



UiO • University of Oslo

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Firstname Lastname

Master of Science in Assessment, Measurement and Evaluation
30 credits

Centre for Educational Measurement
Faculty of Educational Sciences

Spring 2021

Popular Abstract

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Acknowledgements

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Keywords: keyword 1, keyword 2, keyword 3

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First Level 2 Heading

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One Level 3 Heading

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Second Level 2 Heading

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RQ1. To what extent the variation in Y can be accounted for by the variation in X .

RQ2. How does M influence the relationship between X and Y as a mediator?

Method

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Sample

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Measures

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Statistical Analysis

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$$E = mc^2 \tag{1}$$

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Results

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A Generic Level 2 Heading

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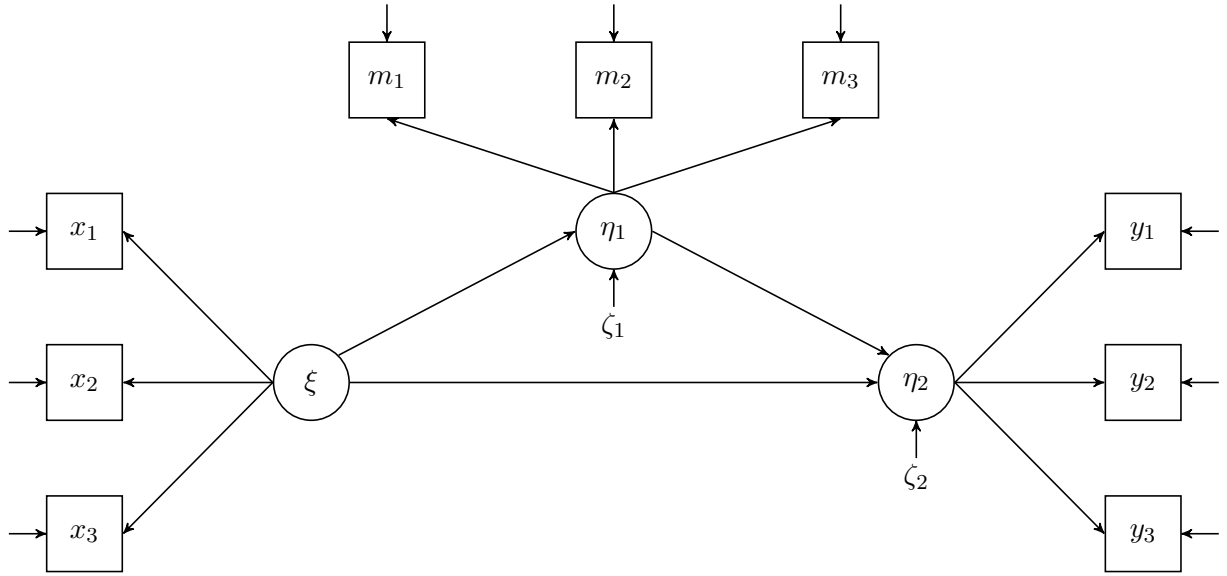
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Figure 1

Model Diagram



Note. A sample diagram.

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Table 1*Descriptive Statistics*

Analysis level	Variable label	Non-missing sample size	Missing rate (%) ^a	Median	M	SD	Skewness	Kurtosis	Excess Minimum	Maximum
Student (within, $L1$)	FLSCHOOL	96435	10.01	0.126	0.018	1.020	0.189	-0.343	-1.564	2.317
	FLFAMILY	95133	11.23	0.011	0.064	1.044	0.121	0.030	-2.042	2.452
	NOBULLY	83499	22.08	0.782	-0.059	1.054	-1.078	0.664	-3.859	0.782
	ESCS	104784	2.22	-0.158	-0.241	1.088	-0.533	0.184	-7.711	4.234
	FCFMLRTY	99969	6.71	7.000	7.049	5.455	0.223	-1.039	0.000	18.000
	FLCONFIN	90130	15.89	-0.027	-0.072	1.017	-0.084	0.355	-2.210	2.322
	FLIT ^b	107162	0.00	481.970	478.291	97.074	-0.089	-0.340	114.256	827.977
School (between, $L2$)	EDUSHORT	6346	4.30	0.100	0.131	1.036	0.341	-0.188	-1.421	2.959
	STRATIO	5626	15.16	11.886	13.873	10.171	4.021	25.425	1.000	100.000

Note. ^a Missing rates were computed based on $n_{L1} = 107,162$ students and $n_{L2} = 6,631$ schools. ^b FLIT was obtained by averaging ten plausible values PV1FLIT to PV10FLIT.

Discussion

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Conclusion

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References

- Lüdtke, O., Marsh, H. W., Robitzsch, A., Trautwein, U., Asparouhov, T., & Muthén, B. (2008). The multilevel latent covariate model: A new, more reliable approach to group-level effects in contextual studies. *Psychological Methods, 13*(3), 203–229. <https://doi.org/10.1037/a0012869>
- Marsh, H. W., Lüdtke, O., Robitzsch, A., Trautwein, U., Asparouhov, T., Muthén, B., & Nagengast, B. (2009). Doubly-latent models of school contextual effects: Integrating multilevel and structural equation approaches to control measurement and sampling error. *Multivariate Behavioral Research, 44*(6), 764–802. <https://doi.org/10.1080/00273170903333665>

Appendix I

GDPR Documentation & Ethical Approval

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About us (/personvernombud/en/about_us.html)

Norwegian (/personvernombud/meld_prosjekt/meldeplikttest.html)

NSD (</>) > Personvern tjenester (</personvernombud/>) > Data Protection Services (</personvernombud/en/>) > Notify project (</personvernombud/en/notify/>) > Notification Test

Denne siden på norsk (/personvernombud/meld_prosjekt/meldeplikttest.html)

Will you be processing personal data?

Are you unsure whether your project is subject to notification? Feel free to try our informal Notification test. Note that the test is intended as a guidance and is not a formal assessment.

Will you be collecting/processing directly identifiable personal data?

☐ Yes

☒ No

A person will be directly identifiable through name, social security number, or other uniquely personal characteristics.

Read more about personal data (</personvernombud/en/help/vocabulary.html?id=8>) and notification (</personvernombud/en/notify/index.html>).

NB! Even though information is to be anonymized in the final thesis/report, check the box if identifying personal data is to be collected/processed in connection with the project.

Will directly identifiable personal information be linked to the data (e.g. through a reference number which refers to a separate list of names/scrambling key)?

☐ Yes

☒ No

Note that the project will be subject to notification even if you cannot access the scrambling key (</personvernombud/en/help/vocabulary.html?id=11>), as the procedure often is when using a data processor (</personvernombud/en/help/vocabulary.html?id=3>), or in register-based studies (/personvernombud/en/help/research_methods/register_studies.html).

Will you be collecting/processing background information that may identify individuals (indirectly identifiable personal data)?

☐ Yes

☒ No

A person will be indirectly identifiable if it is possible to identify him/her through a combination of background information (such as place of residence or workplace/school, combined with information such as age, gender, occupation, etc.).

Will there be registered personal data (directly/indirectly/via IP or email address, etc.) using online surveys?

☐ Yes

☒ No

Please note that the project will be subject to notification even if you as a student/researcher cannot access the link to the IP or email address, as the procedure often is when using a data processor.

Read more about online surveys (/personvernombud/en/help/research_methods/online_surveys.html).

Will there be registered personal data using digital photo or video files?

☐ Yes☒ No

Photo/video recordings of faces will be regarded as identifiable personal data. In order for a voice to be considered as identifiable, it must be registered in combination with other background information, in such a way that people can be recognized.

Show results

Notify project

Do I have to notify my project? (</personvernombud/en/notify/index.html>)

Notification Form (/personvernombud/en/notify/meldeskjema_link)

Notifying changes (/personvernombud/en/notify/notifying_changes.html)

Get help notifying your project

Processing the notification (</personvernombud/en/help/index.html>)

Frequently asked questions (</personvernombud/en/help/faq.html>)

Vocabulary (</personvernombud/en/help/vocabulary.html>)

Research topics (/personvernombud/en/help/research_topics/)

Research methods (/personvernombud/en/help/research_methods/)

Information and consent (/personvernombud/en/help/information_consent/)

Other approvals (/personvernombud/en/help/other_approvals/)

Result of Notification Test: Not Subject to Notification

You have indicated that neither directly or indirectly identifiable personal data will be registered in the project.

If no personal data is to be registered, the project will not be subject to notification, and you will not have to submit a notification form.

Please note that this is a guidance based on information that you have given in the notification test and not a formal confirmation.

For your information: *In order for a project not to be subject to notification, we presuppose that all information processed using electronic equipment in the project remains anonymous.*

Anonymous information is defined as information that cannot identify individuals in the data set in any of the following ways:

- directly, through uniquely identifiable characteristic (such as name, social security number, email address, etc.)*
- indirectly, through a combination of background variables (such as residence/institution, gender, age, etc.)*
- through a list of names referring to an encryption formula or code, or*
- through recognizable faces on photographs or video recordings.*

Furthermore, we presuppose that names/consent forms are not linked to sensitive personal data.

Kind regards,
NSD Data Protection

Appendix II

Data Management and Analysis Code

All computer files related to this thesis can be found in the author's GitHub page:

<https://github.com/author/MAE>.

- Data sets and codebook can be downloaded from
<https://github.com/author/MAE/Data>
- R syntax for data merging can be found in
<https://github.com/author/MAE/R/merge.R>
- Mplus code for SEM analysis is stored in
<https://github.com/author/MAE/Mplus/SEM.inp>
- Model diagram (Figure 1) was generated using L^AT_EX's tikz package:
<https://github.com/author/MAE/Figures/tikz/Model.tex>

Appendix III

Supplemental Materials

Extra figures or tables, survey questions, test items, stimuli, etc.