

Pitkittäisaineistojen mallintaminen

LPE jatkokoulutusseminaari

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TEORIA JA HYPOTEEESIT

AINEISTO

Pitkittäisaineistojen tyypillisiä piirteitä

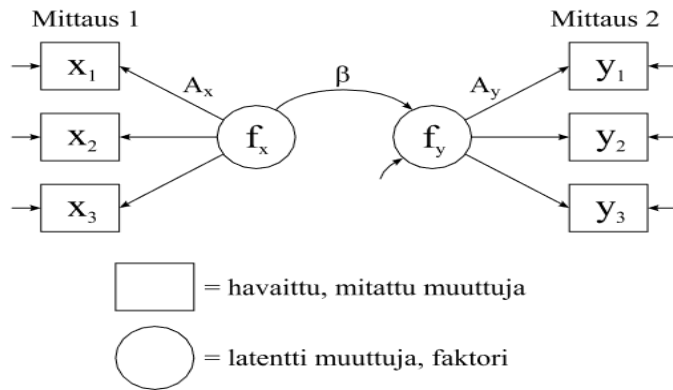
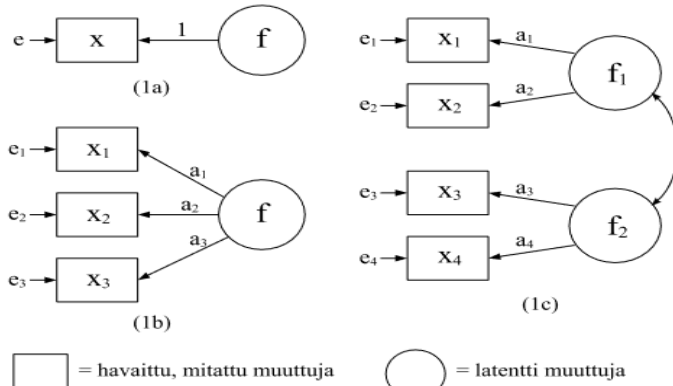
mahdollistavat monipuoliset tutkittavien ilmiöiden muutosten ja pysyvyyksien tarkastelut.

vaativat kehittyneitä tilastollisia menetelmiä ja malleja, esim. latenttien muuttujien mallit.

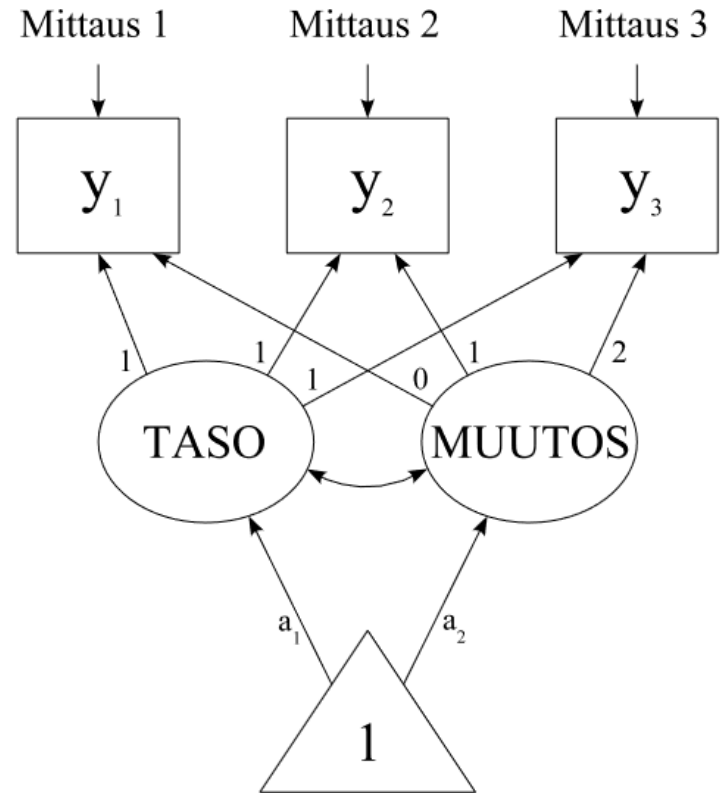
mallien avulla voidaan tutkia mittausten luotettavuutta eli reliabiliteetteja sekä latenttien muuttujien muutos- ja pysyvyyssominaisuuksia ajan suhteen.

myös erilaiset latenttien muuttujien ryhmä- ja tasovertailut ovat mahdollisia.

Konfirmatoriset faktorimallit

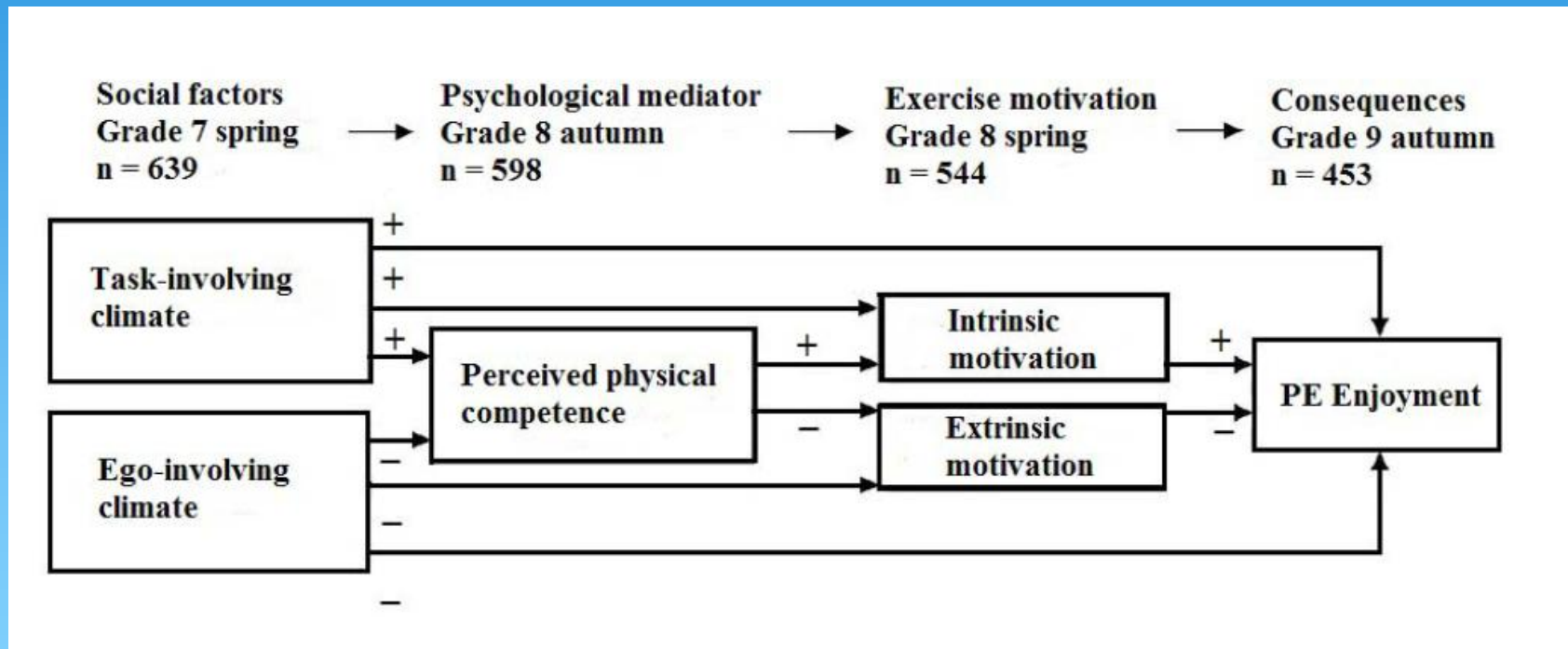


Latentit kasvukäyrämallit



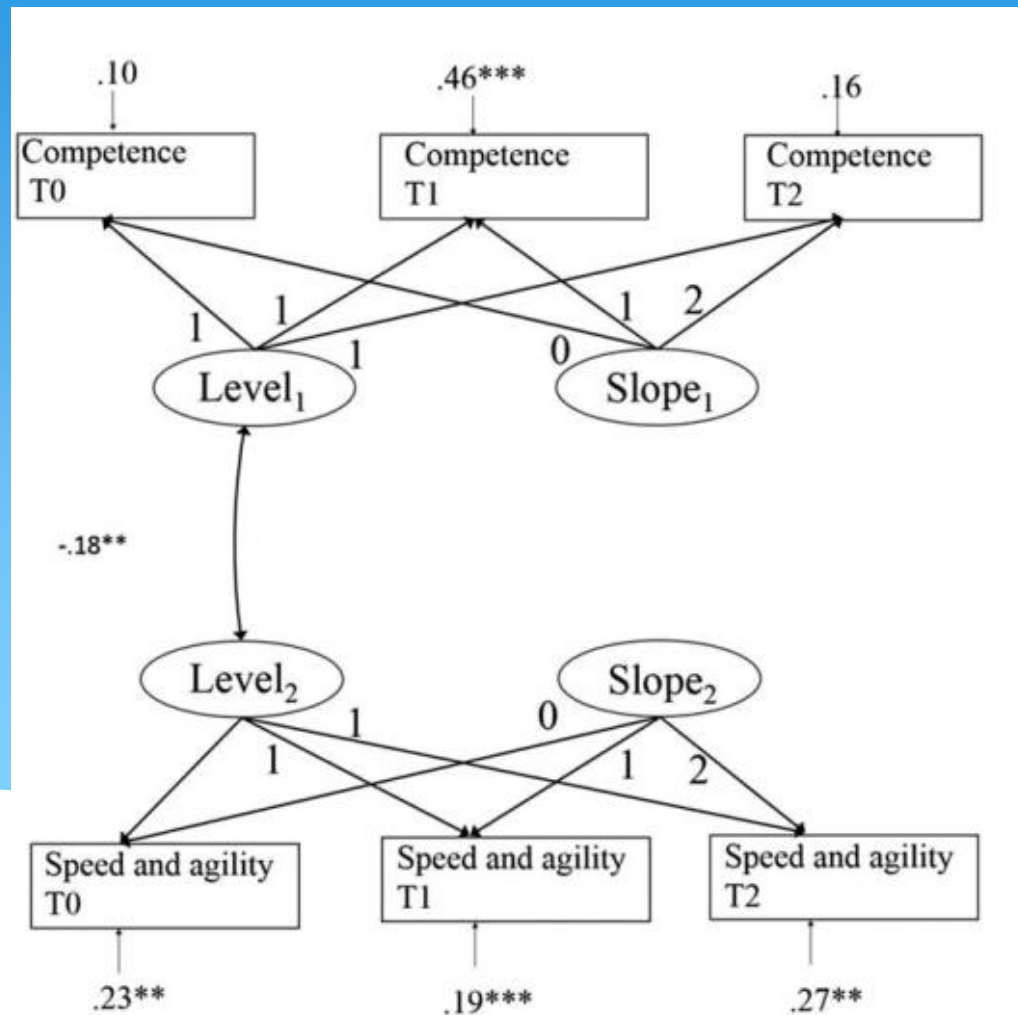
Regression Path Model

RQ: to test the predictive relationships between motivational climate, perceived physical competence, exercise motivation and PE enjoyment over three school years.



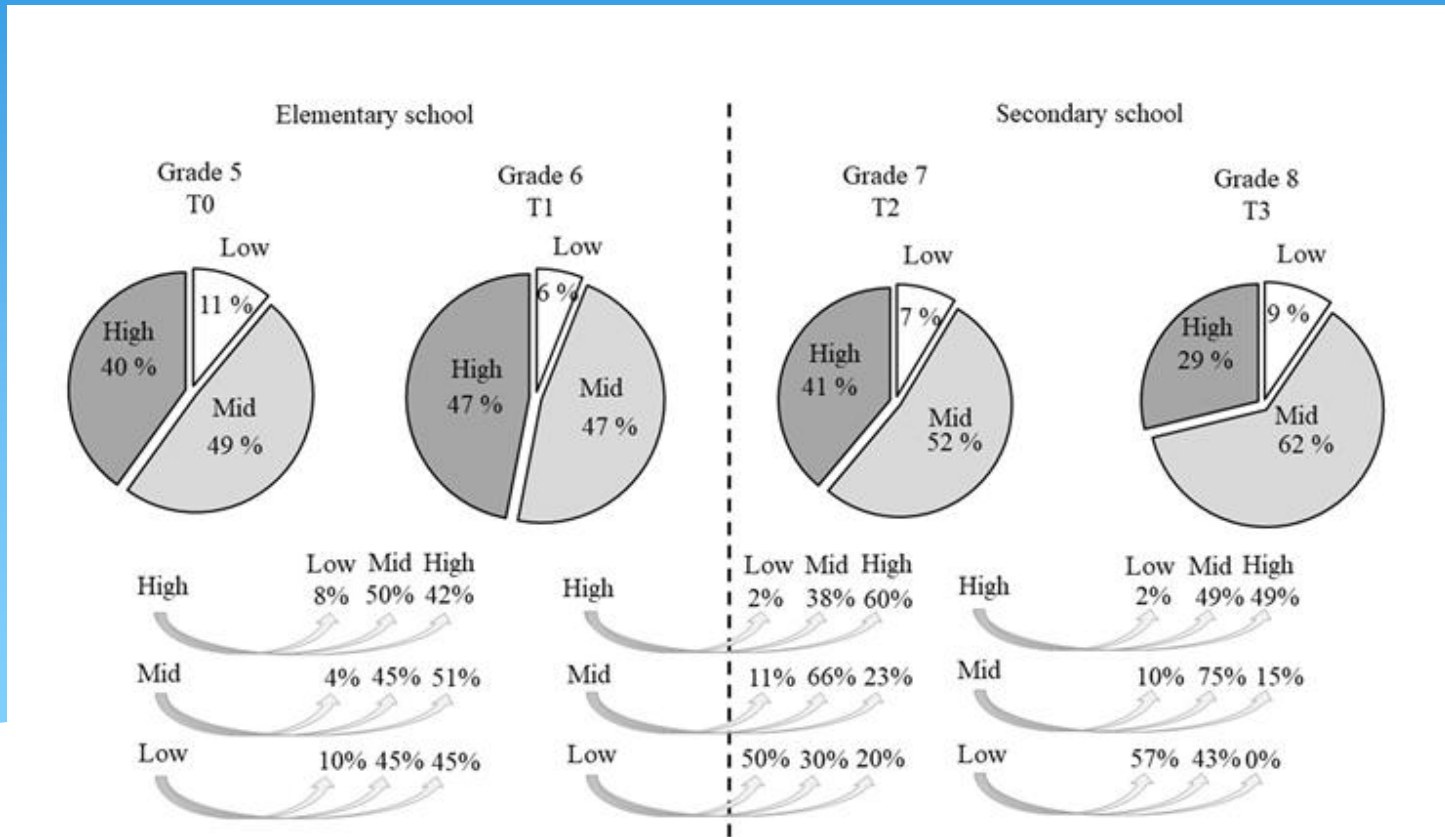
Latent Growth Curve Model

RQ: to examine the developmental trajectories of perceived competence and speed and agility skills over time.



Latent Transition Model

RQ: to identify latent need satisfaction profiles over time and to explore transition probabilities in the identified profiles over a three-year period.



Regression Auxiliary Model

RQ: to identify distinct competence, autonomy, and relatedness need satisfaction latent profiles over time and to examine the levels and trends in in-class and out-of-class MVPA between these profiles.

	Parameters	AIC	BIC	ABIC	LT5%	LT1%	Entropy
1-solution	24	11169	11267	11191	-	-	-
2-solution	37	10394	10546	10429	-	-	.79
3-solution	50	10167	10372	10214	-	-	.78
4-solution	63	9956	10214	10014	-	-	.79
5-solution	76	9892	10203	9962	1	-	.81
6-solution	89	9820	10185	9903	2	-	.83

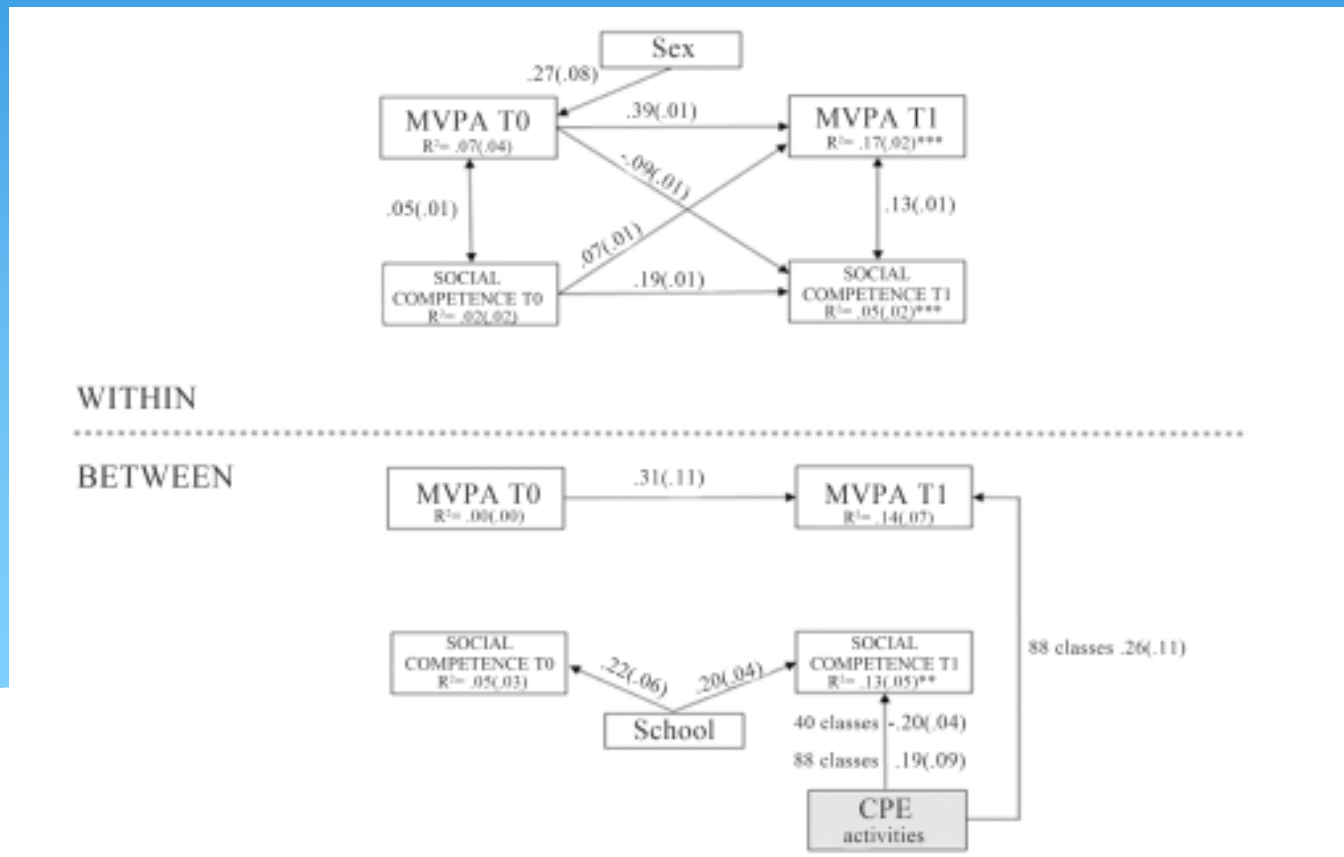
Notes. Bold indicates the most reasonable solution. AIC = Akaike Information Criterion, BIC = Bayesian Information Criterion, ABIC = Adjusted Bayesian Information Criterion, LT = less than, p_{LMR} = p-value for Adjusted Lo-Mendell-Rubin Ratio Test, G^2 = likelihood ratio, df = degrees of freedom; Diff. G^2 = likelihood ratio difference, Diff. df = degrees of freedom difference.

		Profile 1 Large- M (SE)	Profile 2 Medium- M (SE)	Profile 3 Small+ M (SE)	Profile 4 Medium+ M (SE)
In-class MVPA	Level	20.20 (2.13) ^{***}	22.14 (1.25) ^{***}	21.72 (1.45) ^{***}	20.90 (1.36) ^{***}
	Slope	1.41 (1.74)	-1.35 (.88)	-1.19 (.99)	.64 (1.17)
Out-of-class MVPA	Level	47.01 (3.32) ^{***2,4}	38.69 (2.07) ^{***1,3,4}	42.52 (2.72) ^{***2,4}	30.92 (2.07) ^{***1,2,3}
	Slope	-6.70 (1.23) ^{***2,3}	-.16 (1.20) [!]	-.95 (1.44) [!]	-2.49 (1.51)

Notes. *** p < .001, the superscripts indicate the significant between-profile mean differences at p < .05 level.

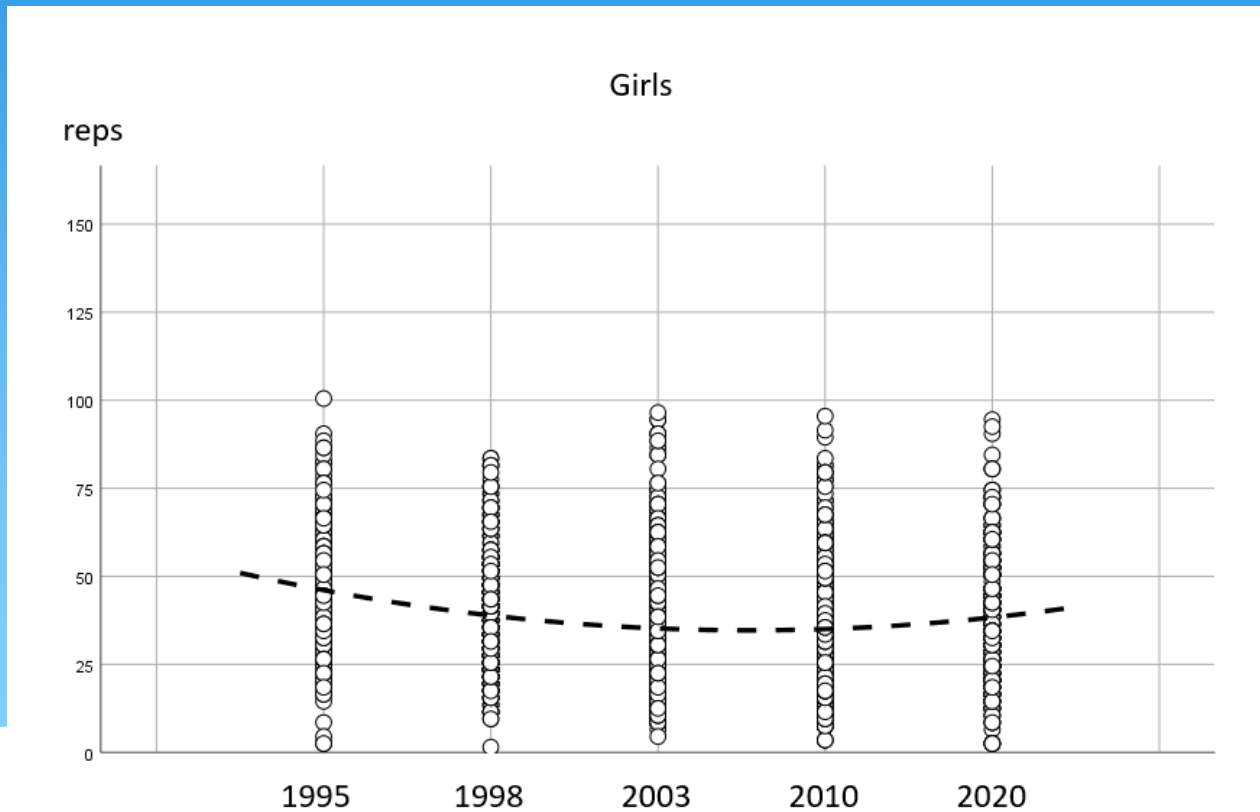
Mixed Multi-Level Model

RQ: to examine the associations between social competence and total MVPA levels in intervention and control students, and to analyze the effects of CPE strategies on social competence and MVPA levels across the intervention.



Contrast Model

RQ: to examine whether the 20m shuttle run performance of Finnish adolescents changed between 1995 and 2020. Specifically, secular trend data collected from cohorts in 1995, 1998, 2003, 2010, and 2020 were analyzed.



Käytännön vinkkejä mallinnukseen

Aineisto kaiken A ja O.

- riittävä N (~ 200 tutkittavaa)
- perustellut mittarit
- multikollineaarisuus (esim. samansanaiset väittämät)
- normaalijaukauma
- puuttuvat havainnot
- poikkeavat havainnot
- parametrit vs. vapausasteet (esim. monimutkaiset mallit)

Tutkimuskysymys määrittää menetelmän.

Perustele valintasi lähteitä käyttäen.

Yhtä oikeaa ratkaisua ei ole. Kokeile rohkeasti!