Computerized, Adaptive and Personalized Assessment of Executive Functions and Fluid Intelligence

PRIN
01/06/2022 – 31/05/2025

Workshop

26 Maggio 2025, Cesena

Path analysis delle relazioni fra livello socio-culturale, fattori individuali e intelligenza fluida in adulti

Aurora Castellani*

Autori presentazione: Pasquale Anselmi**, Alice Bacherini*, Giulia Balboni***, Aurora Castellani*, Sara Giovagnoli***, & Irene Pierluigi*

Università degli Studi di Perugia

*** Università degli Studi di Padova***

****Alma Mater Studiourm Università di Bologna***

A.D. 1308 unipg UNIVERSITÀ DEGLI STUDI DI PERUGIA

UNIVERSITÀ DEGLI STUDI DI PADOVA

ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

Obiettivo

Definire un modello di **path analysis** che rappresenti le relazioni tra **fattori individuali** (età e genere), **livello socio-culturale** (anni di istruzione, prestigio occupazionale, Capitale Culturale e Sociale) e **intelligenza fluida**, misurata tramite **MatriKS**

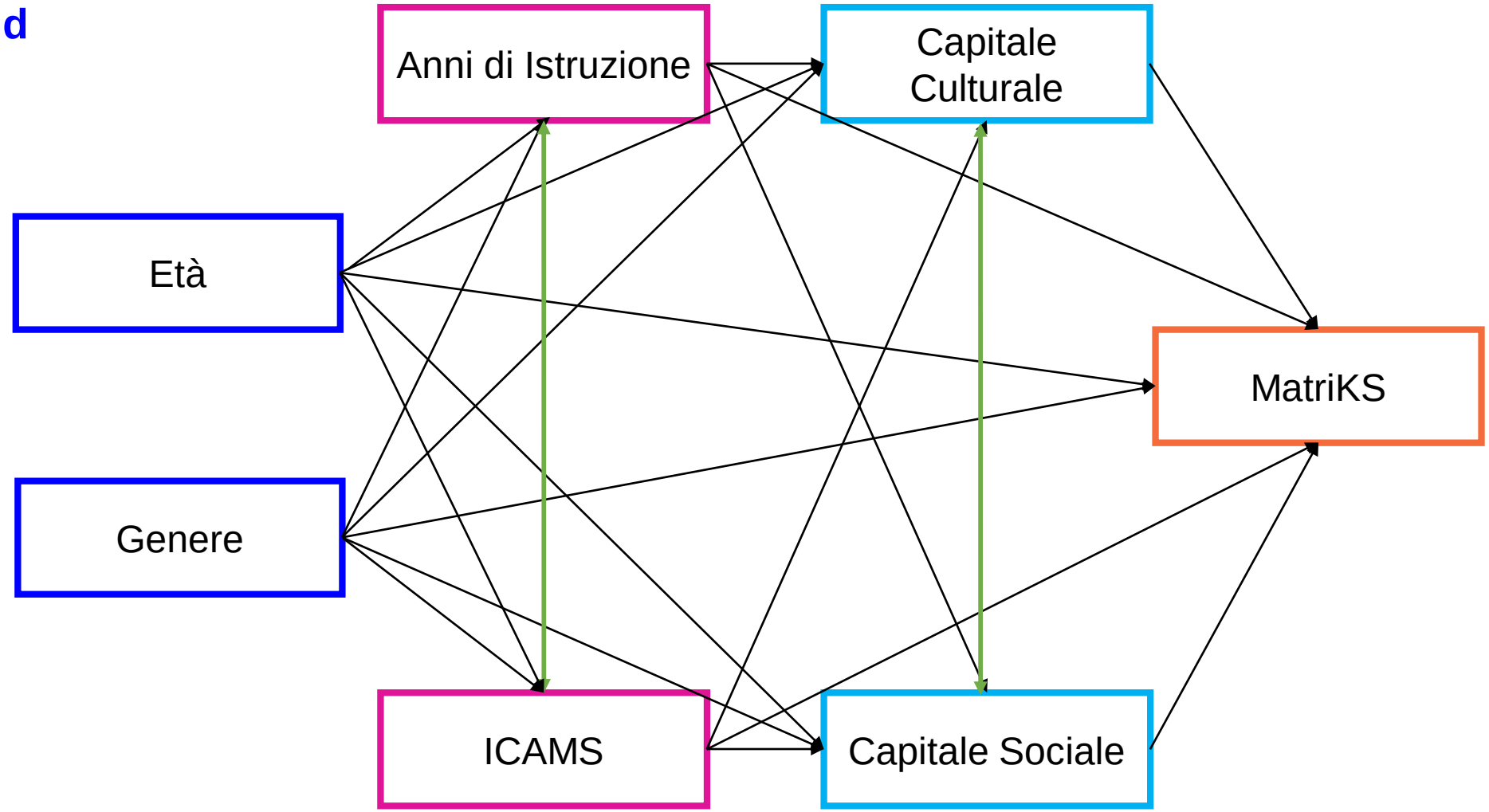
Path Model

Variabili di background
- Età
- Genere

Mediatori I livello
- Anni di istruzione
- Prestigio occupazionale (ICAMS)

Mediatori II livello
- Capitale Culturale
- Capitale Sociale

Variabile outcome
- MatriKS



Partecipanti

308 adulti

	Valore	Range Punteggi	Range Scala
Genere (%)	51 M – 49 F	—	—
Età *M(DS)*	43.65 (15.29)	20 – 71	—
Anni di istruzione *M(DS)*	13.73 (3.87)	5 – 23	—
ICAMS *M(DS)*	52.62 (15.09)	21.07 – 82.71	13.19 – 85.27
Capitale Culturale *M(DS)*	2.64 (1.44)	0.00 – 6.75	0 – 9
Capitale Sociale *M(DS)*	5.31 (0.98)	2.96 – 8.88	2 – 10
MatriKS *M(DS)*	33.70 (9.07)	3 – 46	0 – 46

Strumenti

Intelligenza fluida

- **MatriKS 12+** (de Chiusole et al., 2024)

Capitale Culturale

- **Scala Capitale Culturale On-Off Line** (Balboni e Cubelli, 2019; Balboni et al., in corso)

Capitale Sociale

- **Scala Breve Capitale Sociale On-Off Line** (Menardo et al., 2022; in corso)

Status Socio-Economico

- **Anni di istruzione**
- **International Cambridge Scale (ICAMS)** (Meraviglia et al., 2016)

Desiderabilità Sociale

- **Balanced Inventory of Desirable Responding – Short Form** (Bobbio & Manganelli, 2011; Paulhus, 1991)

Procedura

Ordine di somministrazione (%)	
1. (Capitale Sociale - Capitale Culturale)	52
2. (Capitale Culturale - Capitale Sociale)	48

Screening dei dati

1. Identificazione ed esclusione dei simulatori

Partecipanti classificati come simulatori con la **BIDR-6 Short Form**

2. Identificazione outlier univariati

I partecipanti con z-score ≥ ±3.29 su una o più variabili continue

3. Verifica della normalità univariata

Asimmetria e curtosi comprese tra -1 e +1

4. Identificazione outlier multivariati

Distanza di Mahalanobis

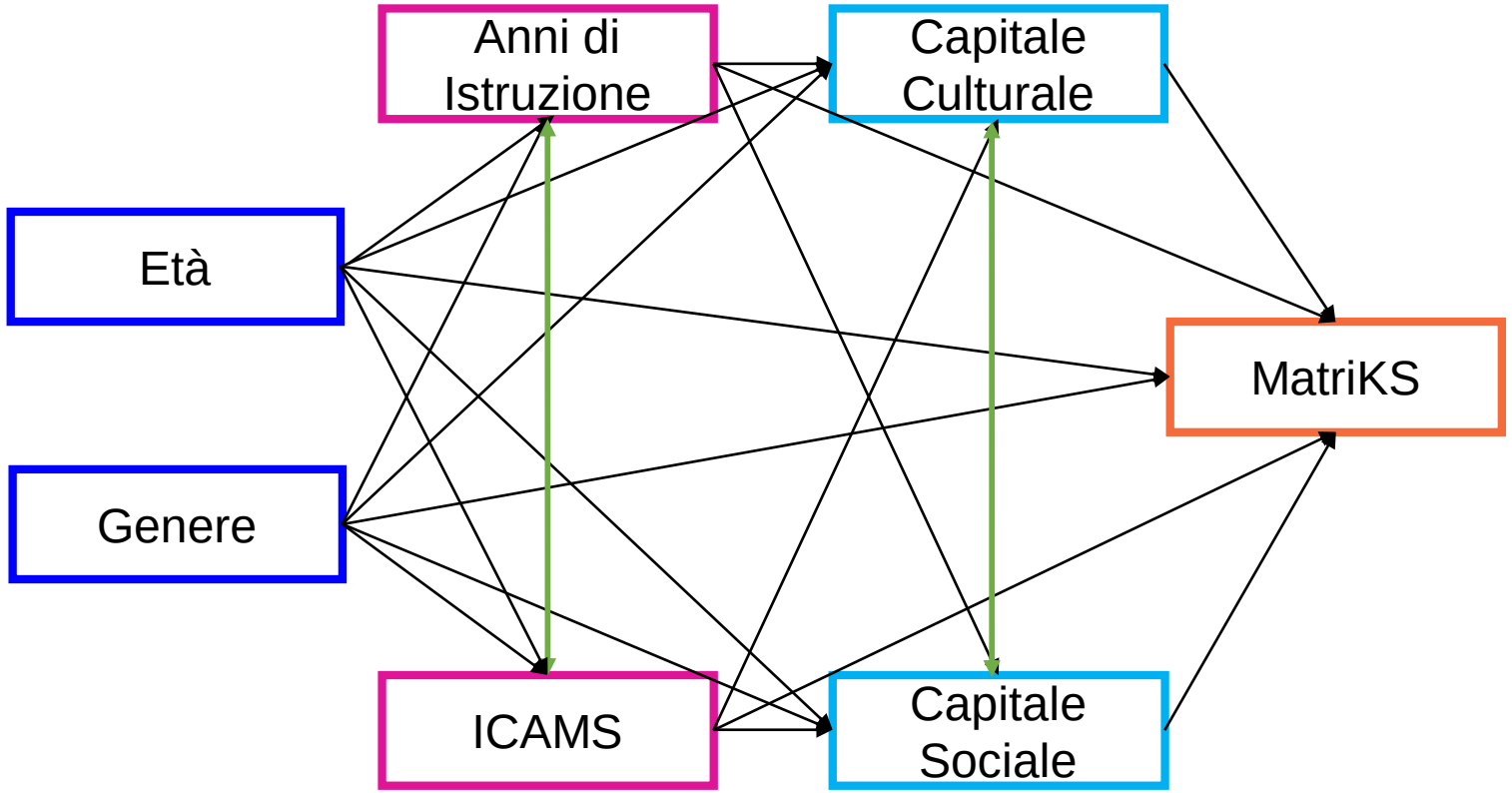
5. Verifica della normalità multivariata

Indice di Mardia → Normalizzazione delle variabili

Bobbio & Manganelli, 2011; Mardia, 1970; Tabachnick & Fidell, 2013

Analisi dei dati

Widaman et al., in corso



Valutazione Adattamento Modelli	
Indici di Fit	**Cut-off**
CFI	≥ .95 buono ≥ .90 accettabile
TLI	≥ .95 buono ≥ .90 accettabile
RMSEA	≤ .05 buono ≤ .08 accettabile
SRMR	≤ .08 buono
Chi-quadro	*p* > .05

Chen et al., 2008; Hu & Bentler, 1999; Kline, 2023

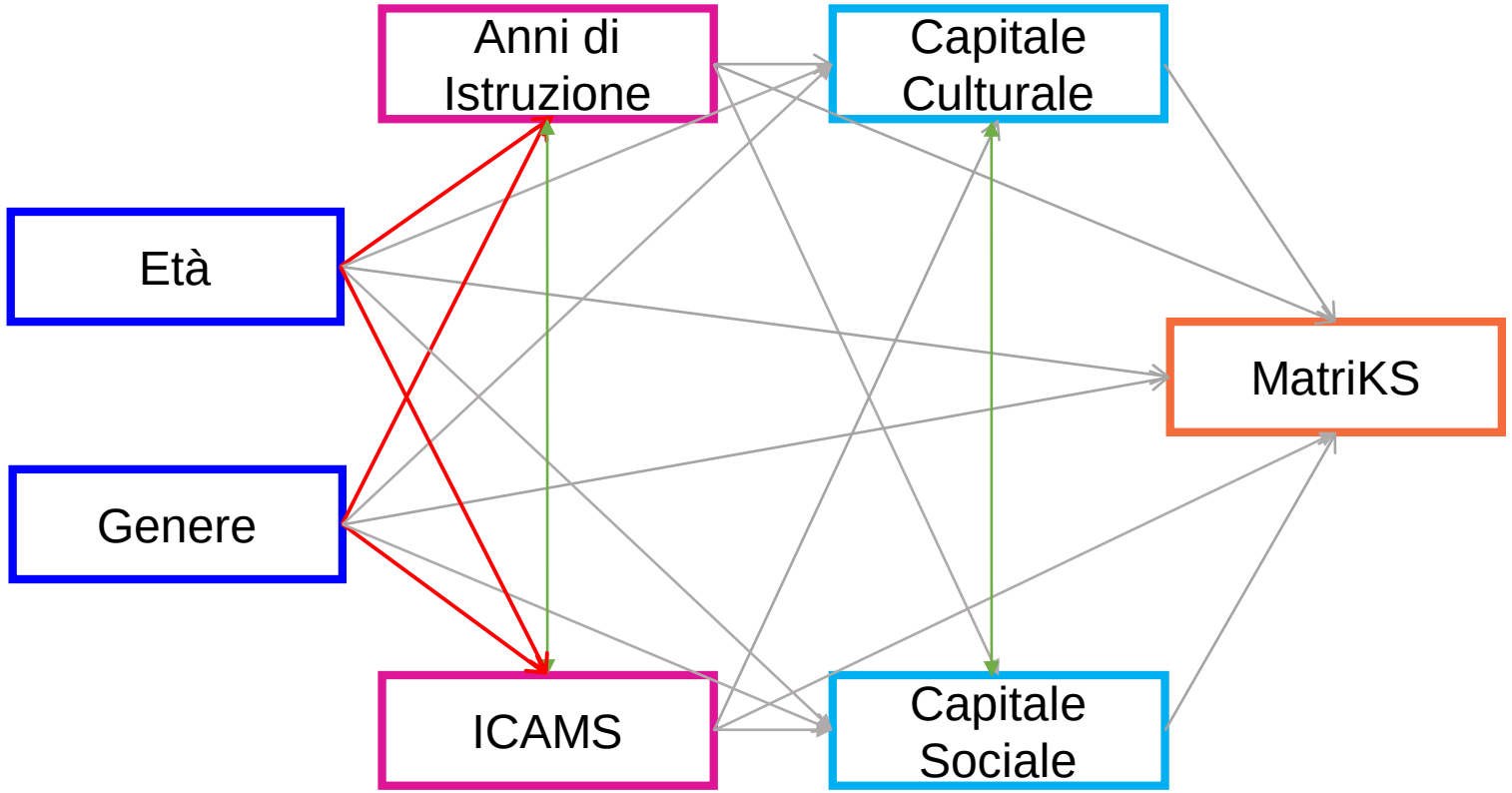
Soglie di differenza minima fra gli indici dei modelli

Indice	**Δχ²**	**ΔCFI**	**ΔTLI**	**ΔRMSEA**	**ΔSRMR**	**ΔAIC**	**RMSEA.D**
Soglia	*p* > .05	.01	.01	.015	.01	Preferibile AIC inferiore	.08

Chen, 2007; Kline, 2023; Savalei et al., 2023

Analisi dei dati

Widaman et al., in corso



Valutazione Adattamento Modelli	
Indici di Fit	**Cut-off**
CFI	≥ .95 buono ≥ .90 accettabile
TLI	≥ .95 buono ≥ .90 accettabile
RMSEA	≤ .05 buono ≤ .08 accettabile
SRMR	≤ .08 buono
Chi-quadro	*p* > .05

Chen et al., 2008; Hu & Bentler, 1999; Kline, 2023

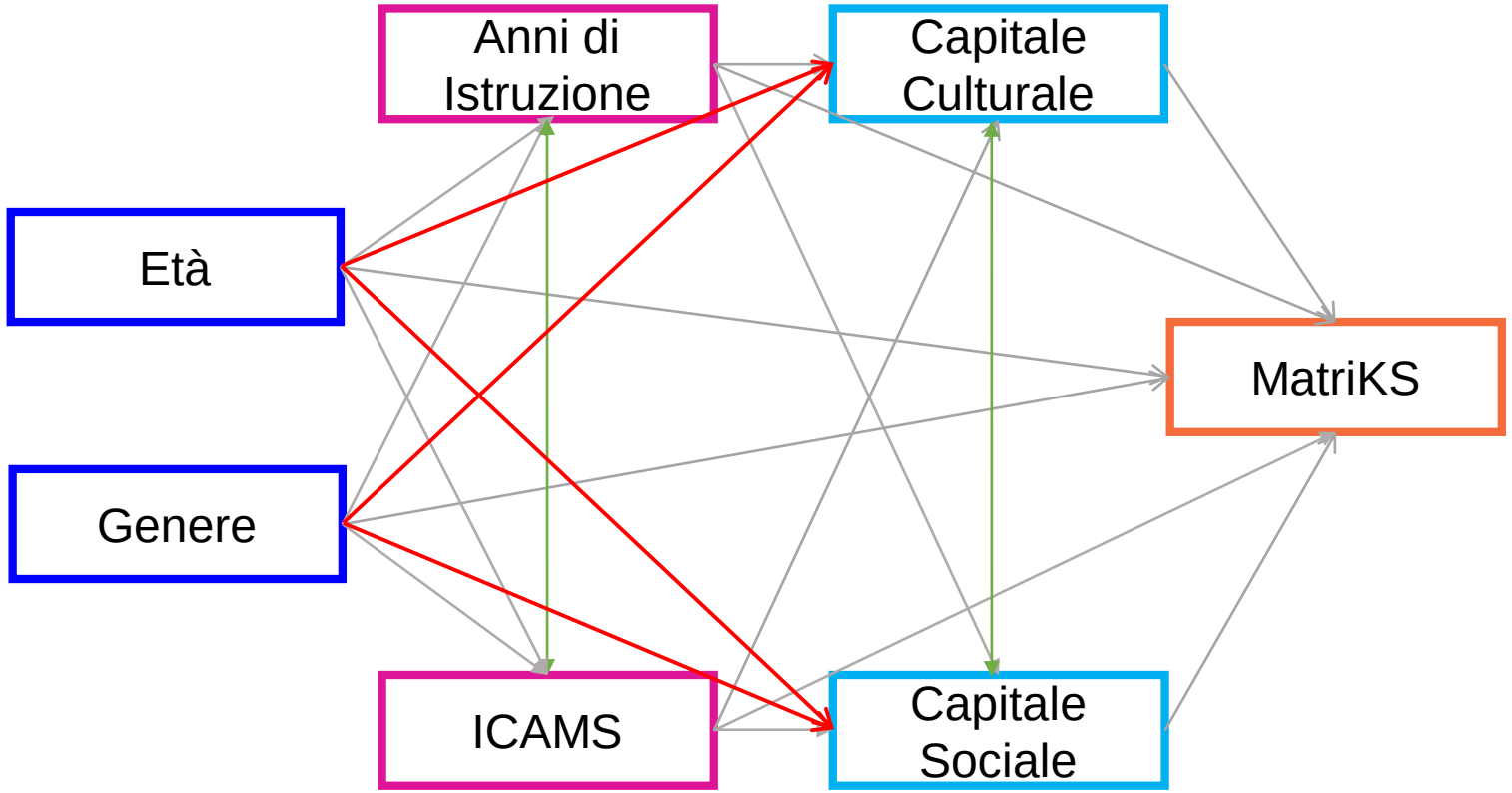
Soglie di differenza minima fra gli indici dei modelli

Indice	**Δχ²**	**ΔCFI**	**ΔTLI**	**ΔRMSEA**	**ΔSRMR**	**ΔAIC**	**RMSEA.D**
Soglia	*p* > .05	.01	.01	.015	.01	Preferibile AIC inferiore	.08

Chen, 2007; Kline, 2023; Savalei et al., 2023

Analisi dei dati

Widaman et al., in corso



Valutazione Adattamento Modelli	
Indici di Fit	**Cut-off**
CFI	≥ .95 buono ≥ .90 accettabile
TLI	≥ .95 buono ≥ .90 accettabile
RMSEA	≤ .05 buono ≤ .08 accettabile
SRMR	≤ .08 buono
Chi-quadro	*p* > .05

Chen et al., 2008; Hu & Bentler, 1999; Kline, 2023

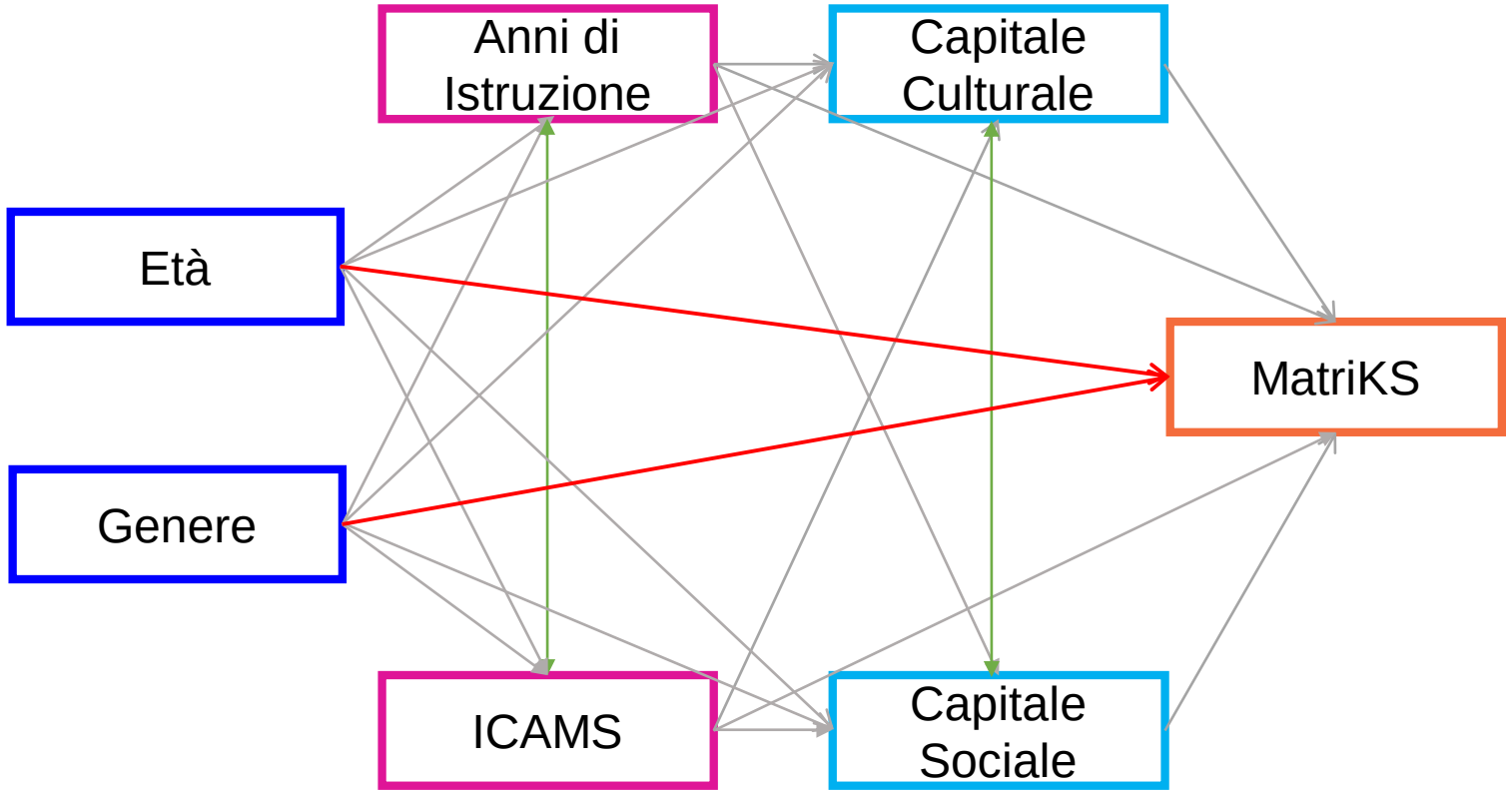
Soglie di differenza minima fra gli indici dei modelli

Indice	**Δχ²**	**ΔCFI**	**ΔTLI**	**ΔRMSEA**	**ΔSRMR**	**ΔAIC**	**RMSEA.D**
Soglia	*p* > .05	.01	.01	.015	.01	Preferibile AIC inferiore	.08

Chen, 2007; Kline, 2023; Savalei et al., 2023

Analisi dei dati

Widaman et al., in corso



Valutazione Adattamento Modelli	
Indici di Fit	**Cut-off**
CFI	≥ .95 buono ≥ .90 accettabile
TLI	≥ .95 buono ≥ .90 accettabile
RMSEA	≤ .05 buono ≤ .08 accettabile
SRMR	≤ .08 buono
Chi-quadro	*p* > .05

Chen et al., 2008; Hu & Bentler, 1999; Kline, 2023

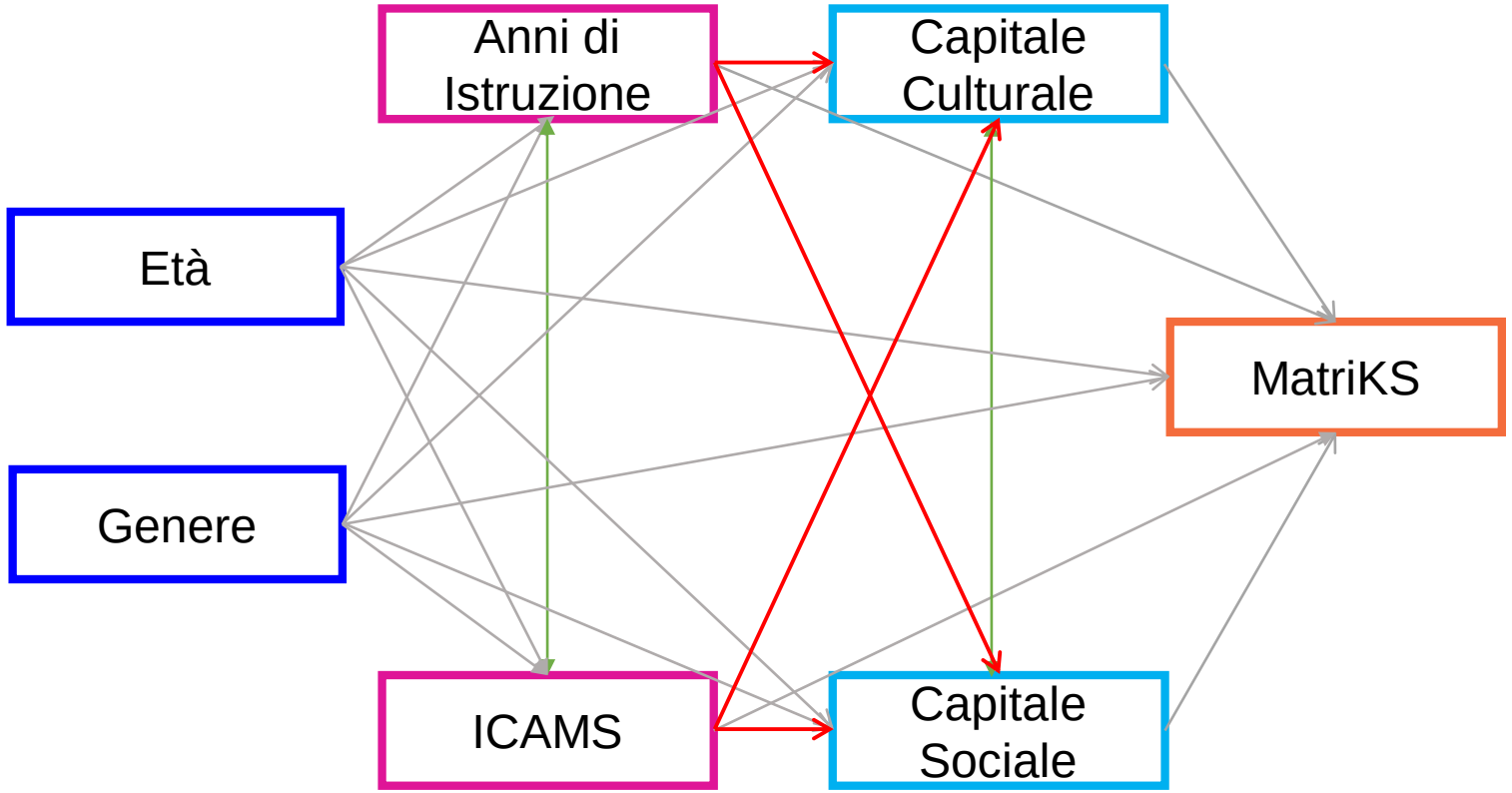
Soglie di differenza minima fra gli indici dei modelli

Indice	Δχ²	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA.D
Soglia	*p* > .05	.01	.01	.015	.01	Preferibile AIC inferiore	.08

Chen, 2007; Kline, 2023; Savalei et al., 2023

Analisi dei dati

Widaman et al., in corso



Valutazione Adattamento Modelli	
Indici di Fit	**Cut-off**
CFI	≥ .95 buono ≥ .90 accettabile
TLI	≥ .95 buono ≥ .90 accettabile
RMSEA	≤ .05 buono ≤ .08 accettabile
SRMR	≤ .08 buono
Chi-quadro	*p* > .05

Chen et al., 2008; Hu & Bentler, 1999; Kline, 2023

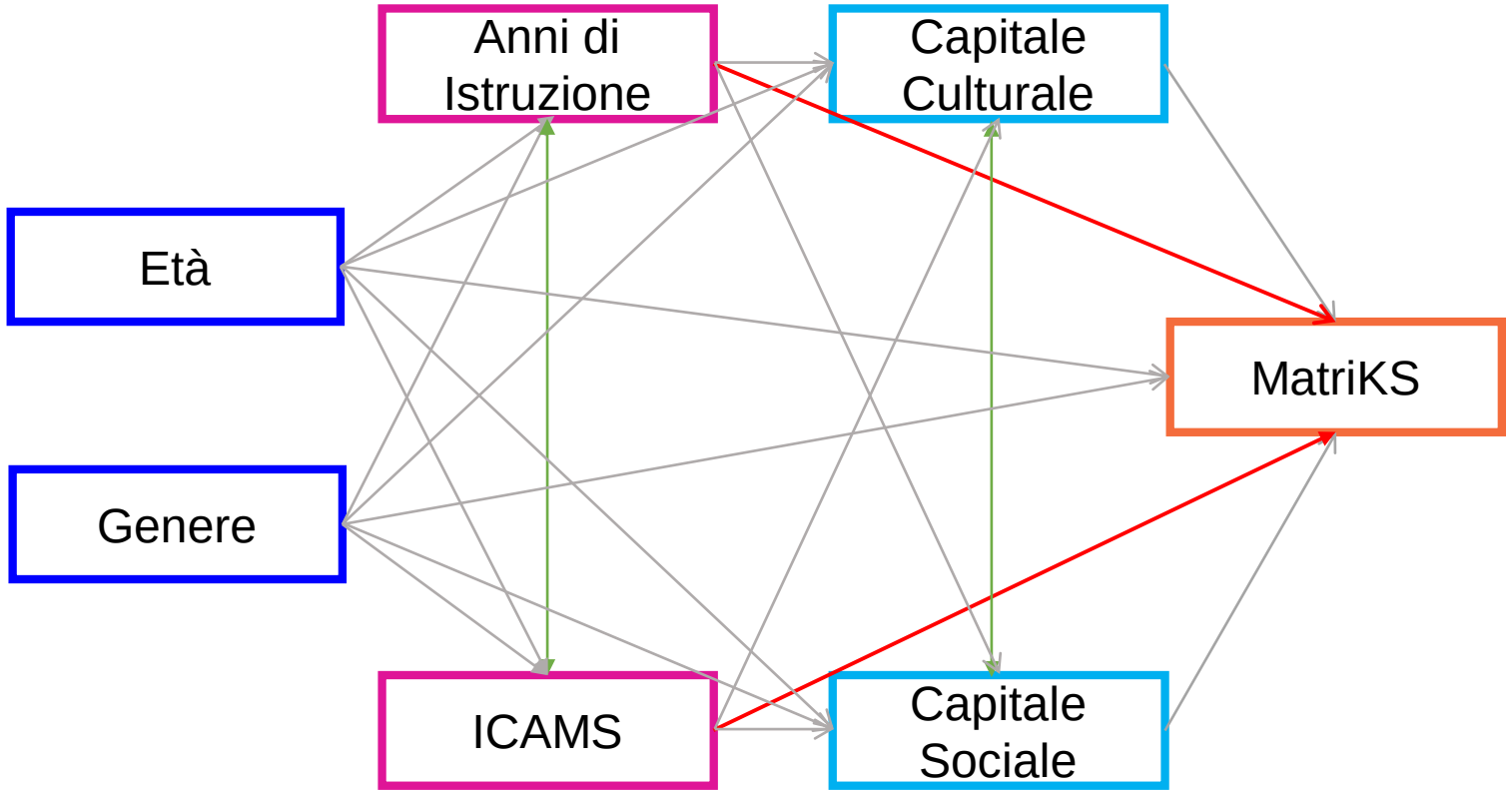
Soglie di differenza minima fra gli indici dei modelli

Indice	Δχ²	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA.D
Soglia	*p* > .05	.01	.01	.015	.01	Preferibile AIC inferiore	.08

Chen, 2007; Kline, 2023; Savalei et al., 2023

Analisi dei dati

Widaman et al., in corso



Valutazione Adattamento Modelli	
Indici di Fit	**Cut-off**
CFI	≥ .95 buono ≥ .90 accettabile
TLI	≥ .95 buono ≥ .90 accettabile
RMSEA	≤ .05 buono ≤ .08 accettabile
SRMR	≤ .08 buono
Chi-quadro	*p* > .05

Chen et al., 2008; Hu & Bentler, 1999; Kline, 2023

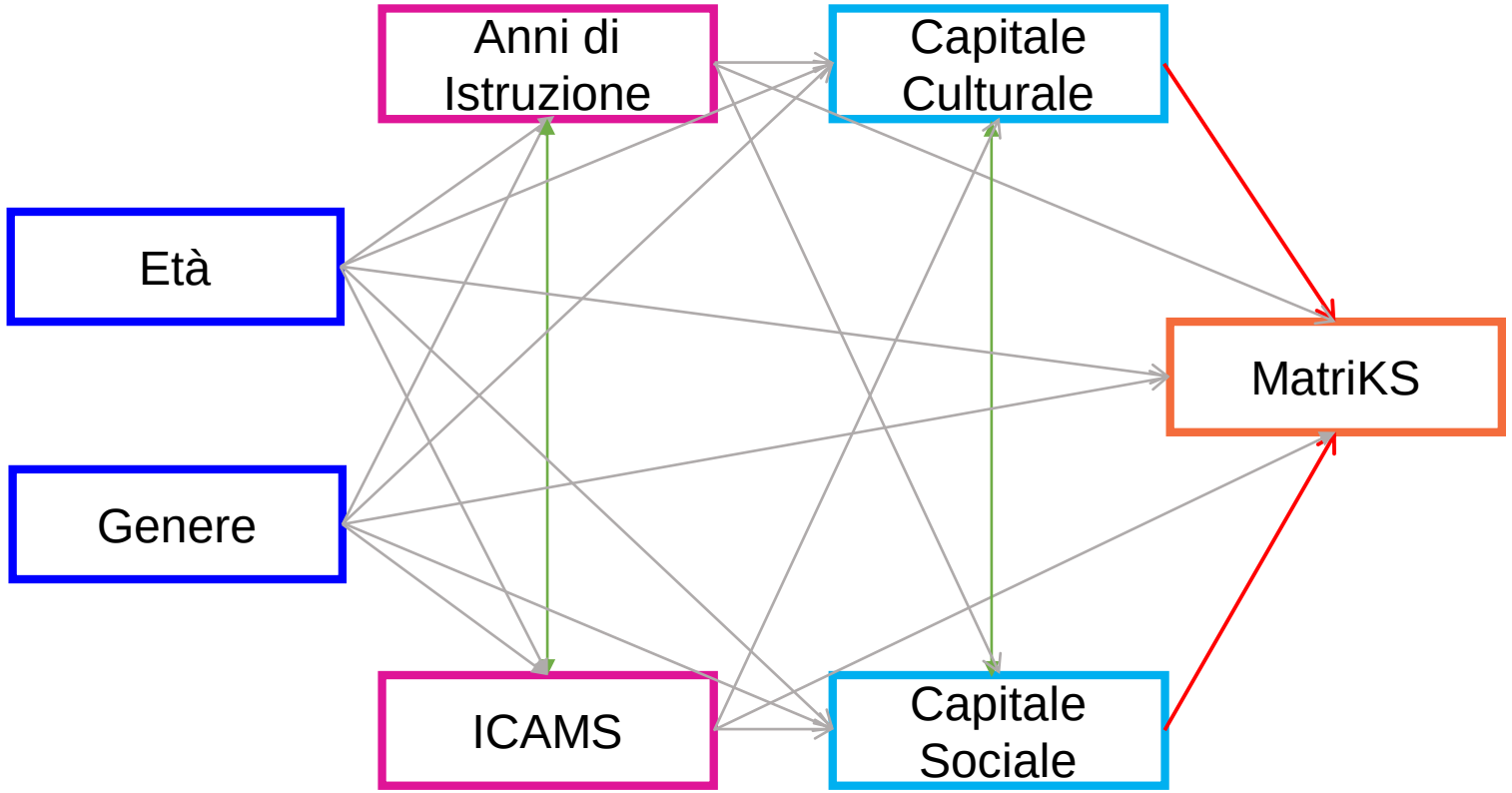
Soglie di differenza minima fra gli indici dei modelli

Indice	Δχ²	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA.D
Soglia	*p* > .05	.01	.01	.015	.01	Preferibile AIC inferiore	.08

Chen, 2007; Kline, 2023; Savalei et al., 2023

Analisi dei dati

Widaman et al., in corso



Valutazione Adattamento Modelli	
Indici di Fit	**Cut-off**
CFI	≥ .95 buono ≥ .90 accettabile
TLI	≥ .95 buono ≥ .90 accettabile
RMSEA	≤ .05 buono ≤ .08 accettabile
SRMR	≤ .08 buono
Chi-quadro	*p* > .05

Chen et al., 2008; Hu & Bentler, 1999; Kline, 2023

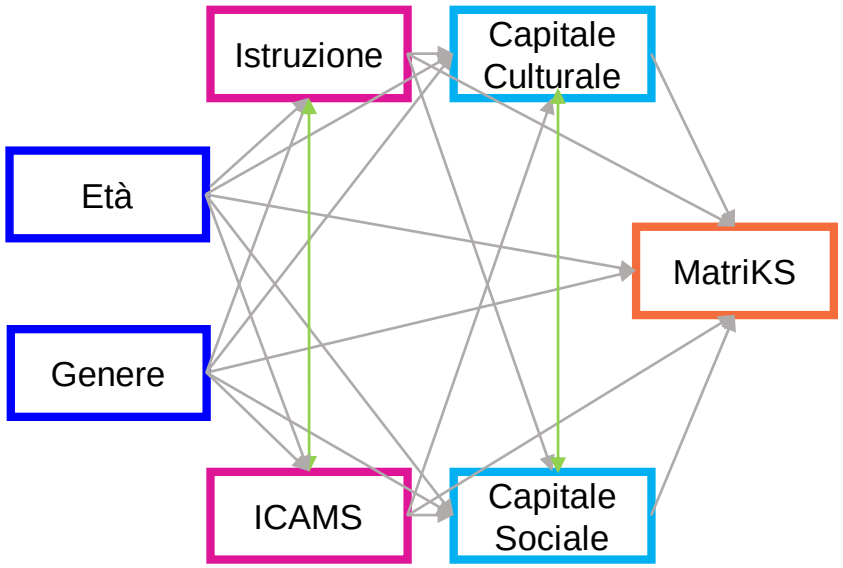
Soglie di differenza minima fra gli indici dei modelli

Indice	Δχ²	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA.D
Soglia	*p* > .05	.01	.01	.015	.01	Preferibile AIC inferiore	.08

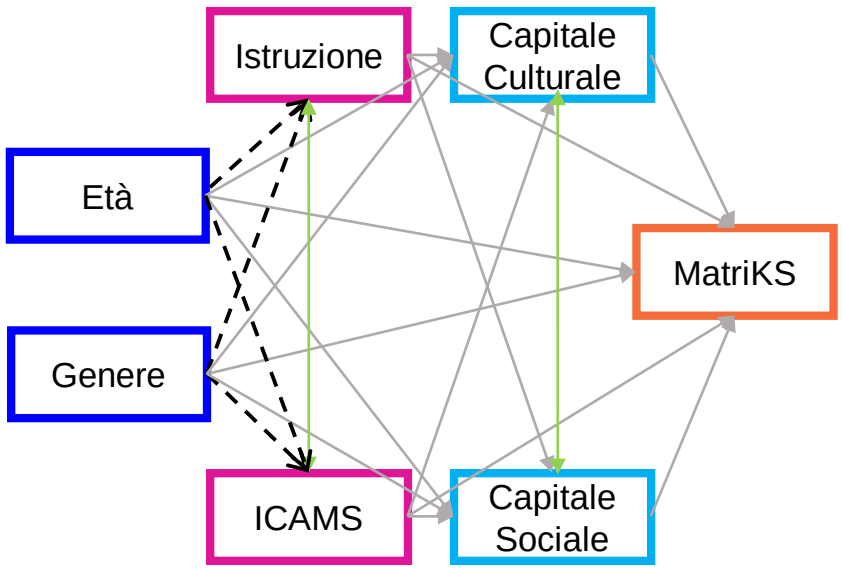
Chen, 2007; Kline, 2023; Savalei et al., 2023

Risultati

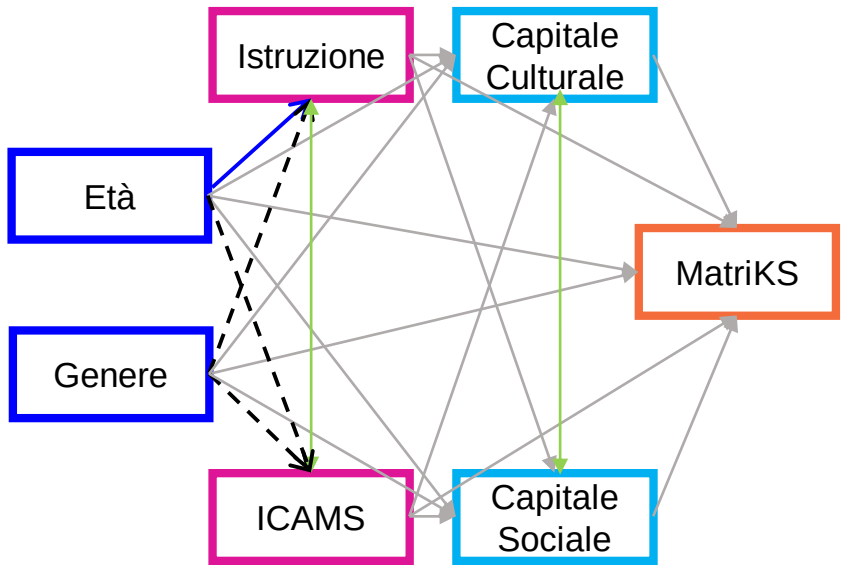
Modello 0



Modello 1



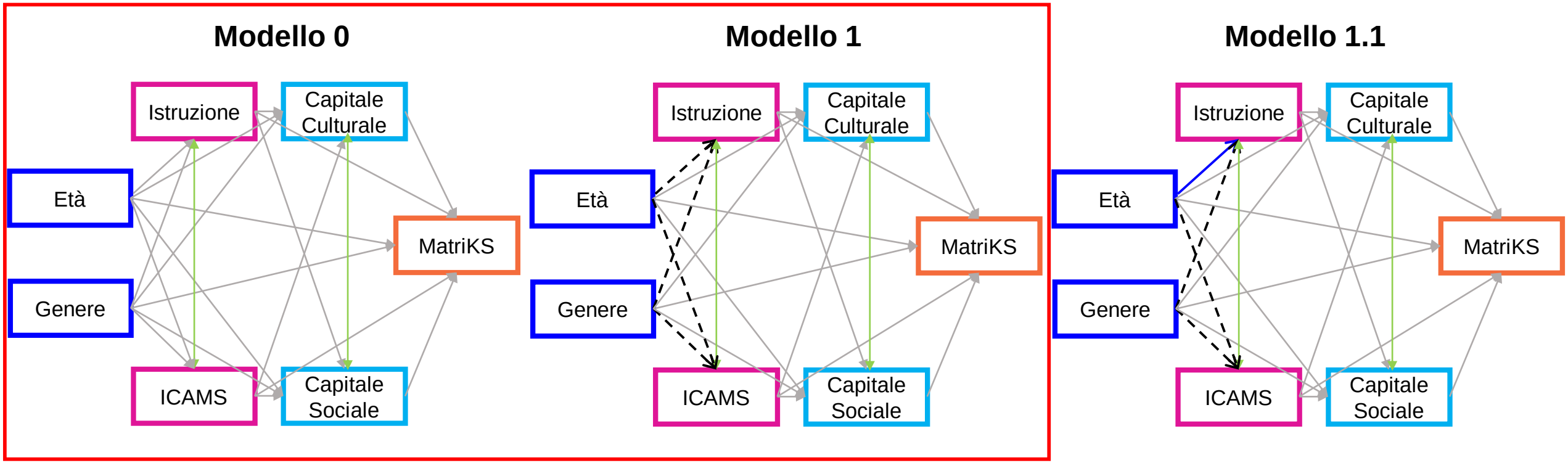
Modello 1.1



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 0	0	0	1	1	NA	0	3839.410
Modello 1	79.989**	4	.853	.265	.248	.090	3901.648
Modello 1.1	2.022	3	1	1	.000	.021	3835.267

	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
1 vs 0			NA				62.224	
1.1 vs 0							-4.157	
1.1 vs 1	87.907**	1	.147	.735	-.248	-.069	-66.381	.532

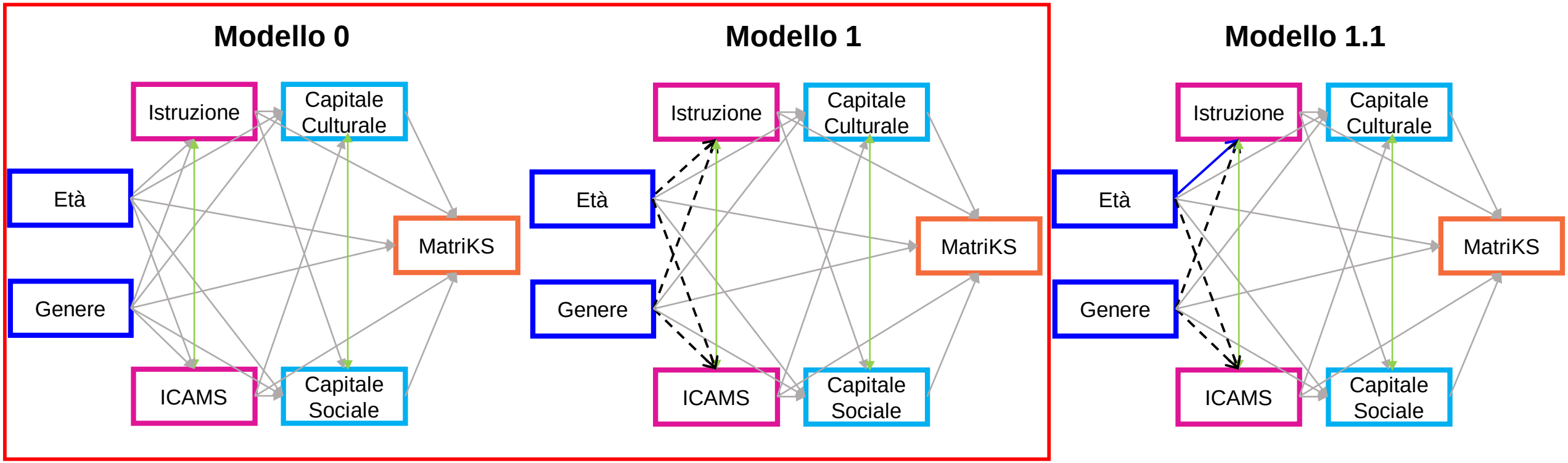
Risultati



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 0	0	0	1	1	NA	0	3839.410
Modello 1	79.989**	4	.853	.265	.248	.090	3901.648
Modello 1.1	2.022	3	1	1	.000	.021	3835.267

	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
1 vs 0			NA				62.224	
1.1 vs 0							-4.157	
1.1 vs 1	87.907**	1	.147	.735	-.248	-.069	-66.381	.532

Risultati

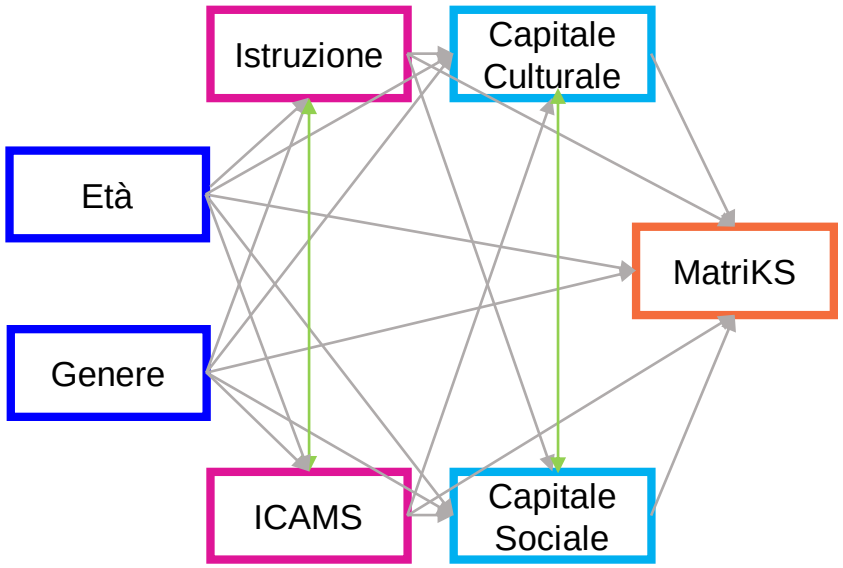


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 0	0	0	1	1	NA	0	3839.410
Modello 1	**79.989****	**4**	**.853**	**.265**	**.248**	**.090**	3901.648
Modello 1.1	2.022	3	1	1	.000	.021	3835.267

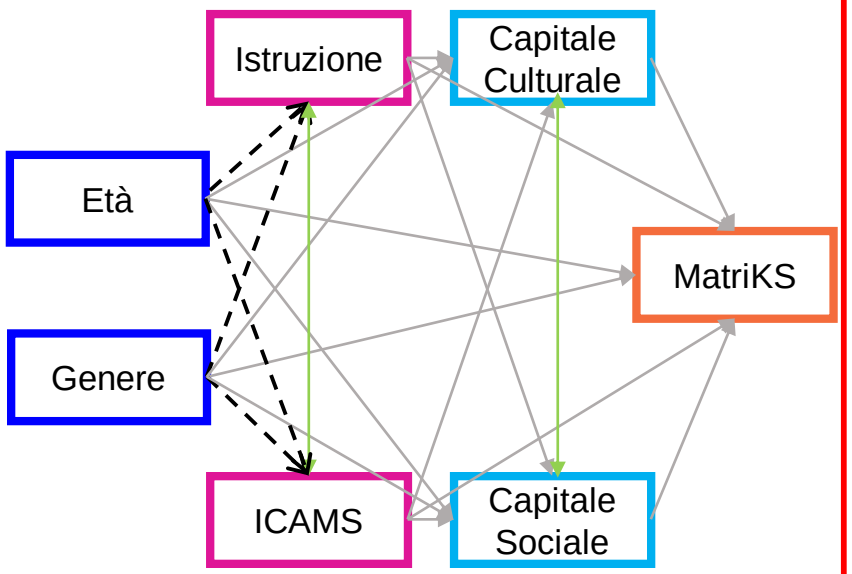
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
1 vs 0			NA				**62.224**	
1.1 vs 0							-4.157	
1.1 vs 1	87.907**	1	.147	.735	-.248	-.069	-66.381	.532

Risultati

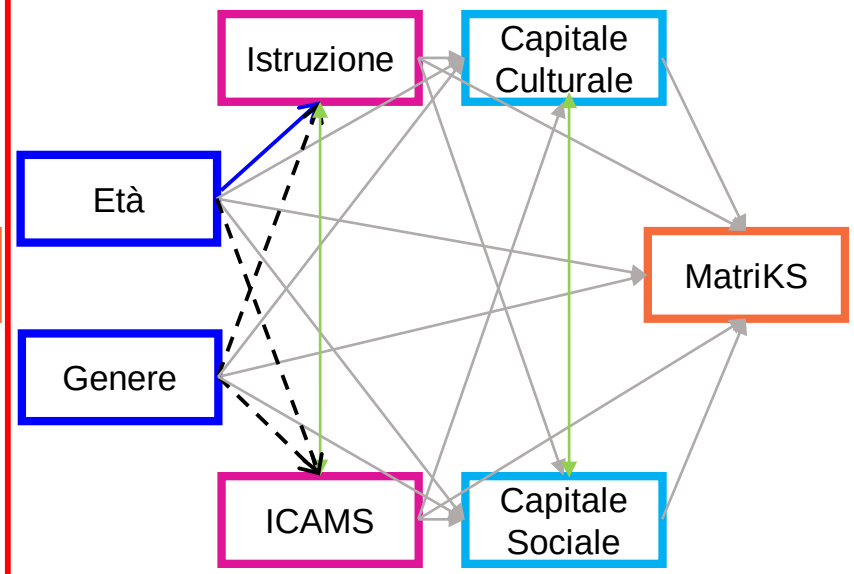
Modello 0



Modello 1



Modello 1.1

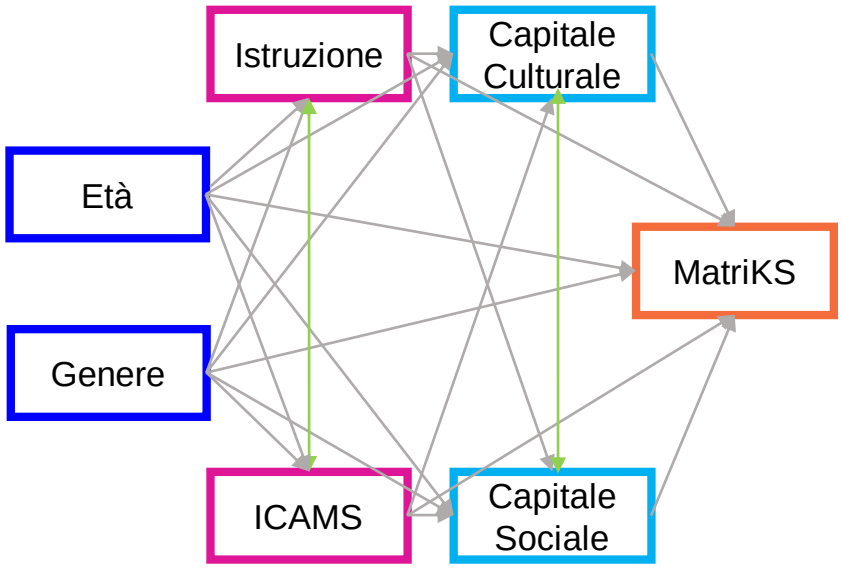


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 0	0	0	1	1	NA	0	3839.410
Modello 1	79.989**	4	.853	.265	.248	.090	3901.648
Modello 1.1	2.022	3	1	1	.000	.021	3835.267

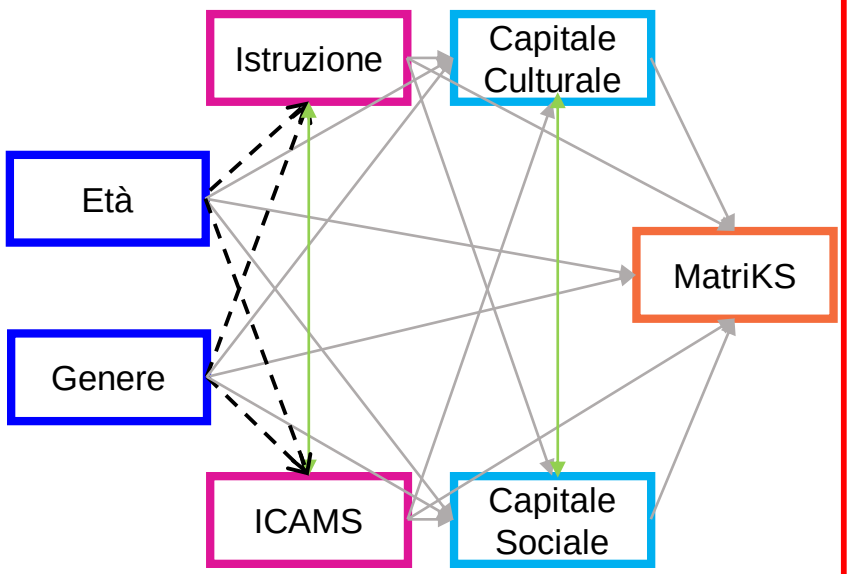
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
1 vs 0			NA				62.224	
1.1 vs 0							-4.157	
1.1 vs 1	87.907**	1	.147	.735	-.248	-.069	-66.381	.532

Risultati

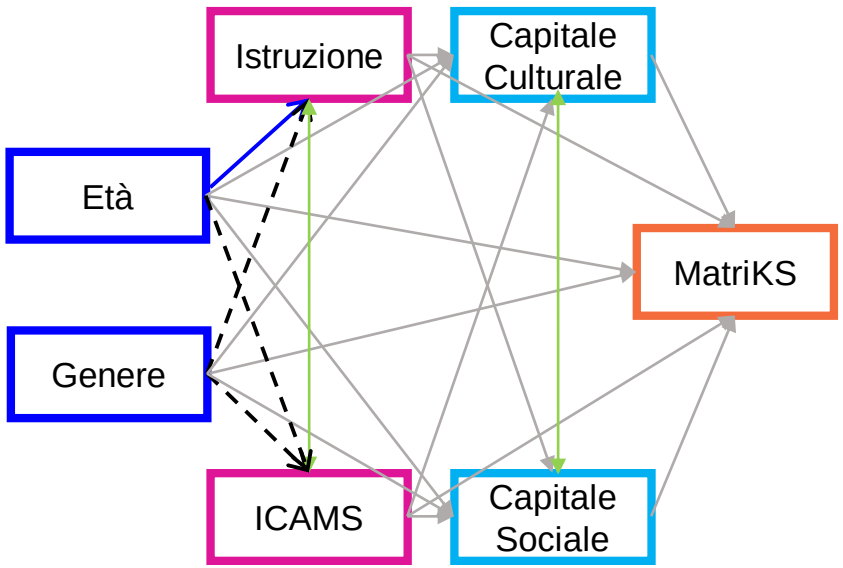
Modello 0



Modello 1



Modello 1.1

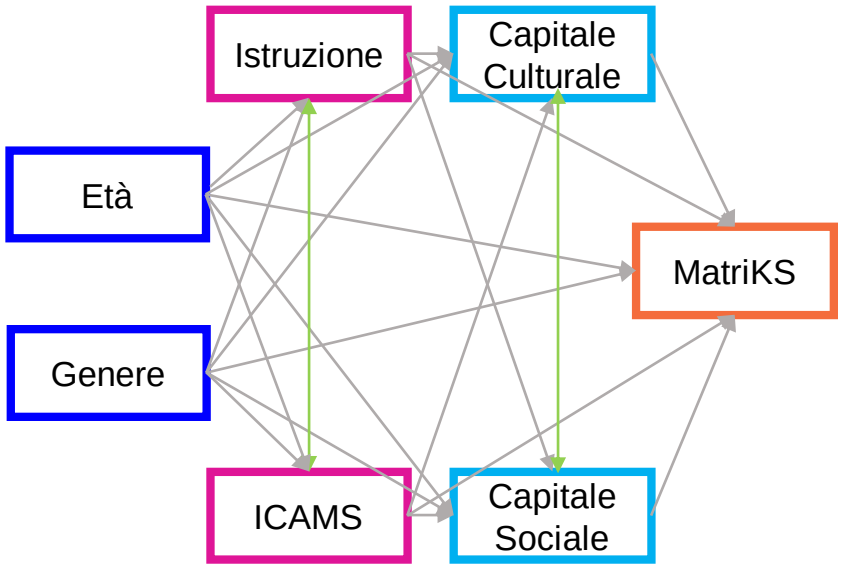


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 0	0	0	1	1	NA	0	3839.410
Modello 1	79.989**	4	.853	.265	.248	.090	3901.648
Modello 1.1	2.022	3	**1**	**1**	**.000**	.021	3835.267

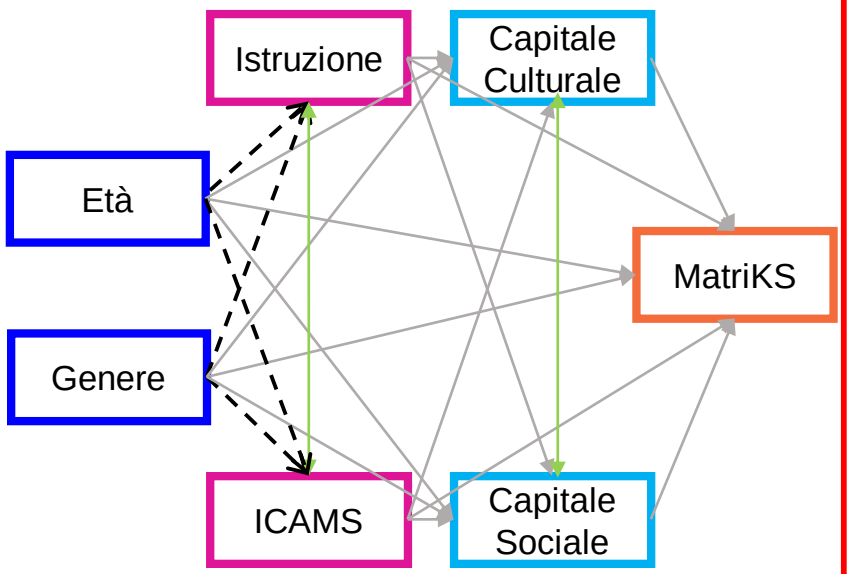
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
1 vs 0			NA				62.224	
1.1 vs 0							-4.157	
1.1 vs 1	87.907**	1	.147	.735	-.248	-.069	-66.381	.532

Risultati

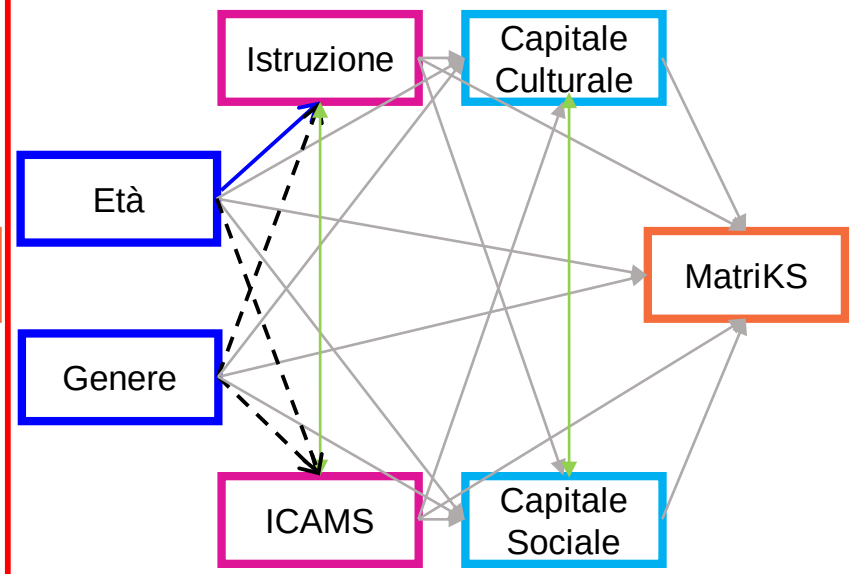
Modello 0



Modello 1



Modello 1.1

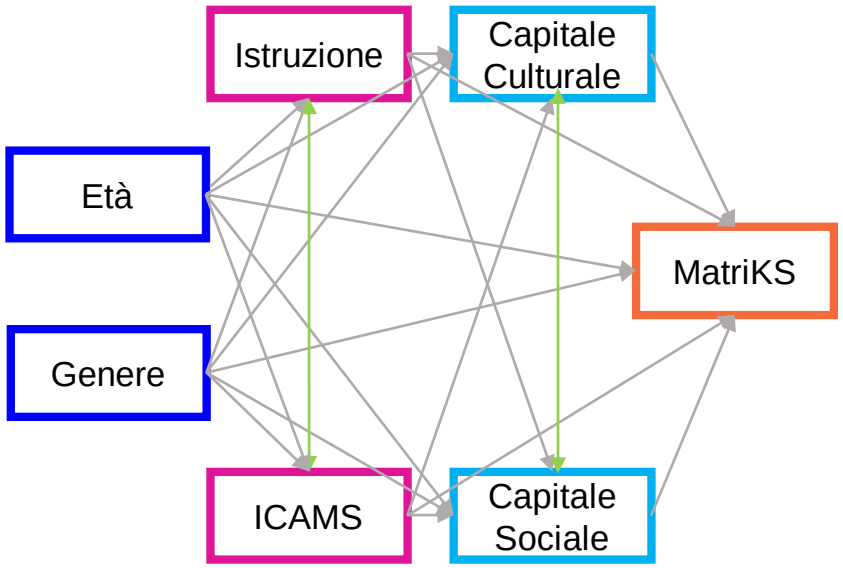


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 0	0	0	1	1	NA	0	3839.410
Modello 1	79.989**	4	.853	.265	.248	.090	3901.648
Modello 1.1	2.022	3	1	1	.000	.021	3835.267

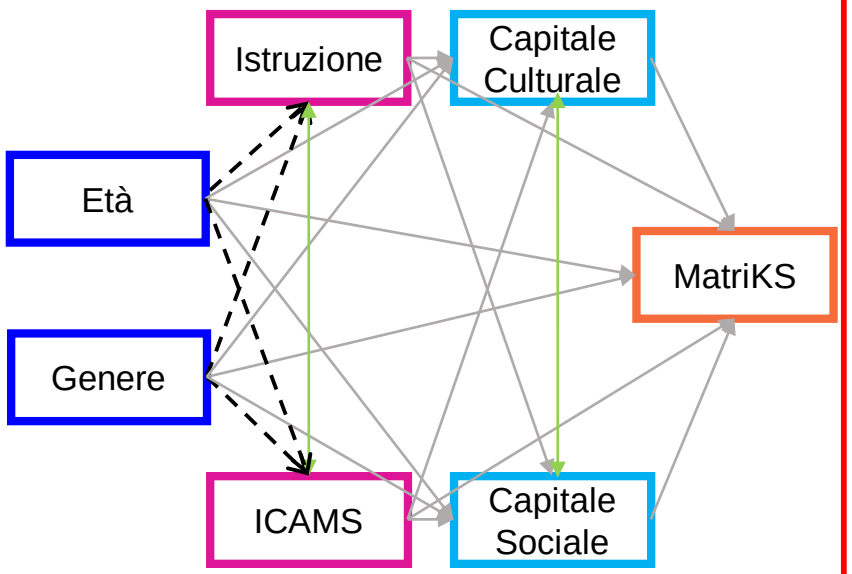
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
1 vs 0			NA				62.224	
1.1 vs 0							**-4.157**	
1.1 vs 1	87.907**	1	.147	.735	-.248	-.069	-66.381	.532

Risultati

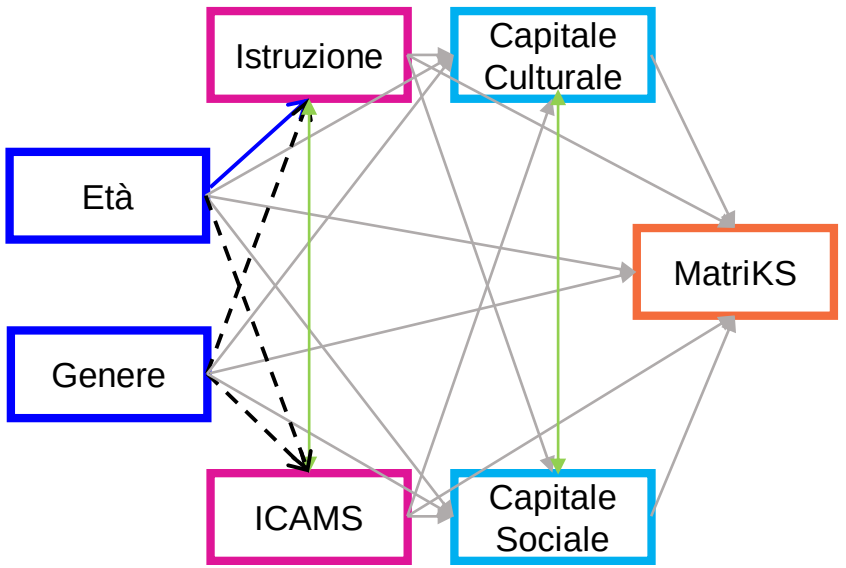
Modello 0



Modello 1



Modello 1.1

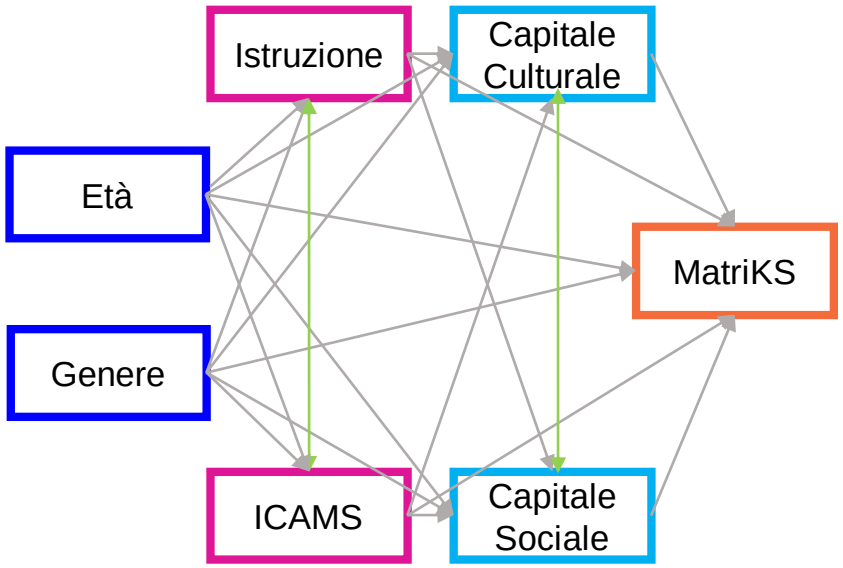


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 0	0	0	1	1	NA	0	3839.410
Modello 1	79.989**	4	.853	.265	.248	.090	3901.648
Modello 1.1	2.022	3	1	1	.000	.021	3835.267

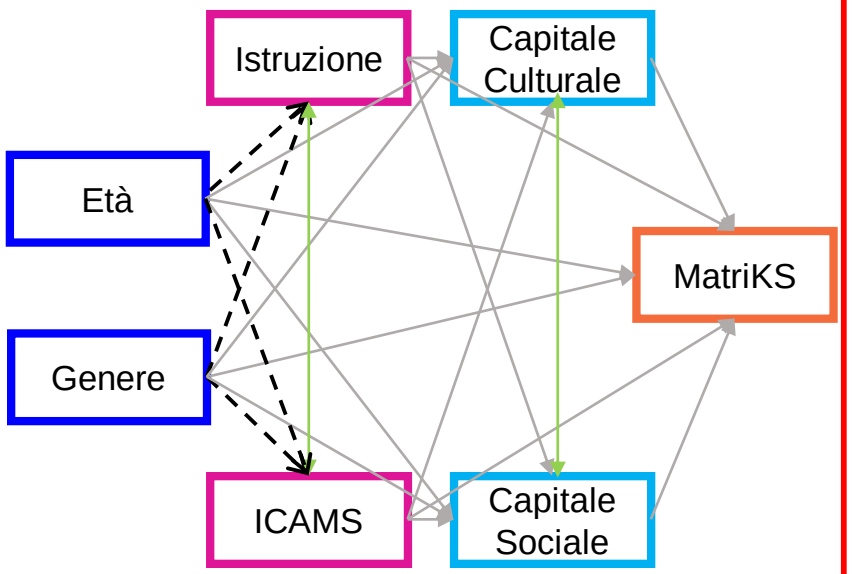
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
1 vs 0			NA				62.224	
1.1 vs 0							-4.157	
1.1 vs 1	**87.907****	**1**	**.147**	**.735**	**-.248**	**-.069**	**-66.381**	**.532**

Risultati

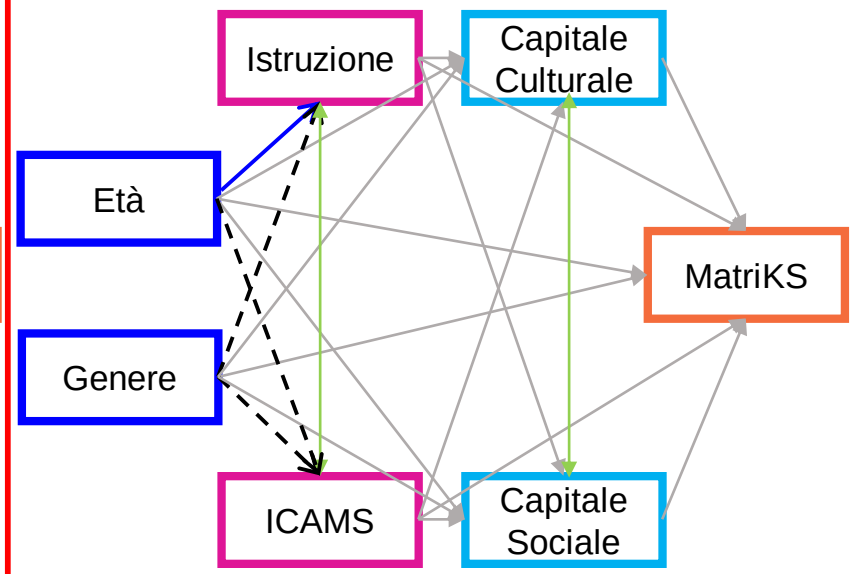
Modello 0



Modello 1



Modello 1.1

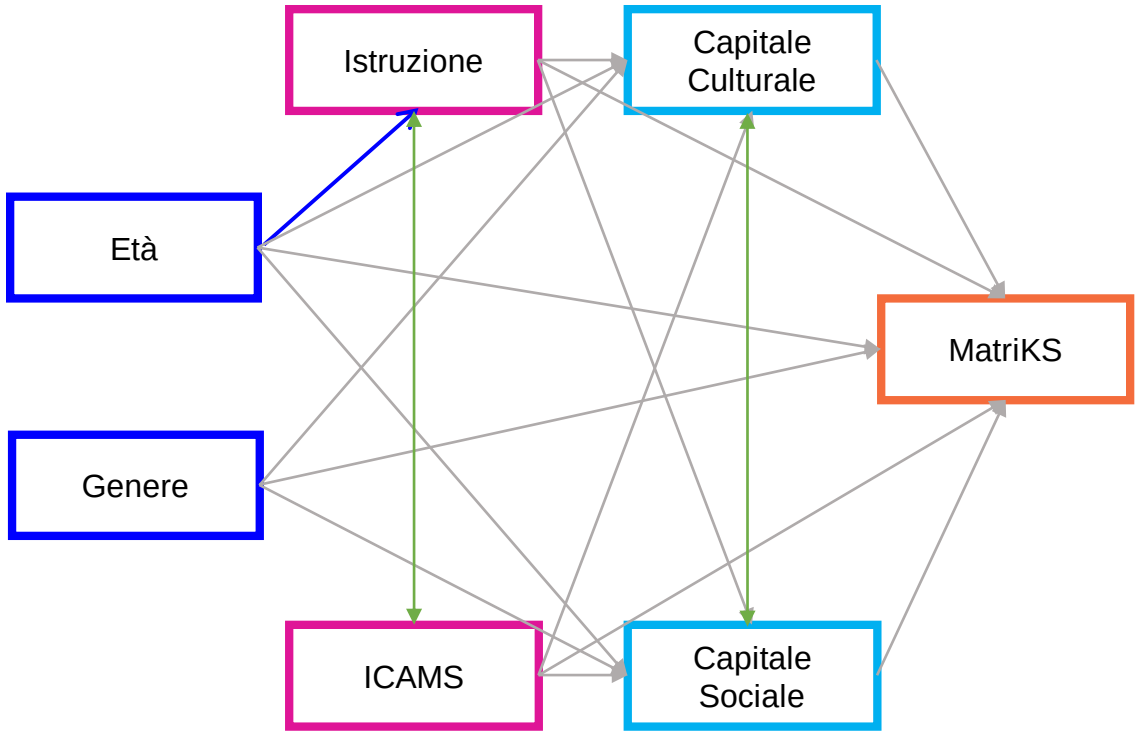


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 0	0	0	1	1	NA	0	3839.410
Modello 1	79.989**	4	.853	.265	.248	.090	3901.648
Modello 1.1	2.022	3	1	1	.000	.021	3835.267

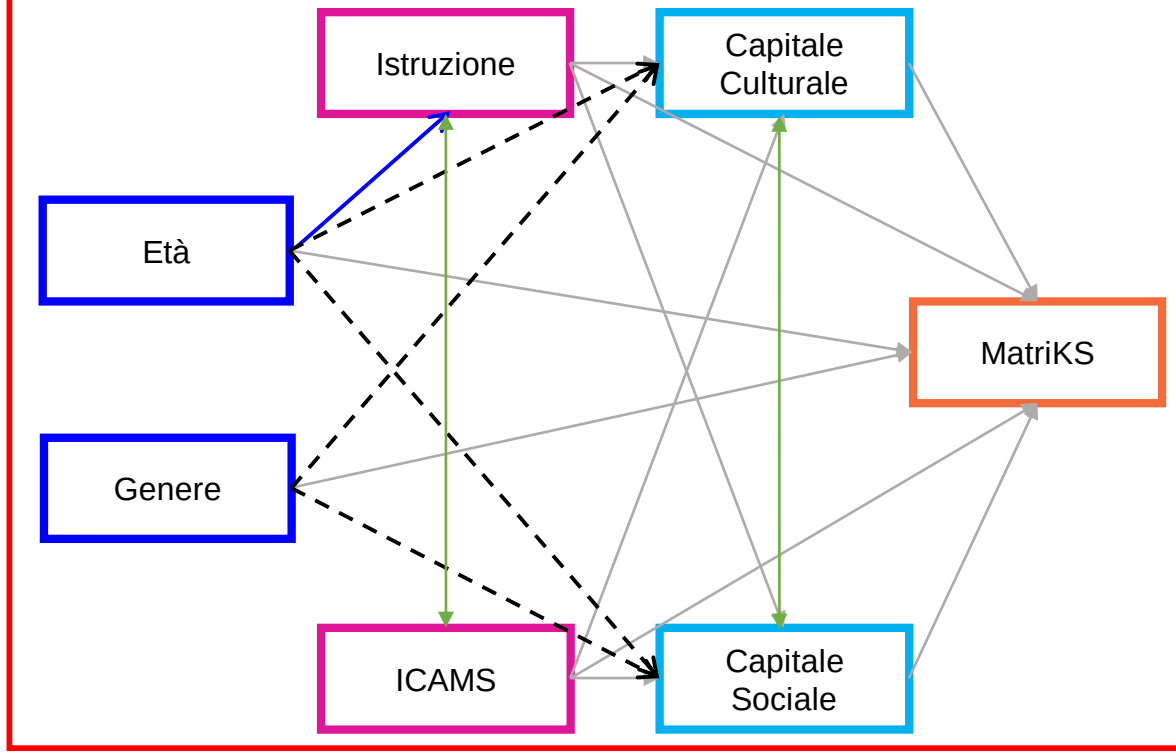
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
1 vs 0			NA				62.224	
1.1 vs 0							-4.157	
1.1 vs 1	87.907**	1	.147	.735	-.248	-.069	-66.381	.532

Risultati

Modello 1.1



Modello 2

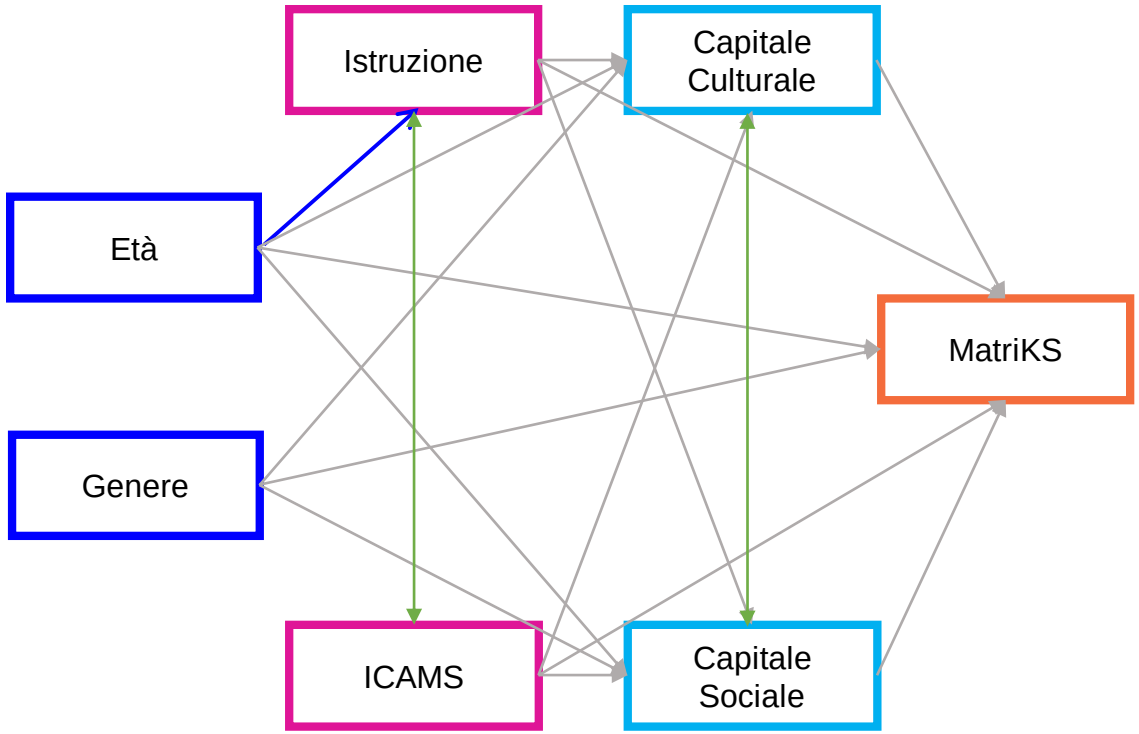


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 1.1	2.022	3	1	1	0	.021	3835.257
Modello 2	8.418	7	.997	.992	.026	.024	3833.736

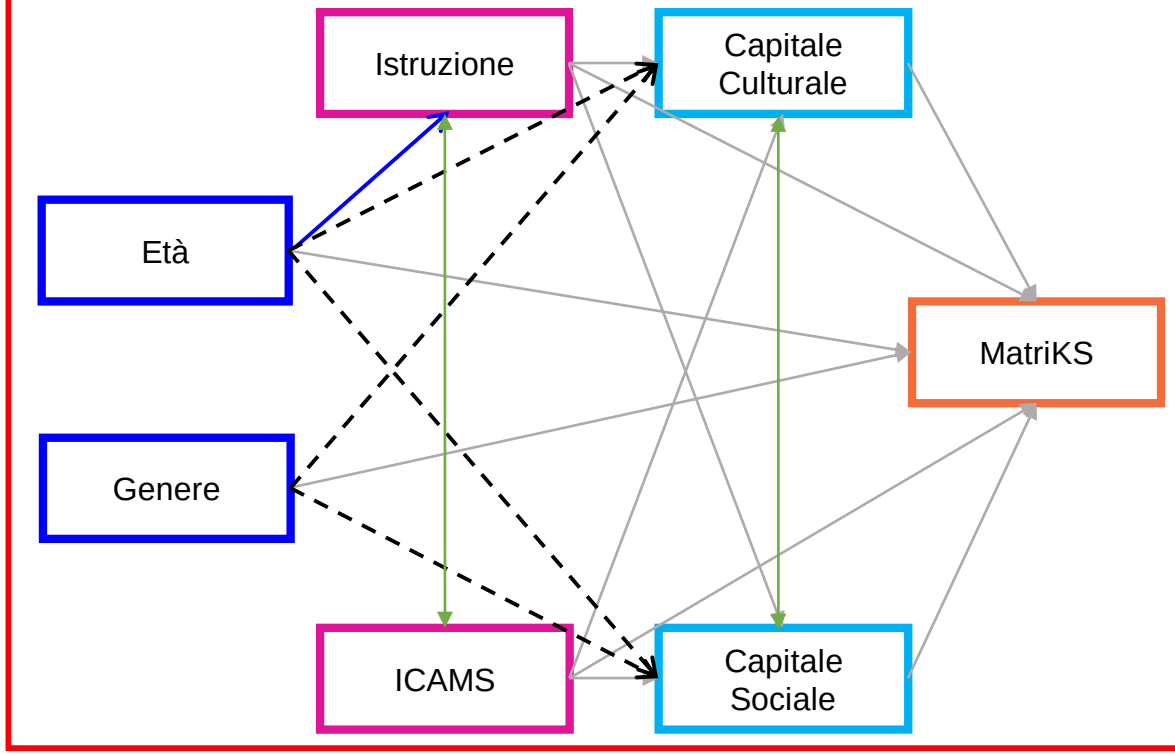
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
2 vs 1.1	6.192	4	-.003	-.008	.026	.003	-1.521	.042

Risultati

Modello 1.1



Modello 2

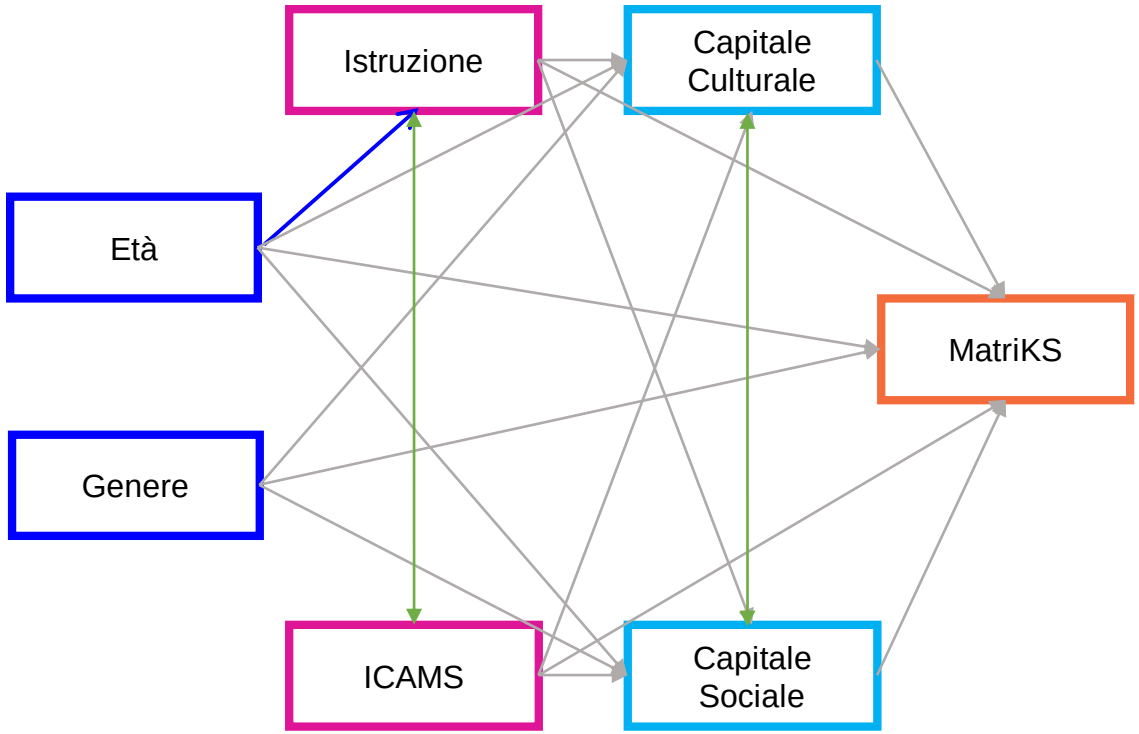


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 1.1	2.022	3	1	1	0	.021	3835.257
Modello 2	**8.418**	**7**	**.997**	**.992**	**.026**	**.024**	3833.736

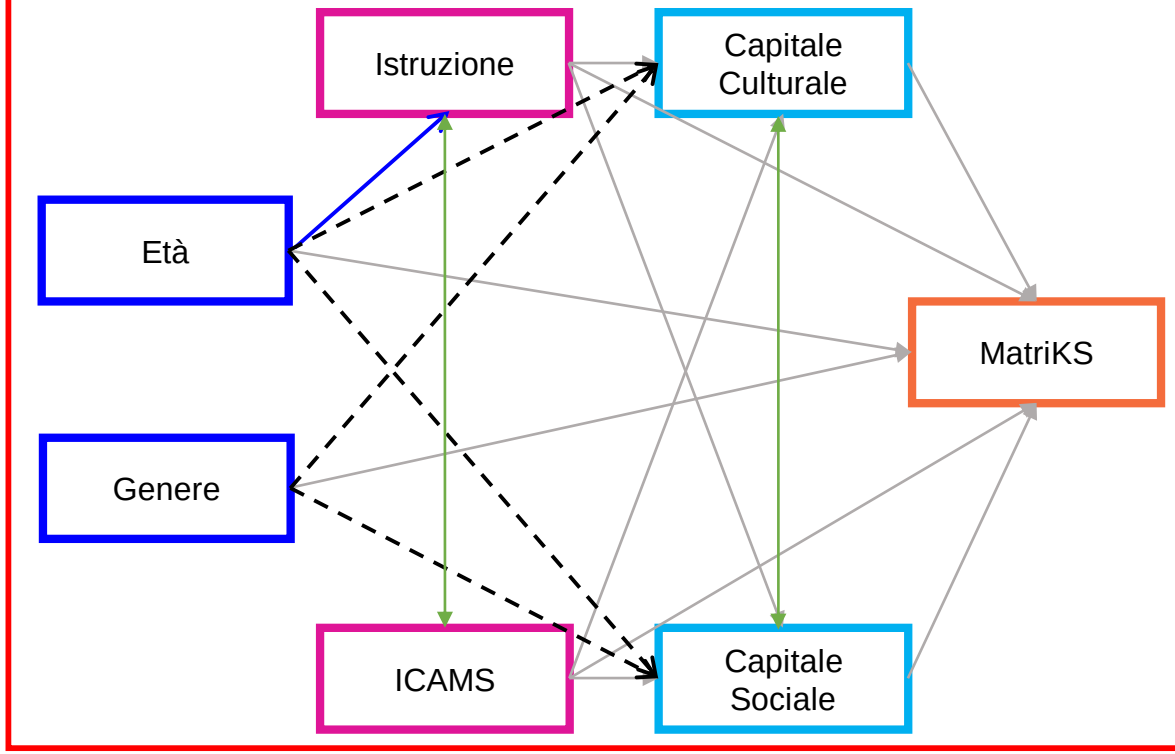
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
2 vs 1.1	6.192	4	-.003	-.008	.026	.003	-1.521	.042

Risultati

Modello 1.1



Modello 2

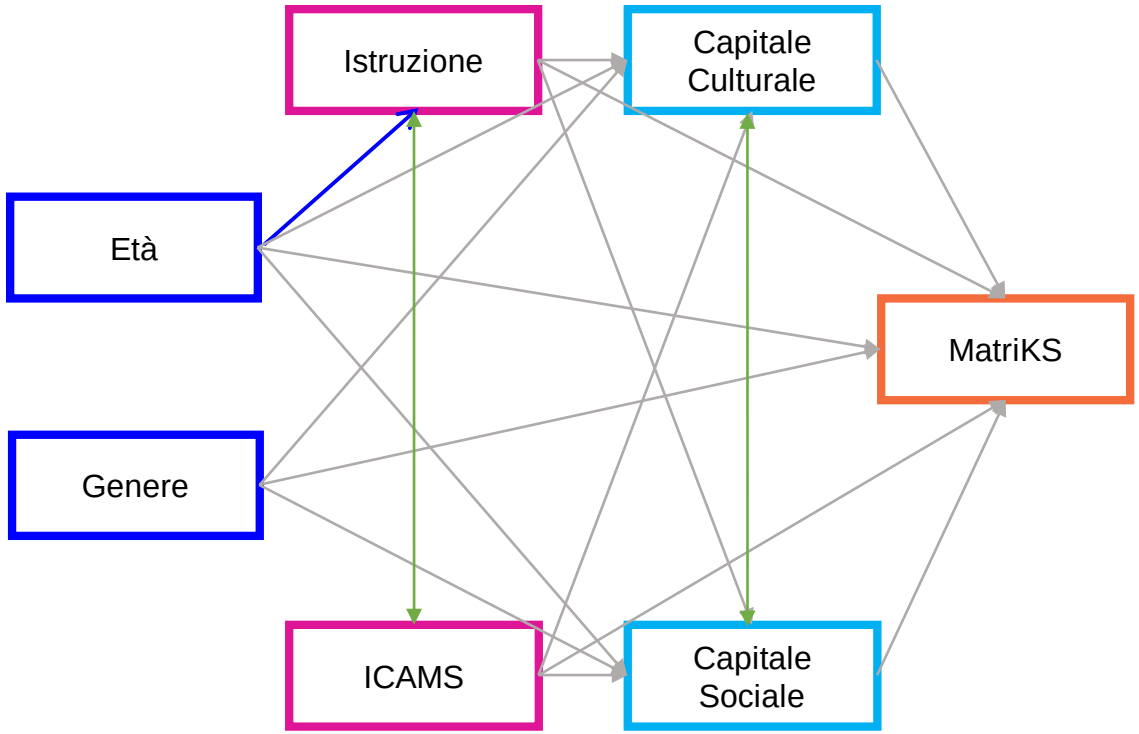


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 1.1	2.022	3	1	1	0	.021	3835.257
Modello 2	8.418	7	.997	.992	.026	.024	3833.736

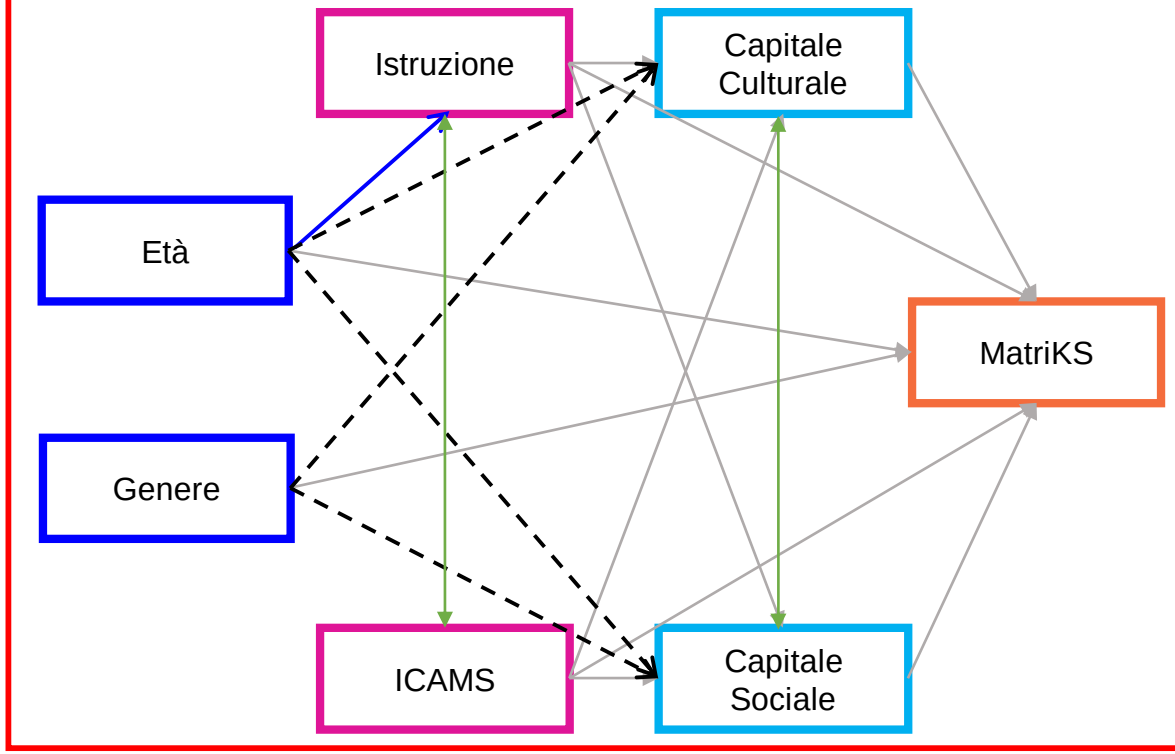
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
2 vs 1.1	**6.192**	**4**	**-.003**	**-.008**	.026	**.003**	**-1.521**	**.042**

Risultati

Modello 1.1



Modello 2

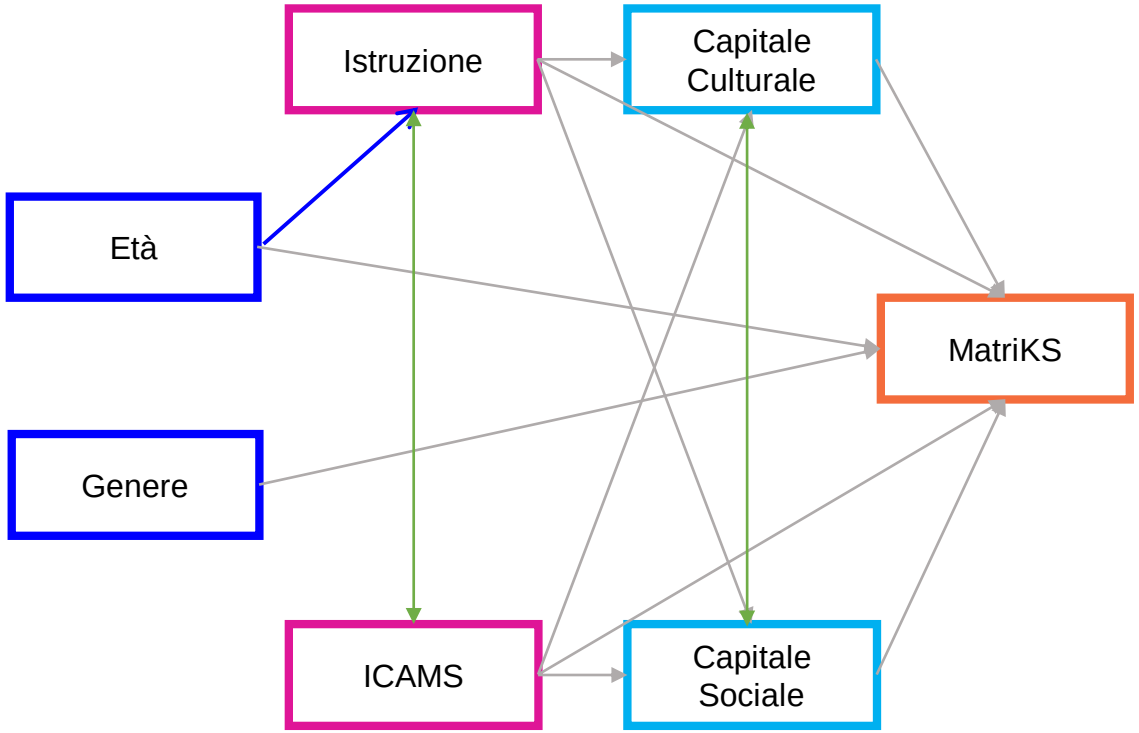


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 1.1	2.022	3	1	1	0	.021	3835.257
Modello 2	8.418	7	.997	.992	.026	.024	3833.736

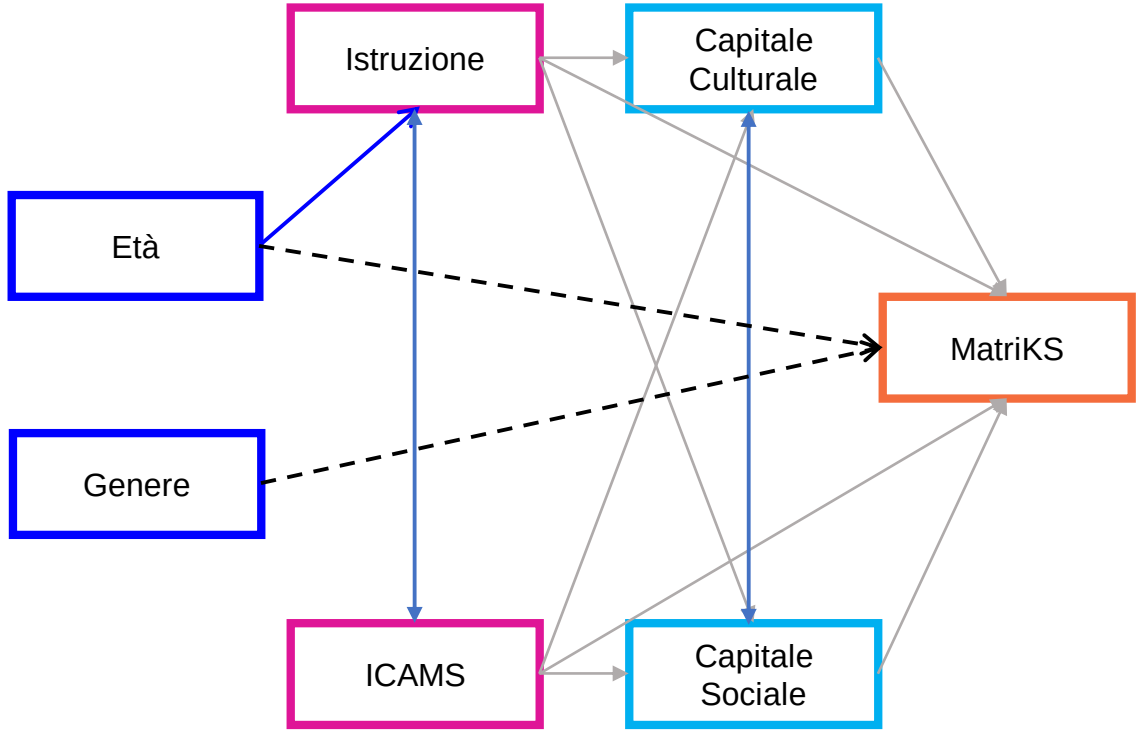
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
2 vs 1.1	6.192	4	-.003	-.008	.026	.003	-1.521	.042

Risultati

Modello 2



Modello 3

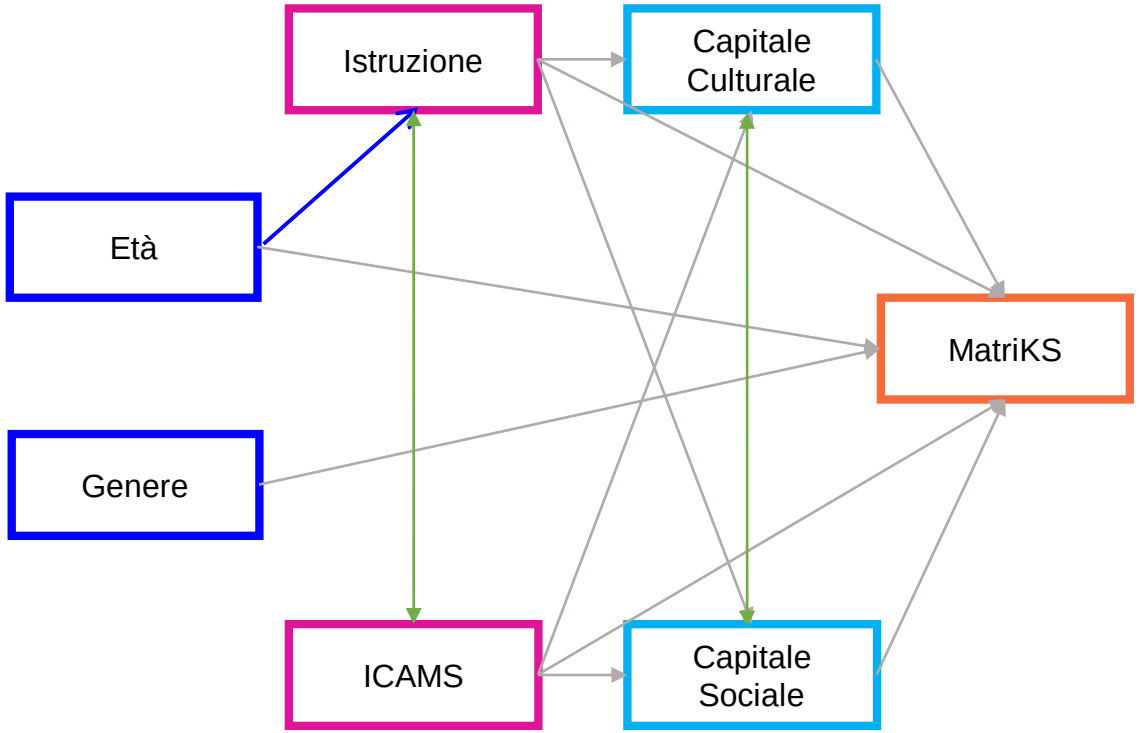


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 2	8.418	7	.997	.992	.026	.024	3833.736
Modello 3	24.542*	9	.970	.933	.075	.041	3845.097

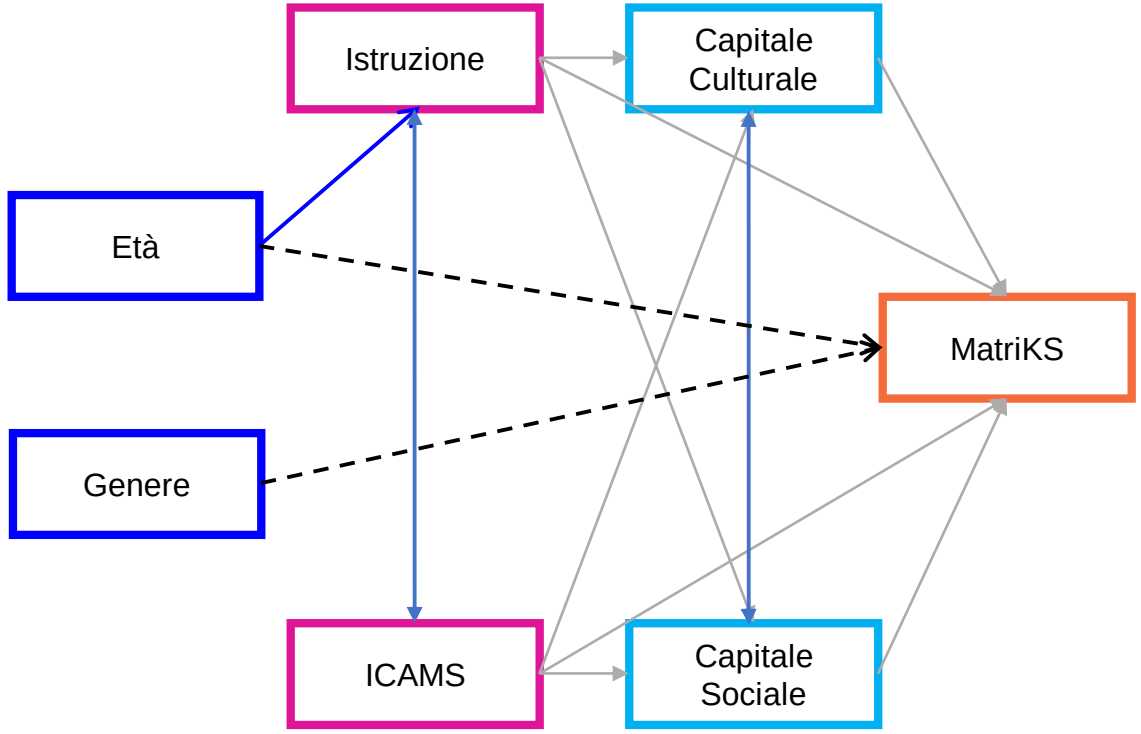
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
3 vs 2	17.405**	2	-.027	-.059	.049	.017	11.361	.158

Risultati

Modello 2



Modello 3

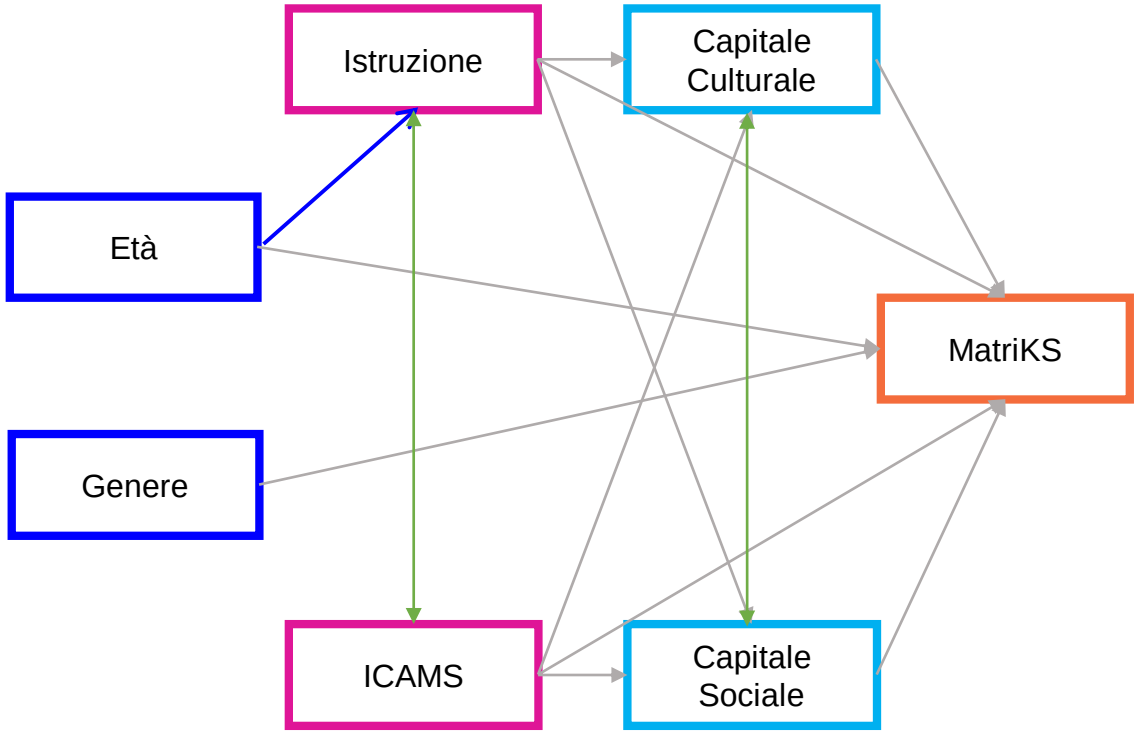


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 2	8.418	7	.997	.992	.026	.024	3833.736
Modello 3	24.542*	9	.970	.933	.075	.041	3845.097

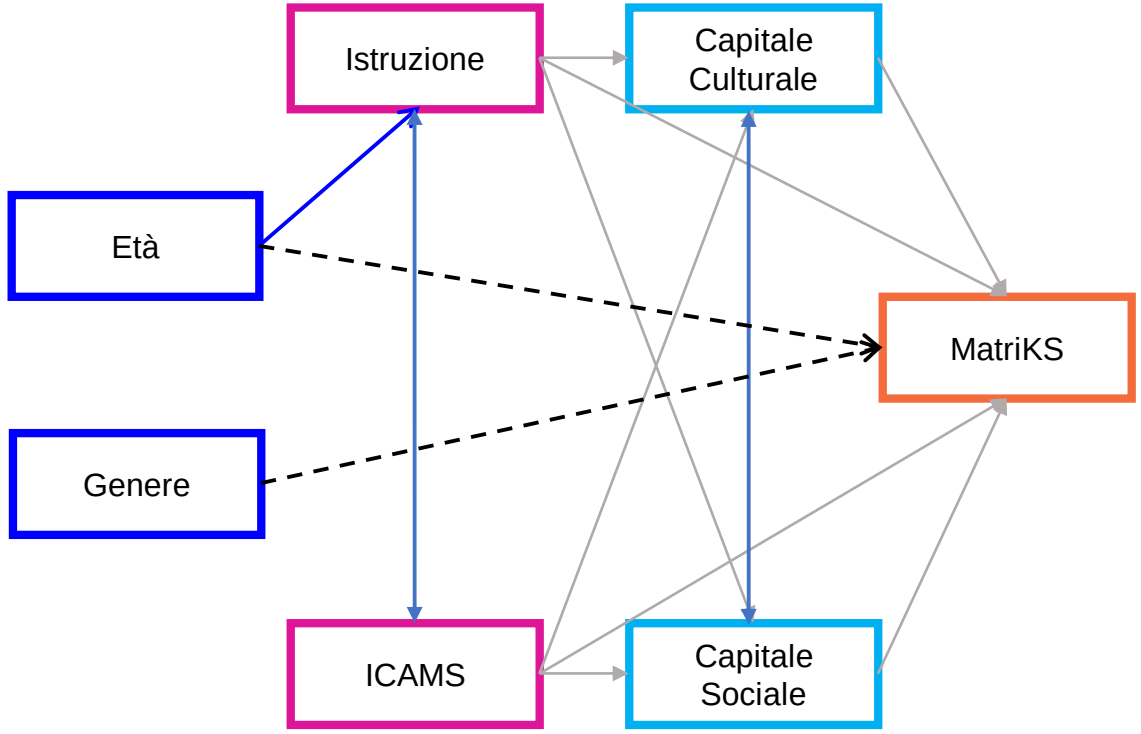
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
3 vs 2	17.405**	2	-.027	-.059	.049	.017	11.361	.158

Risultati

Modello 2



Modello 3

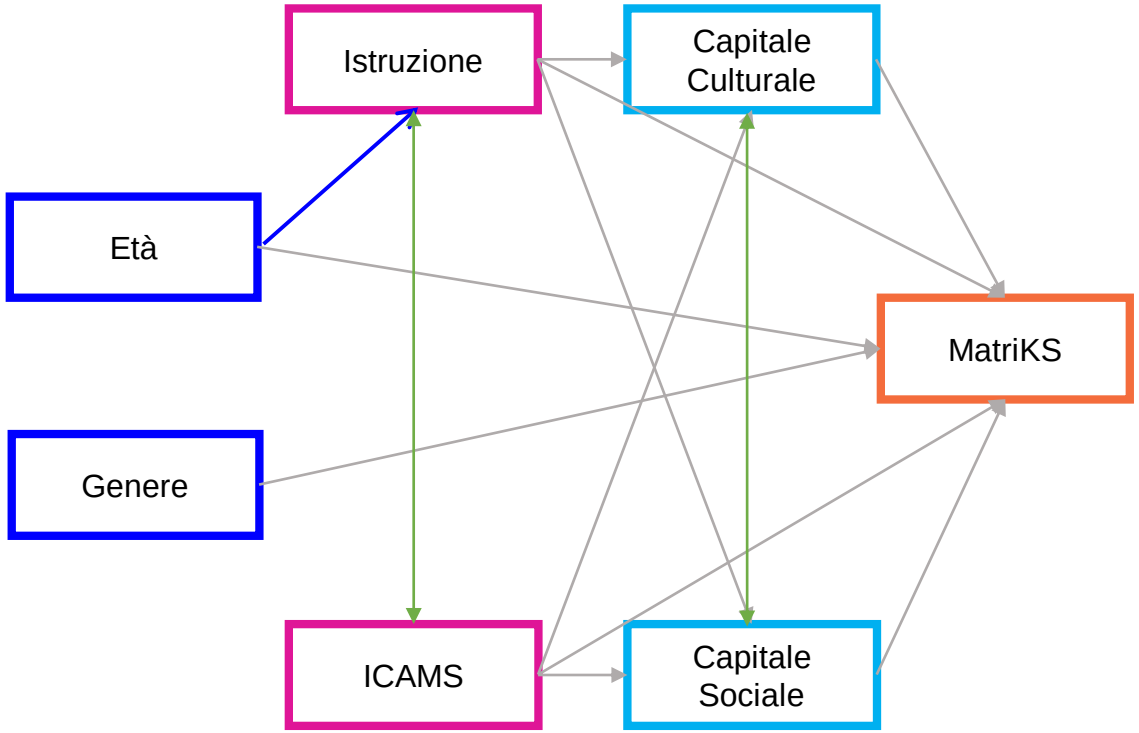


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 2	8.418	7	.997	.992	.026	.024	3833.736
Modello 3	**24.542***	**9**	**.970**	**.933**	**.075**	**.041**	3845.097

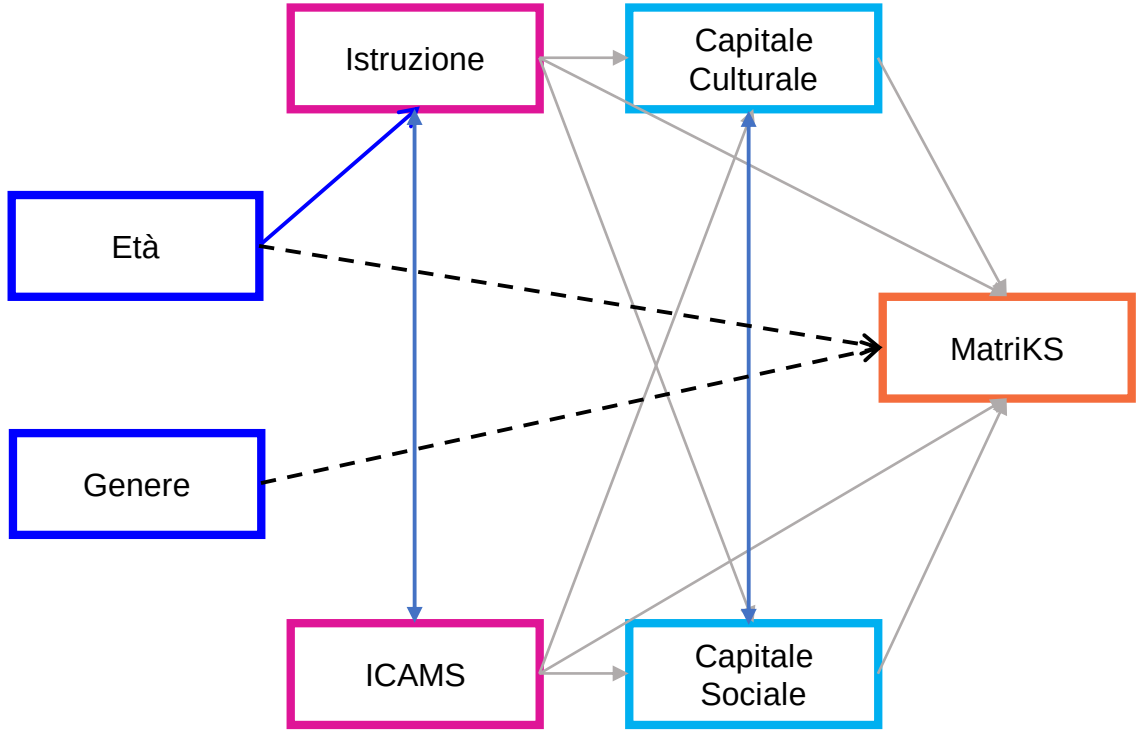
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
3 vs 2	17.405**	2	-.027	-.059	.049	.017	11.361	.158

Risultati

Modello 2



Modello 3

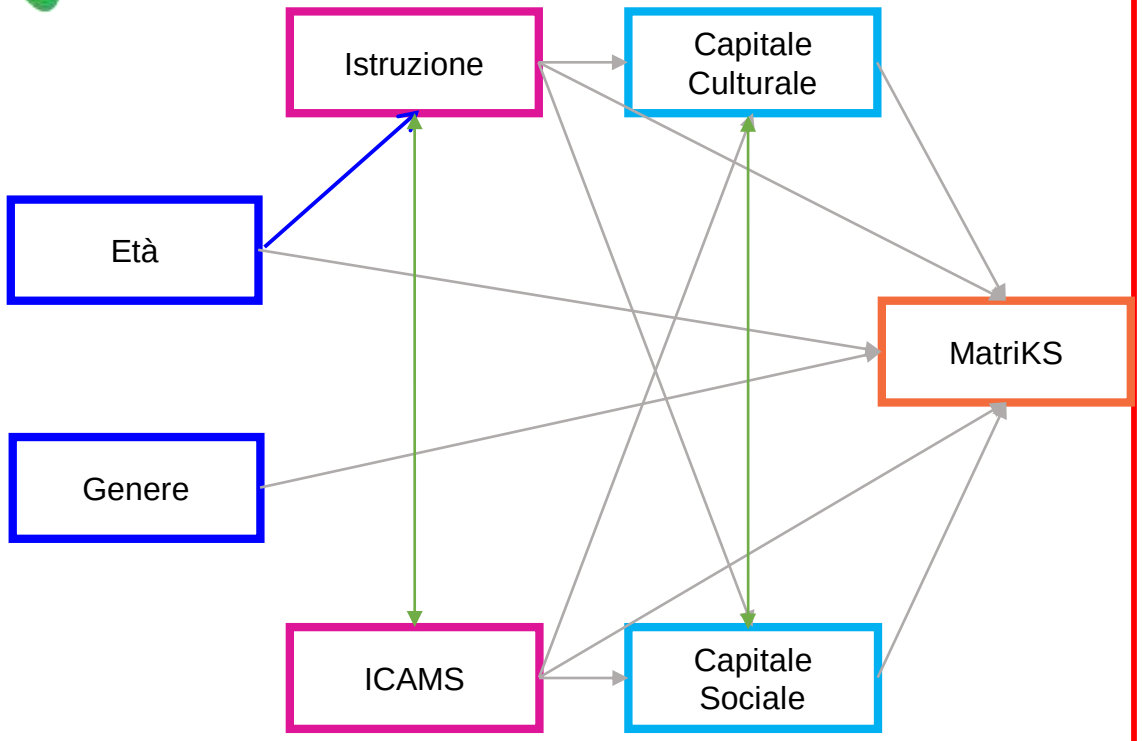


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 2	8.418	7	.997	.992	.026	.024	3833.736
Modello 3	24.542*	9	.970	.933	.075	.041	3845.097

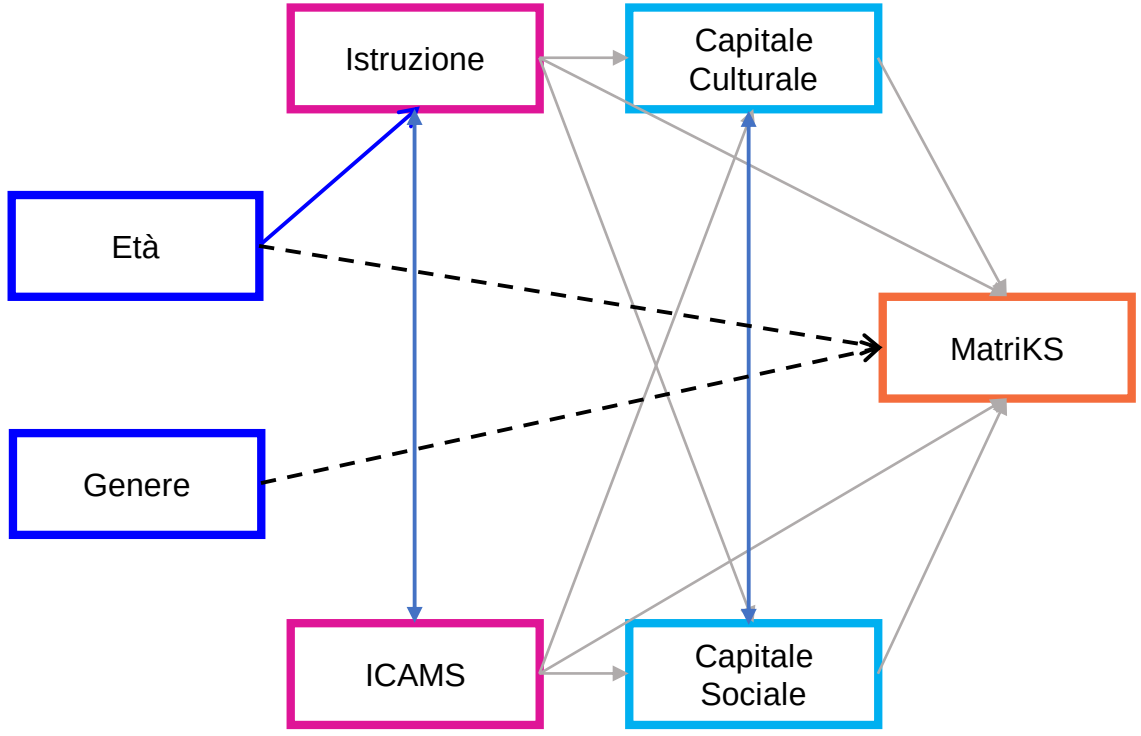
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
3 vs 2	**17.405****	**2**	**-.027**	**-.059**	**.049**	**.017**	**11.361**	**.158**

Risultati

Modello 2



Modello 3

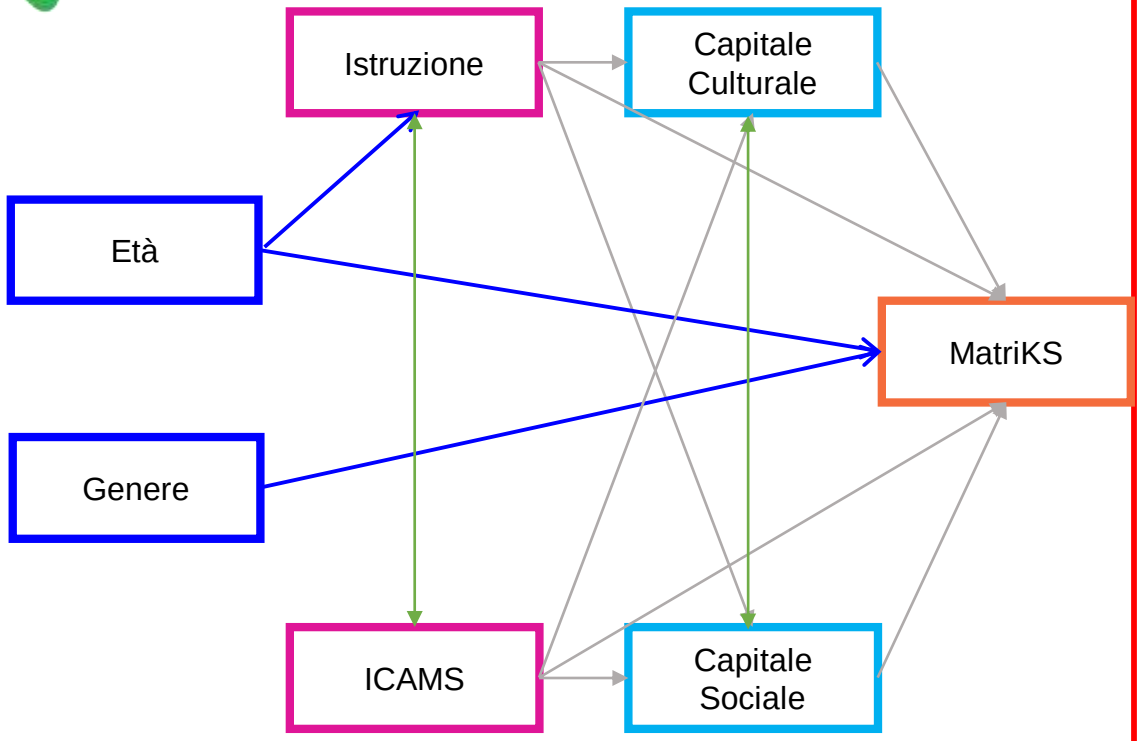


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 2	8.418	7	.997	.992	.026	.024	3833.736
Modello 3	24.542*	9	.970	.933	.075	.041	3845.097

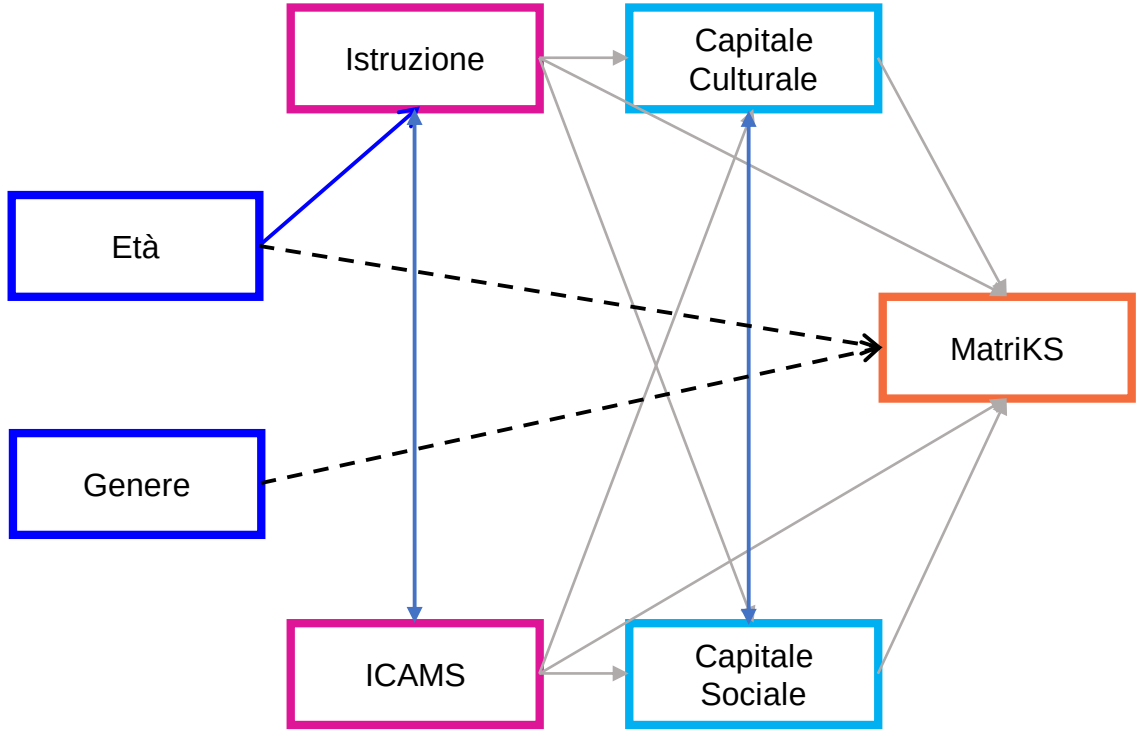
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
3 vs 2	17.405**	2	-.027	-.059	.049	.017	11.361	.158

Risultati

Modello 2



Modello 3

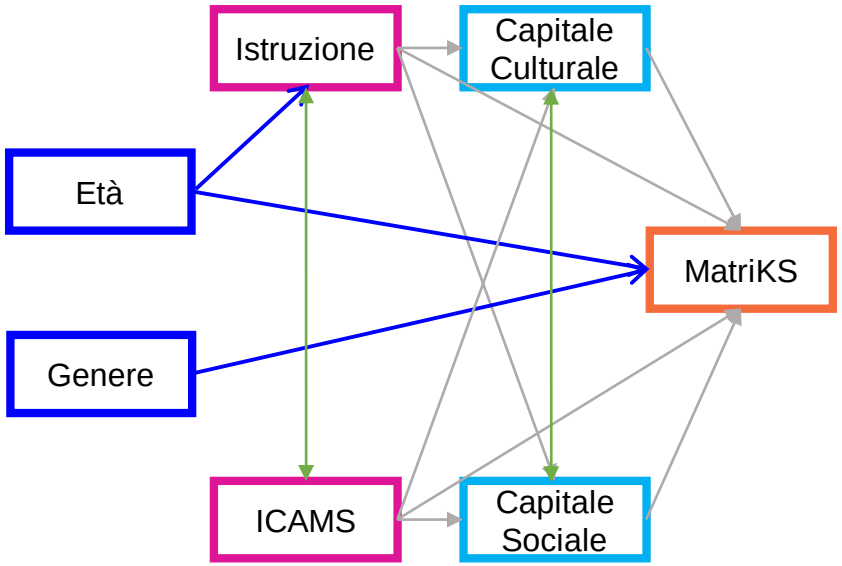


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 2	8.418	7	.997	.992	.026	.024	3833.736
Modello 3	24.542*	9	.970	.933	.075	.041	3845.097

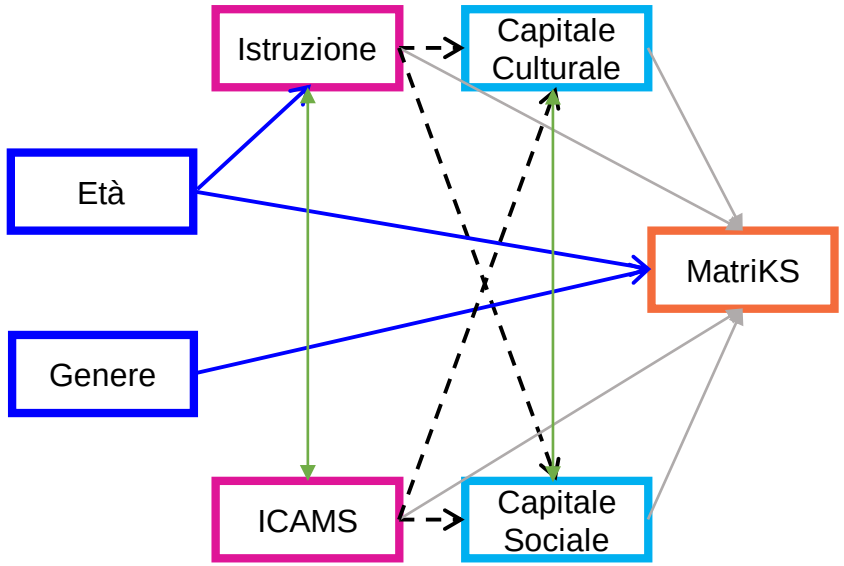
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
3 vs 2	17.405**	2	-.027	-.059	.049	.017	11.361	.158

Risultati

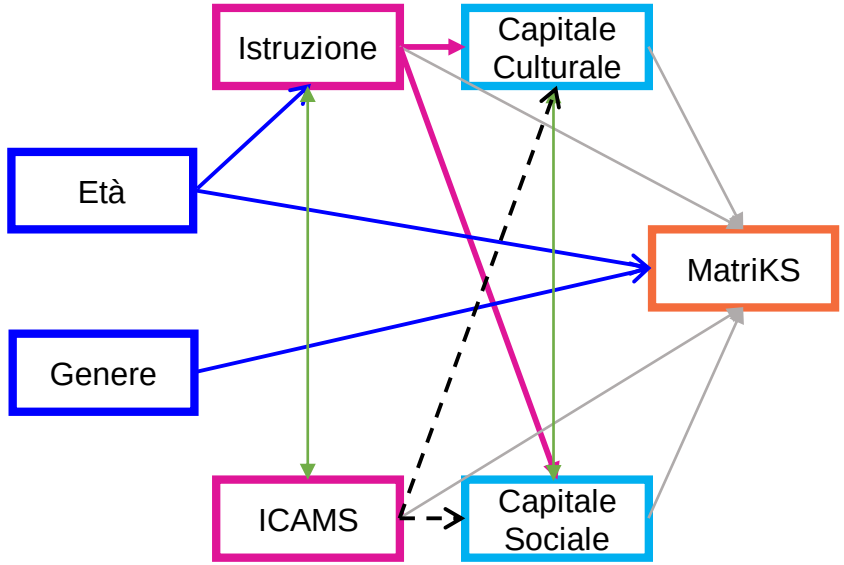
Modello 2



Modello 4



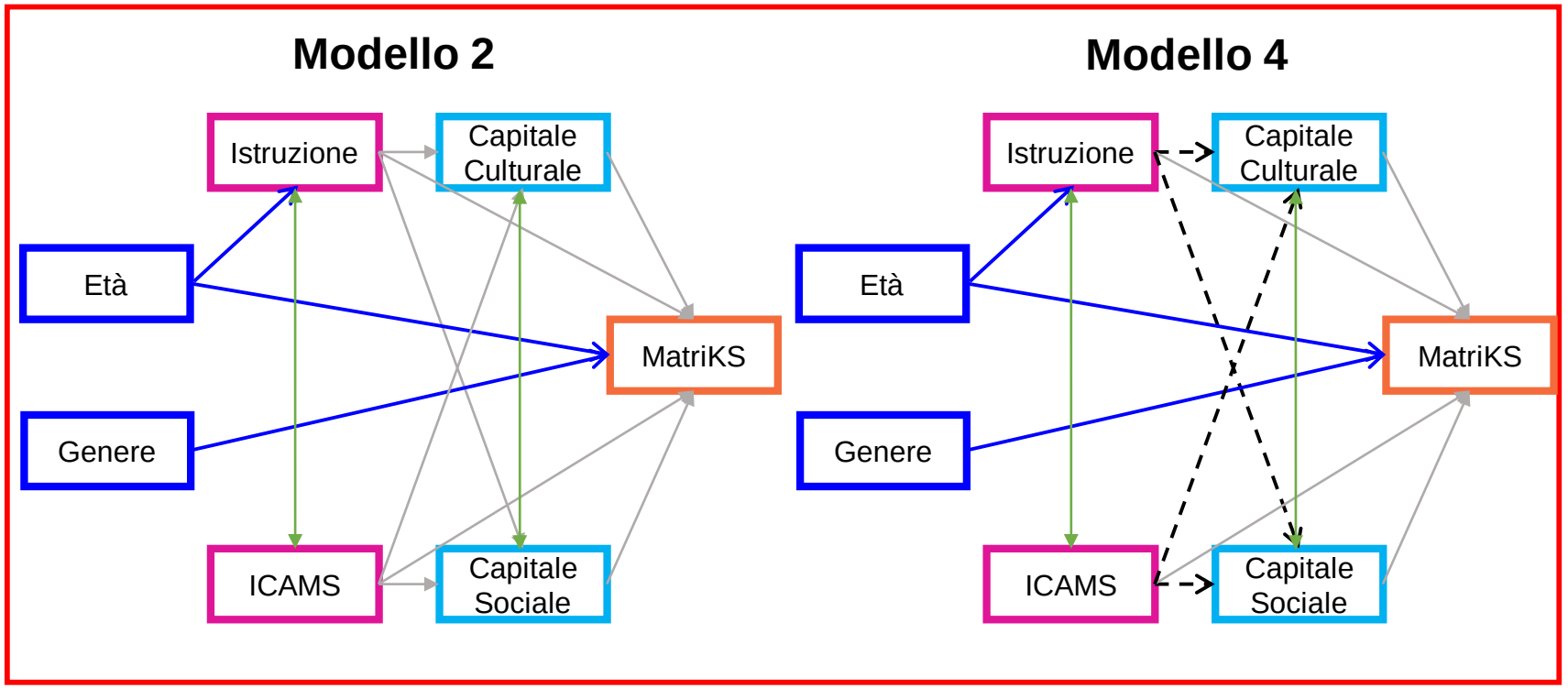
Modello 4.1



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 2	8.418	7	.997	.992	.026	.024	3833.736
Modello 4	145.234**	11	.740	.528	.199	.174	3966.878
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792

	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
4 vs 2	128.29**	4	-.257	-.464	.173	.150	133.142	.318
4.1 vs 4	118,95**	2	.252	.453	-.159	-.144	-132.086	.436
4.1 vs 2	4.79	2	-.005	-.011	.014	.006	1.056	.067

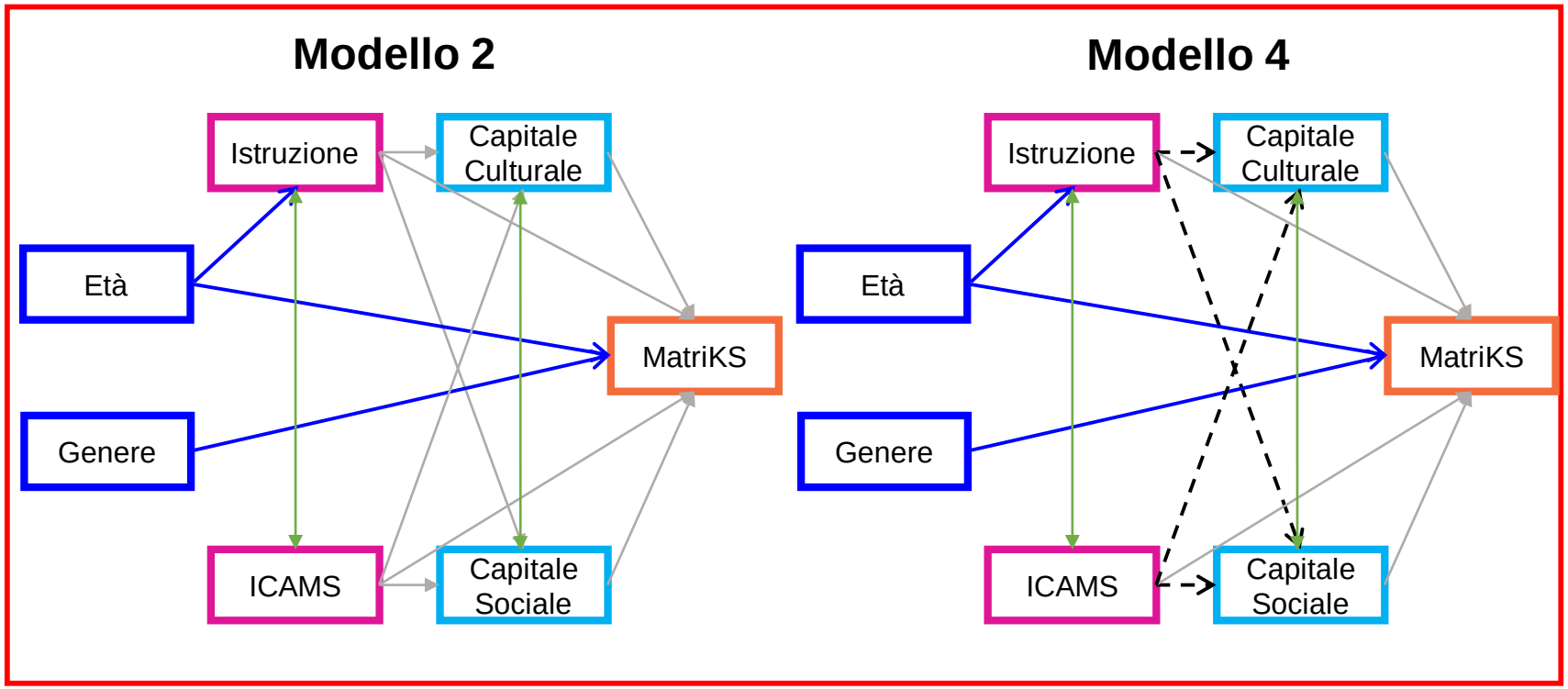
Risultati



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 2	8.418	7	.997	.992	.026	.024	3833.736
Modello 4	145.234**	11	.740	.528	.199	.174	3966.878
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792

	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
4 vs 2	128.29**	4	-.257	-.464	.173	.150	133.142	.318
4.1 vs 4	118,95**	2	.252	.453	-.159	-.144	-132.086	.436
4.1 vs 2	4.79	2	-.005	-.011	.014	.006	1.056	.067

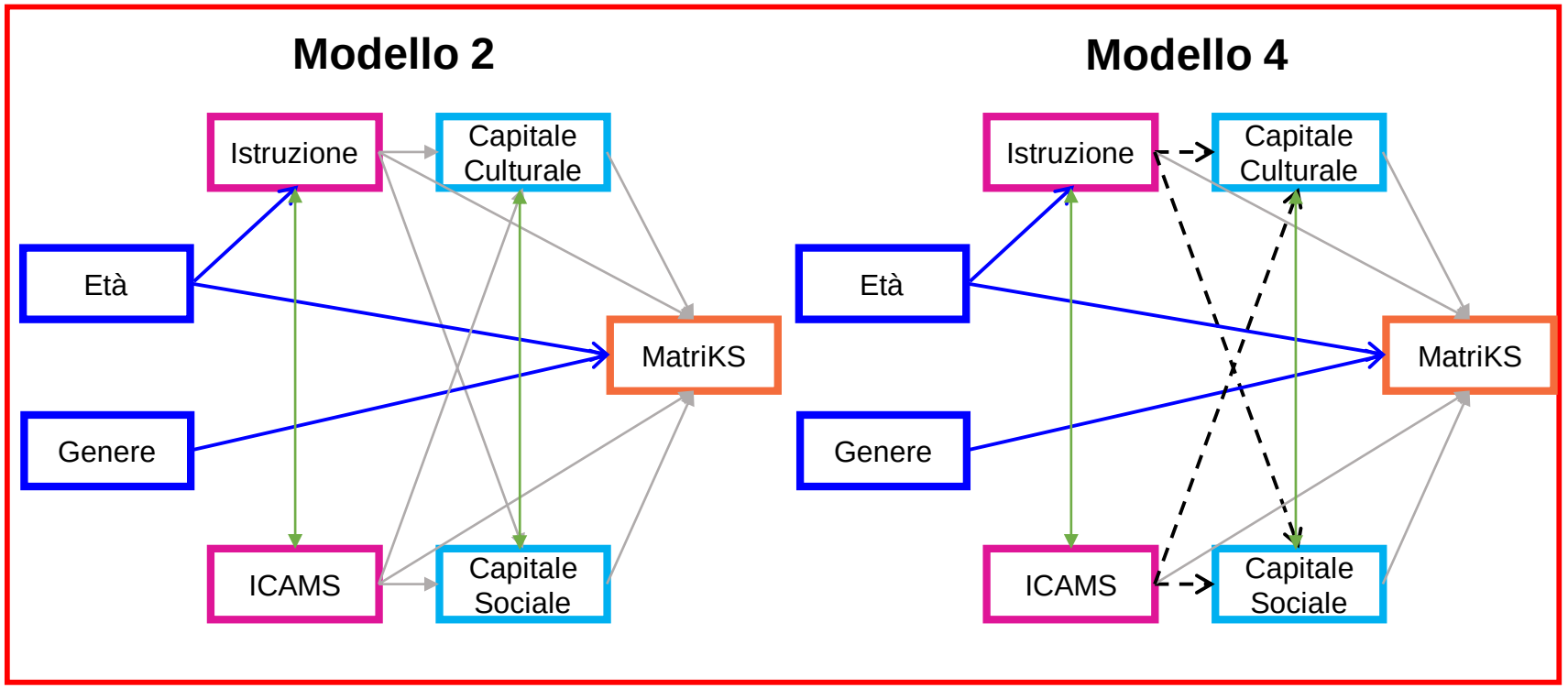
Risultati



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 2	8.418	7	.997	.992	.026	.024	3833.736
Modello 4	**145.234****	**11**	**.740**	**.528**	**.199**	**.174**	3966.878
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792

	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
4 vs 2	128.29**	4	-.257	-.464	.173	.150	133.142	.318
4.1 vs 4	118,95**	2	.252	.453	-.159	-.144	-132.086	.436
4.1 vs 2	4.79	2	-.005	-.011	.014	.006	1.056	.067

Risultati

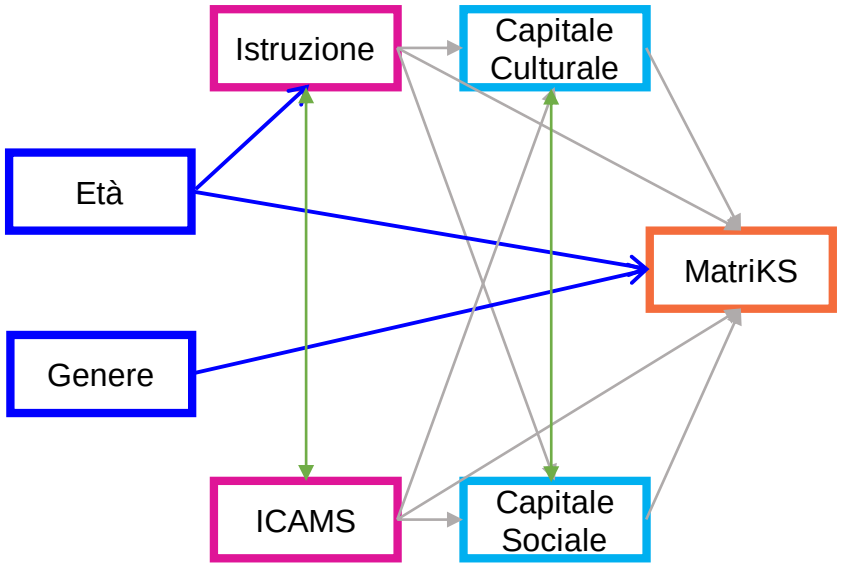


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 2	8.418	7	.997	.992	.026	.024	3833.736
Modello 4	145.234**	11	.740	.528	.199	.174	3966.878
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792

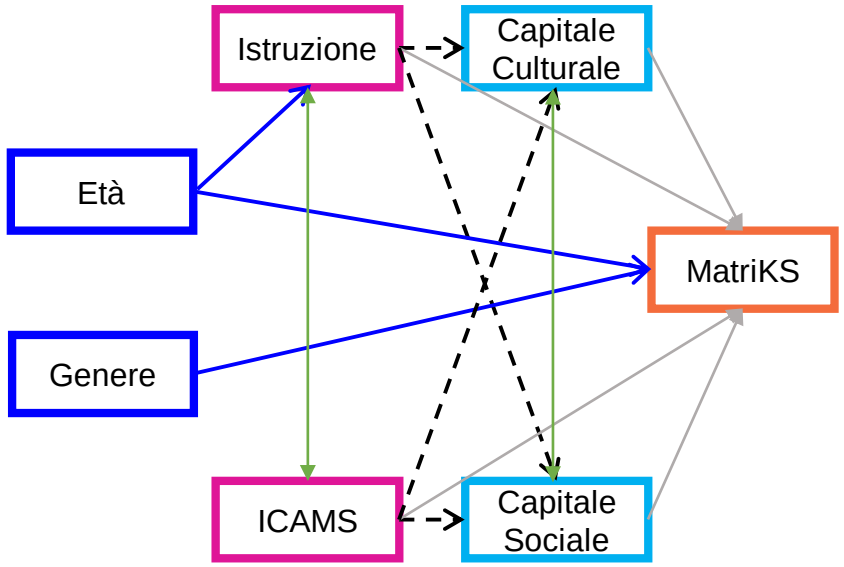
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
4 vs 2	**128.29****	**4**	**-.257**	**-.464**	**.173**	**.150**	**133.142**	**.318**
4.1 vs 4	118,95**	2	.252	.453	-.159	-.144	-132.086	.436
4.1 vs 2	4.79	2	-.005	-.011	.014	.006	1.056	.067

Risultati

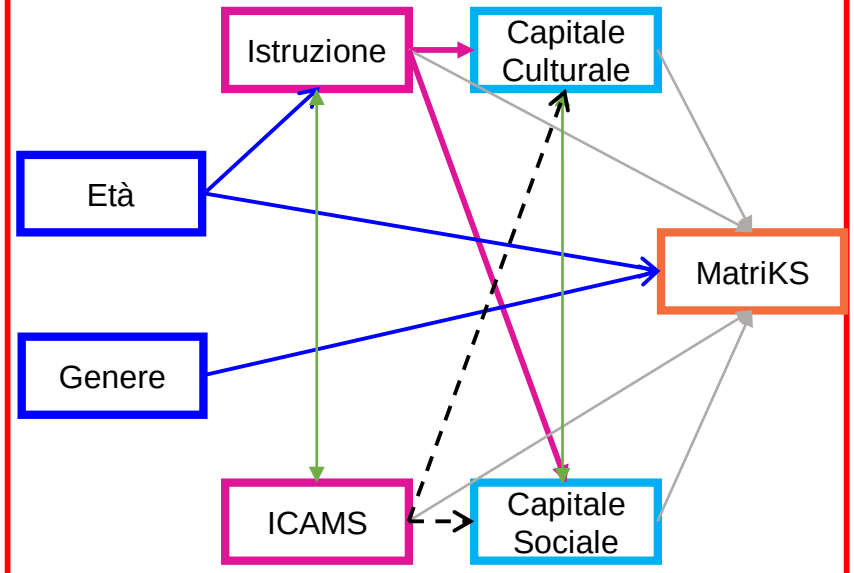
Modello 2



Modello 4



Modello 4.1

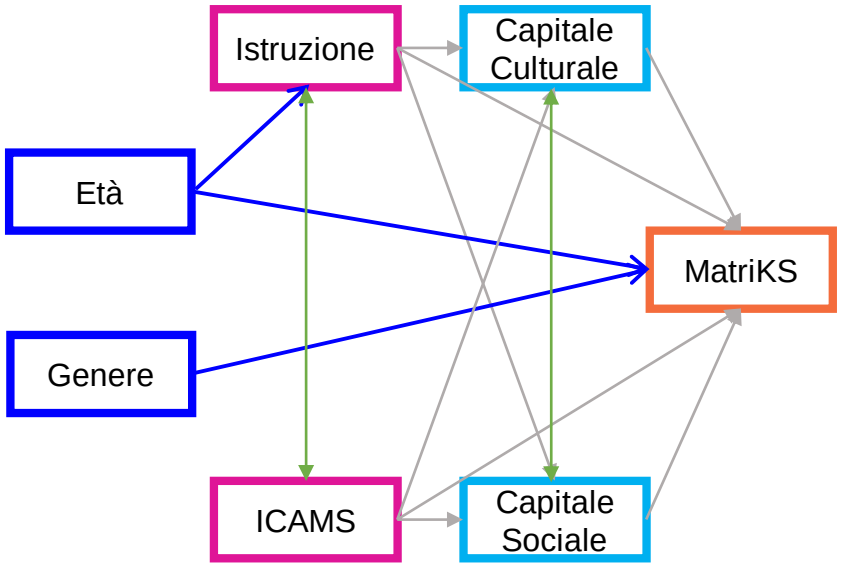


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 2	8.418	7	.997	.992	.026	.024	3833.736
Modello 4	145.234**	11	.740	.528	.199	.174	3966.878
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792

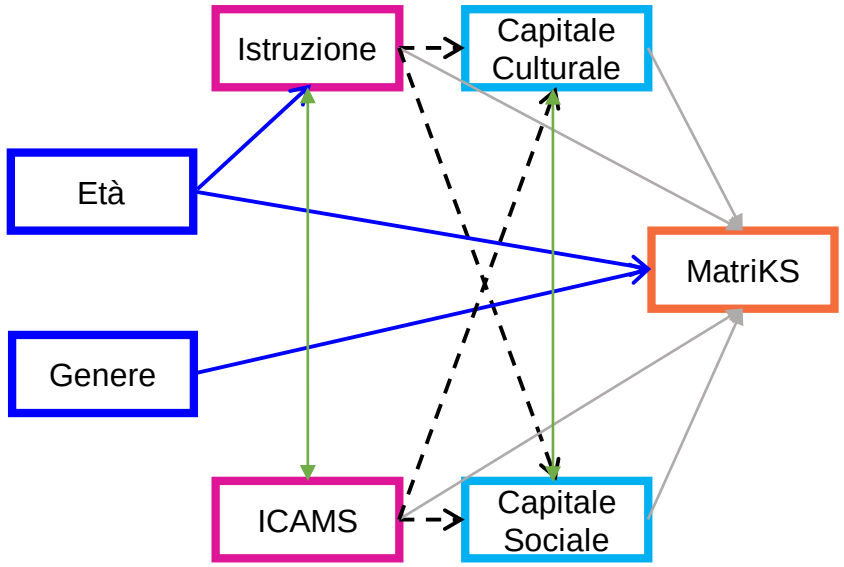
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
4 vs 2	128.29**	4	-.257	-.464	.173	.150	133.142	.318
4.1 vs 4	118,95**	2	.252	.453	-.159	-.144	-132.086	.436
4.1 vs 2	4.79	2	-.005	-.011	.014	.006	1.056	.067

Risultati

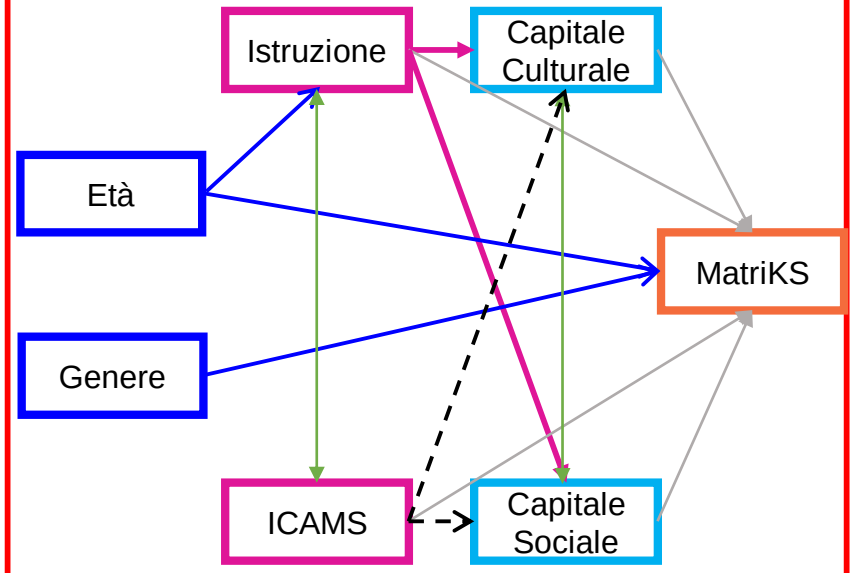
Modello 2



Modello 4



Modello 4.1

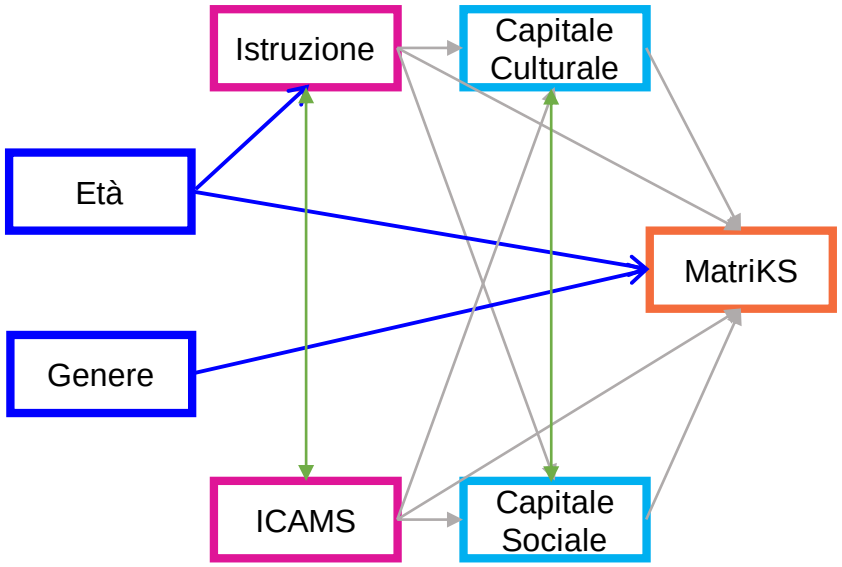


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 2	8.418	7	.997	.992	.026	.024	3833.736
Modello 4	145.234**	11	.740	.528	.199	.174	3966.878
Modello 4.1	**13.331**	**9**	**.992**	**.981**	**.040**	**.030**	3834.792

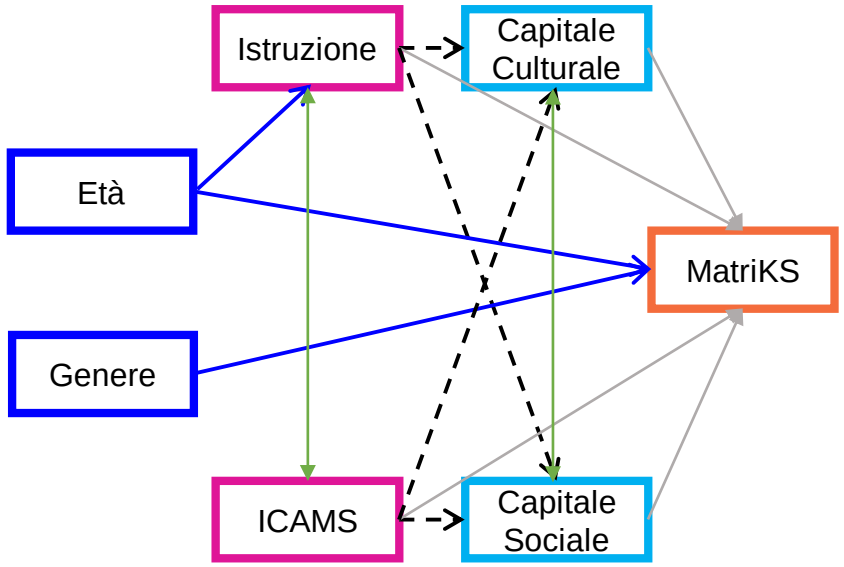
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
4 vs 2	128.29**	4	-.257	-.464	.173	.150	133.142	.318
4.1 vs 4	118,95**	2	.252	.453	-.159	-.144	-132.086	.436
4.1 vs 2	4.79	2	-.005	-.011	.014	.006	1.056	.067

Risultati

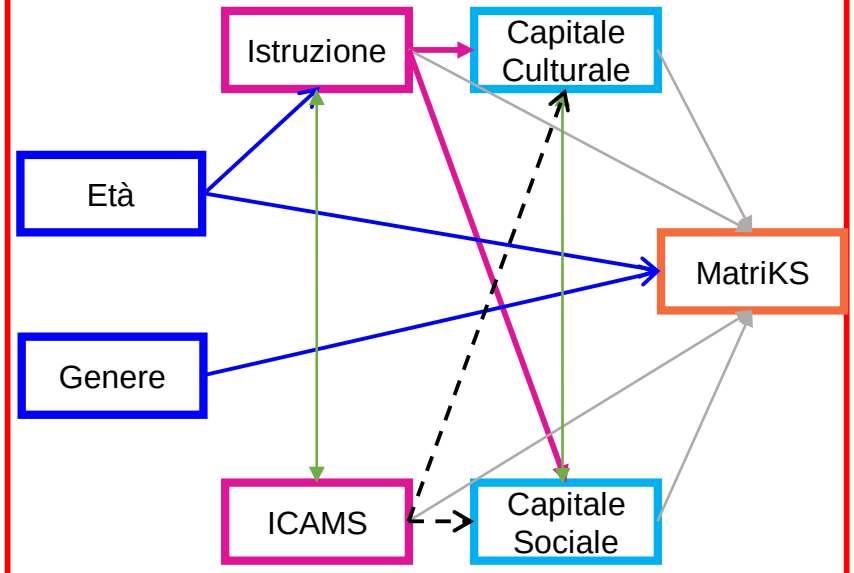
Modello 2



Modello 4



Modello 4.1

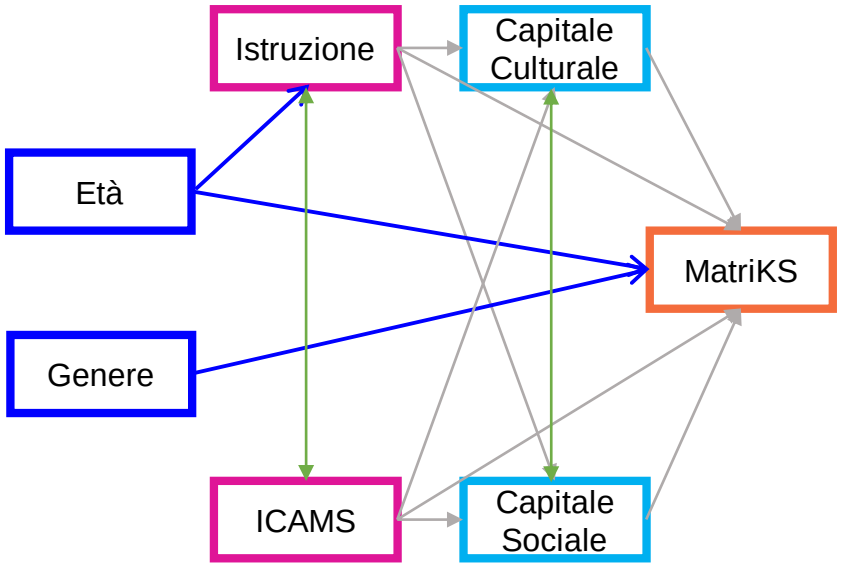


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 2	8.418	7	.997	.992	.026	.024	3833.736
Modello 4	145.234**	11	.740	.528	.199	.174	3966.878
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792

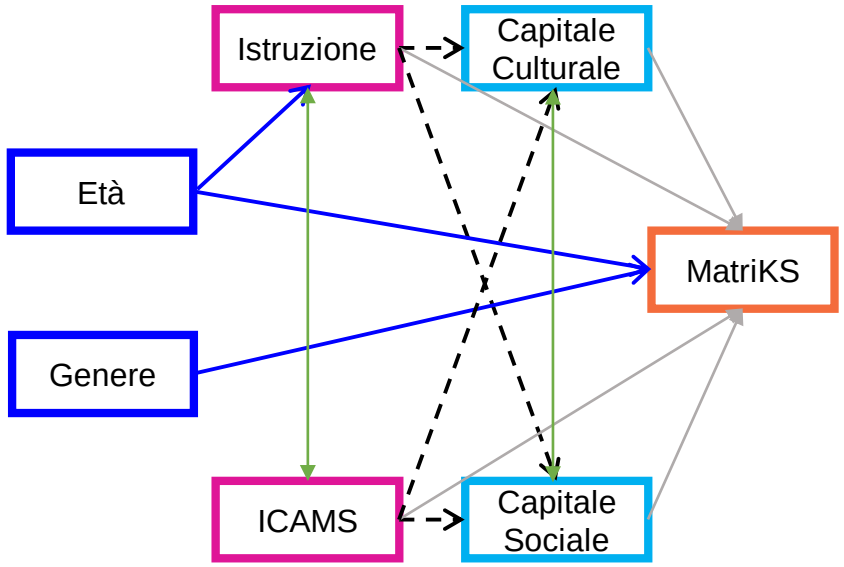
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
4 vs 2	128.29**	4	-.257	-.464	.173	.150	133.142	.318
4.1 vs 4	**118,95****	**2**	**.252**	**.453**	**-.159**	**-.144**	**-132.086**	**.436**
4.1 vs 2	4.79	2	-.005	-.011	.014	.006	1.056	.067

Risultati

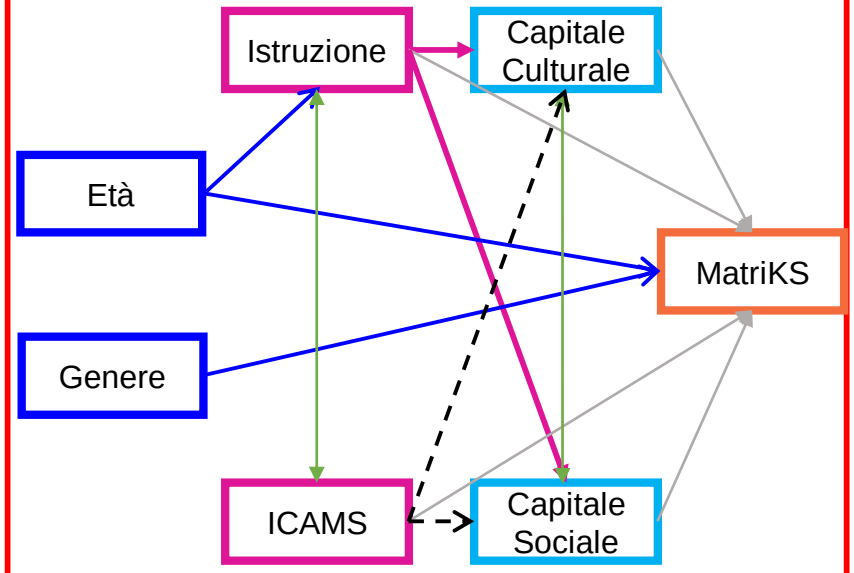
Modello 2



Modello 4



Modello 4.1

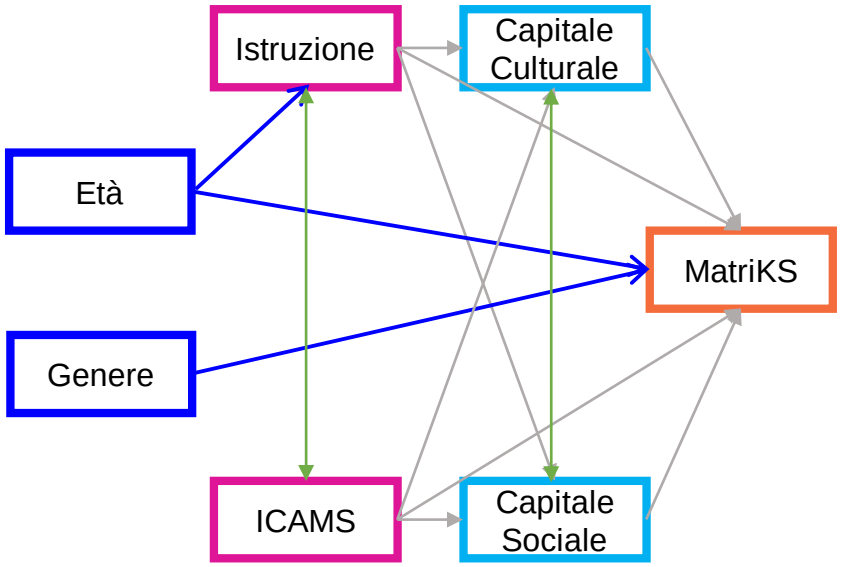


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 2	8.418	7	.997	.992	.026	.024	3833.736
Modello 4	145.234**	11	.740	.528	.199	.174	3966.878
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792

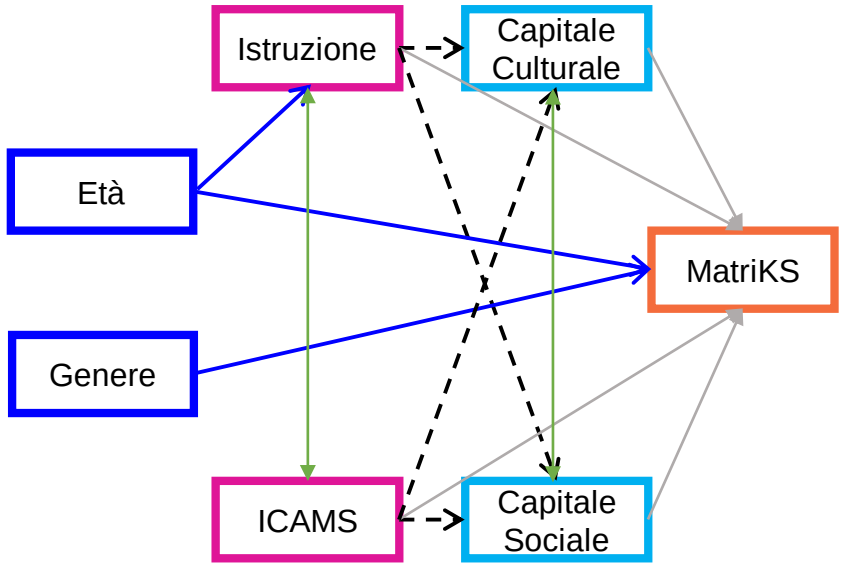
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
4 vs 2	128.29**	4	-.257	-.464	.173	.150	133.142	.318
4.1 vs 4	118,95**	2	.252	.453	-.159	-.144	-132.086	.436
4.1 vs 2	**4.79**	**2**	**-.005**	**-.011**	**.014**	**.006**	**1.056**	**.067**

Risultati

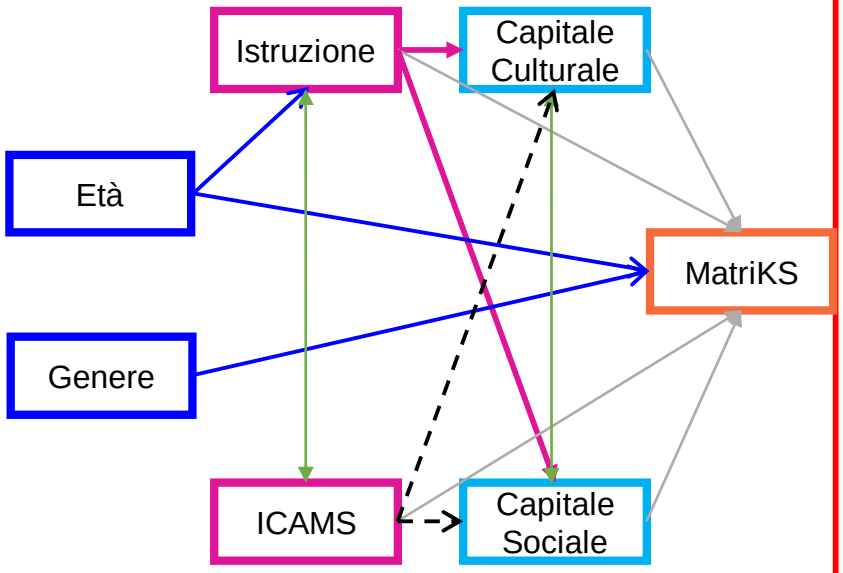
Modello 2



Modello 4



Modello 4.1

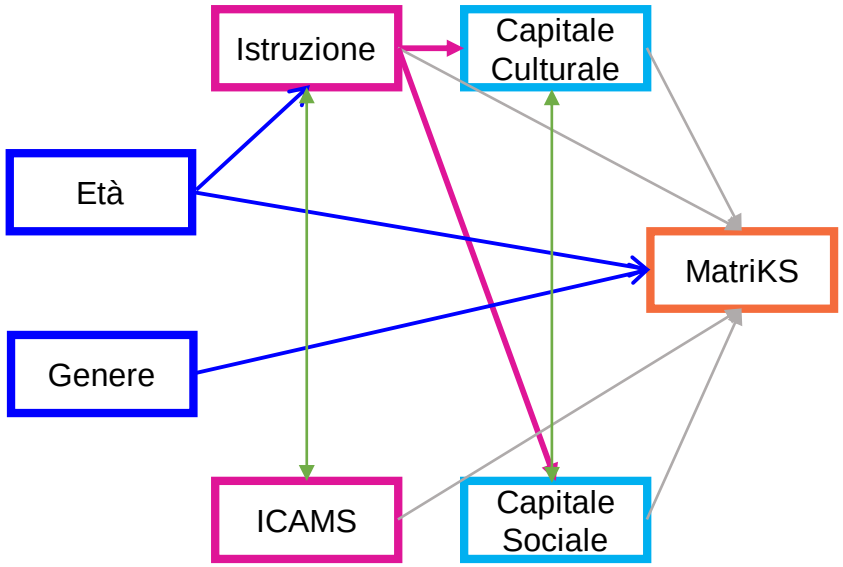


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 2	8.418	7	.997	.992	.026	.024	3833.736
Modello 4	145.234**	11	.740	.528	.199	.174	3966.878
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792

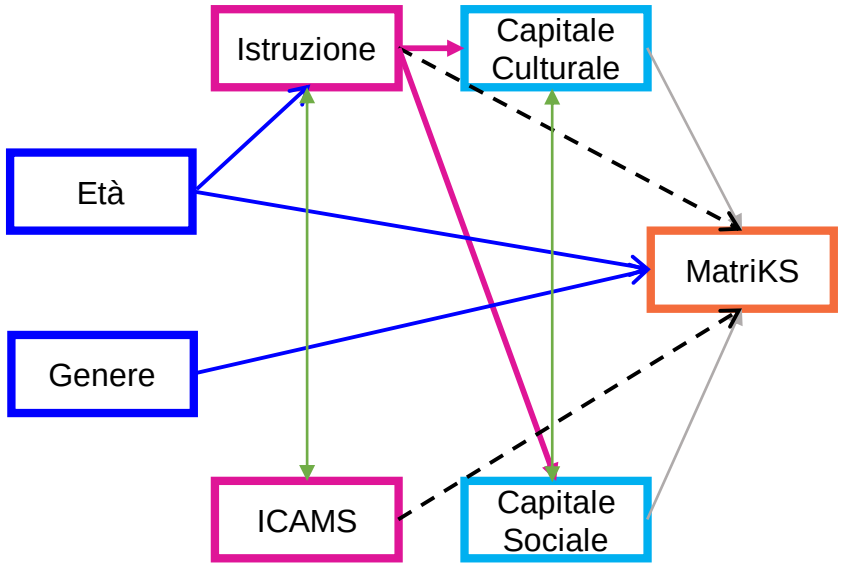
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
4 vs 2	128.29**	4	-.257	-.464	.173	.150	133.142	.318
4.1 vs 4	118,95**	2	.252	.453	-.159	-.144	-132.086	.436
4.1 vs 2	4.79	2	-.005	-.011	.014	.006	1.056	.067

Risultati

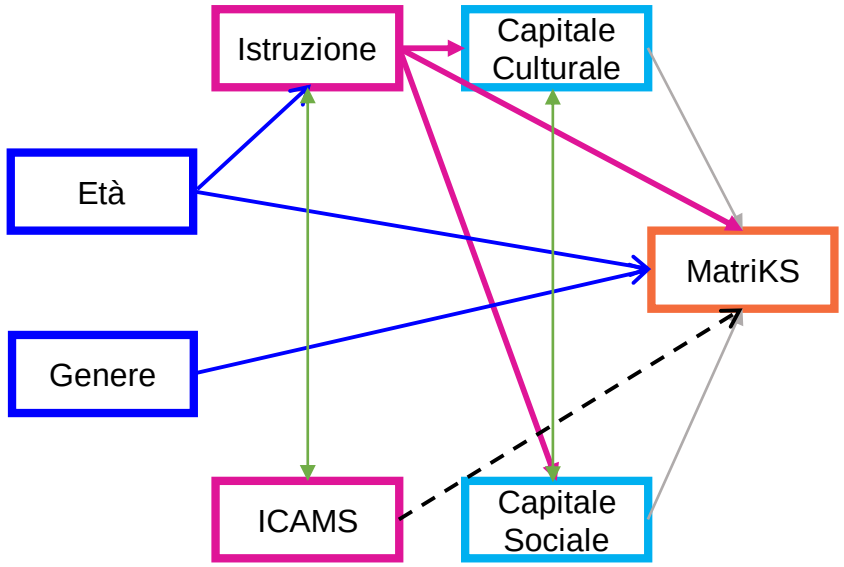
Modello 4.1



Modello 5



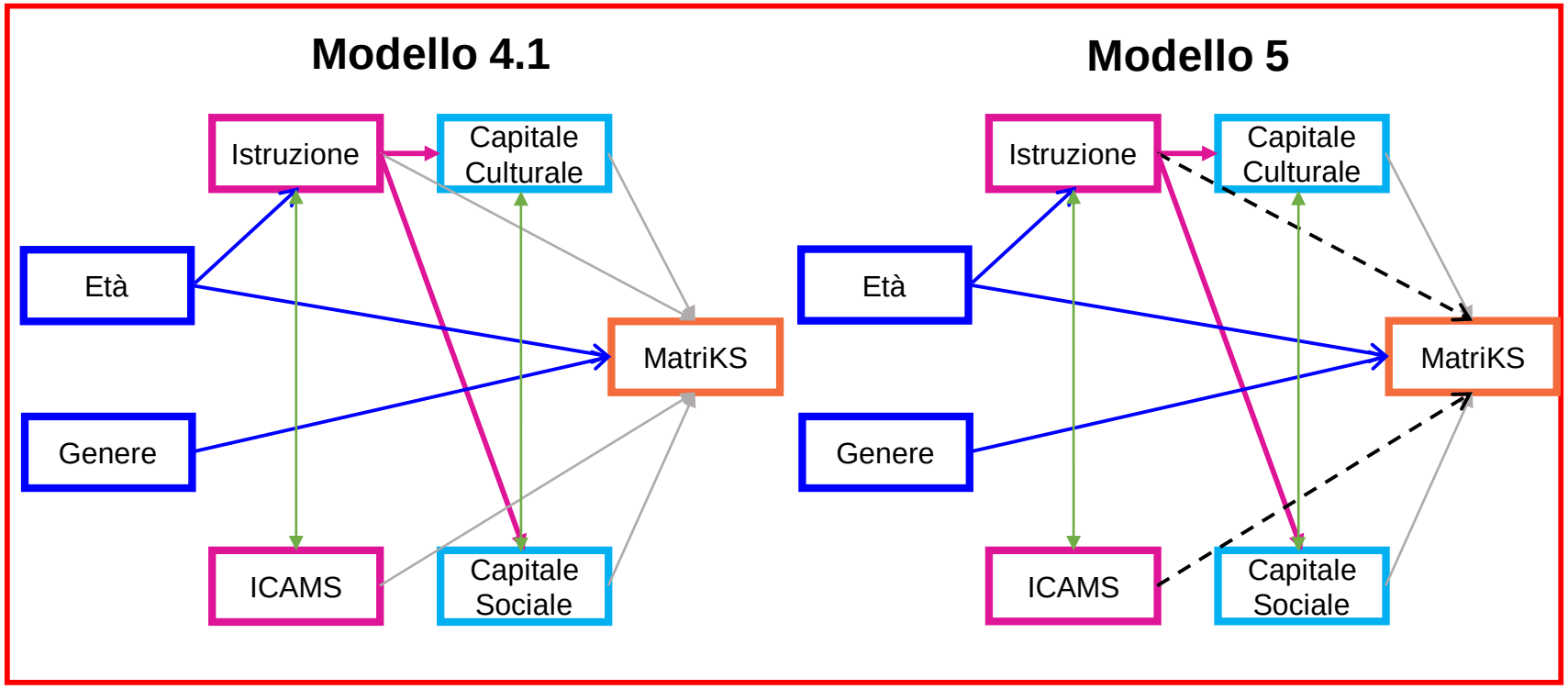
Modello 5.1



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792
Modello 5	48.284**	11	.928	.869	.105	.064	3864.775
Modello 5.1	14.797	10	.991	.981	.039	.031	3834.105

	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
5 vs 4.1	38.67**	2	-.064	-.112	.065	.034	29.983	.244
5.1 vs 4.1	1.46	1	-.001	,000	.001	.001	-.687	.039
5.1 vs 5	37.93**	1	.063	.112	-.066	-.033	-30.67	.347

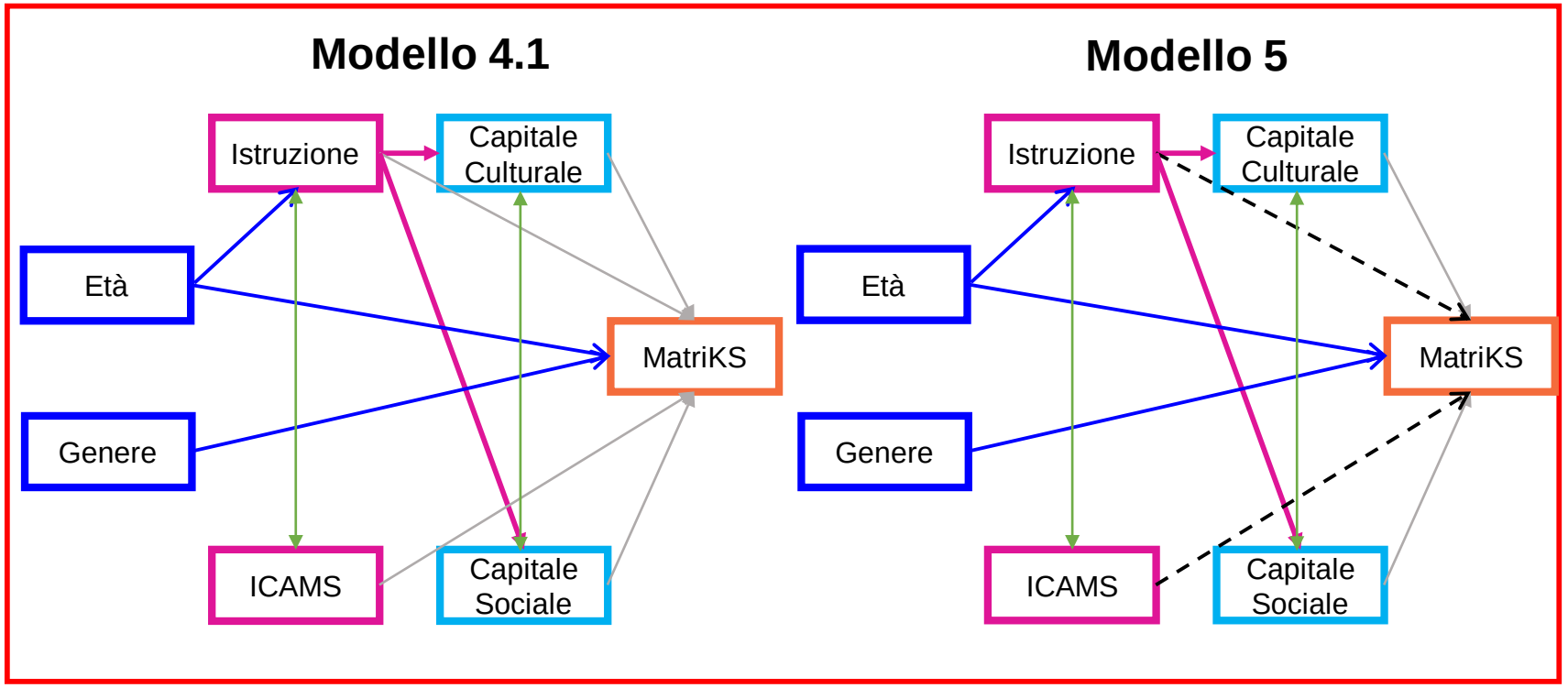
Risultati



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792
Modello 5	48.284**	11	.928	.869	.105	.064	3864.775
Modello 5.1	14.797	10	.991	.981	.039	.031	3834.105

	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
5 vs 4.1	38.67**	2	-.064	-.112	.065	.034	29.983	.244
5.1 vs 4.1	1.46	1	-.001	,000	.001	.001	-.687	.039
5.1 vs 5	37.93**	1	.063	.112	-.066	-.033	-30.67	.347

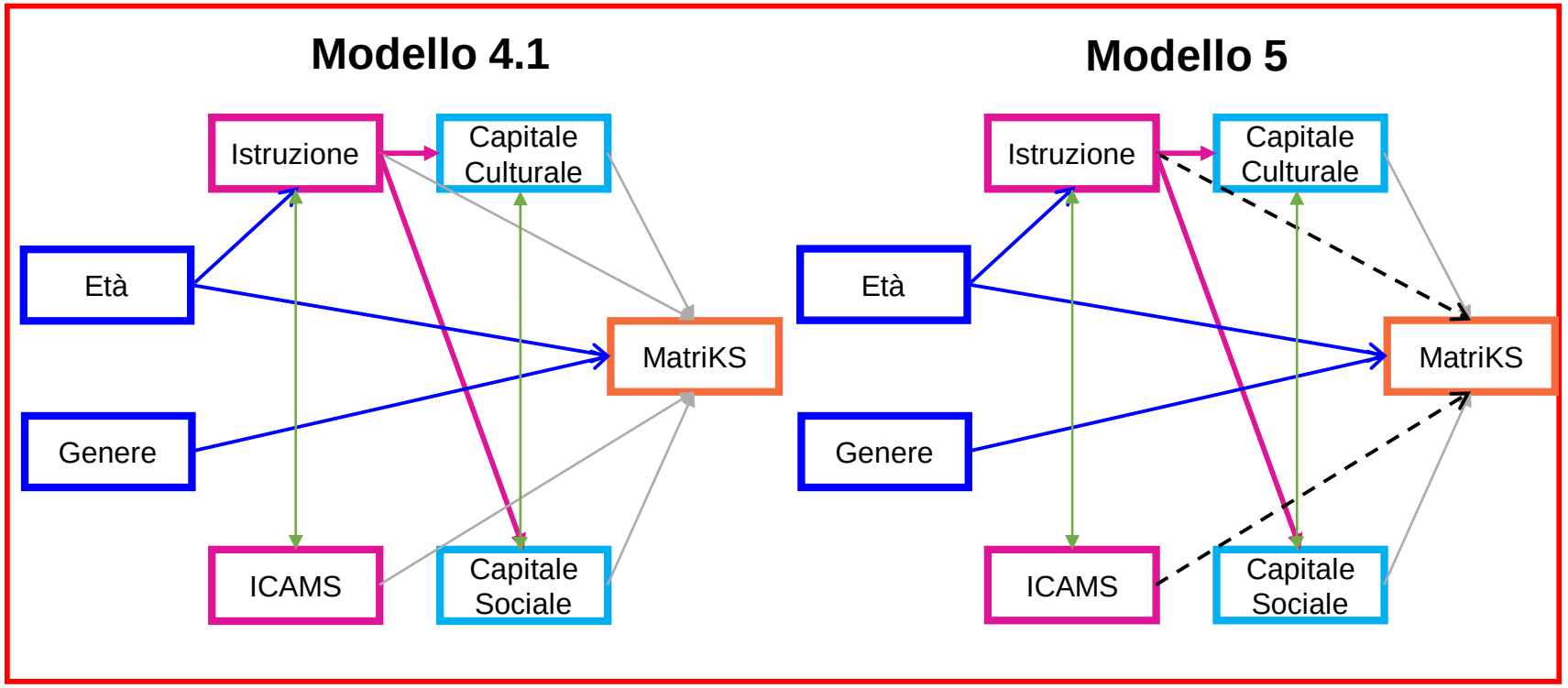
Risultati

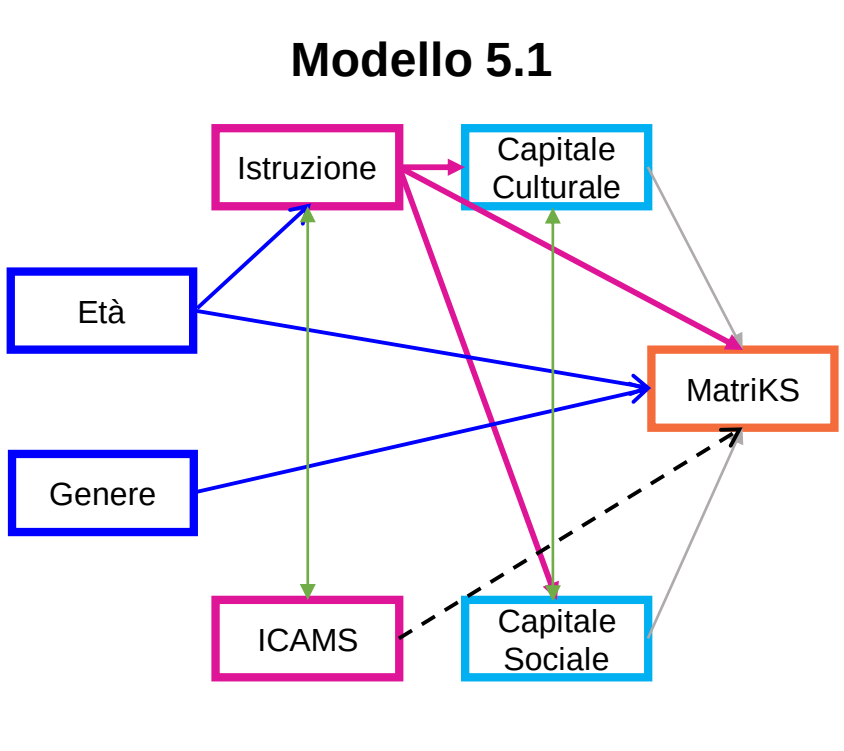


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792
Modello 5	**48.284****	**11**	**.928**	**.869**	**.105**	**.064**	3864.775
Modello 5.1	14.797	10	.991	.981	.039	.031	3834.105

	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
5 vs 4.1	38.67**	2	-.064	-.112	.065	.034	29.983	.244
5.1 vs 4.1	1.46	1	-.001	,000	.001	.001	-.687	.039
5.1 vs 5	37.93**	1	.063	.112	-.066	-.033	-30.67	.347

Risultati



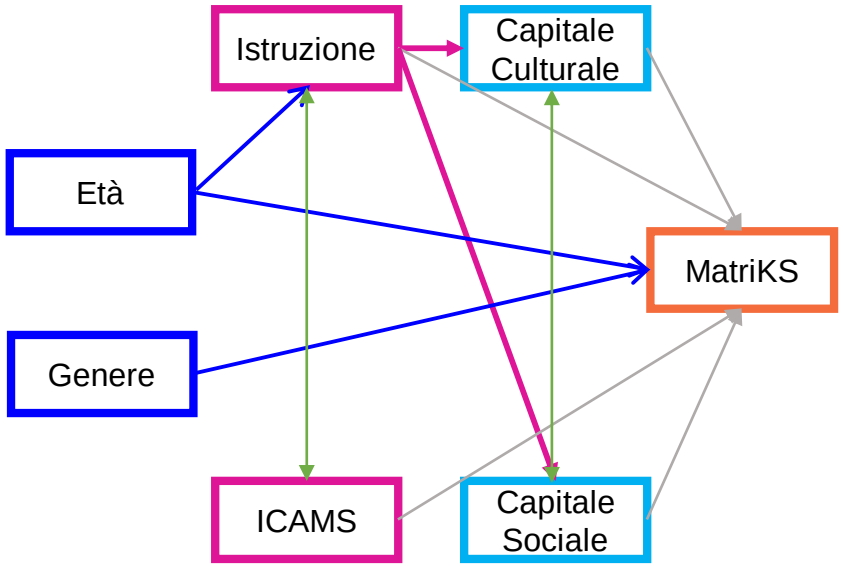


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792
Modello 5	48.284**	11	.928	.869	.105	.064	3864.775
Modello 5.1	14.797	10	.991	.981	.039	.031	3834.105

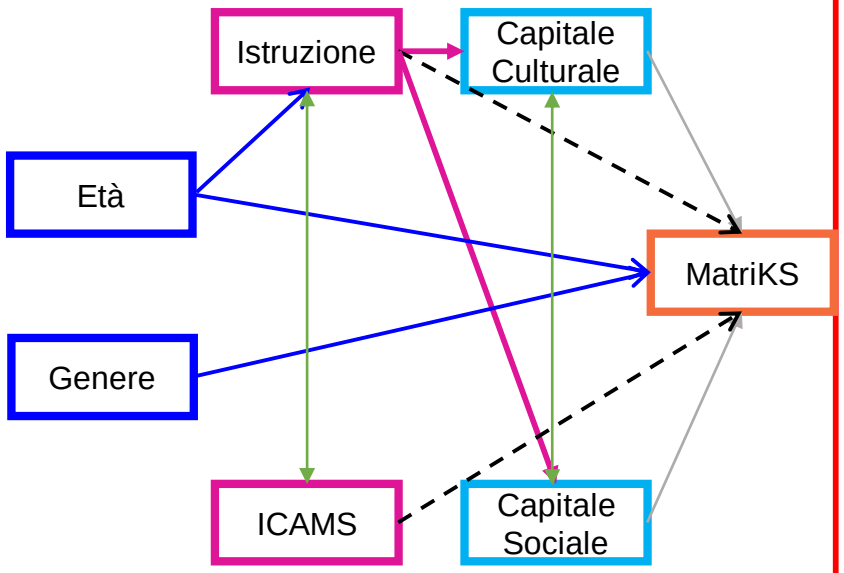
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
5 vs 4.1	**38.67****	**2**	**-.064**	**-.112**	**.065**	**.034**	**29.983**	**.244**
5.1 vs 4.1	1.46	1	-.001	,000	.001	.001	-.687	.039
5.1 vs 5	37.93**	1	.063	.112	-.066	-.033	-30.67	.347

Risultati

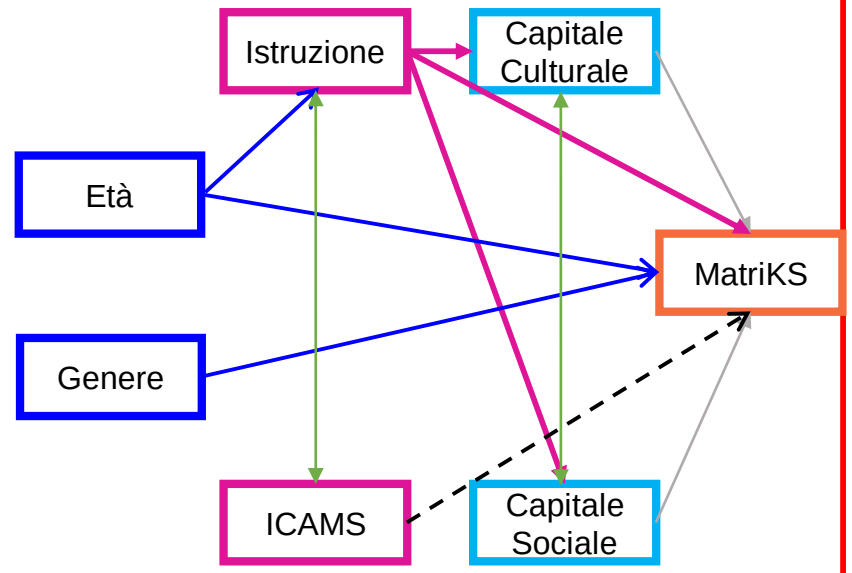
Modello 4.1



Modello 5



Modello 5.1

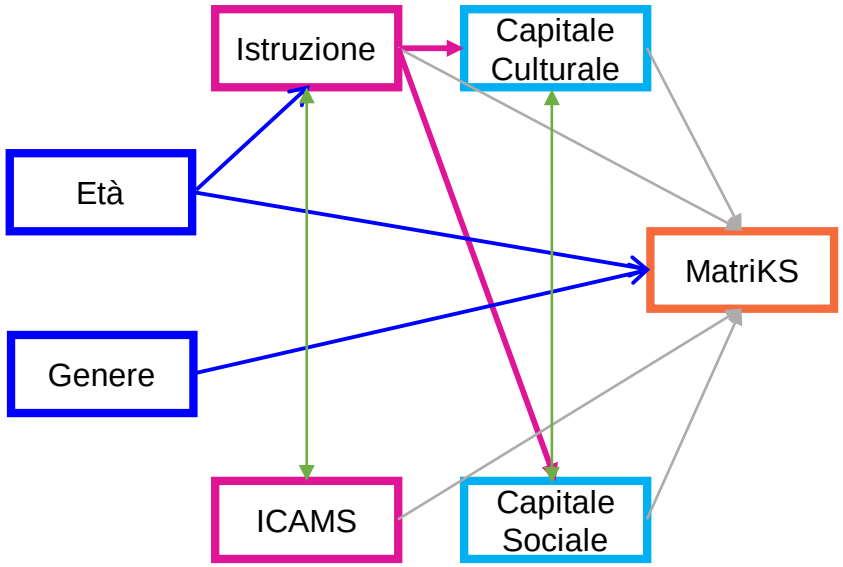


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792
Modello 5	48.284**	11	.928	.869	.105	.064	3864.775
Modello 5.1	14.797	10	.991	.981	.039	.031	3834.105

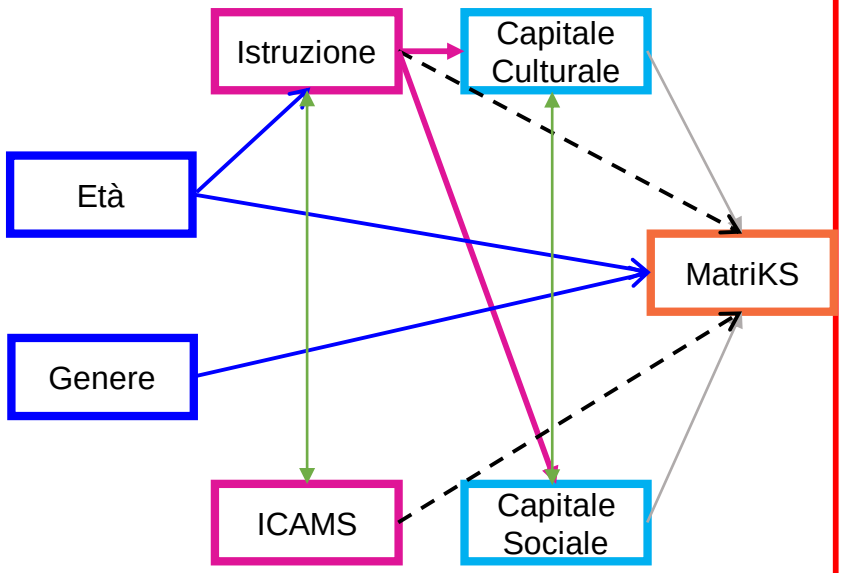
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
5 vs 4.1	38.67**	2	-.064	-.112	.065	.034	29.983	.244
5.1 vs 4.1	1.46	1	-.001	,000	.001	.001	-.687	.039
5.1 vs 5	37.93**	1	.063	.112	-.066	-.033	-30.67	.347

Risultati

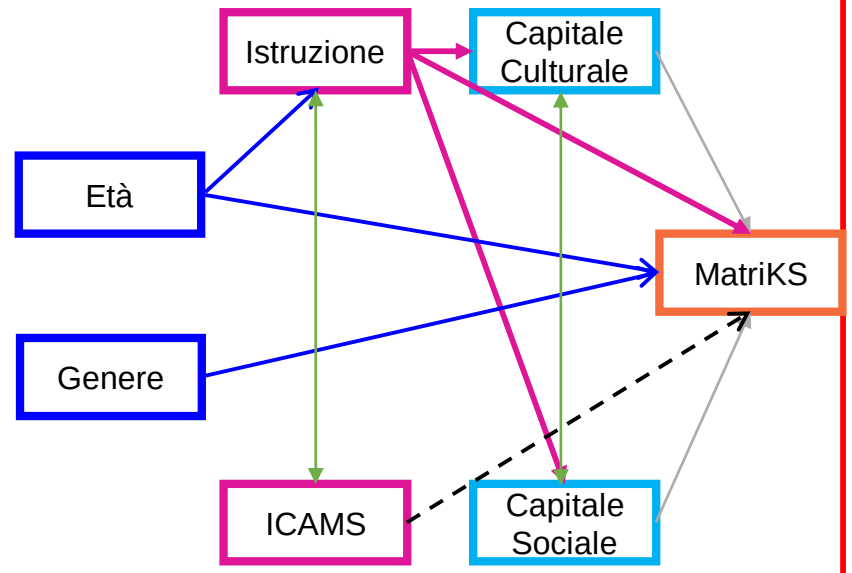
Modello 4.1



Modello 5



Modello 5.1

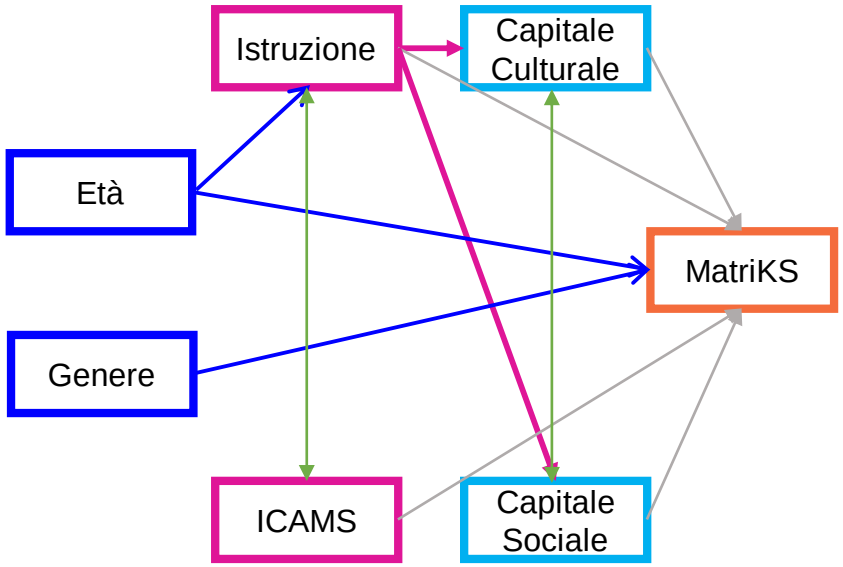


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792
Modello 5	48.284**	11	.928	.869	.105	.064	3864.775
Modello 5.1	**14.797**	**10**	**.991**	**.981**	**.039**	**.031**	3834.105

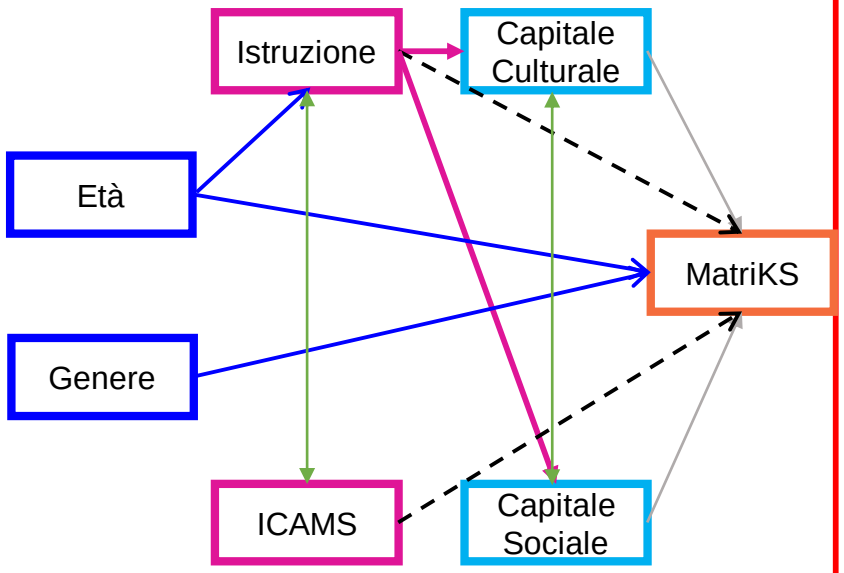
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
5 vs 4.1	38.67**	2	-.064	-.112	.065	.034	29.983	.244
5.1 vs 4.1	1.46	1	-.001	,000	.001	.001	-.687	.039
5.1 vs 5	37.93**	1	.063	.112	-.066	-.033	-30.67	.347

Risultati

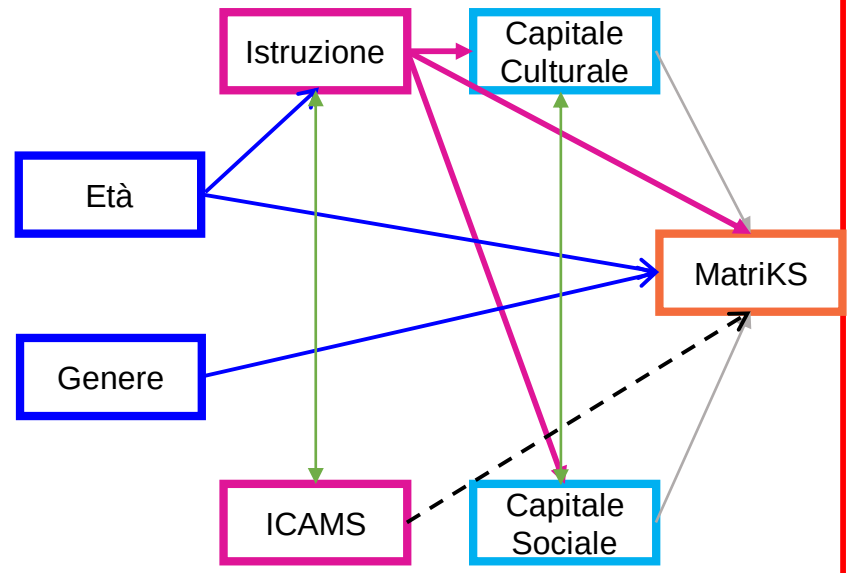
Modello 4.1



Modello 5



Modello 5.1

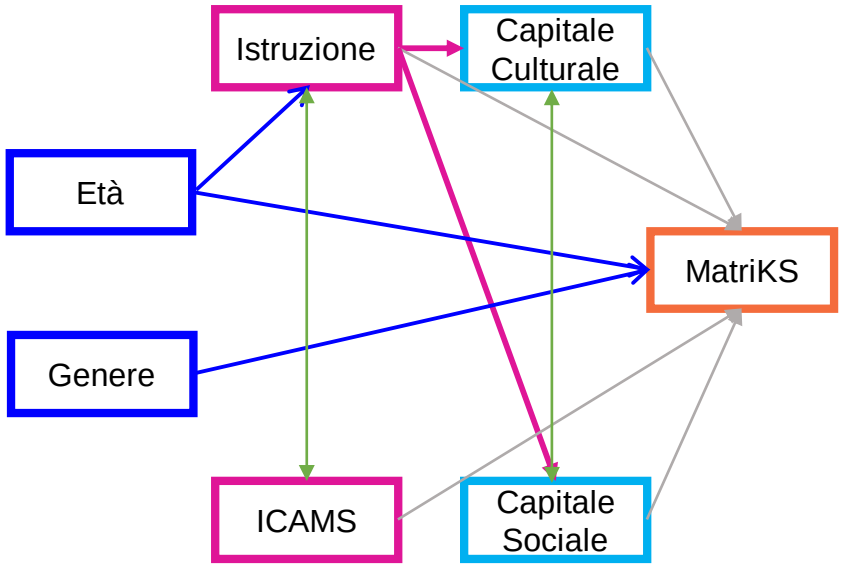


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792
Modello 5	48.284**	11	.928	.869	.105	.064	3864.775
Modello 5.1	14.797	10	.991	.981	.039	.031	3834.105

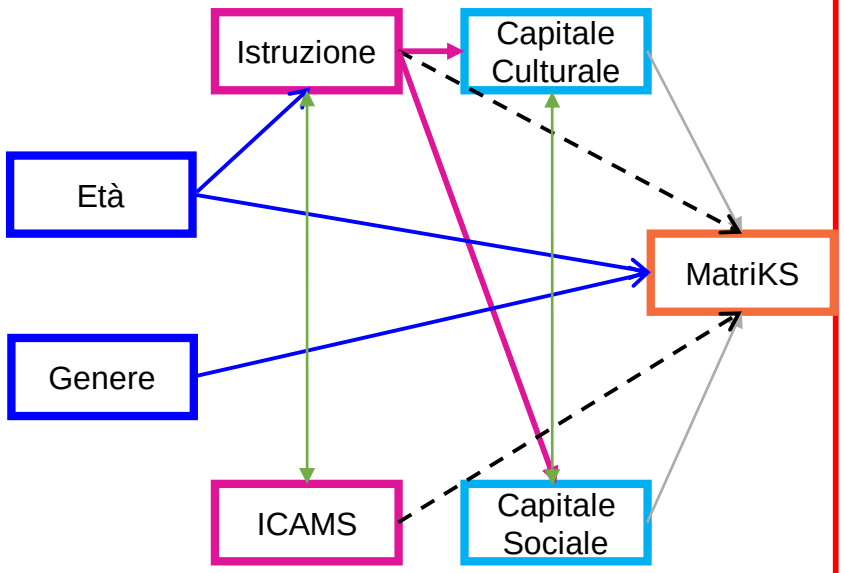
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
5 vs 4.1	38.67**	2	-.064	-.112	.065	.034	29.983	.244
5.1 vs 4.1	1.46	1	-.001	,000	.001	.001	-.687	.039
5.1 vs 5	**37.93****	**1**	**.063**	**.112**	**-.066**	**-.033**	**-30.67**	**.347**

Risultati

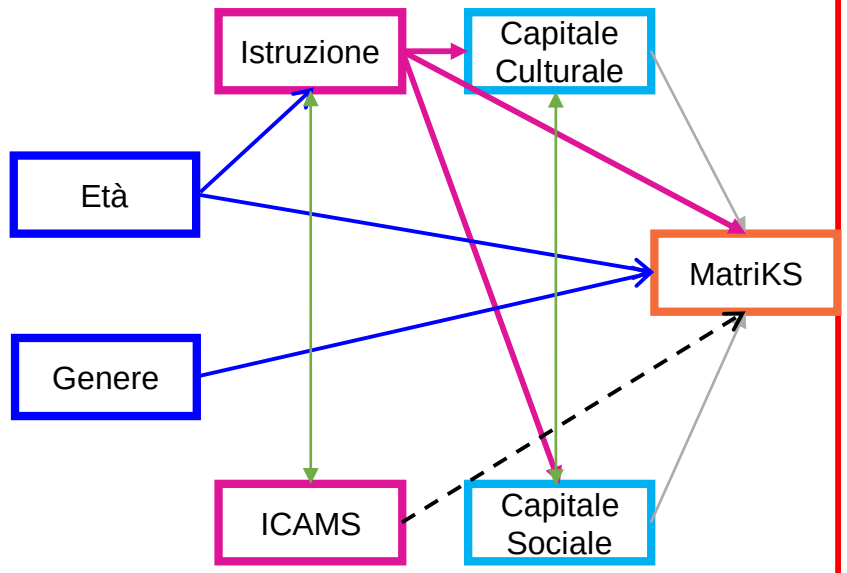
Modello 4.1



Modello 5



Modello 5.1

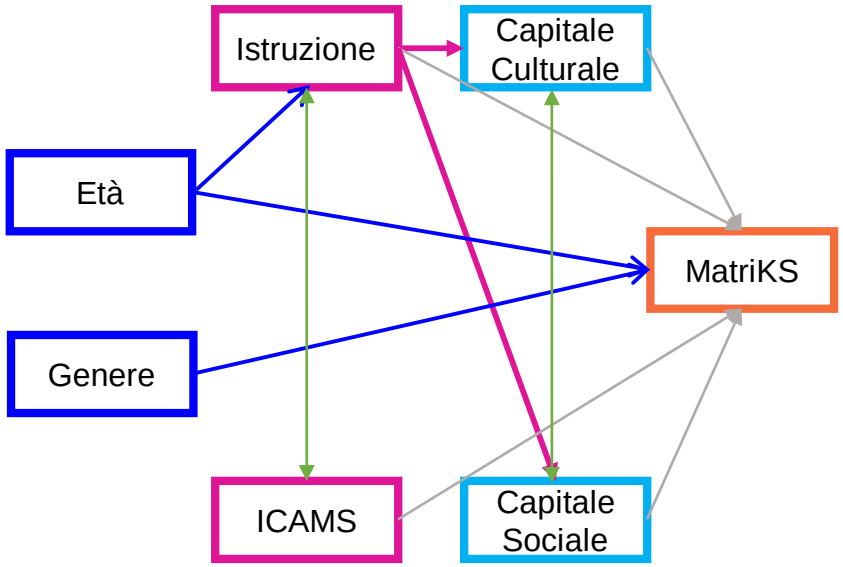


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792
Modello 5	48.284**	11	.928	.869	.105	.064	3864.775
Modello 5.1	14.797	10	.991	.981	.039	.031	3834.105

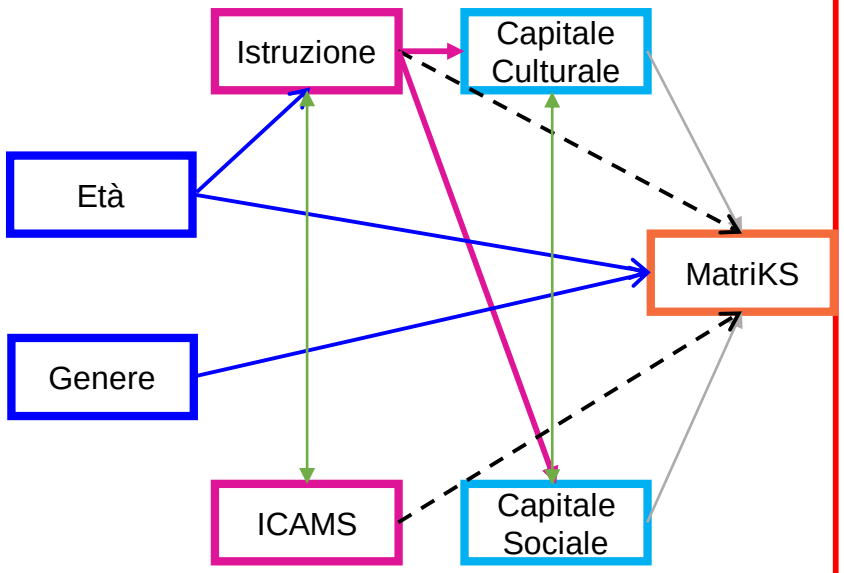
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
5 vs 4.1	38.67**	2	-.064	-.112	.065	.034	29.983	.244
5.1 vs 4.1	**1.46**	**1**	**-.001**	**,000**	**.001**	**.001**	**-.687**	**.039**
5.1 vs 5	37.93**	1	.063	.112	-.066	-.033	-30.67	.347

Risultati

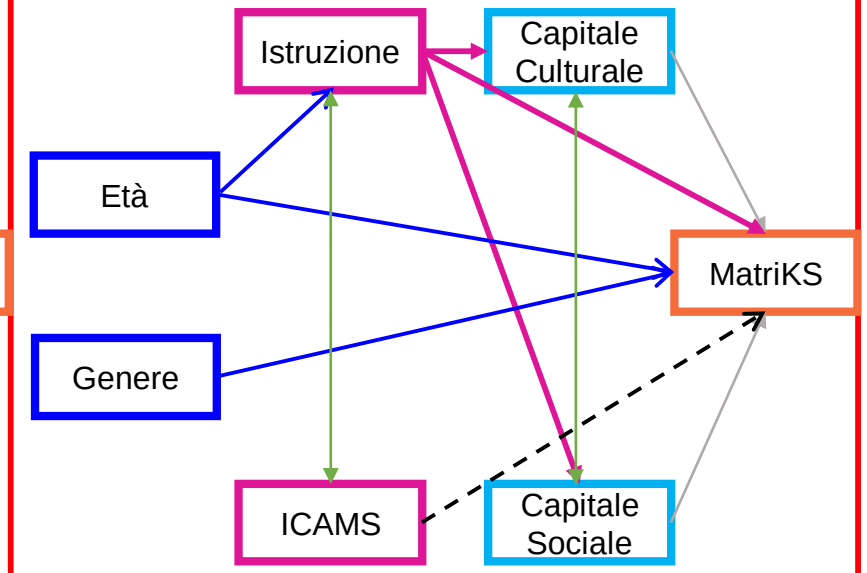
Modello 4.1



Modello 5



Modello 5.1

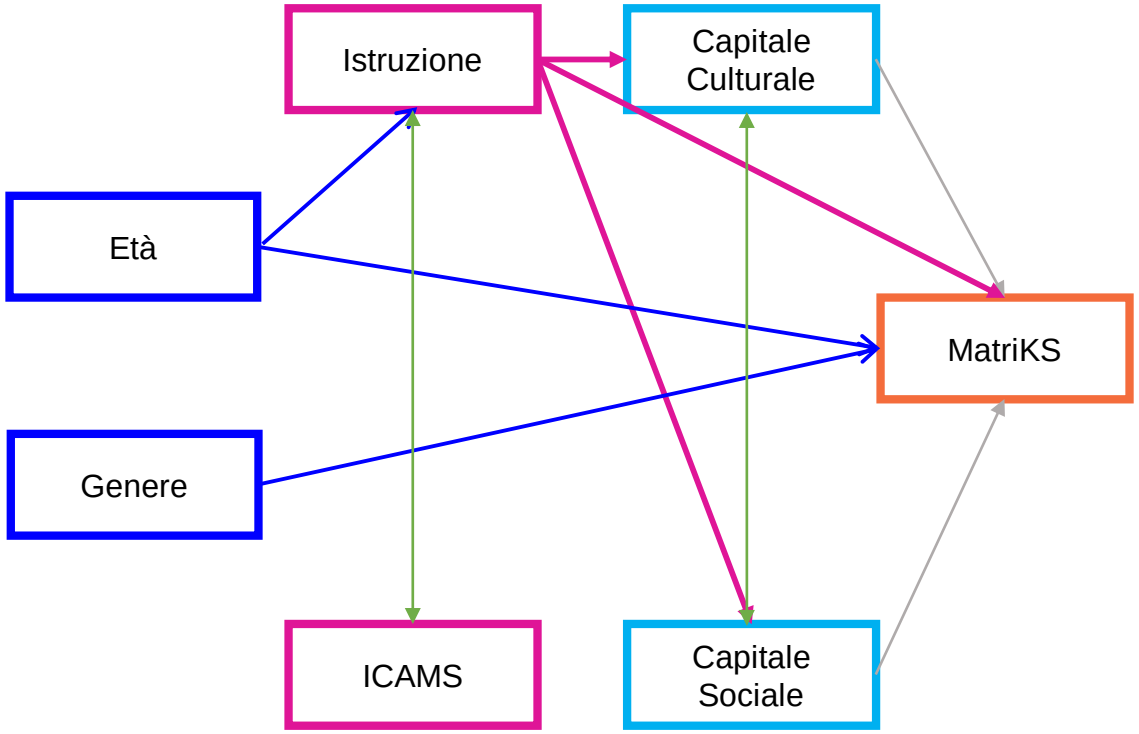


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 4.1	13.331	9	.992	.981	.040	.030	3834.792
Modello 5	48.284**	11	.928	.869	.105	.064	3864.775
Modello 5.1	14.797	10	.991	.981	.039	.031	3834.105

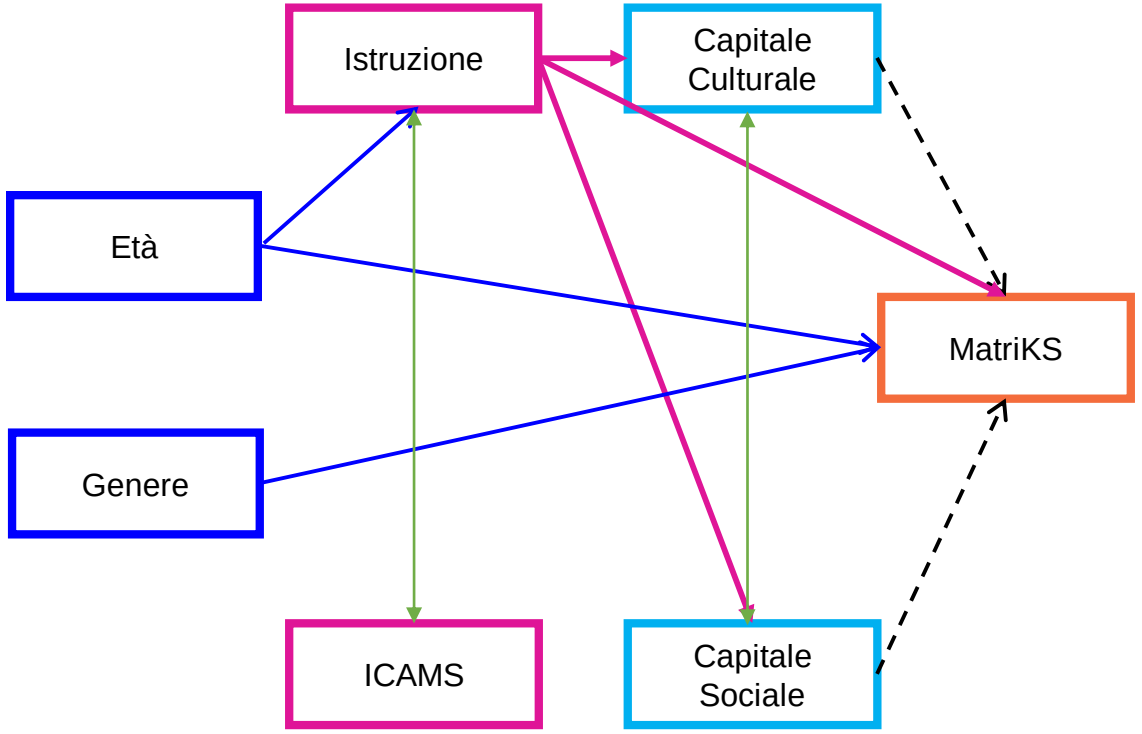
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
5 vs 4.1	38.67**	2	-.064	-.112	.065	.034	29.983	.244
5.1 vs 4.1	1.46	1	-.001	,000	.001	.001	-.687	.039
5.1 vs 5	37.93**	1	.063	.112	-.066	-.033	-30.67	.347

Risultati

Modello 5.1



Modello 6

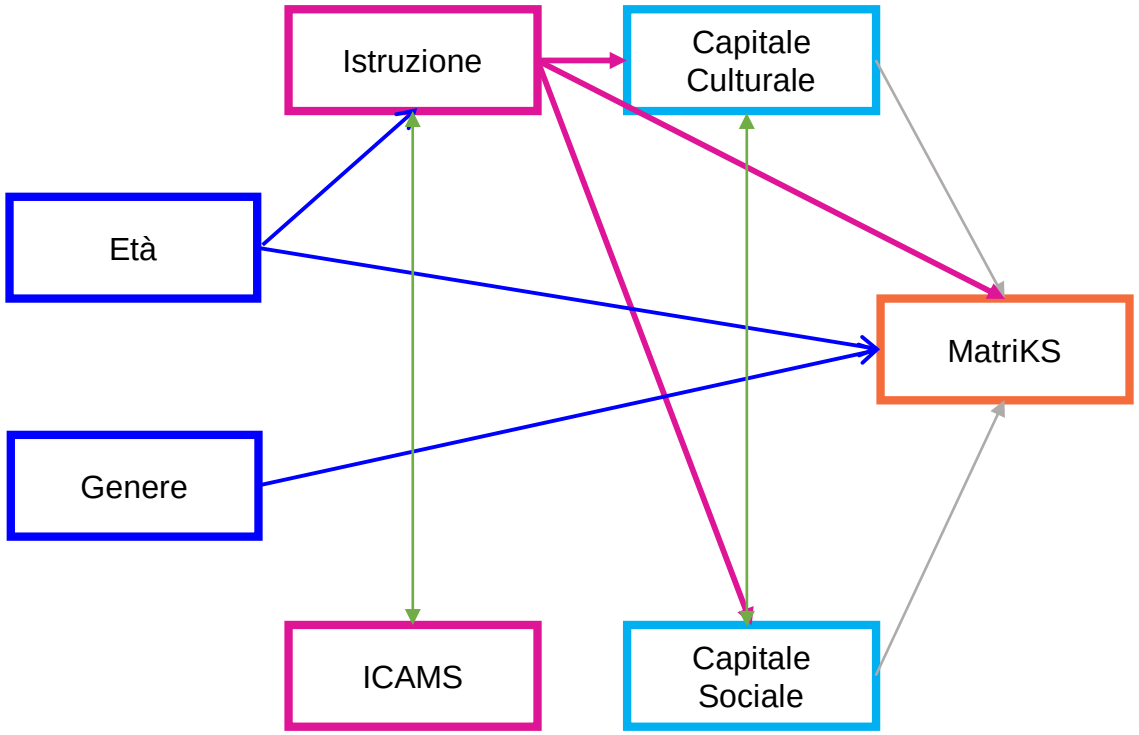


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 5.1	14.797	10	.991	.981	.039	.031	3834.105
Modello 6	16.124	12	.992	.987	.033	.032	3831.167

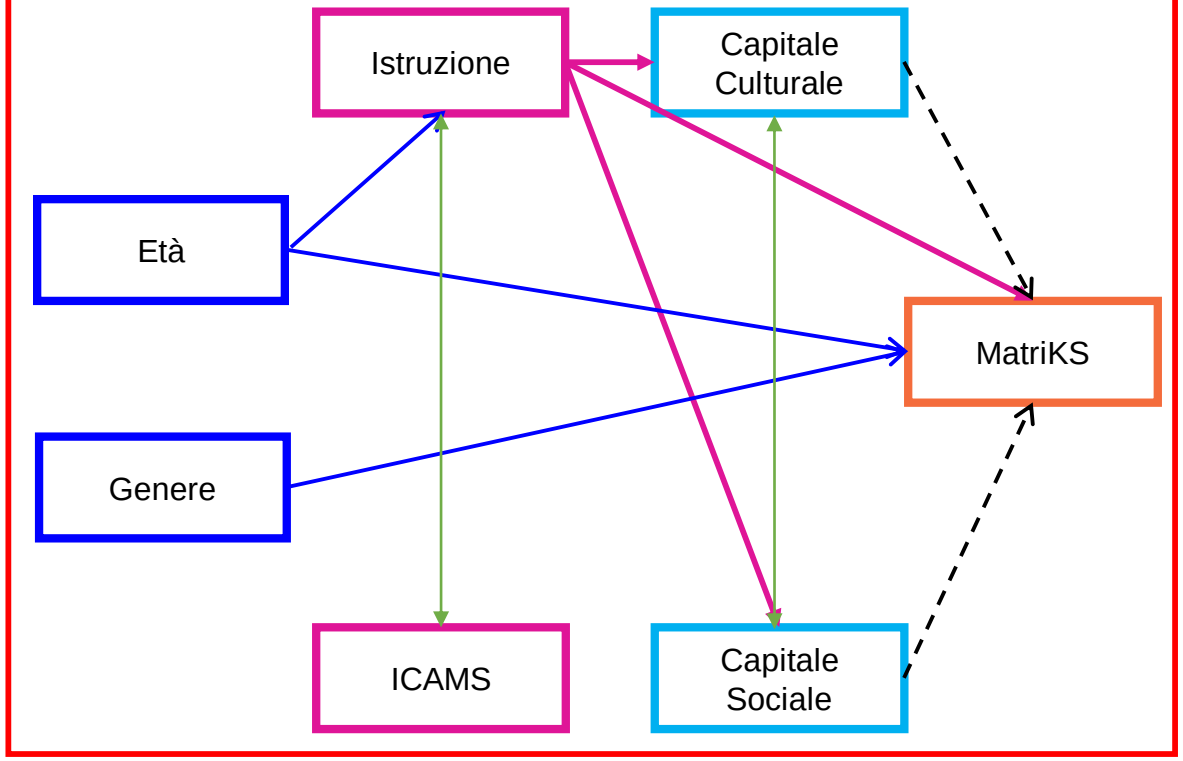
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
6 vs 5.1	1.184	2	.001	.006	-.006	.001	-2.938	NA

Risultati

Modello 5.1



Modello 6

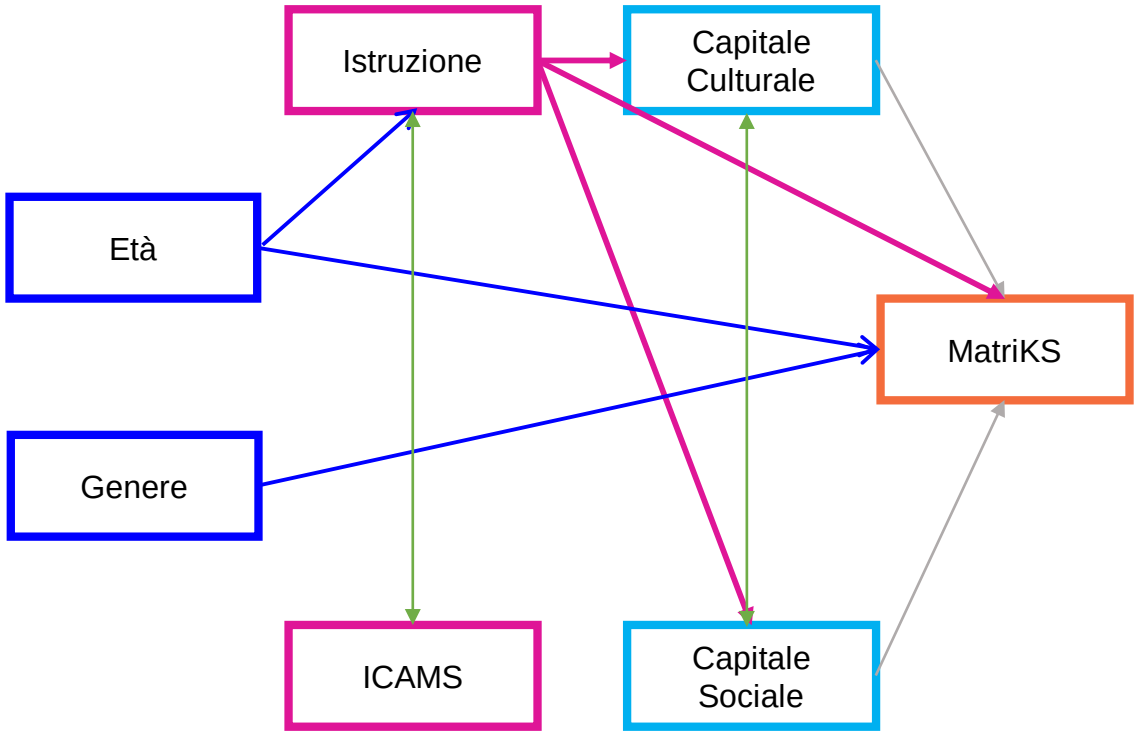


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 5.1	14.797	10	.991	.981	.039	.031	3834.105
Modello 6	16.124	12	.992	.987	.033	.032	3831.167

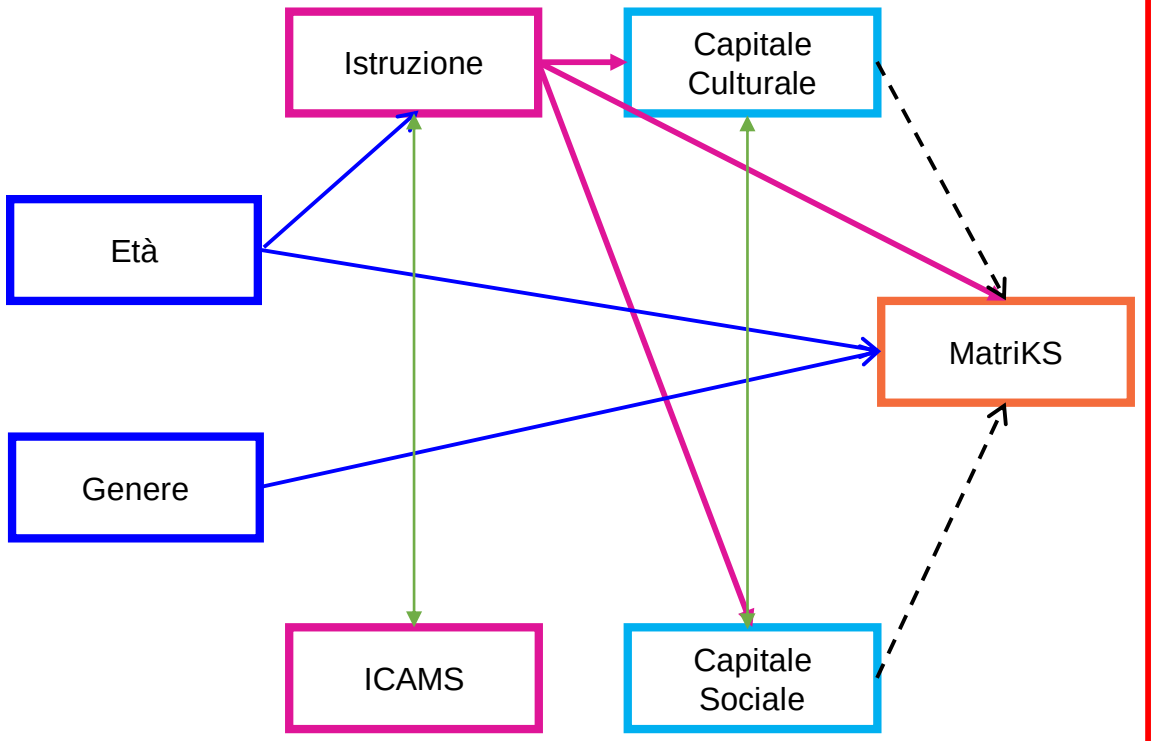
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
6 vs 5.1	1.184	2	.001	.006	-.006	.001	-2.938	NA

Risultati

Modello 5.1



Modello 6

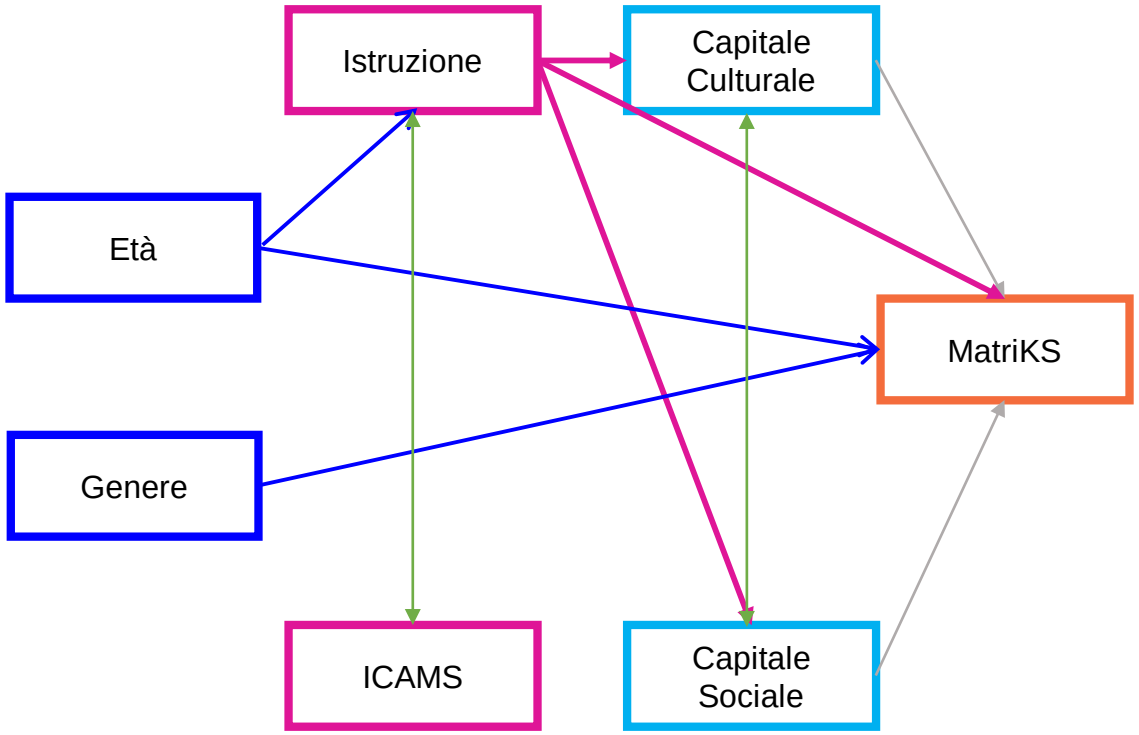


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 5.1	14.797	10	.991	.981	.039	.031	3834.105
Modello 6	**16.124**	**12**	**.992**	**.987**	**.033**	**.032**	3831.167

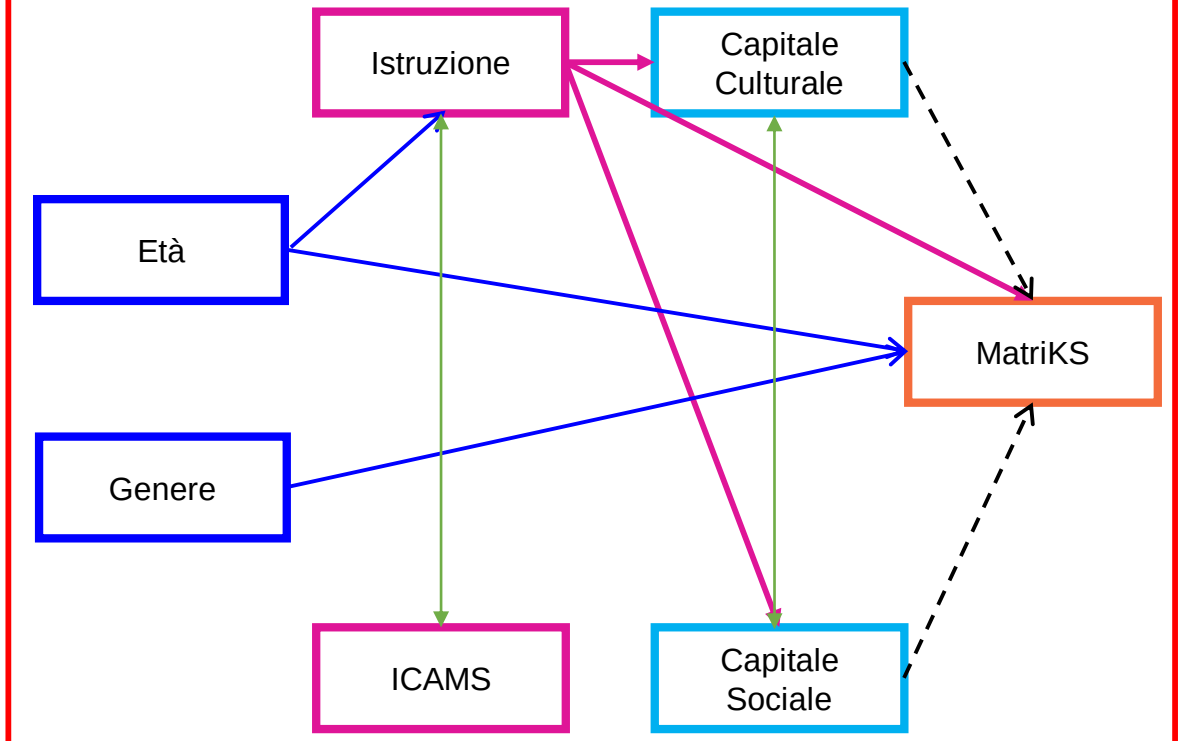
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
6 vs 5.1	1.184	2	.001	.006	-.006	.001	-2.938	NA

Risultati

Modello 5.1



Modello 6

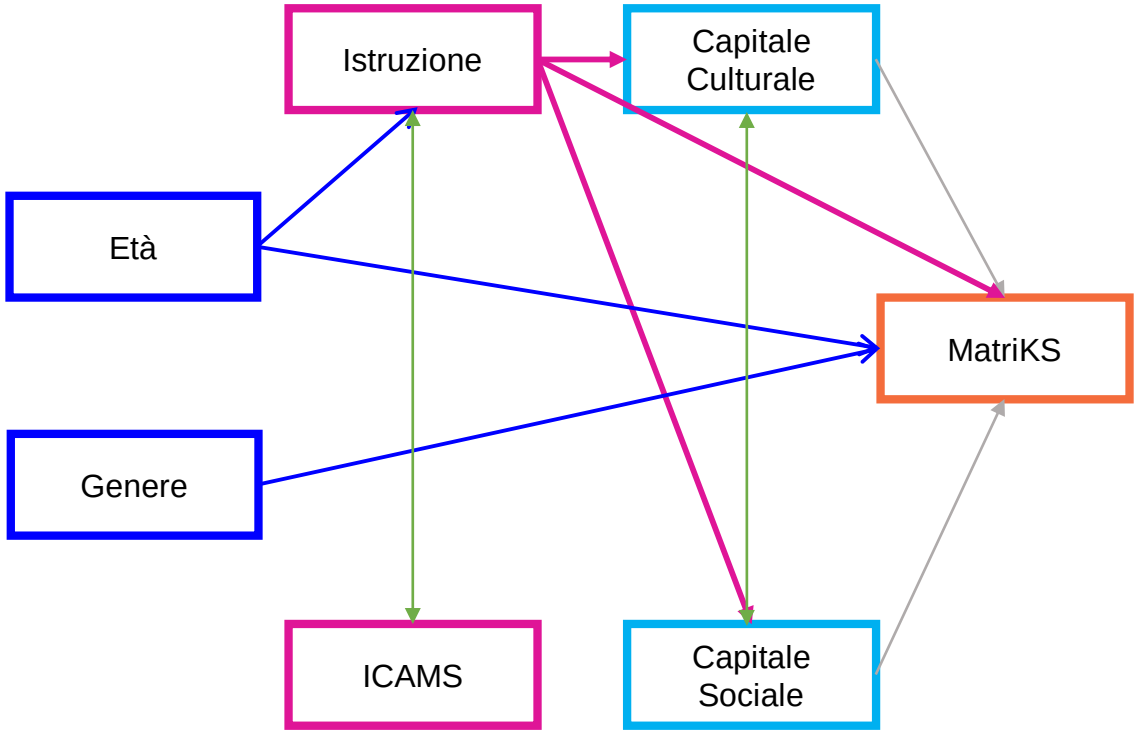


	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 5.1	14.797	10	.991	.981	.039	.031	3834.105
Modello 6	16.124	12	.992	.987	.033	.032	3831.167

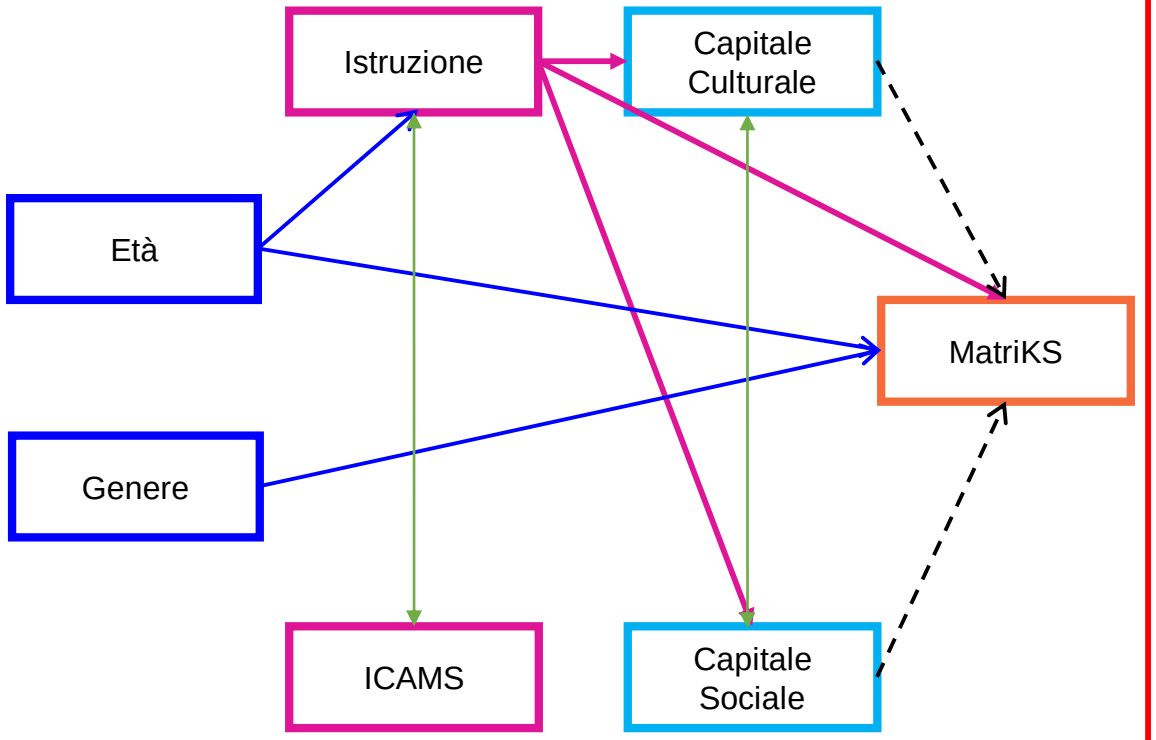
	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
6 vs 5.1	**1.184**	**2**	**.001**	**.006**	**-.006**	**.001**	**-2.938**	NA

Risultati

Modello 5.1



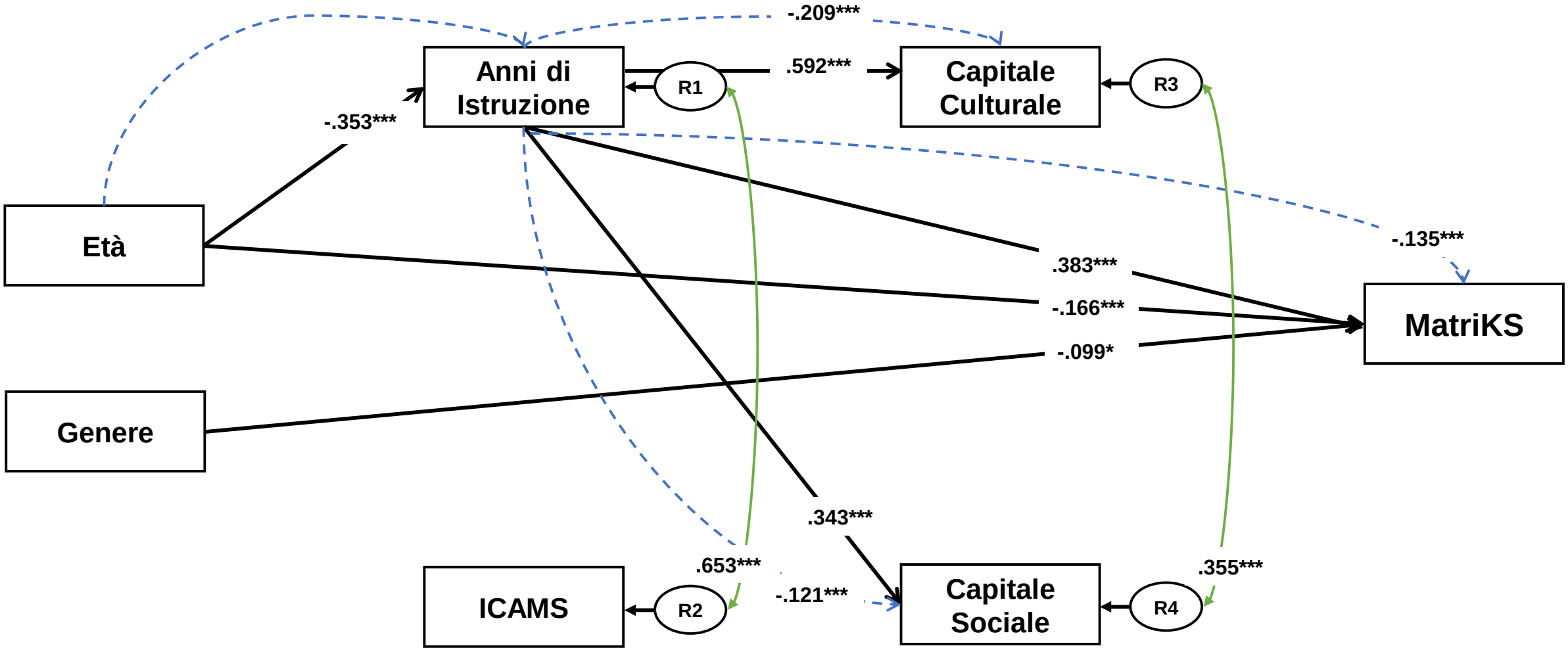
Modello 6



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 5.1	14.797	10	.991	.981	.039	.031	3834.105
Modello 6	16.124	12	.992	.987	.033	.032	3831.167

	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR	ΔAIC	RMSEA_D
6 vs 5.1	1.184	2	.001	.006	-.006	.001	-2.938	NA

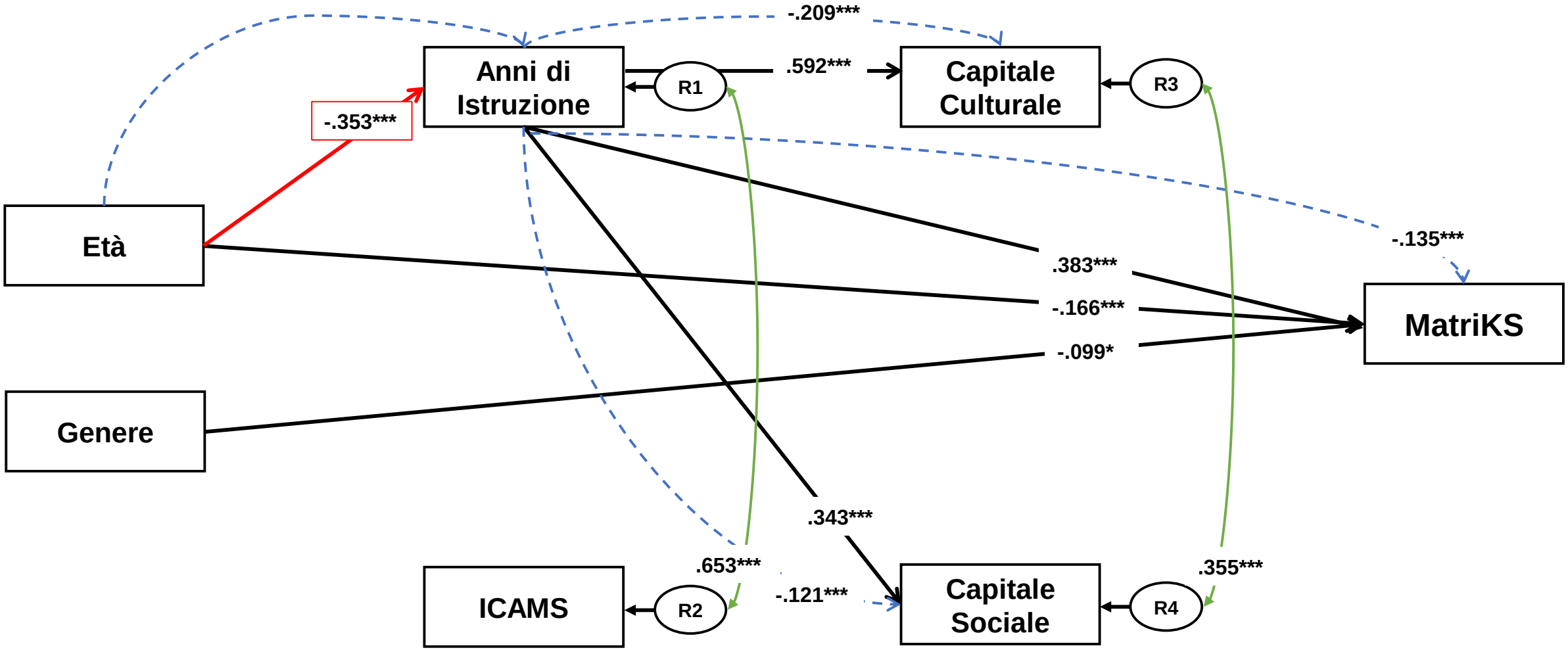
Risultati



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 6	16.124	12	.992	.987	.033	.032	3831.167

*$p \leq .05$; **$p \leq .01$; *** $p \leq .001$

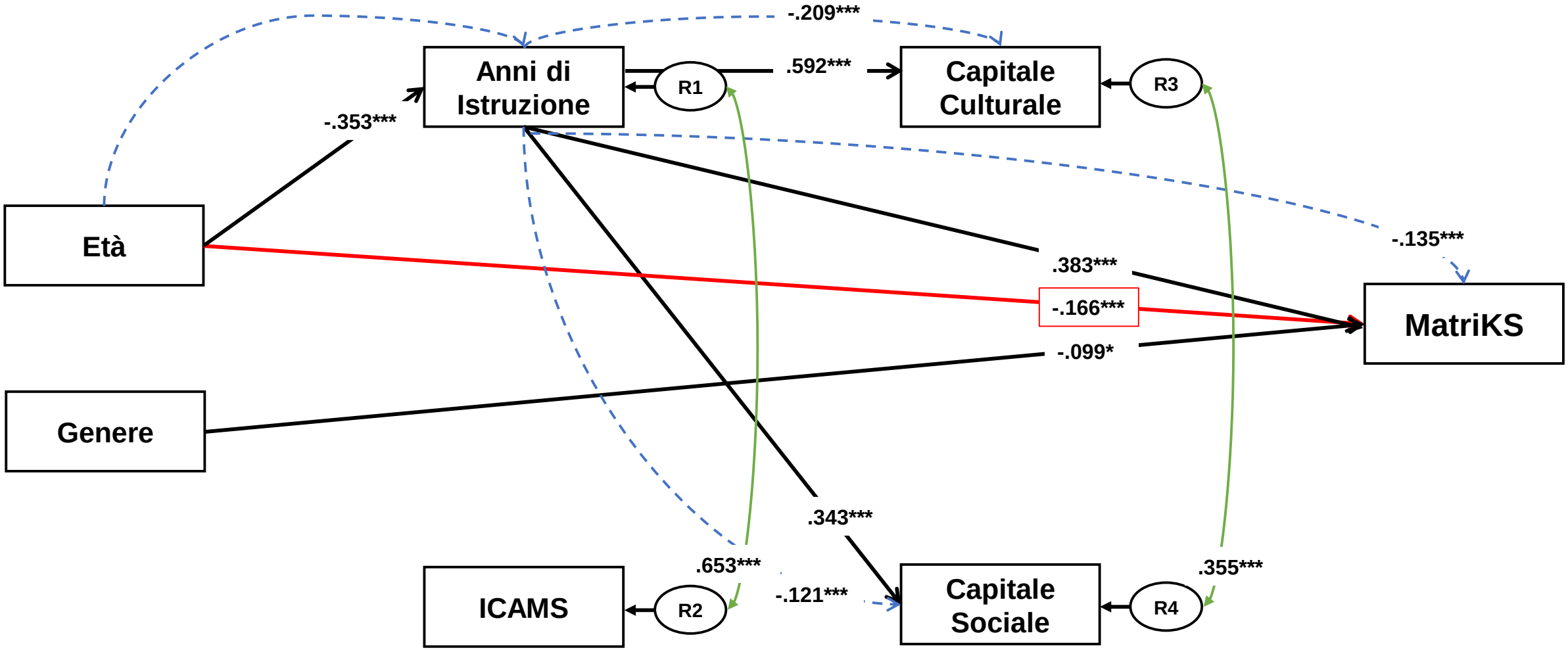
Risultati



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 6	16.124	12	.992	.987	.033	.032	3831.167

*$p \leq .05$; **$p \leq .01$; *** $p \leq .001$

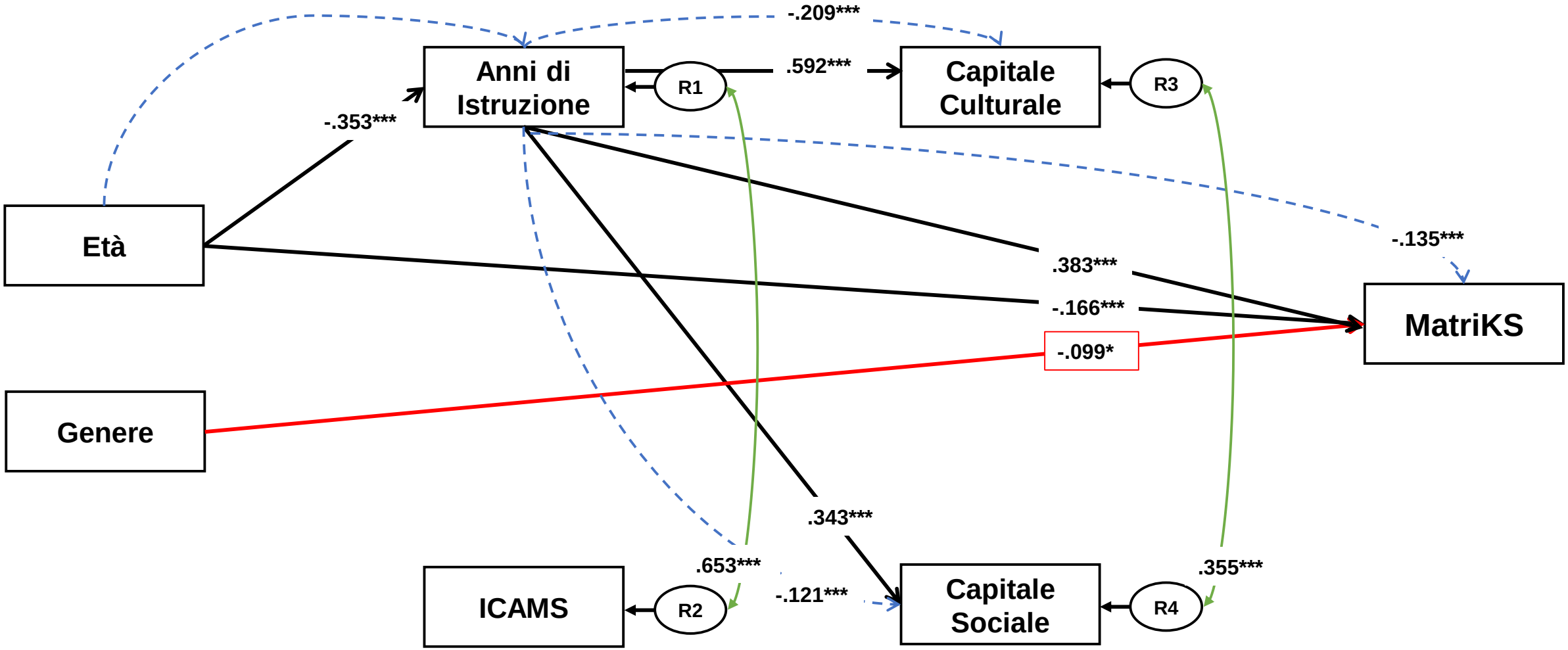
Risultati



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 6	16.124	12	.992	.987	.033	.032	3831.167

*$p \leq .05$; **$p \leq .01$; *** $p \leq .001$

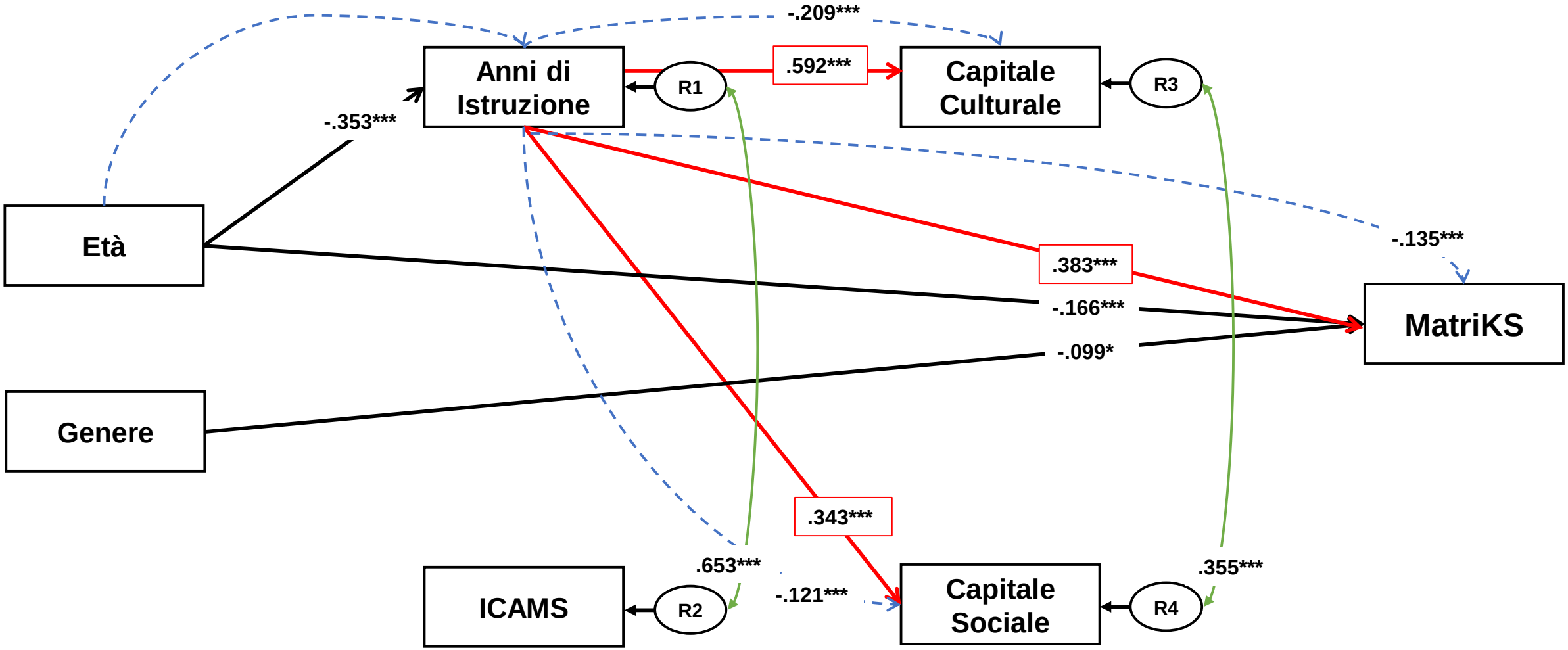
Risultati



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 6	16.124	12	.992	.987	.033	.032	3831.167

*$p \leq .05$; **$p \leq .01$; *** $p \leq .001$

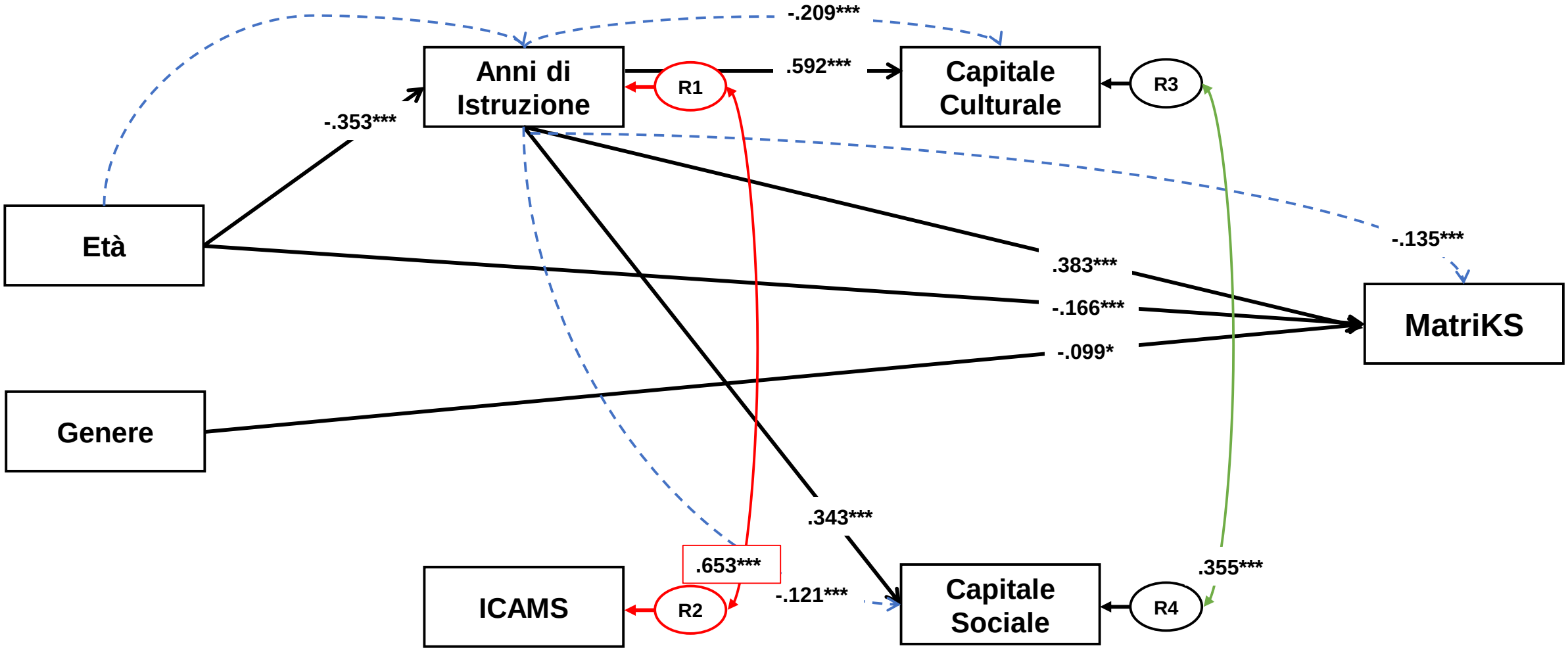
Risultati



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 6	16.124	12	.992	.987	.033	.032	3831.167

*$p \leq .05$; **$p \leq .01$; *** $p \leq .001$

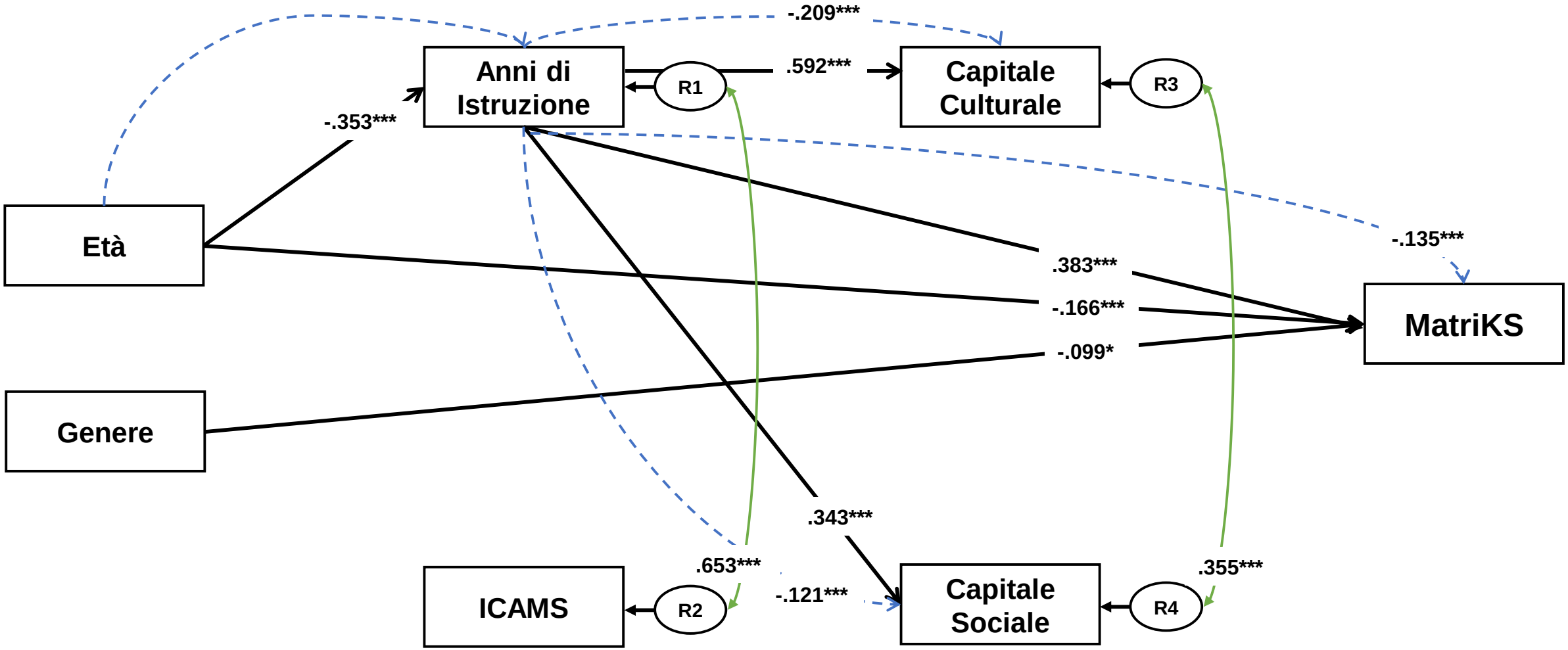
Risultati



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 6	16.124	12	.992	.987	.033	.032	3831.167

*$p \leq .05$; **$p \leq .01$; *** $p \leq .001$

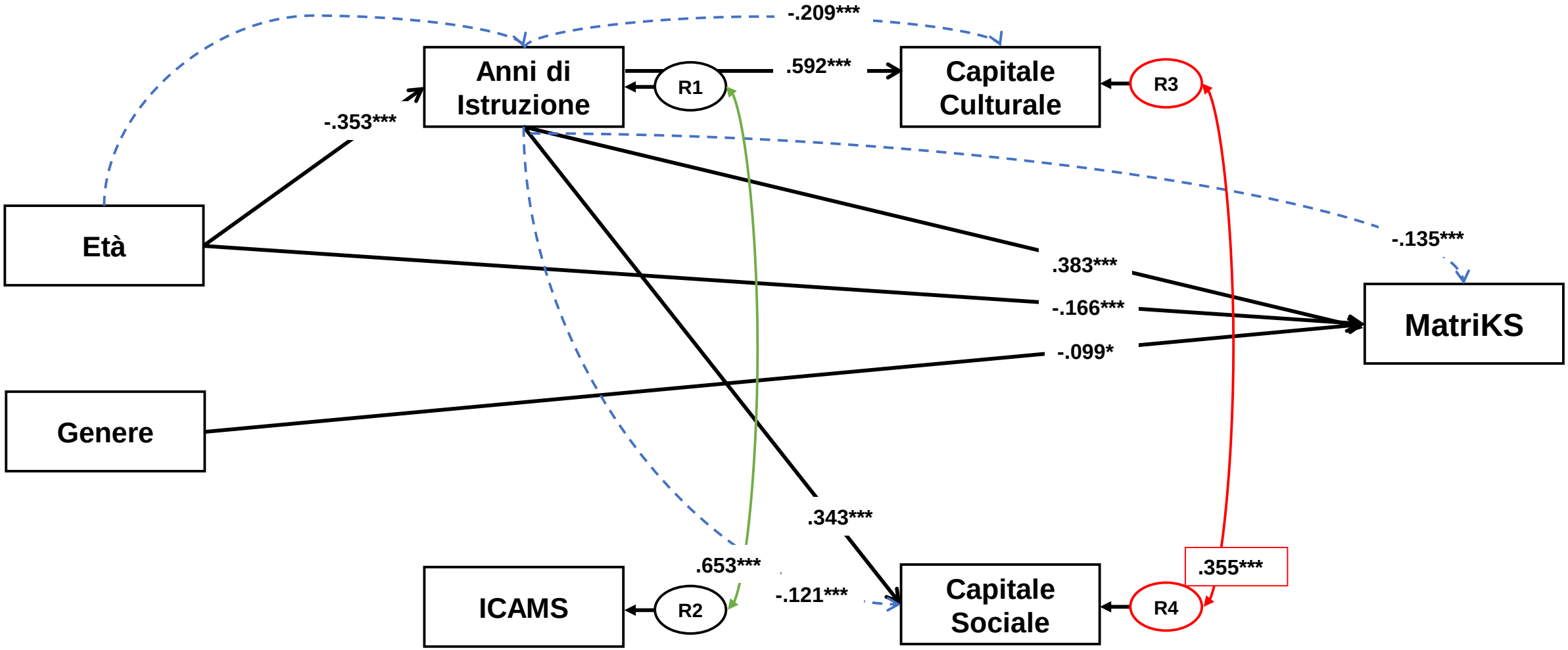
Risultati



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 6	16.124	12	.992	.987	.033	.032	3831.167

*$p \leq .05$; **$p \leq .01$; *** $p \leq .001$

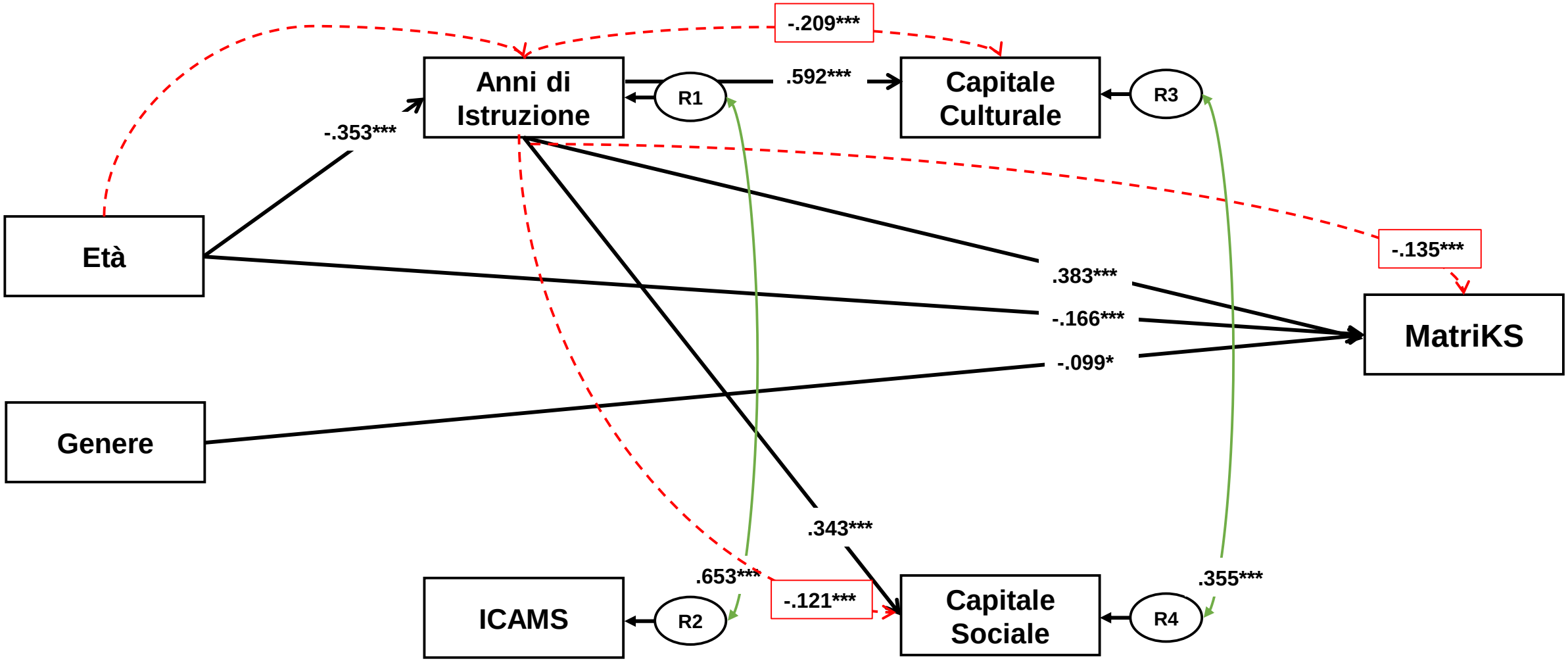
Risultati



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 6	16.124	12	.992	.987	.033	.032	3831.167

*$p \leq .05$; **$p \leq .01$; *** $p \leq .001$

Risultati



	χ^2	df	CFI	TLI	RMSEA	SRMR	AIC
Modello 6	16.124	12	.992	.987	.033	.032	3831.167

*$p \leq .05$; **$p \leq .01$; *** $p \leq .001$

Discussione

Maggiore età = Minore punteggio in MatriKS

Declino dell'intelligenza fluida con l'età *(Bugg et al., 2006; Murphy et al., 2023)*

Donne = Minore punteggio in MatriKS

Prestazioni superiori nei maschi nei test di tipo matrici dai 15 anni (*Đapo & Kolenović-Đapo, 2012; Irwing & Lynn, 2005; Flores-Mendoza et al., 2013)*

Maggiori anni di istruzione = Maggiore punteggio in MatriKS

Fattore favorevole per lo sviluppo del ragionamento fluido (Brouwers et al., 2009; Rindermann et al., 2012)

Capitale Sociale, Capitale Culturale, ICAMS = Nessuna relazione con MatriKS

Ruolo poco esplorato in letteratura

Take home message

Riscontrate relazioni attese tra MatriKS e

età

genere

status socio economico

Evidenze di **validità di costrutto rispetto ad altre misure** che i punteggi di MatriKS possano essere interpretati come misure di intelligenza fluida

Take home message

Diversi pattern di relazioni dei punteggi MatriKS in **adulti** e **anziani**

Interazioni bidirezionali con:

- Abilità culturali con coinvolgimento mentale attivo per acquisire nuove informazioni e uso dispositivi digitali
- Risorse sociali derivanti da relazioni di fiducia con persone vicine all'individuo

Indipendenza da fattori contestuali: misure di capitale culturale e sociale


thank you
danke
謝謝
ngiyabonga
teşekkür ederim
gracias
спасибо
Баярлалаа
рахмат
dank je
tapadh leat
mochchakkeram
go raibh maith agat
dziękuję
bedankt
obrigado
sukriya
kop khun krap
hvala
maururu
arigatō
takk
dakujem
мерси
grazie
terima kasih
merci
감사합니다
ありがとう
ευχαριστώ
хвала
sagolun
taiku
trugarez
najis tuke
dhanyavadagalu
shukriya
chnorakaloutioun

Computerized, Adaptive and Personalized Assessment of Executive Functions and Fluid Intelligence

PRIN
01/06/2022 – 31/05/2025

Workshop

26 Maggio 2025, Cesena

Sistema di relazioni fra livello socio-culturale e intelligenza fluida in adulti e anziani

Giulia Balboni*, Irene Pierluigi, & Aurora Castellani****

**** Alma Mater Studiourm Università di Bologna***

***** Università degli Studi di Perugia***

ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

A.D. 1308 unipg
UNIVERSITÀ DEGLI STUDI DI PERUGIA