85.30	14.10	0.60
0.30/0.70	AIC	0	72.30	23.70	4	0	52.20	38.80	9	0	52.60	39.20	8.20	0	55.90	37.10	7
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.40	0.60	0	0	99.70	0.30	0	0	99.40	0.60	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.60	1.40	0	0	97.90	2	0.10	0	97.40	2.50	0.10	0	99	1	0
	LMR	0	72.70	23.60	3.70	0	67.70	27.20	5.10	0	67.80	26.30	5.90	0	64.80	31.30	3.90
	ALMR	0	74.70	22.10	3.20	0	69.30	26.10	4.60	0	69.40	25.40	5.20	0	65.70	30.90	3.40
	BLRT	0	88.60	10.70	0.70	0	86.60	11.80	1.60	0	80.80	17.80	1.40	0	85.90	13.30	0.80

Note: Mixing ratio was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and high class separation. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S34.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Mixing Ratio for Study 2 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
0.50/0.50	AIC	0	72.30	24.20	3.50	0	54.70	35.40	10	0	58.50	35.20	6.30	0	55.50	37.40	7.10
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.40	0.60	0	0	99.40	0.60	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	99.90	0.10	0	0	100	0	0	0	100	0	0
	SBIC	0	98.60	1.40	0	0	97.30	2.50	0.20	0	97	3	0	0	98.10	1.90	0
	LMR	0	73.10	22.70	4.20	0	64.20	28.80	7	0	69.60	26.30	4.10	0	67.30	27.90	4.90
	ALMR	0	74.80	21.40	3.80	0	65.40	28.30	6.40	0	71.10	25	3.90	0	68.50	26.80	4.80
	BLRT	0	87.40	11.50	1.10	0	85.70	12.40	1.80	0	82.90	16.40	0.70	0	84.10	14.80	1.10
0.30/0.70	AIC	0	72.30	23.70	4	0	53.50	37.40	9.10	0	55.40	33.60	11	0	55.80	36.30	7.90
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.40	0.60	0	0	99.40	0.60	0	0	99.60	0.40	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.60	1.40	0	0	97	3	0	0	97.60	2.30	0.10	0	98.40	1.60	0
	LMR	0	72.70	23.60	3.70	0	63.40	31.10	5.50	0	66.60	25.20	8.20	0	69.30	27.70	3
	ALMR	0	74.70	22.10	3.20	0	64.40	30.40	5.20	0	67.70	24.30	8	0	70.40	26.80	2.80
	BLRT	0	88.60	10.70	0.70	0	85.40	13.60	1	0	84	14.60	1.40	0	88.30	11.20	0.50

Note: Mixing ratio was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and high class separation. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S35.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Mixing Ratio for Study 2 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1 X2				Model with C, I, S invariant on Covariate X1 X2				Model with C, I, S variant on Covariate X1 X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
0.50/0.50	AIC	0	72.30	24.20	3.50	0	33.40	46.30	20.40	0	71.30	23.10	5.60	0	45.40	45.70	8.90
	CAIC	0	100	0	0	0	100	0	0	0	99.80	0.20	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.20	0.80	0	0	95.70	4.30	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	99.60	0.40	0	0	100	0	0
	SBIC	0	98.60	1.40	0	0	96	4	0	0	91	8.90	0.10	0	99.30	0.70	0
	LMR	0	73.10	22.70	4.20	0	52.10	34.40	13.50	0	49.60	39.50	10.90	0	58.50	37.80	3.70
	ALMR	0	74.80	21.40	3.80	0	52.60	34.30	13.10	0	50.60	38.90	10.50	0	58.80	37.60	3.60
	BLRT	0	87.40	11.50	1.10	0	74	21.40	4.60	0	65.70	28.80	5.50	0	76.90	20.70	2.40
0.30/0.70	AIC	0	72.30	23.70	4	0	30	52.20	17.80	0	31.90	50.80	17.30	0	44.60	44.80	10.60
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.40	0.60	0	0	99.50	0.50	0	0	99.40	0.60	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.60	1.40	0	0	95.90	4	0.10	0	96.30	3.70	0	0	99.60	0.40	0
	LMR	0	72.70	23.60	3.70	0	47.10	39.40	13.50	0	52.60	38.60	8.80	0	58.90	38.10	3
	ALMR	0	74.70	22.10	3.20	0	48.10	39.20	12.70	0	53.40	38	8.60	0	59.40	37.80	2.80
	BLRT	0	88.60	10.70	0.70	0	73.60	22	4.40	0	72.70	23.50	3.80	0	79	18.60	2.40

Note: Mixing ratio was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and high class separation. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S36.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Matrix of Variance-Covariance for Study 2 with an X1-X2

Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Same	AIC	0	72.30	24.20	3.50	0	56.30	33.40	10.30	0	57.60	42.40	0	0	59	33.40	7.60
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.70	0.30	0	0	99.60	0.40	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	98.60	1.40	0	0	98.10	1.90	0	0	97.80	2.20	0	0	99.40	0.60	0
	LMR	0	73.10	22.70	4.20	0	66.80	25.90	7.20	0	70.40	29.50	0.10	0	70.20	26.40	3.40
	ALMR	0	74.80	21.40	3.80	0	68.40	24.80	6.80	0	70.90	29	0.10	0	70.70	26.20	3.10
	BLRT	0	87.40	11.50	1.10	0	86.10	12.30	1.50	0	81.60	18.40	0	0	85.30	14.10	0.60
Different	AIC	0	5.90	17.60	76.50	0	3.40	13.30	83.30	0	19.40	30.60	50	0	20.80	0	79.20
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	94.10	5.90	0	0	86.70	13.30	0	0	100	0	0	0	100	0	0
	LMR	0	70.60	17.60	11.80	0	73.40	13.30	13.30	0	93.10	6.90	0	0	100	0	0
	ALMR	0	76.50	17.60	5.90	0	73.40	13.30	13.30	0	93.10	6.90	0	0	100	0	0
	BLRT	0	88.20	11.80	0	0	80	20	0	0	100	0	0	0	95.80	4.20	0

Note: Matrix variance covariance structure was varied while holding other design factors constant as follows: Sample size N = 1000, high class separation, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S37.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Matrix of Variance-Covariance for Study 2 with an X1-X2

Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Same	AIC	0	72.30	24.20	3.50	0	54.70	35.40	10	0	58.50	35.20	6.30	0	55.5	37.40	7.10
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.40	0.60	0	0	99.40	0.60	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	99.90	0.10	0	0	100	0	0	0	100	0	0
	SBIC	0	98.60	1.40	0	0	97.30	2.50	0.20	0	97	3	0	0	98.10	1.90	0
	LMR	0	73.10	22.70	4.20	0	64.20	28.80	7	0	69.60	26.30	4.10	0	67.30	27.90	4.90
	ALMR	0	74.80	21.40	3.80	0	65.40	28.30	6.40	0	71.10	25	3.90	0	68.50	26.80	4.80
	BLRT	0	87.40	11.50	1.10	0	85.70	12.40	1.80	0	82.90	16.40	0.70	0	84.10	14.80	1.10
Different	AIC	0	5.90	17.60	76.50	0	0	33.30	66.70	0	0	0	100	0	15.80	0	84.20
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	100	0	0	0	88.90	11.10	0	0	100	0	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	94.10	5.90	0	0	77.80	22.20	0	0	100	0	0	0	89.50	10.50	0
	LMR	0	70.60	17.60	11.80	0	55.50	27.80	16.70	0	50	12.50	37.50	0	94.70	0	5.30
	ALMR	0	76.50	17.60	5.90	0	55.50	27.80	16.70	0	50	12.50	37.50	0	94.70	0	5.30
	BLRT	0	88.20	11.80	0	0	72.20	11.10	16.70	0	100	0	0	0	94.70	5.30	0

Note: Matrix variance covariance structure was varied while holding other design factors constant as follows: Sample size N = 1000, high class separation, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S38.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Matrix of Variance-Covariance for Study 2 with an X1-X2

Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1 X2				Model with C, I, S invariant on Covariate X1 X2				Model with C, I, S variant on Covariate X1 X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Same	AIC	0	72.30	24.20	3.50	0	33.40	46.30	20.40	0	71.30	23.10	5.60	0	45.40	45.70	8.90
	CAIC	0	100	0	0	0	100	0	0	0	99.80	0.20	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	99.20	0.80	0	0	95.70	4.30	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	99.60	0.40	0	0	100	0	0
	SBIC	0	98.60	1.40	0	0	96	4	0	0	91	8.90	0.10	0	99.30	0.70	0
	LMR	0	73.10	22.70	4.20	0	52.10	34.40	13.50	0	49.60	39.50	10.90	0	58.50	37.80	3.70
	ALMR	0	74.80	21.40	3.80	0	52.60	34.30	13.10	0	50.60	38.90	10.50	0	58.80	37.60	3.60
	BLRT	0	87.40	11.50	1.10	0	74	21.40	4.60	0	65.70	28.80	5.50	0	76.90	20.70	2.40
Different	AIC	0	5.9	17.60	76.50	0	3.70	11.10	85.20	0	4.2	33.30	62.50	0	0	0	100
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	100	0	0	0	96.30	3.70	0	0	100	0	0	0	100	0	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	94.10	5.90	0	0	88.90	11.10	0	0	95.80	2.10	2.10	0	100	0	0
	LMR	0	70.60	17.60	11.80	0	70.40	25.90	3.70	0	83.30	12.50	4.20	0	73.30	26.70	0
	ALMR	0	76.50	17.60	5.90	0	70.40	25.90	3.70	0	83.30	12.50	4.20	0	73.30	26.70	0
	BLRT	0	88.20	11.80	0	0	70.40	22.20	7.40	0	70.80	18.80	10.40	0	100	0	0

Note: Matrix variance covariance structure was varied while holding other design factors constant as follows: Sample size N = 1000, high class separation, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S39.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 3 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=200	AIC	0	71.30	24.10	4.60	0	63.80	22.40	13.80	0	63.40	24.40	12.20	0	60.10	24.60	15.30
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	95.10	4.70	0.20	0	93.10	6.60	0.30	0	93.20	6.60	0.20	0	96.40	3.50	0.10
	BIC	0	100	0	0	0	99.90	0.10	0	0	100	0	0	0	100	0	0
	SBIC	0	74.70	22	3.30	0	69.10	20.40	10.50	0	69.10	22.50	8.40	0	67.70	22.30	10
	LMR	0	75.90	22.40	1.70	0	84	14	2	0	80.30	17.10	2.60	0	79	18.90	2.10
	ALMR	0	77.90	20.50	1.60	0	84.50	13.50	2	0	81.20	16.20	2.60	0	80.30	17.80	1.90
	BLRT	0	87.90	11.70	0.40	0	85.70	12.60	1.70	0	84	14.30	1.70	0	89.40	9.20	1.40
N=400	AIC	0	73.60	20.70	5.70	0	55.40	19	25.60	0	71	18.20	10.80	0	92.50	4.10	3.40
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	98	2	0	0	96	3.90	0.10	0	98.40	1.60	0	0	99.70	0.30	0
	BIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	92.90	6.80	0.30	0	84.20	12	3.80	0	92.20	6.80	1	0	98.10	1.90	0
	LMR	0	76.80	21.10	2.10	0	81.40	15.80	2.80	0.10	84.80	11.80	3.30	0	82.50	15.50	2
	ALMR	0	77.90	20.10	2	0	82.60	15.20	2.20	0.10	85.60	11.60	2.70	0	83.10	15.30	1.60
	BLRT	0	89.60	9.90	0.50	0	82	14.10	3.90	0	89	9.70	1.30	0	81.90	16.80	1.30

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S40.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 3 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=200	AIC	0	71.30	24.10	4.60	0	18.10	17.60	64.30	0	59.10	23.70	17.20	0	59	25.60	15.40
	CAIC	0	100	0	0	0	99.60	0.40	0	0	100	0	0	0	100	0	0
	SCAIC	0	95.10	4.70	0.20	0	64	21.90	14.10	0	94.8	4.40	0.80	0	95.50	4.30	0.20
	BIC	0	100	0	0	0	97.80	2.10	0.10	0	100	0	0	0	100	0	0
	SBIC	0	74.70	22	3.30	0	22.80	21.20	56	0	65.90	21.50	12.60	0	67.20	22.50	10.30
	LMR	0	75.90	22.40	1.70	0.10	69.10	26.10	4.70	0.10	74.10	20.80	5	0.10	74.10	23.30	2.50
	ALMR	0	77.90	20.50	1.60	0.10	71.30	24.90	3.70	0.10	75.20	20.20	4.50	0.10	75.70	21.90	2.30
	BLRT	0	87.90	11.70	0.40	0	52.50	24.50	23	0	83.80	13.70	2.50	0	87	11.90	1.10
N=400	AIC	0	73.60	20.70	5.70	0	2.90	3.10	94	0	62.20	23.10	14.70	0	63.40	22.90	13.70
	CAIC	0	100	0	0	0	98	1.90	0.10	0	100	0	0	0	100	0	0
	SCAIC	0	98	2	0	0	48.50	19.30	32.20	0	98.70	1.30	0	0	99.40	0.60	0
	BIC	0	100	0	0	0	93.50	5.70	0.80	0	99.90	0.10	0	0	100	0	0
	SBIC	0	92.90	6.80	0.30	0	16.60	13.80	69.60	0	90	8.90	1.10	0	91.90	7.30	0.80
	LMR	0	76.80	21.10	2.10	0	49.40	35.40	15.20	0	76.60	18.90	4.50	0	77.10	20.20	2.70
	ALMR	0	77.90	20.10	2	0	51.50	34.20	14.30	0	77.40	18.40	4.20	0	77.70	19.80	2.50
	BLRT	0	89.60	9.90	0.50	0	19.20	15.60	65.20	0	86	11.70	2.30	0	87.20	10	2.80

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S41.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 3 with an X1-X2 Correlation of 0.20.

		Model w/o Covariate				Model with Covariate active X1 X2 on C				Model with Covariate active X1 X2 on C, I S invariant				Model with Covariate active X1 X2 on C, I S variant			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=200	AIC	0	71.30	24.10	4.60	0	15.90	13.20	70.90	0	43.50	25.70	30.80	0	43.60	22.60	33.80
	CAIC	0	100	0	0	0	99.50	0.50	0	0	100	0	0	1	99	0	0
	SCAIC	0	95.10	4.70	0.20	0	64.40	23.60	12	0	92	7.70	0.30	0	95.60	4.30	0.10
	BIC	0	100	0	0	0	98.90	1.10	0	0	99.90	0.10	0	0	100	0	0
	SBIC	0	74.70	22	3.30	0	21.30	15.30	63.40	0	51.30	25.90	22.80	0	54.80	23.60	21.60
	LMR	0	75.90	22.40	1.70	0	72.20	22.20	5.60	0.10	65.40	24.80	9.70	0.10	75.40	22	2.50
	ALMR	0	77.90	20.50	1.60	0	73.30	21.60	5.10	0.10	66.50	24.30	9.10	0.10	76.20	21.40	2.30
BLRT	0	87.90	11.70	0.40	0	55	24.90	20.10	0	72.10	18.80	9.10	0	78.20	17.40	4.40	
N=400	AIC	0	73.60	20.70	5.70	0	2.60	3.40	94	0	47.10	23.40	29.50	0	49.90	23.90	26.20
	CAIC	0	100	0	0	0	99.50	0.40	0.10	0	100	0	0	0	100	0	0
	SCAIC	0	98	2	0	0	56.50	20.60	22.90	0	98	1.9	0.10	0	99.80	0.20	0
	BIC	0	100	0	0	0	96.50	3	0.50	0	100	0	0	0	100	0	0
	SBIC	0	92.90	6.80	0.30	0	19.70	14.40	65.90	0	82.80	13.50	3.70	0	92.10	6.80	1.10
	LMR	0	76.80	21.10	2.10	0	62.30	28.60	9.10	0	72.20	20.20	7.60	0	77.20	20	2.80
	ALMR	0	77.90	20.10	2	0	64.40	27.40	8.20	0	72.80	20	7.20	0	78.20	19.20	2.60
BLRT	0	89.60	9.90	0.50	0	26.10	19.10	54.80	0	77	14.70	8.30	0	82.20	13	4.80	

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing percentages of 50%:50%. AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S42.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 3 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=1000	AIC	0	71.60	23.20	5.20	0	30.80	14.30	54.90	0	76.80	13.50	9.70	0	67.90	22.40	9.70
	CAIC	0	100	0	0	0	99.90	0.10	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	95.70	3.50	0.80	0	100	0	0	0	100	0	0
	BIC	0	100	0	0	0	99.60	0.40	0	0	100	0	0	0	100	0	0
	SBIC	0	98.20	1.70	0.10	0	86.10	9	4.90	0	98.50	1.50	0	0	99.60	0.40	0
	LMR	0	71	26.40	2.60	0	71.60	23	5.40	0	85.30	11.90	2.80	0	82.60	15.60	1.80
	ALMR	0	72.90	25	2.10	0	72.90	22.30	4.80	0	86.20	11.20	2.60	0	83	15.40	1.60
	BLRT	0	88.10	11	0.90	0	59.30	17.90	22.80	0	91	7.90	1.10	0	90.50	8.20	1.3
N=2000	AIC	0	70.60	24.90	4.50	0	8	3	89	0	59.10	38.20	2.70	0	65.50	24.50	10
	CAIC	0	100	0	0	0	99.70	0.30	0	0	89.90	10.10	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	88.80	6.30	4.90	0	79.20	20.80	0	0	100	0	0
	BIC	0	100	0	0	0	99	0.90	0.10	0	86.50	13.50	0	0	100	0	0
	SBIC	0	99.50	0.50	0	0	72.80	10.60	16.60	0	74.70	25.30	0	0	99.90	0.10	0
	LMR	0	72.80	25.50	1.70	0	48.80	31.30	19.90	0	86.10	12.80	1.10	0	84.20	14.20	1.60
	ALMR	0	73.90	24.50	1.60	0	49.90	31.10	19	0	87	12.10	0.90	0	85.60	13.10	1.30
	BLRT	0	87.30	11.90	0.80	0	24.80	9.40	65.80	0	90.10	9.50	0.40	0	90.50	8.60	0.90

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S43.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 3 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=1000	AIC	0	71.60	23.20	5.20	0	0	0	100	0	62.50	23.30	14.20	0	61.70	24.90	13.40
	CAIC	0	100	0	0	0	65.40	11	23.60	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	4.50	2.90	92.60	0	99.60	0.40	0	0	99.80	0.20	0
	BIC	0	100	0	0	0	43.50	10	46.50	0	100	0	0	0	100	0	0
	SBIC	0	98.20	1.70	0.10	0	0.60	0.30	99.10	0	97.80	2.10	0.10	0	98.70	1.20	0.10
	LMR	0	71	26.40	2.60	0	15.30	23.90	60.80	0	79.70	15.60	4.70	0	77.30	19.60	3.10
	ALMR	0	72.90	25	2.10	0	16.60	24.30	59.10	0	80.90	15.10	4	0	78.30	18.70	3
	BLRT	0	88.10	11	0.90	0	0.10	0.20	99.70	0	84.70	13.50	1.80	0	88.90	9.40	1.70
N=2000	AIC	0	70.60	24.90	4.50	0	0	0	100	0	62.40	22.80	14.80	0	63.60	24.30	12.10
	CAIC	0	100	0	0	0	1.70	0.20	98.10	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	0	0	100	0	99.90	0.10	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	0.40	0.10	99.50	0	100	0	0	0	100	0	0
	SBIC	0	99.50	0.50	0	0	0	0	100	0	99.50	0.50	0	0	99.90	0.10	0
	LMR	0	72.80	25.50	1.70	0	3.20	4.30	92.50	0	82.60	13.90	3.50	0	82.60	15.40	2
	ALMR	0	73.90	24.50	1.60	0	3.40	4.40	92.20	0	83.20	13.70	3.10	0	83.10	15	1.90
	BLRT	0	87.30	11.90	0.80	0	0	0	100	0	84.80	14.30	0.90	0	90.50	8.50	1

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S44.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 3 with an X1-X2 Correlation of 0.20.

		Model w/o Covariate				Model with Covariate active X1 X2 on C				Model with Covariate active X1 X2 on C, I S invariant				Model with Covariate active X1 X2 on C, I S variant			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=1000	AIC	0	71.60	23.20	5.20	0	0	0	100	0	48.50	20.60	30.90	0	52.30	25.60	22.10
	CAIC	0	100	0	0	0	84.10	8.30	7.60	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	10.30	3.80	85.90	0	99.40	0.60	0	0	100	0	0
	BIC	0	100	0	0	0	63.70	11.30	25	0	100	0	0	0	100	0	0
	SBIC	0	98.20	1.70	0.10	0	1.30	0.60	98.10	0	97.40	2.50	0.10	0	99.60	0.40	0
	LMR	0	71	26.40	2.60	0	31.20	28.50	40.30	0.10	76.40	17.90	5.60	0	82.20	14.80	3
	ALMR	0	72.90	25	2.10	0	33.30	28.30	38.40	0.10	77.20	17.40	5.30	0	82.90	14.20	2.90
	BLRT	0	88.10	11	0.90	0	0.20	0.20	99.60	0	81.10	13.50	5.40	0	85.50	11.20	3.30
N=2000	AIC	0	70.60	24.90	4.50	0	0	0	100	0	49.60	19.60	30.80	0	55.70	25.40	18.90
	CAIC	0	100	0	0	0	11.80	0.80	87.40	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	0	0	100	0	99.80	0.20	0	0	100	0	0
	BIC	0	100	0	0	0	3.10	0.20	96.70	0	100	0	0	0	100	0	0
	SBIC	0	99.50	0.50	0	0	0	0	100	0	98.70	1.30	0	0	99.90	0.10	0
	LMR	0	72.80	25.50	1.70	0	8.70	7.90	83.40	0	81.20	13.40	5.40	0	88.80	10.50	0.70
	ALMR	0	73.90	24.50	1.60	0	9.10	8.10	82.80	0	82.20	12.60	5.20	0	88.90	10.40	0.70
	BLRT	0	87.30	11.90	0.80	0	0	0	100	0	84.30	10	5.70	0	89.70	9.40	0.90

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing percentages of 50%:50%. AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S45.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Class Separation for Study 3 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
High	AIC	0	71.60	23.20	5.20	0	30.80	14.30	54.90	0	76.80	13.50	9.70	0	67.90	22.40	9.70
	CAIC	0	100	0	0	0	99.90	0.10	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	95.70	3.50	0.80	0	100	0	0	0	100	0	0
	BIC	0	100	0	0	0	99.60	0.40	0	0	100	0	0	0	100	0	0
	SBIC	0	98.20	1.70	0.10	0	86.10	9	4.90	0	98.50	1.50	0	0	99.60	0.40	0
	LMR	0	71	26.40	2.60	0	71.60	23	5.40	0	85.30	11.90	2.80	0	82.60	15.60	1.80
	ALMR	0	72.90	25	2.10	0	72.90	22.30	4.80	0	86.20	11.20	2.60	0	83	15.40	1.60
BLRT	0	88.10	11	0.90	0	59.30	17.90	22.80	0	91	7.90	1.10	0	90.50	8.20	1.30	
Low	AIC	2.20	74	20.10	3.70	0	37.30	44.80	17.90	1.70	70.90	22	5.50	4.20	65.10	24.50	6.20
	CAIC	84	16	0	0	3.30	96.70	0	0	94.70	5.30	0	0	99.30	0.70	0	0
	SCAIC	34.50	65.20	0.30	0	0	99.20	0.80	0	52.40	47.60	0	0	78.60	21.40	0	0
	BIC	73.70	26.30	0	0	0.90	99.10	0	0	88.20	11.80	0	0	98.50	1.50	0	0
	SBIC	18.60	80	1.40	0	0	94.50	5.40	0.10	27.70	71.40	0.90	0	52.80	46.80	0.40	0
	LMR	14.90	67.10	15.60	2.40	1.60	67	26.50	4.90	24.20	61.20	11.20	3.30	30	53.90	14.50	1.60
	ALMR	16.10	67.10	14.70	2.10	1.60	67.60	26.20	4.60	25.40	60.60	10.70	3.30	31	54	13.50	1.50
BLRT	8.90	81.30	9.10	0.70	0	74	22.90	3.10	17.40	69.50	12	1.10	22.40	65.20	11.20	1.20	

Note: Class separation was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S46.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Class Separation for Study 3 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
High	AIC	0	71.60	23.20	5.20	0	0	0	100	0	62.50	23.30	14.20	0	61.70	24.90	13.40
	CAIC	0	100	0	0	0	65.40	11	23.60	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	4.50	2.90	92.60	0	99.60	0.40	0	0	99.80	0.20	0
	BIC	0	100	0	0	0	43.50	10	46.50	0	100	0	0	0	100	0	0
	SBIC	0	98.2	1.70	0.10	0	0.60	0.30	99.10	0	97.80	2.10	0.10	0	98.70	1.20	0.10
	LMR	0	71	26.40	2.60	0	15.30	23.90	60.80	0	79.70	15.60	4.70	0	77.30	19.60	3.10
	ALMR	0	72.90	25	2.10	0	16.60	24.30	59.10	0	80.90	15.10	4	0	78.30	18.70	3
BLRT	0	88.10	11	0.90	0	0.10	0.20	99.70	0	84.70	13.50	1.80	0	88.90	9.40	1.70	
Low	AIC	2.20	74	20.10	3.70	0	2.30	97.70	0	0	64.60	28.80	6.60	0	59.70	31.40	8.90
	CAIC	84	16	0	0	0	98.40	1.60	0	35.80	64.20	0	0	74.90	25.10	0	0
	SCAIC	34.50	65.20	0.30	0	0	63.90	36.10	0	3.50	96.30	0.20	0	13.60	86.40	0	0
	BIC	73.70	26.30	0	0	0	95.20	4.80	0	21.60	78.40	0	0	56.30	43.70	0	0
	SBIC	18.60	80	1.40	0	0	36.10	63.90	0	0.40	97.80	1.70	0.10	3.60	95.70	0.70	0
	LMR	14.90	67.10	15.60	2.40	2.60	53.90	43.10	0.40	2.80	72.40	18.60	6.20	3.60	66.40	26.20	3.80
	ALMR	16.10	67.10	14.70	2.10	2.60	55	42	0.40	2.90	72.70	18.50	5.90	4	66.90	25.30	3.80
BLRT	8.90	81.30	9.10	0.70	0	15.70	84.30	0	0.20	80	17.20	2.60	0.60	77.50	20.40	1.50	

Note: Class separation was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S47.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Mixing Ratio for Study 3 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
0.50/0.50	AIC	0	71.60	23.20	5.20	0	30.80	14.30	54.90	0	76.80	13.50	9.70	0	67.90	22.40	9.70
	CAIC	0	100	0	0	0	99.90	0.10	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	95.70	3.50	0.80	0	100	0	0	0	100	0	0
	BIC	0	100	0	0	0	99.60	0.40	0	0	100	0	0	0	100	0	0
	SBIC	0	98.20	1.70	0.10	0	86.10	9	4.90	0	98.50	1.50	0	0	99.60	0.40	0
	LMR	0	71	26.40	2.60	0	71.60	23	5.40	0	85.30	11.90	2.80	0	82.60	15.60	1.80
	ALMR	0	72.90	25	2.10	0	72.90	22.30	4.80	0	86.20	11.20	2.60	0	83	15.40	1.60
	BLRT	0	88.10	11	0.90	0	59.30	17.90	22.80	0	91	7.90	1.10	0	90.50	8.20	1.30
0.30/0.70	AIC	0	71.10	25.80	3.10	0	16.40	37.80	45.80	0	54.70	34.90	10.40	0	58.50	36	5.50
	CAIC	0	100	0	0	0	99.80	0.20	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	90.60	8.80	0.60	0	99.60	0.40	0	0	100	0	0
	BIC	0	100	0	0	0	99.20	0.80	0	0	100	0	0	0	100	0	0
	SBIC	0	98.70	1.30	0	0	76.20	19.80	4	0	97.30	2.70	0	0	99.50	0.50	0
	LMR	0	72.10	23.80	4.10	0	58.60	33.80	7.60	0	65.50	28	6.50	0	64.40	30.90	4.70
	ALMR	0	73.60	22.70	3.70	0	59.90	33.20	6.90	0	66.50	27.50	6	0	64.80	30.90	4.30
	BLRT	0	87.50	12	0.50	0	47.50	33.80	18.70	0	80.20	18.40	1.40	0	86.50	12.30	1.20

Note: Mixing ratio was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and high class separation. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S48.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Mixing Ratio for Study 3 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
0.50/0.50	AIC	0	71.60	23.20	5.20	0	0	0	100	0	62.50	23.30	14.20	0	61.70	24.90	13.40
	CAIC	0	100	0	0	0	65.40	11	23.60	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	4.50	2.90	92.60	0	99.60	0.40	0	0	99.80	0.20	0
	BIC	0	100	0	0	0	43.50	10	46.50	0	100	0	0	0	100	0	0
	SBIC	0	98.20	1.70	0.10	0	0.60	0.30	99.10	0	97.80	2.10	0.10	0	98.70	1.20	0.10
	LMR	0	71	26.40	2.60	0	15.30	23.90	60.80	0	79.70	15.60	4.70	0	77.30	19.60	3.10
	ALMR	0	72.90	25	2.10	0	16.60	24.30	59.10	0	80.90	15.10	4	0	78.30	18.70	3
	BLRT	0	88.10	11	0.90	0	0.10	0.20	99.70	0	84.70	13.50	1.80	0	88.90	9.40	1.70
0.30/0.70	AIC	0	71.10	25.80	3.10	0	0	1.10	98.90	0	53.60	37.50	8.90	0	57.80	35.60	6.60
	CAIC	0	100	0	0	0	41.20	36.80	22	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	2.10	12.10	85.80	0	99.40	0.60	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	23	34.70	42.30	0	100	0	0	0	100	0	0
	SBIC	0	98.70	1.30	0	0	0.10	5.70	94.20	0	97.80	2.20	0	0	99.20	0.80	0
	LMR	0	72.10	23.80	4.10	0	12.50	30.90	56.60	0	65.40	27.40	7.20	0	66.40	28	5.60
	ALMR	0	73.60	22.70	3.70	0	13	32.10	54.90	0	65.90	27.30	6.80	0	67.50	27.50	5
	BLRT	0	87.50	12	0.50	0	0	2.80	97.20	0	82.80	15.80	1.40	0	88.40	11.20	0.40

Note: Mixing ratio was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and high class separation. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S49.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Mixing Ratio for Study 3 with an X1-X2 Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X1 X2				Model with C, I, S invariant on Covariate X1 X2				Model with C, I, S variant on Covariate X1 X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
0.50/0.50	AIC	0	71.60	23.20	5.20	0	0	0	100	0	48.50	20.60	30.90	0	52.30	25.60	22.10
	CAIC	0	100	0	0	0	84.10	8.30	7.60	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	10.30	3.80	85.90	0	99.40	0.60	0	0	100	0	0
	BIC	0	100	0	0	0	63.70	11.30	25	0	100	0	0	0	100	0	0
	SBIC	0	98.20	1.70	0.10	0	1.30	0.60	98.10	0	97.40	2.50	0.10	0	99.60	0.40	0
	LMR	0	71	26.40	2.60	0	31.20	28.50	40.30	0.10	76.40	17.90	5.60	0	82.20	14.80	3
	ALMR	0	72.90	25	2.10	0	33.30	28.30	38.40	0.10	77.20	17.40	5.30	0	82.90	14.20	2.90
	BLRT	0	88.10	11	0.90	0	0.20	0.20	99.60	0	81.10	13.50	5.40	0	85.50	11.20	3.30
0.3/0.70	AIC	0	71.10	25.80	3.10	0	0	4.20	95.80	0	30.40	52.80	16.80	0	43.90	47	9.10
	CAIC	0	100	0	0	0	58.90	33	8.10	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	4.20	26.60	69.20	0	99.50	0.50	0	0	100	0	0
	BIC	0	100	0	0	0	39.30	39.10	21.60	0	100	0	0	0	100	0	0
	SBIC	0	98.70	1.30	0	0	0.40	17.40	82.20	0	96.80	3.10	0.10	0	99.60	0.40	0
	LMR	0	72.10	23.80	4.10	0	30.70	35.10	34.20	0	49.80	40.80	9.40	0	60.80	36.80	2.40
	ALMR	0	73.60	22.70	3.70	0	31	36.20	32.80	0	51.30	39.60	9.10	0	61.40	36.20	2.40
	BLRT	0	87.50	12	0.50	0	0	9.40	90.60	0	72.80	23.60	3.60	0	81.20	17	1.80

Note: Mixing ratio was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and high class separation. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S50.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Matrix of Variance-Covariance for Study 3 with an X1-X2

Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Same	AIC	0	71.60	23.20	5.20	0	30.80	14.30	54.90	0	76.80	13.50	9.70	0	67.90	22.40	9.70
	CAIC	0	100	0	0	0	99.90	0.10	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	95.70	3.50	0.80	0	100	0	0	0	100	0	0
	BIC	0	100	0	0	0	99.60	0.40	0	0	100	0	0	0	100	0	0
	SBIC	0	98.20	1.70	0.10	0	86.10	9	4.90	0	98.50	1.50	0	0	99.60	0.40	0
	LMR	0	71	26.40	2.60	0	71.60	23	5.40	0	85.30	11.90	2.80	0	82.60	15.60	1.80
	ALMR	0	72.90	25	2.10	0	72.90	22.30	4.80	0	86.20	11.20	2.60	0	83	15.40	1.60
	BLRT	0	88.10	11	0.90	0	59.30	17.90	22.80	0	91	7.90	1.10	0	90.50	8.20	1.30
Different	AIC	0	0	7.70	92.30	0	0	0.10	99.90	0	0	1.90	98.10	0	10.50	5.30	84.20
	CAIC	0	100	0	0	0	19.20	80.60	0.20	0	91.30	8.70	0	0	100	0	0
	SCAIC	0	100	0	0	0	0.30	79.60	20.10	0	13.20	76.90	9.90	0	100	0	0
	BIC	0	100	0	0	0	8.20	91.20	0.60	0	75.70	24.30	0	0	100	0	0
	SBIC	0	100	0	0	0	0	42.50	57.50	0	1.80	57.70	40.50	0	100	0	0
	LMR	0	69.20	15.40	15.40	0	10.60	52.40	37	0	20.90	62.20	16.90	0	79	15.80	5.20
	ALMR	0	69.20	15.40	15.40	0	10.90	53.10	36	0	21.50	62.90	15.60	0	79	15.80	5.20
	BLRT	0	92.30	7.70	0	0	0	8.60	91.40	0	3.40	37.30	59.30	0	100	0	0

Note: Matrix variance covariance structure was varied while holding other design factors constant as follows: Sample size N = 1000, high class separation, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S51.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Matrix of Variance-Covariance for Study 3 with an X1-X2

Correlation of 0.20.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Same	AIC	0	71.60	23.20	5.20	0	0	0	100	0	62.50	23.30	14.20	0	61.70	24.90	13.40
	CAIC	0	100	0	0	0	65.40	11	23.60	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	4.50	2.90	92.60	0	99.60	0.40	0	0	99.80	0.20	0
	BIC	0	100	0	0	0	43.50	10	46.50	0	100	0	0	0	100	0	0
	SBIC	0	98.20	1.70	0.10	0	0.60	0.30	99.10	0	97.80	2.10	0.10	0	98.70	1.20	0.10
	LMR	0	71	26.40	2.60	0	15.30	23.90	60.80	0	79.70	15.60	4.70	0	77.30	19.60	3.10
	ALMR	0	72.90	25	2.10	0	16.60	24.30	59.10	0	80.90	15.10	4	0	78.30	18.70	3
	BLRT	0	88.10	11	0.90	0	0.10	0.20	99.70	0	84.70	13.50	1.80	0	88.90	9.40	1.70
Different	AIC	0	0	7.70	92.30	0	0	0	100	0	0	1.90	98.10	0	0	7.70	92.30
	CAIC	0	100	0	0	0	73.90	26.10	0	0	100	0	0	0	100	0	0
	SCAIC	0	100	0	0	0	5.10	60.60	34.30	0	82.70	17.30	0	0	92.30	7.70	0
	BIC	0	100	0	0	0	52.70	46.30	1	0	100	0	0	0	100	0	0
	SBIC	0	100	0	0	0	0.30	25.90	73.80	0	41.40	53.80	4.80	0	76.90	23.10	0
	LMR	0	69.20	15.40	15.40	0	17.50	46.70	35.80	0	50	44.20	5.80	0	69.20	30.80	0
	ALMR	0	69.20	15.40	15.40	0	17.80	47.10	35.10	0	50	44.20	5.80	0	69.20	30.80	0
	BLRT	0	92.30	7.70	0	0	0.30	4.50	95.20	0	40.40	43.20	16.40	0	76.90	23.10	0

Note: Matrix variance covariance structure was varied while holding other design factors constant as follows: Sample size N = 1000, high class separation, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S52.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 3 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=200	AIC	0	71.80	22.70	5.50	0	55.80	26.90	17.30	0	60.10	24.10	15.80	0	57.4	24.50	18.10
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	95.10	4.80	0.10	0	91.20	8.30	0.50	0	93.60	6	0.40	0	95.30	4.60	0.10
	BIC	0	100	0	0	0	99.90	0.10	0	0	100	0	0	0	100	0	0
	SBIC	0	76.50	18.90	4.60	0	62.70	25	12.30	0	65.70	22.30	12	0	65.90	21.80	12.30
	LMR	0	77.20	21	1.80	0	78	18.70	3.30	0.10	79.80	16.50	3.60	0	77.40	20.30	2.30
	ALMR	0	79	19.70	1.30	0	79.20	17.70	3.10	0.10	81.10	15.50	3.30	0	79	19.20	1.80
	BLRT	0	88.80	10.40	0.80	0	84.50	12.50	3	0	83.20	14.20	2.60	0	87	11	2
N=400	AIC	0	73.10	22.10	4.80	0	100	0	0	0	65.20	21.90	12.90	0	99.80	0	0.20
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	98.40	1.60	0	0	100	0	0	0	98.20	1.80	0	0	100	0	0
	BIC	0	99.90	0.10	0	0	100	0	0	0	100	0	0	0	100	0	0
	SBIC	0	92.20	7.30	0.50	0	100	0	0	0	89.50	8.90	1.60	0	99.90	0.10	0
	LMR	0	72	24.90	3.10	0	80.80	15.20	4	0	82.90	13.70	3.40	0	73.30	24.60	2.10
	ALMR	0	74.30	23.10	2.60	0	81.80	14.30	3.90	0	84	12.70	3.30	0	74.60	23.40	2
	BLRT	0	89.30	10	0.70	0	86.10	11.60	2.30	0	86.40	12.10	1.50	0	45.20	50.90	3.90

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S53.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 3 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=200	AIC	0	71.80	22.70	5.50	0	5.80	9.90	84.30	0	59.50	23.60	16.90	0	60.20	24	15.80
	CAIC	0	100	0	0	0	97.30	2.60	0.10	0	100	0	0	0	100	0	0
	SCAIC	0	95.10	4.80	0.10	0	37.80	27	35.20	0	92.80	6.90	0.30	0	95.30	4.70	0
	BIC	0	100	0	0	0	91.50	8	0.50	0	100	0	0	0	100	0	0
	SBIC	0	76.50	18.90	4.60	0	7.20	12.60	80.20	0	66	21.60	12.40	0	67.60	22.10	10.30
	LMR	0	77.20	21	1.80	0	56.90	32	11.10	0.20	76	18.90	4.90	0.10	77.70	20.30	1.90
	ALMR	0	79	19.70	1.30	0	59.20	30.70	10.10	0.20	77.40	18	4.40	0.10	78.90	19.30	1.70
	BLRT	0	88.80	10.40	0.80	0	30.80	24.60	44.60	0	84.30	13	2.70	0	87.30	11.60	1.10
N=400	AIC	0	73.10	22.10	4.80	0	0.10	0.50	99.40	0	59.70	25.50	14.80	0	59.70	26.50	13.80
	CAIC	0	100	0	0	0	87.80	9.80	2.40	0	100	0	0	0	100	0	0
	SCAIC	0	98.40	1.60	0	0	16.30	13.70	70	0	97.40	2.60	0	0	99	1	0
	BIC	0	99.90	0.10	0	0	72.60	17.80	9.60	0	99.90	0.10	0	0	100	0	0
	SBIC	0	92.20	7.30	0.50	0	2.50	4.40	93.10	0	87.80	10.40	1.80	0	91.30	8.10	0.60
	LMR	0	72	24.90	3.10	0	32.20	40.60	27.20	0	75.20	19.90	4.90	0	77.50	19.50	3
	ALMR	0	74.30	23.10	2.60	0	33.80	41.30	24.90	0	76.90	18.70	4.40	0	78.30	19	2.70
	BLRT	0	89.30	10	0.70	0	3.50	5.10	91.40	0	81.60	15.40	3	0	88.30	9.50	2.20

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S54.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 3 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1 X2				Model with C, I, S invariant on Covariate X1 X2				Model with C, I, S variant on Covariate X1 X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=200	AIC	0	71.80	22.70	5.50	0	4.40	9.40	86.20	0	41.80	25.60	32.60	0	41.90	23.30	34.80
	CAIC	0	100	0	0	0	99.20	0.80	0	0	100	0	0	0.50	99.50	0	0
	SCAIC	0	95.10	4.80	0.10	0	41.60	28	30.40	0	89	10	1	0	95.30	4.70	0
	BIC	0	100	0	0	0	94.70	5	0.30	0	100	0	0	0	100	0	0
	SBIC	0	76.50	18.90	4.60	0	7.10	13.30	79.60	0	49.90	26	24.10	0	52.30	23.30	24.40
	LMR	0	77.20	21	1.80	0	57.50	32.50	10	0.20	66.90	24.30	8.60	0.10	74	22.60	3.30
	ALMR	0	79	19.70	1.30	0	58.30	32.10	9.60	0.20	67.50	24.10	8.20	0.10	74.60	22.10	3.20
	BLRT	0	88.80	10.40	0.80	0	33.80	28.10	38.10	0	71	19.40	9.60	0	76.70	18.60	4.70
N=400	AIC	0	73.10	22.10	4.80	0	0	0.90	99.10	0	45.10	22	32.90	0	49.50	23.30	27.10
	CAIC	0	100	0	0	0	95.20	4.20	0.60	0	100	0	0	0	100	0	0
	SCAIC	0	98.40	1.60	0	0	24.20	17.10	58.70	0	97.20	2.60	0.20	0	99.90	0.10	0
	BIC	0	99.90	0.10	0	0	84.10	12.10	3.80	0	100	0	0	0	100	0	0
	SBIC	0	92.20	7.30	0.50	0	4.20	5.10	90.70	0	84.90	12.10	3	0	92.10	7.40	0.50
	LMR	0	72	24.90	3.10	0	41.80	41.10	17.10	0	72.50	20	7.50	0	79.30	18.10	2.60
	ALMR	0	74.30	23.10	2.60	0	43.30	40.60	16.10	0	73.60	19.10	7.30	0	79.90	17.70	2.40
	BLRT	0	89.30	10	0.70	0	7.30	8.40	84.30	0	78.60	12.90	8.50	0	82.80	13.60	3.60

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S55.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 3 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=1000	AIC	0	70.80	23	6.20	0	32.4	23.80	43.80	0	63.60	20.90	15.50	0	61.50	24.90	13.60
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	98.30	1.40	0.30	0	99.60	0.30	0.10	0	99.90	0.10	0
	BIC	0	100	0	0	0	99.90	0.10	0	0	100	0	0	0	100	0	0
	SBIC	0	99	0.9	0.10	0	92.10	6.30	1.60	0	98.20	1.70	0.10	0	99.40	0.50	0.10
	LMR	0	72.80	24.50	2.70	0	73.70	21.40	4.90	0	81.20	15.40	3.40	0	79.80	18.10	2.10
	ALMR	0	74.80	22.90	2.30	0	75.30	20.10	4.60	0	81.80	15	3.20	0	80.60	17.70	1.70
	BLRT	0	88.90	10	1.10	0	68.20	21.50	10.30	0	86	11.60	2.40	0	88.80	9.60	1.60
N=2000	AIC	0	71	28.90	0.20	0	12	9	79	0	62.20	23.80	14	0	64.30	24.40	11.30
	CAIC	0	100	0	0	0	99.80	0.20	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	95.50	4	0.50	0	99.90	0.10	0	0	100	0	0
	BIC	0	100	0	0	0	99.60	0.40	0	0	100	0	0	0	100	0	0
	SBIC	0	98.90	1.10	0	0	86.60	9.80	3.60	0	99.30	0.70	0	0	99.70	0.30	0
	LMR	0	71	25.90	3.10	0	61.40	29.50	9.10	0	82.50	15.40	2.10	0	83.80	14.60	1.60
	ALMR	0	72.30	24.80	2.90	0	62.70	29.80	7.50	0	82.70	14.50	1.80	0	84.20	14.20	1.60
	BLRT	0	86.40	12.90	0.70	0	41	20.10	38.90	0	82.70	15	2.30	0	88.60	10	1.40

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S56.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 3 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=1000	AIC	0	70.80	23	6.20	0	0	0	100	0	61.40	21.80	16.80	0	59.40	26	14.60
	CAIC	0	100	0	0	0	10.40	2.60	87	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	0.10	0.10	99.80	0	99.40	0.60	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	2.90	0.80	96.30	0	100	0	0	0	100	0	0
	SBIC	0	99	0.90	0.10	0	0	0	100	0	97.10	2.90	0	0	98.20	1.80	0
	LMR	0	72.80	24.50	2.70	0	7.10	13.40	79.50	0	77.50	17.70	4.80	0	78	18.50	3.50
	ALMR	0	74.80	22.90	2.30	0	7.30	14.40	78.30	0	78.60	16.80	4.60	0	78.80	17.80	3.40
	BLRT	0	88.90	10	1.10	0	0	0	100	0	85.20	12	2.80	0	88.40	10.20	1.40
N=2000	AIC	0	71	28.90	0.20	0	0	0	100	0	61.10	24.10	14.80	0	62.10	26.50	11.40
	CAIC	0	100	0	0	0	0	0	100	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	0	0	100	0	99.80	0.20	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	0	0	100	0	100	0	0	0	100	0	0
	SBIC	0	98.90	1.10	0	0	0	0	100	0	99	1	0	0	99.80	0.20	0
	LMR	0	71	25.90	3.10	0	0.10	1.30	98.60	0	81.70	14.70	3.60	0	82.70	15.10	2.20
	ALMR	0	72.30	24.80	2.90	0	0.10	1.60	98.30	0	82.70	13.80	3.50	0	83.10	14.80	2.10
	BLRT	0	86.40	12.90	0.70	0	0	0	100	0	83.20	14.60	2.20	0	90.50	8.90	0.60

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S57.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Sample Size for Study 3 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1 X2				Model with C, I, S invariant on Covariate X1 X2				Model with C, I, S variant on Covariate X1 X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N=1000	AIC	0	70.80	23	6.20	0	0	0	100	0	48	19	33	0	50.90	27.30	21.80
	CAIC	0	100	0	0	0	26.10	5.20	68.70	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	0	0.10	99.90	0	99.30	0.70	0	0	100	0	0
	BIC	0	100	0	0	0	10	2	88	0	100	0	0	0	100	0	0
	SBIC	0	99	0.90	0.10	0	0	0	100	0	97	2.80	0.20	0	99.60	0.40	0
	LMR	0	72.80	24.50	2.70	0	8.70	16.80	74.50	0	77.20	14.80	8	0	80.40	17.10	2.50
	ALMR	0	74.80	22.90	2.30	0	8.90	17.10	74	0	78.60	13.80	7.60	0	80.80	16.80	2.40
	BLRT	0	88.90	10	1.10	0	0	0	100	0	82.70	10.80	6.50	0	85.50	11.60	2.90
N=2000	AIC	0	71	28.90	0.20	0	0	0	100	0	49.10	19.40	31.50	0	54.40	25.90	19.70
	CAIC	0	100	0	0	0	0	0	100	0	100	0	0	0	100	0	0
	SCAIC	0	99.70	0.30	0	0	0	0	100	0	99.90	0.10	0	0	100	0	0
	BIC	0	100	0	0	0	0	0	100	0	100	0	0	0	100	0	0
	SBIC	0	98.90	1.10	0	0	0	0	100	0	98.60	1.40	0	0	99.90	0.10	0
	LMR	0	71	25.90	3.10	0	1.20	1.20	97.60	0	81	14	5	0	86	11.90	2.10
	ALMR	0	72.30	24.80	2.90	0	1.20	1.30	97.50	0	82.10	13.10	4.80	0	86.40	11.70	1.90
	BLRT	0	86.40	12.90	0.70	0	0	0	100	0	84.20	10.50	5.30	0	87.60	9.60	2.80

Note: Sample size was varied while holding other design factors constant as follows: High class separation, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S58.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Class Separation for Study 3 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
High	AIC	0	70.80	23	6.20	0	32.40	23.80	43.80	0	63.60	20.90	15.50	0	61.50	24.90	13.60
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	98.30	1.40	0.30	0	99.60	0.30	0.10	0	99.90	0.10	0
	BIC	0	100	0	0	0	99.90	0.10	0	0	100	0	0	0	100	0	0
	SBIC	0	99	0.90	0.10	0	92.10	6.30	1.60	0	98.20	1.70	0.10	0	99.40	0.50	0.10
	LMR	0	72.80	24.50	2.70	0	73.70	21.40	4.90	0	81.20	15.40	3.40	0	79.80	18.10	2.10
	ALMR	0	74.80	22.90	2.30	0	75.30	20.10	4.60	0	81.80	15	3.20	0	80.60	17.70	1.70
BLRT	0	88.90	10	1.10	0	68.20	21.50	10.30	0	86	11.60	2.40	0	88.80	9.60	1.60	
Low	AIC	0	72.60	24.60	2.80	0	39	47.70	13.30	0	66.10	28.90	5	0	63.80	29.10	7.10
	CAIC	19.50	80.50	0	0	0	100	0	0	32.50	67.50	0	0	70.90	29.10	0	0
	SCAIC	1.20	98.40	0.40	0	0	99.30	0.60	0.10	2.20	97.60	0.20	0	11.30	88.60	0.10	0
	BIC	10.50	89.50	0	0	0	100	0	0	18.80	81.20	0	0	52.50	47.50	0	0
	SBIC	0.30	98.40	1.20	0.10	0	95.90	3.80	0.30	0.50	98.50	1	0	2.80	95.80	1.40	0
	LMR	0.80	76.30	20.60	2.30	0	68.10	26.90	5	2.30	78.10	14.90	4.70	2.40	69.40	23.80	4.40
	ALMR	0.90	77.60	19.40	2.10	0	69.60	25.60	4.80	2.40	79.10	14.10	4.40	2.50	70.10	23.20	4.20
BLRT	0.20	90.50	8.60	0.70	0	76.80	20.90	2.30	0	82.80	15.30	1.90	0.30	80.60	18.20	0.90	

Note: Class separation was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S59.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Class Separation for Study 3 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
High	AIC	0	70.80	23	6.20	0	0	0	100	0	61.40	21.80	16.80	0	59.40	26	14.60
	CAIC	0	100	0	0	0	10.40	2.60	87	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	0.10	0.10	99.80	0	99.40	0.60	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	2.90	0.80	96.30	0	100	0	0	0	100	0	0
	SBIC	0	99	0.90	0.10	0	0	0	100	0	97.10	2.90	0	0	98.20	1.80	0
	LMR	0	72.80	24.50	2.70	0	7.10	13.40	79.50	0	77.50	17.70	4.80	0	78	18.50	3.50
	ALMR	0	74.80	22.90	2.30	0	7.30	14.40	78.30	0	78.60	16.80	4.60	0	78.80	17.80	3.40
BLRT	0	88.90	10	1.10	0	0	0	100	0	85.20	12	2.80	0	88.40	10.20	1.40	
Low	AIC	0	72.60	24.60	2.80	0	0	4.10	95.90	0	62.80	30.90	6.30	0	58.30	33.50	8.20
	CAIC	19.50	80.50	0	0	0	16.60	80.80	2.60	34.20	65.80	0	0	74.40	25.60	0	0
	SCAIC	1.20	98.40	0.40	0	0	0.20	56	43.80	2.90	96.40	0.70	0	12.50	87.50	0	0
	BIC	10.50	89.50	0	0	0	7.20	84.80	8	20.90	79.10	0	0	54.90	45.10	0	0
	SBIC	0.30	98.40	1.20	0.10	0	0	32.80	67.20	0.60	96.70	2.70	0	3.30	95.70	1	0
	LMR	0.80	76.30	20.60	2.30	0	27.70	43.80	28.50	2.80	71.60	20.30	5.30	3.20	67.50	26.50	2.80
	ALMR	0.90	77.60	19.40	2.10	0	29.30	44.30	26.40	3	72.50	19.50	5	3.50	67.70	26.10	2.70
BLRT	0.20	90.50	8.60	0.70	0	0	15.90	84.10	0.20	78	18.10	3.70	0.70	79.30	18.50	1.50	

Note: Class separation was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S60.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Class Separation for Study 3 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1 X2				Model with C, I, S invariant on Covariate X1 X2				Model with C, I, S variant on Covariate X1 X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
High	AIC	0	70.80	23	6.20	0	0	0	100	0	48	19	33	0	50.90	27.30	21.80
	CAIC	0	100	0	0	0	26.10	5.20	68.70	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	0	0.10	99.90	0	99.30	0.70	0	0	100	0	0
	BIC	0	100	0	0	0	10	2	88	0	100	0	0	0	100	0	0
	SBIC	0	99	0.90	0.10	0	0	0	100	0	97	2.80	0.20	0	99.60	0.40	0
	LMR	0	72.80	24.50	2.70	0	8.70	16.80	74.50	0	77.20	14.80	8	0	80.40	17.10	2.50
	ALMR	0	74.80	22.90	2.30	0	8.90	17.10	74	0	78.60	13.80	7.60	0	80.80	16.80	2.40
BLRT	0	88.90	10	1.10	0	0	0	100	0	82.70	10.80	6.50	0	85.50	11.60	2.90	
Low	AIC	0	72.60	24.60	2.80	0	0	3.10	96.90	0	29	48.10	22.90	0	39.20	48.90	11.90
	CAIC	19.50	80.50	0	0	0	34.70	64.10	1.20	50.60	49.40	0	0	97.30	2.70	0	0
	SCAIC	1.20	98.40	0.40	0	0	1	60.50	38.50	5.50	93.90	0.50	0.10	38.80	61.20	0	0
	BIC	10.50	89.50	0	0	0	16.30	79.20	4.50	32.60	67.40	0	0	88.90	11.10	0	0
	SBIC	0.30	98.40	1.20	0.10	0	0	32.20	67.80	1.20	94.80	3.80	0.20	13.30	86.20	0.50	0
	LMR	0.80	76.30	20.60	2.30	0	31.20	43.60	25.20	4.80	44	43.30	7.90	6.70	53	35.10	5.20
	ALMR	0.90	77.60	19.40	2.10	0	32.30	43.60	24.10	4.80	44.60	42.90	7.70	7.20	53	34.60	5.20
BLRT	0.20	90.50	8.60	0.70	0	0	17.10	82.90	0.80	52.10	35.30	11.80	2.70	58	33.60	5.70	

Note: Class separation was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S61.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Mixing Ratio for Study 3 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
0.50/0.50	AIC	0	70.80	23	6.20	0	32.40	23.80	43.80	0	63.60	20.90	15.50	0	61.50	24.90	13.60
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	98.30	1.40	0.30	0	99.60	0.30	0.10	0	99.90	0.10	0
	BIC	0	100	0	0	0	99.90	0.10	0	0	100	0	0	0	100	0	0
	SBIC	0	99	0.9	0.10	0	92.10	6.30	1.60	0	98.20	1.70	0.10	0	99.40	0.50	0.10
	LMR	0	72.80	24.50	2.70	0	73.70	21.40	4.90	0	81.20	15.40	3.40	0	79.80	18.10	2.10
	ALMR	0	74.80	22.90	2.30	0	75.30	20.10	4.60	0	81.80	15	3.20	0	80.60	17.70	1.70
	BLRT	0	88.90	10	1.10	0	68.20	21.50	10.30	0	86	11.60	2.40	0	88.80	9.60	1.60
0.30/0.70	AIC	0	73.30	22.10	4.60	0	22.90	38.90	38.20	0	52.70	37.30	10	0	56.20	35.20	8.60
	CAIC	0	100	0	0	0	99.80	0.20	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.20	0.80	0	0	95.90	4	0.10	0	99.40	0.60	0	0	100	0	0
	BIC	0	100	0	0	0	99.80	0.20	0	0	100	0	0	0	100	0	0
	SBIC	0	98.50	1.50	0	0	83.40	14.90	1.70	0	97.30	2.60	0.10	0	99.10	0.80	0.10
	LMR	0	72	23.60	4.40	0	64.50	27.60	7.90	0	66.90	27.40	5.70	0	64.50	31.50	4
	ALMR	0	74	22.10	3.90	0	65.80	26.60	7.60	0	67.70	26.80	5.50	0	65.20	31.50	3.30
	BLRT	0	89.50	9.30	1.20	0	58.60	32.20	9.20	0	77.20	21.40	1.40	0	84	15	1

Note: Mixing ratio was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and high class separation. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S62.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Mixing Ratio for Study 3 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
0.50 /0.50	AIC	0	70.80	23	6.20	0	0	0	100	0	61.40	21.80	16.80	0	59.40	26	14.60
	CAIC	0	100	0	0	0	10.40	2.60	87	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	0.10	0.10	99.80	0	99.40	0.60	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	2.90	0.80	96.30	0	100	0	0	0	100	0	0
	SBIC	0	99	0.9	0.10	0	0	0	100	0	97.10	2.90	0	0	98.20	1.80	0
	LMR	0	72.80	24.50	2.70	0	7.10	13.40	79.50	0	77.50	17.70	4.80	0	78	18.50	3.50
	ALMR	0	74.80	22.90	2.30	0	7.30	14.40	78.30	0	78.60	16.80	4.60	0	78.80	17.80	3.40
BLRT	0	88.90	10	1.10	0	0	0	100	0	85.20	12	2.80	0	88.40	10.20	1.40	
0.30/0.70	AIC	0	73.30	22.10	4.60	0	0	0.40	99.60	0	55.10	33.80	11.10	0	57.60	32.80	9.60
	CAIC	0	100	0	0	0	1.50	24.10	74.40	0	100	0	0	0	100	0	0
	SCAIC	0	99.20	0.80	0	0	0	3	97	0	99.60	0.40	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	0.40	14.50	85.10	0	100	0	0	0	100	0	0
	SBIC	0	98.50	1.50	0	0	0	2	98	0	97.50	2.40	0.10	0	98.70	1.30	0
	LMR	0	72	23.60	4.40	0	4.40	20.30	75.30	0	66.50	26.40	7.10	0	68.30	26.60	5.10
	ALMR	0	74	22.10	3.90	0	4.40	20.80	74.80	0	67	26.40	6.60	0	69	26.20	4.80
BLRT	0	89.50	9.30	1.20	0	0	1.40	98.60	0	82.50	15.60	1.90	0	87.70	11.60	0.70	

Note: Mixing ratio was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and high class separation. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S63.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Mixing Ratio for Study 3 with an X1-X2 Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1 X2				Model with C, I, S invariant on Covariate X1 X2				Model with C, I, S variant on Covariate X1 X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
0.50/0.50	AIC	0	70.80	23	6.20	0	0	0	100	0	48	19	33	0	50.90	27.30	21.80
	CAIC	0	100	0	0	0	26.10	5.20	68.70	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	0	0.10	99.90	0	99.30	0.70	0	0	100	0	0
	BIC	0	100	0	0	0	10	2	88	0	100	0	0	0	100	0	0
	SBIC	0	99	0.90	0.10	0	0	0	100	0	97	2.80	0.20	0	99.60	0.40	0
	LMR	0	72.80	24.50	2.70	0	8.70	16.80	74.50	0	77.20	14.80	8	0	80.40	17.10	2.50
	ALMR	0	74.80	22.90	2.30	0	8.90	17.10	74	0	78.60	13.80	7.60	0	80.80	16.80	2.40
	BLRT	0	88.90	10	1.10	0	0	0	100	0	82.70	10.80	6.50	0	85.50	11.60	2.90
0.30/0.70	AIC	0	73.30	22.10	4.60	0	0	2.80	97.20	0	28.40	52.70	18.90	0	43.90	45.80	10.30
	CAIC	0	100	0	0	0	7.60	38.20	54.20	0	100	0	0	0	100	0	0
	SCAIC	0	99.20	0.80	0	0	0	12	88	0	99.40	0.60	0	0	100	0	0
	BIC	0	100	0	0	0	1.50	27.60	70.90	0	100	0	0	0	100	0	0
	SBIC	0	98.50	1.50	0	0	0	8.60	91.40	0	96.20	3.80	0	0	99.50	0.50	0
	LMR	0	72	23.60	4.40	0	6.40	24.10	69.50	0	49.40	39.40	11.20	0	57.30	39.20	3.50
	ALMR	0	74	22.10	3.90	0	6.60	24.50	68.90	0	50.40	38.60	11	0	57.80	38.80	3.40
	BLRT	0	89.50	9.30	1.20	0	0	4.90	95.10	0	68.90	25.90	5.20	0	78.60	19.10	2.30

Note: Mixing ratio was varied while holding other design factors constant as follows: Sample size N = 1000, same matrix variance of covariance, and high class separation. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S64.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Matrix of Variance-Covariance for Study 3 with an X1-X2

Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1				Model with C, I, S invariant on Covariate X1				Model with C, I, S variant on Covariate X1			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Same	AIC	0	70.80	23	6.20	0	32.40	23.80	43.80	0	63.60	20.90	15.50	0	61.50	24.90	13.60
	CAIC	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	98.30	1.40	0.30	0	99.60	0.30	0.10	0	99.90	0.10	0
	BIC	0	100	0	0	0	99.90	0.10	0	0	100	0	0	0	100	0	0
	SBIC	0	99	0.90	0.10	0	92.10	6.30	1.60	0	98.20	1.70	0.10	0	99.40	0.50	0.10
	LMR	0	72.80	24.50	2.70	0	73.70	21.40	4.90	0	81.20	15.40	3.40	0	79.80	18.10	2.10
	ALMR	0	74.80	22.90	2.30	0	75.30	20.10	4.60	0	81.80	15	3.20	0	80.60	17.70	1.70
	BLRT	0	88.90	10	1.10	0	68.20	21.50	10.30	0	86	11.60	2.40	0	88.80	9.60	1.60
Different	AIC	0	14.30	14.30	71.40	0	0	0.20	99.80	0	0	2.20	97.80	0	0	0	100
	CAIC	0	100	0	0	0	68.50	31.50	0	0	95.20	4.80	0	0	100	0	0
	SCAIC	0	100	0	0	0	5.70	83.50	10.80	0	22.90	72.30	4.80	0	100	0	0
	BIC	0	100	0	0	0	45.60	54.40	0	0	83.80	16.20	0	0	100	0	0
	SBIC	0	100	0	0	0	0.70	56.70	42.60	0	4.70	66.80	28.50	0	93.30	6.70	0
	LMR	0	85.70	14.30	0	0	17.80	58.10	24.10	0	25.50	62.20	12.30	0	86.70	13.30	0
	ALMR	0	85.70	14.30	0	0	18.20	58.60	23.20	0	26.10	62.30	11.60	0	86.70	13.30	0
	BLRT	0	100	0	0	0	0.70	16.10	83.20	0	6.20	42.40	51.40	0	86.70	6.60	6.70

Note: Matrix variance covariance structure was varied while holding other design factors constant as follows: Sample size N = 1000, high class separation, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S65.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Matrix of Variance-Covariance for Study 3 with an X1-X2

Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X2				Model with C, I, S invariant on Covariate X2				Model with C, I, S variant on Covariate X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Same	AIC	0	70.80	23	6.20	0	0	0	100	0	61.40	21.80	16.80	0	59.40	26	14.60
	CAIC	0	100	0	0	0	10.40	2.60	87	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	0.10	0.10	99.80	0	99.40	0.60	0	0	99.90	0.10	0
	BIC	0	100	0	0	0	2.90	0.80	96.30	0	100	0	0	0	100	0	0
	SBIC	0	99	0.90	0.10	0	0	0	100	0	97.10	2.90	0	0	98.20	1.80	0
	LMR	0	72.80	24.50	2.70	0	7.10	13.40	79.50	0	77.50	17.70	4.80	0	78	18.50	3.50
	ALMR	0	74.80	22.90	2.30	0	7.30	14.40	78.30	0	78.60	16.80	4.60	0	78.80	17.80	3.40
	BLRT	0	88.90	10	1.10	0	0	0	100	0	85.20	12	2.80	0	88.40	10.20	1.40
Different	AIC	0	14.30	14.30	71.40	0	0	0	100	0	0	0	100	0	0	0	100
	CAIC	0	100	0	0	0	56.60	36.90	6.50	0	20.80	79.20	0	0	100	0	0
	SCAIC	0	100	0	0	0	0.90	17.90	81.20	0	0	50.10	49.90	0	100	0	0
	BIC	0	100	0	0	0	31.30	47.80	20.90	0	6.70	90.20	3.10	0	100	0	0
	SBIC	0	100	0	0	0	0	2.90	97.10	0	0	11.40	88.60	0	100	0	0
	LMR	0	85.70	14.30	0	0	13.80	32.10	54.10	0	5.90	54.90	39.20	0	66.70	33.30	0
	ALMR	0	85.70	14.30	0	0	14.40	33	52.60	0	6	56.50	37.50	0	66.70	33.30	0
	BLRT	0	100	0	0	0	0	0.10	99.90	0	0	2.80	97.20	0	100	0	0

Note: Matrix variance covariance structure was varied while holding other design factors constant as follows: Sample size N = 1000, high class separation, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S66.

Percentages of Times Enumerated by the Indicators for Different Number of Classes by Matrix of Variance-Covariance for Study 3 with an X1-X2

Correlation of 0.50.

		Model without Covariates				Model with C on Covariate X1 X2				Model with C, I, S invariant on Covariate X1 X2				Model with C, I, S variant on Covariate X1 X2			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Same	AIC	0	70.80	23	6.20	0	0	0	100	0	48	19	33	0	50.90	27.30	21.80
	CAIC	0	100	0	0	0	26.10	5.20	68.70	0	100	0	0	0	100	0	0
	SCAIC	0	99.80	0.20	0	0	0	0.10	99.90	0	99.30	0.70	0	0	100	0	0
	BIC	0	100	0	0	0	10	2	88	0	100	0	0	0	100	0	0
	SBIC	0	99	0.90	0.10	0	0	0	100	0	97	2.80	0.20	0	99.60	0.40	0
	LMR	0	72.80	24.50	2.70	0	8.70	16.80	74.50	0	77.20	14.80	8	0	80.40	17.10	2.50
	ALMR	0	74.80	22.90	2.30	0	8.90	17.10	74	0	78.60	13.80	7.60	0	80.80	16.80	2.40
	BLRT	0	88.90	10	1.10	0	0	0	100	0	82.70	10.80	6.50	0	85.50	11.60	2.90
Different	AIC	0	14.30	14.30	71.40	0	0	0	100	0	0	0	100	0	0	0	100
	CAIC	0	100	0	0	0	50.20	48.10	1.70	0	34	65.70	0.30	0	100	0	0
	SCAIC	0	100	0	0	0	0.60	24	75.40	0	0	42.40	57.60	0	100	0	0
	BIC	0	100	0	0	0	21.30	67	11.70	0	10.40	87.30	2.30	0	100	0	0
	SBIC	0	100	0	0	0	0	3.30	96.70	0	0	8.50	91.50	0	93.80	6.20	0
	LMR	0	85.70	14.30	0	0	31.10	37.30	31.60	0	13.80	60.60	25.60	0	93.80	6.20	0
	ALMR	0	85.70	14.30	0	0	31.60	37.80	30.60	0	14.40	60.50	25.10	0	93.80	6.20	0
	BLRT	0	100	0	0	0	0	0	100	0	0	1.80	98.20	0	100	0	0

Note: Matrix variance covariance structure was varied while holding other design factors constant as follows: Sample size N = 1000, high class separation, and mixing ratio of 50%:50%. C = latent class membership; I = intercept factor; S = linear slope factor; AIC = Akaike's Information Criterion; CAIC = consistent AIC; SCAIC = sample size adjusted CAIC; BIC = Bayesian Information Criterion; SBIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin likelihood ratio test; ALMR = adjusted LMR likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Table S67

Mean Rates of Nonconvergence and Improper Solutions for Study 1.

		Model without Covariates				Model with C on Covariate				Model with C, I, S invariant on Covariate				Model with C, I, S variant on Covariate			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Overall	Nonconvergence	0	0	0	0	0	0	0.34	0.57	0	0.31	1.39	1.95	0	0	0.06	0.30
	Improper	0	0	0	0	0	0	0	0	0	0	0.01	0.03	0	0	0.03	0.16
N=200	Nonconvergence	0	0	0	0	0	0	0	0	0	0	0.60	0.5	0	0	0	0
	Improper	0	0	0	0	0	0	0	0	0	0	0.10	0.3	0	0	0.30	1.60
N=400	Nonconvergence	0	0	0	0	0	0	0.10	0	0	0.10	1.10	1.10	0	0	0	0
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N=1000	Nonconvergence	0	0	0	0	0	0	0.44	0.80	0	0.34	1.51	2.13	0	0	0.06	0.27
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N=2000	Nonconvergence	0	0	0	0	0	0	0.20	0.10	0	0.60	1.60	3	0	0	0.20	0.60
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mix: 0.50/0.50	Nonconvergence	0	0	0	0	0	0	0.37	0.63	0	0.28	1.33	1.87	0	0	0.04	0.28
	Improper	0	0	0	0	0	0	0	0	0	0	0.10	0.30	0	0	0.30	0.18
Mix: 0.70/0.30	Nonconvergence	0	0	0	0	0	0	0.10	0	0	0.60	1.90	2.70	0	0	0.20	0.50
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Different Mat:	Nonconvergence	0	0	0	0	0	0	1.70	3.60	0	0.28	1.26	1.83	0	0	0.07	0.33
	Improper	0	0	0	0	0	0	0	0	0	0	0.01	0.03	0	0	0.03	0.18
Same Mat:	Nonconvergence	0	0	0	0	0	0	0.90	1.20	0	0.60	2.60	3	0	0	0	0
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Low Sep:	Nonconvergence	0	0	0	0	0	0	0.19	0.23	0	0.30	1.42	2.06	0	0	0.07	0.33
	Improper	0	0	0	0	0	0	0	0	0	0	0.01	0.03	0	0	0.03	0.18
High Sep:	Nonconvergence	0	0	0	0	0	0	1.70	3.60	0	0.40	1.10	1	0	0	0	0
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: N = Sample Size; Mix = Mixing Ratio; Mat = Within Class Variance-Covariance Matrix; Sep = Class Separation; Corr = Correlation.

Table S68

Mean Rates of Nonconvergence and Improper Solutions for Study 2.

		Model without Covariates				Model with C on Covariate(s)				Model with C, I, S invariant on Covariate(s)				Model with C, I, S variant on Covariate(s)			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Overall	Nonconvergence	0	0	0.02	0	0	0	0.23	0.55	0	0	0.81	1.79	0	0	0.91	1.11
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.10	6.05
N=200	Nonconvergence	0	0	0.02	0.01	0	0	0.19	0.63	0	0	1.03	2.07	0	0	1	1.35
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.85	8.61
N=400	Nonconvergence	0	0	0	0	0	0	0.47	0.45	0	0	0.17	0.73	0	0	0.27	0.27
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.55	6.69
N=1000	Nonconvergence	0	0	0	0	0	0	0.35	0.15	0	0	0.07	0.38	0	0	0.13	0.17
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N=2000	Nonconvergence	0	0	0	0	0	0	0.13	0.47	0	0	0.72	2.30	0	0	1.70	1.17
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mix: 0.50/0.50	Nonconvergence	0	0	0	0	0	0	0.18	0.50	0	0	2.20	0.82	0	0	0.95	0.9
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mix: 0.70/0.30	Nonconvergence	0	0	0.01	0	0	0	0.22	0.55	0	0	0.66	1.90	0	0	0.90	1.13
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Different Mat:	Nonconvergence	0	0	0.02	0	0	0	0.26	0.56	0	0	0.03	0.53	0	0	0.87	0.91
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21.70	30.92
Same Mat:	Nonconvergence	0	0	0	0	0	0	0	0.38	0	0	0.90	1.93	0	0	1.22	2.83
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.14	3.26
Low Sep:	Nonconvergence	0	0	0.15	0.05	0	0	0.73	0.78	0	0	1.43	2.90	0.02	0.03	1.30	1.35
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.55	6.69
High Sep:	Nonconvergence	0	0	0	0	0	0	0.17	0.52	0	0	0.74	1.67	0	0	0.86	1.08
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Corr: 0.20	Nonconvergence	0	0	0	0	0	0	0.22	0.50	0	0	0.74	1.64	0	0	0.80	1.16
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Corr: 0.50	Nonconvergence	0	0	0	0.01	0	0	0.24	0.59	0	0	0.89	1.94	0	0	1.02	1.05
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.19	12.05

Note: N = Sample Size; Mix = Mixing Ratio; Mat = Within Class Variance-Covariance Matrix; Sep = Class Separation; Corr = Correlation.

Table S69

Mean Rates of Nonconvergence and Improper Solutions for Study 3.

		Model without Covariates				Model with C on Covariate(s)				Model with C, I, S invariant on Covariate(s)				Model with C, I, S variant on Covariate(s)			
# of Classes		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Overall	Nonconvergence	0	0	0.02	0.01	0	0	0.70	0.96	0	0	0.74	1.65	0	0	1.35	1.75
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16.29	16.71
N=200	Nonconvergence	0	0	0.02	0.01	0	0	0.68	1.14	0	0	0.95	2	0	0	1.72	2.29
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23.27	23.87
N=400	Nonconvergence	0	0	0	0	0	0	1.30	0.98	0	0	0.53	1.70	0	0	1.32	1.07
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N=1000	Nonconvergence	0	0	0	0	0	0	0.30	0.15	0	0	0.10	0.25	0	0	0.10	0.17
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N=2000	Nonconvergence	0	0	0	0	0	0	0.32	0.47	0	0	0.20	0.51	0	0	0.25	0.27
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mix: 0.50/0.50	Nonconvergence	0	0	0.02	0.01	0	0	0.68	0.95	0	0	0.63	1.74	0	0	1.21	1.55
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13.59	13.88
Mix: 0.70/0.30	Nonconvergence	0	0	0	0	0	0	0.57	1.05	0	0	1.85	0.77	0	0	2.5	3.58
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40.28	42.22
Different Mat:	Nonconvergence	0	0	0.02	0.01	0	0	0.73	1.01	0	0	0.81	1.71	0	0	2.84	4
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44.42	46.69
Same Mat:	Nonconvergence	0	0	0	0	0	0	0.08	0.05	0	0	0.13	1.08	0	0	1.21	1.50
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13.60	13.84
Low Sep:	Nonconvergence	0	0	0.15	0	0	0	1.30	1.50	0	0	1.35	1.54	0	0	1.37	1.79
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18.10	18.57
High Sep:	Nonconvergence	0	0	0	0.01	0	0	0.59	0.9	0	0	0.68	1.54	0	0	1.17	1.40
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Corr: 0.20	Nonconvergence	0	0	0	0.02	0	0	1.11	1.42	0	0	0.76	1.65	0	0	1.97	2.34
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Corr: 0.50	Nonconvergence	0	0	0	0.99	0	0	1.29	1.40	0	0	0.95	1.70	0	0	0.94	1.03
	Improper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32.58	33.42

Note: N = Sample Size; Mix = Mixing Ratio; Mat = Within Class Variance-Covariance Matrix; Sep = Class Separation; Corr = Correlation.