

A Appendix

A.1 Grit scale

Here is a list of eight statements of a short grit questionnaire proposed by Duckworth and Quinn (2009).¹⁷

1. New ideas and projects sometimes distract me from previous ones.*
2. Setbacks don't discourage me.
3. I have been obsessed with a certain idea or project for a short time but later lost interest.*
4. I am a hard worker.
5. I often set a goal but later choose to pursue a different one.*
6. I have difficulty maintaining my focus on projects that take more than a few months to complete.*
7. I finish whatever I begin.
8. I am diligent.

Interviewees can choose of the following phrases to answer if they agree with the previous statements:

- Very much like me
- Mostly like me
- Somewhat like me
- Not much like me
- Not like me at all

¹⁷You can find the PDF here <https://sjdm.org/dmidi/Gritscale.html>

Following the below-reported scale of scores (the above mentioned Grit-S), it is possible to add up all the points, divide by eight and obtain a grit value from 5 (extremely gritty) to 1 (not at all gritty).

1. For questions 2, 4, 7 and 8 assign the following points:

- 5 = Very much like me
- 4 = Mostly like me
- 3 = Somewhat like me
- 2 = Not much like me
- 1 = Not like me at all

2. For questions 1, 3, 5 and 6 assign the following points:

- 1 = Very much like me
- 2 = Mostly like me
- 3 = Somewhat like me
- 4 = Not much like me
- 5 = Not like me at all

A.2 PISA database grit questions

These are the selected 12 questions about grit:

- Q1. "NAME 1" [...] gives up easily when confronted with a problem and is often not prepared.
- Q2. I have fun when I am learning [broad science] .
- Q3. I like reading about [broad science] topics.
- Q4. I am happy working on [broad science] topics.
- Q5. I enjoy acquiring new knowledge in [broad science].
- Q6. I am interested in learning about [broad science].
- Q7. Making an effort in my [school science] subject(s) is worth it because this will help me in the work I want to do later.
- Q8. What I learn in my [school science] subject(s) is important for me because I need this for what I want to do later on.
- Q9. Studying my [school science] subject(s) is worthwhile for me because what I learn will improve my career prospects.
- Q10. Many things I learn in my [school science] subject(s) will help me to get a job.
- Q11. "NAME 2" [...] mostly remains interested in the tasks she starts and sometimes does more than expected.
- Q12. "NAME 3" [...] wants to get top grades at school and continues working on tasks until perfect.

A.3 Graphs and tables

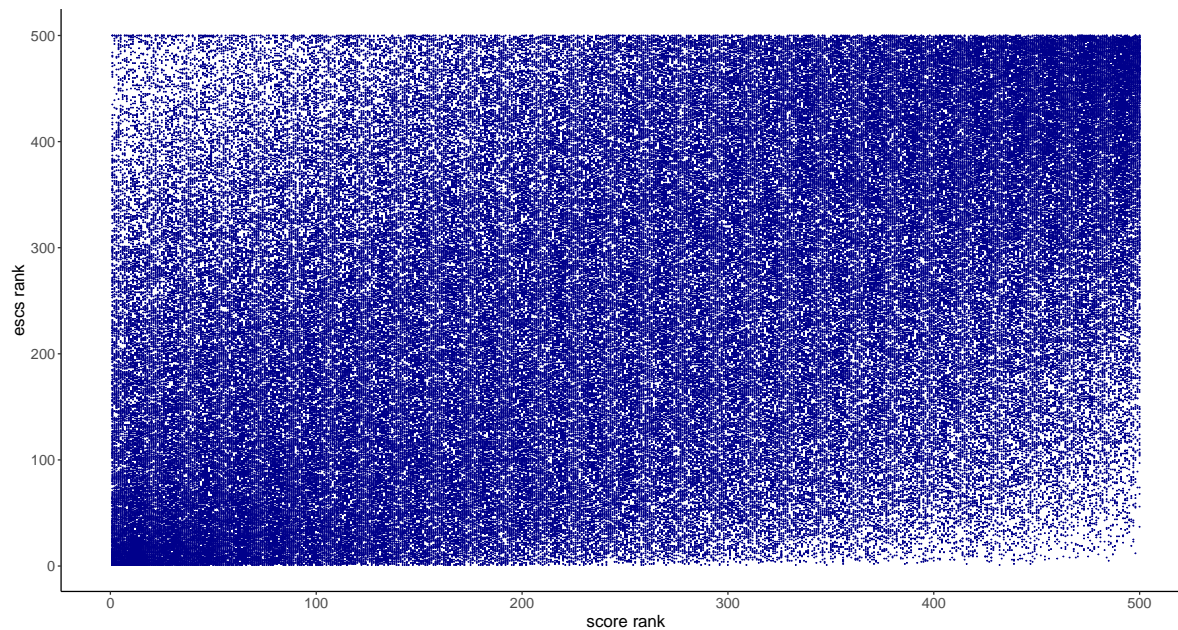


Figure A.1: Whole population distribution through five quintiles of ESCS-score rank combination.

Source: OECD, PISA 2018 Database (<https://www.oecd.org/pisa/data/2018database/>)

Table A1: ISCED means and standard deviations by country.

Country	HISCED		MISCED		FISCED	
	mean	s.d.	mean	s.d.	mean	s.d.
AUS	4.59	1.32	4.16	1.53	3.84	1.58
AUT	4.39	1.28	3.83	1.34	3.94	1.38
BEL	4.79	1.24	4.38	1.45	4.16	1.50
CAN	5.09	0.98	4.81	1.15	4.54	1.25
CHE	4.50	1.45	3.90	1.56	4.09	1.58
CHL	4.46	1.49	3.96	1.64	3.92	1.70
CZE	4.28	1.29	3.91	1.30	3.83	1.29
DEU	3.66	1.58	3.01	1.64	3.19	1.67
DNK	4.76	1.56	4.33	1.77	3.89	1.81
ESP	4.29	1.76	3.75	1.91	3.62	1.95
EST	4.95	1.02	4.68	1.18	4.35	1.17
FIN	5.20	1.09	4.93	1.26	4.56	1.45
FRA	4.53	1.35	4.12	1.47	3.89	1.56
GBR	4.44	1.26	4.05	1.35	3.71	1.47
GRC	4.83	1.26	4.42	1.43	4.23	1.58
HUN	4.65	1.31	4.36	1.42	4.20	1.38
IRL	4.86	1.16	4.49	1.31	4.18	1.50
ISL	5.02	1.23	4.62	1.52	4.27	1.52
ISR	4.88	1.28	4.56	1.45	4.24	1.51
ITA	4.26	1.40	3.86	1.51	3.69	1.52
JPN	4.85	1.09	4.35	1.13	4.36	1.28
KOR	4.55	0.85	4.19	1.01	4.32	1.01
LUX	4.24	1.72	3.69	1.87	3.73	1.86

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Table A1: ISCED means and standard deviations by country (continue).

Country	HISCED		MISCED		FISCED	
	mean	s.d.	mean	s.d.	mean	s.d.
LVA	4.93	1.00	4.70	1.10	4.28	1.10
MEX	3.48	1.91	2.80	1.93	2.93	1.98
NLD	4.65	1.10	4.20	1.25	4.21	1.36
NOR	4.83	0.98	4.48	1.14	4.32	1.20
NZL	4.34	1.33	3.85	1.52	3.67	1.44
POL	4.09	1.15	3.90	1.28	3.92	1.23
PRT	3.25	1.92	2.87	1.97	2.50	1.95
SVK	4.47	1.13	4.20	1.16	4.03	1.13
SVN	4.47	1.28	4.17	1.35	3.94	1.31
SWE	4.88	1.24	4.53	1.43	4.23	1.51
TUR	2.98	1.90	2.18	1.84	2.64	1.89
USA	4.70	1.44	4.39	1.58	4.10	1.60

Source: OECD, PISA 2018 Database (<https://www.oecd.org/pisa/data/2018database/>)

Table A2: ISEI means and standard deviations by country.

Country	HISEI		MISEI		FISEI	
	mean	s.d.	mean	s.d.	mean	s.d.
AUS	50.91	20.99	41.51	21.48	37.02	22.43
AUT	48.39	21.07	37.54	20.94	38.62	21.45
BEL	48.75	21.95	38.70	22.49	38.45	21.70
CAN	50.43	20.39	41.34	20.73	35.83	22.52
CHE	49.31	21.61	34.59	20.58	40.71	22.79
CHL	46.52	23.49	32.52	22.97	37.95	23.56
CZE	45.57	19.74	37.41	19.47	33.83	19.74
DEU	42.54	20.38	33.52	19.70	33.74	21.64
DNK	45.91	22.80	33.82	23.20	33.07	23.01
ESP	46.09	23.45	32.70	23.55	37.12	22.68
EST	50.58	20.26	42.37	21.94	37.61	19.32
FIN	50.75	21.25	41.80	21.17	38.62	22.04
FRA	46.85	21.54	37.12	21.54	36.62	21.72
GBR	48.60	21.53	35.90	22.18	36.10	22.42
GRC	46.92	23.11	34.65	23.66	37.81	22.02
HUN	44.54	21.37	37.14	21.16	33.04	20.95
IRL	49.65	21.46	39.31	21.79	37.27	21.86
ISL	57.20	19.32	48.27	20.24	42.99	22.19
ISR	53.30	20.91	41.65	19.72	40.42	22.67
ITA	46.73	21.26	33.88	21.43	37.70	20.36
JPN	45.74	19.93	34.33	19.23	34.67	20.53
KOR	50.06	18.97	33.51	18.96	42.47	19.31
LUX	43.98	22.43	33.62	22.87	36.40	21.64

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Table A2: ISEI means and standard deviations by country (continue).

Country	HISEI	HISEI	MISEI	MISEI	FISEI	FISEI
	mean	s.d.	mean	s.d.	mean	s.d.
LVA	46.89	21.98	38.52	22.50	30.89	21.00
MEX	38.81	21.39	23.30	20.97	32.65	20.38
NLD	51.61	19.93	39.07	19.91	42.99	21.29
NOR	57.63	19.67	47.88	21.43	45.05	21.94
NZL	52.32	19.97	40.86	21.14	40.28	21.36
POL	43.18	22.36	34.89	22.51	31.54	20.43
PRT	43.25	22.72	32.36	23.27	35.83	21.54
SVK	42.22	20.66	34.11	21.04	29.86	19.09
SVN	46.63	21.31	37.71	21.75	35.09	20.19
SWE	52.81	20.33	44.51	21.37	39.68	21.44
TUR	31.78	19.67	7.88	22.42	29.89	18.67
USA	49.39	21.71	40.33	21.78	34.63	22.31

Source: OECD, PISA 2018 Database (<https://www.oecd.org/pisa/data/2018database/>)

Table A3: Means and standard deviations by country for persistence, long-term goals, passion and motivation indexes.

Country	Perseverance		L.-T. Goals		Passion		Motivation	
	mean	s.d.	mean	s.d.	mean	s.d.	mean	s.d.
AUS	2.43	0.66	1.88	0.85	2.31	0.84	3.22	0.48
AUT	2.67	0.58	2.29	0.92	2.18	0.91	3.54	0.57
BEL	2.42	0.67	2.04	0.82	2.30	0.83	3.29	0.57
CAN	2.54	0.62	1.83	0.78	2.68	0.80	3.31	0.49
CHE	2.59	0.63	2.14	0.86	2.30	0.83	3.46	0.62
CHL	2.48	0.71	1.84	0.82	2.44	0.80	3.40	0.53
CZE	2.42	0.68	2.28	0.80	2.31	0.73	3.21	0.59
DEU	2.34	0.54	1.44	0.87	1.55	0.88	3.12	0.52
DNK	2.46	0.60	1.99	0.82	2.50	0.81	3.23	0.53
ESP	2.58	0.64	2.02	0.91	2.54	0.83	3.41	0.50
EST	2.54	0.64	2.12	0.66	2.66	0.72	3.38	0.50
FIN	2.61	0.58	2.08	0.75	2.45	0.73	3.36	0.51
FRA	2.50	0.66	2.11	0.88	2.36	0.81	3.45	0.56
GBR	2.50	0.63	1.86	0.78	2.51	0.78	3.29	0.44

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Table A3: Means and standard deviations by country for persistence, long-term goals, passion and motivation indexes. (continue).

Country	Perseverance		L.-T. Goals		Passion		Motivation	
	mean	s.d.	mean	s.d.	mean	s.d.	mean	s.d.
GRC	2.39	0.71	2.02	0.77	2.60	0.80	3.11	0.68
HUN	2.48	0.68	2.11	0.78	2.21	0.79	3.20	0.62
IRL	2.62	0.58	1.97	0.79	2.67	0.78	3.47	0.42
ISL	2.49	0.62	1.98	0.84	2.52	0.89	3.41	0.54
ISR	2.48	0.69	1.99	0.88	2.52	0.90	3.33	0.62
ITA	2.51	0.64	2.13	0.74	2.47	0.75	3.22	0.63
JPN	2.75	0.51	2.32	0.85	2.30	0.85	3.64	0.47
KOR	2.66	0.59	2.29	0.83	2.48	0.85	3.29	0.49
LUX	2.58	0.65	2.09	0.90	2.43	0.88	3.43	0.61
LVA	2.42	0.69	2.19	0.70	2.62	0.68	3.37	0.64
MEX	2.39	0.76	1.73	0.69	2.68	0.67	3.38	0.61
NLD	2.43	0.64	2.36	0.89	2.13	0.80	3.35	0.52
NOR	2.52	0.65	2.07	0.77	2.50	0.86	3.28	0.54
NZL	2.49	0.65	1.82	0.81	2.50	0.79	3.27	0.46
POL	2.54	0.65	2.20	0.77	2.59	0.70	3.36	0.54

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Table A3: Means and standard deviations by country for persistence, long-term goals, passion and motivation indexes. (continue).

Country	Perseverance		L.-T. Goals		Passion		Motivation	
	mean	s.d.	mean	s.d.	mean	s.d.	mean	s.d.
PRT	2.55	0.67	1.97	0.85	2.72	0.70	3.54	0.46
SVK	2.31	0.71	2.11	0.76	2.28	0.75	3.07	0.67
SVN	2.44	0.67	2.14	0.75	2.22	0.79	3.21	0.58
SWE	2.43	0.71	1.87	0.79	2.37	0.90	3.29	0.61
TUR	2.42	0.82	1.94	0.74	2.58	0.84	3.32	0.73
USA	2.60	0.60	1.97	0.75	2.69	0.75	3.42	0.46

Source: OECD, PISA 2018 Database (<https://www.oecd.org/pisa/data/2018database/>)

Table A4: Grit means and standard deviations by country.

Country	mean grit	grit s. d.	Country	mean grit	grit s. d.	Country	mean grit	grit s. d.
AUS	2.62	0.37	FRA	2.72	0.37	MEX	2.66	0.38
AUT	2.80	0.40	GBR	2.62	0.33	NLD	2.65	0.37
BEL	2.66	0.40	GRC	2.58	0.36	NOR	2.66	0.37
CAN	2.64	0.33	HUN	2.63	0.39	NZL	2.62	0.34
CHE	2.81	0.41	IRL	2.72	0.30	POL	2.69	0.34
CHL	2.67	0.38	ISL	2.67	0.39	PRT	2.74	0.32
CZE	2.62	0.39	ISR	2.65	0.38	SVK	2.55	0.42
DEU	2.57	0.43	ITA	2.63	0.35	SVN	2.58	0.37
DNK	2.72	0.39	JPN	2.79	0.31	SWE	2.63	0.42
ESP	2.70	0.35	KOR	2.69	0.30	TUR	2.62	0.43
EST	2.70	0.32	LUX	2.77	0.39	USA	2.72	0.33
FIN	2.69	0.33	LVA	2.69	0.38			

Source: OECD, PISA 2018 Database (<https://www.oecd.org/pisa/data/2018database/>).

Table A5: Scores and circumstances variables missing values shares.

Country	Score	ESCS	HISCED	MISCED	FISCED	HISEI	MISEI	FISEI
AUS	0.00%	3.72%	4.80%	6.07%	8.94%	10.01%	19.50%	18.88%
AUT	0.00%	0.97%	2.30%	3.37%	5.52%	6.01%	15.73%	14.77%
BEL	0.00%	2.06%	3.88%	5.19%	8.04%	8.09%	17.92%	16.79%
CAN	0.00%	3.16%	3.39%	3.82%	5.51%	11.44%	21.43%	22.77%
CHE	0.00%	1.13%	1.89%	2.63%	4.30%	6.55%	22.51%	15.31%
CHL	0.00%	1.47%	2.58%	4.45%	7.20%	8.90%	30.07%	20.90%
CZE	0.00%	1.54%	2.41%	3.10%	5.69%	7.12%	15.56%	18.70%
DEU	0.00%	13.44%	16.59%	19.51%	22.05%	18.07%	25.77%	25.88%
DNK	0.00%	2.46%	2.99%	3.90%	5.36%	14.66%	32.22%	30.05%
ESP	0.00%	0.86%	1.54%	2.12%	3.36%	6.18%	25.86%	13.55%
EST	0.00%	1.58%	1.81%	1.97%	4.67%	4.96%	10.65%	14.73%
FIN	0.00%	1.19%	1.56%	1.97%	3.25%	4.28%	9.44%	13.84%
FRA	0.00%	2.73%	3.95%	4.93%	7.92%	9.46%	19.78%	19.79%
GBR	0.00%	4.53%	8.33%	10.13%	14.48%	13.36%	28.06%	27.92%
GRC	0.00%	0.72%	0.72%	0.89%	1.21%	8.08%	29.28%	14.57%
HUN	0.00%	1.56%	1.87%	2.17%	3.55%	8.48%	16.56%	18.79%

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Table A5: Scores and circumstances variables missing values shares (continue).

Country	Score	ESCS	HISCED	MISCED	FISCED	HISEI	MISEI	FISEI
IRL	0.00%	1.29%	1.85%	2.37%	4.35%	5.97%	17.80%	15.10%
ISL	0.00%	2.61%	3.32%	4.21%	5.78%	5.73%	13.35%	13.53%
ISR	0.00%	1.47%	2.17%	2.70%	5.94%	10.90%	28.18%	21.58%
ITA	0.00%	2.18%	2.44%	2.88%	3.89%	6.39%	27.80%	11.75%
JPN	0.00%	1.35%	3.29%	4.63%	7.87%	9.60%	19.68%	23.60%
KOR	0.00%	0.59%	0.97%	1.18%	1.58%	3.73%	28.42%	7.02%
LUX	0.00%	2.19%	4.76%	6.93%	8.93%	9.95%	19.83%	18.93%
LVA	0.00%	1.07%	1.29%	1.56%	4.97%	8.63%	18.57%	24.71%
MEX	0.00%	0.81%	1.00%	1.36%	2.97%	5.43%	41.28%	11.48%
NLD	0.00%	1.13%	1.65%	1.99%	3.44%	5.59%	13.80%	11.92%
NOR	0.00%	3.12%	4.31%	4.78%	6.80%	6.69%	12.48%	14.17%
NZL	0.00%	4.12%	8.56%	11.22%	13.32%	9.03%	21.04%	17.08%
POL	0.00%	0.71%	1.52%	2.17%	2.95%	5.52%	18.04%	13.58%
PRT	0.00%	1.37%	1.94%	2.57%	4.03%	5.46%	18.58%	13.19%
SVK	0.00%	1.46%	1.43%	1.64%	2.80%	12.06%	22.14%	25.46%
SVN	0.00%	0.98%	1.09%	1.25%	2.50%	5.79%	15.64%	14.80%
SWE	0.00%	2.66%	4.34%	5.31%	7.18%	8.54%	15.23%	18.56%
TUR	0.00%	0.61%	0.66%	1.19%	1.10%	12.65%	80.07%	14.47%
USA	0.00%	1.30%	1.73%	2.05%	4.39%	7.93%	19.14%	20.05%
OECD	0.00%	2.12%	3.11%	3.95%	5.88%	8.32%	22.61%	17.66%

Source: OECD, PISA 2018 Database (<https://www.oecd.org/pisa/data/2018database/>)

Table A6: Effort variables missing values shares.

Country	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
AUS	5.62%	13.32%	13.54%	13.79%	13.76%	13.72%	15.53%	15.84%	15.95%	16.10%	5.78%	5.88%
AUT	2.37%	7.72%	7.95%	8.22%	8.48%	8.81%	9.82%	10.29%	10.52%	10.73%	2.27%	2.51%
BEL	5.83%	10.97%	11.07%	11.50%	11.47%	11.40%	14.02%	14.42%	14.68%	14.72%	6.00%	6.13%
CAN	4.52%	6.04%	6.24%	6.45%	6.31%	6.46%	6.87%	7.12%	7.28%	7.36%	4.64%	4.76%
CHE	2.34%	11.88%	12.30%	12.44%	12.65%	12.70%	15.15%	15.51%	15.96%	16.23%	2.42%	2.82%
CHL	2.45%	9.43%	9.77%	9.98%	10.01%	10.08%	10.80%	11.14%	11.06%	11.39%	2.58%	2.78%
CZE	3.63%	3.89%	4.31%	4.58%	4.41%	4.45%	6.14%	6.51%	6.59%	6.61%	3.76%	3.86%
DEU	14.74%	37.55%	37.96%	38.01%	38.18%	38.08%	43.87%	44.37%	44.65%	44.83%	14.54%	14.93%
DNK	8.31%	7.69%	7.95%	8.13%	8.09%	8.29%	13.46%	13.55%	13.84%	13.69%	8.24%	8.46%
ESP	1.44%	4.19%	4.45%	4.82%	4.60%	4.62%	5.40%	5.95%	6.03%	6.29%	1.45%	1.59%
EST	2.17%	2.81%	3.11%	3.20%	3.01%	3.13%	3.01%	3.24%	3.29%	3.35%	2.31%	2.42%
FIN	2.60%	4.74%	5.02%	5.20%	5.24%	5.12%	6.36%	6.60%	6.82%	6.82%	2.53%	2.69%
FRA	4.55%	9.35%	9.68%	9.89%	9.92%	9.77%	10.56%	10.97%	11.26%	11.25%	4.45%	4.86%
GBR	4.84%	7.57%	7.97%	8.28%	8.21%	8.36%	8.77%	9.19%	9.54%	9.59%	4.80%	5.02%
GRC	2.04%	4.37%	4.56%	5.19%	4.92%	4.99%	5.21%	5.33%	5.71%	5.73%	2.22%	2.55%
HUN	2.72%	10.13%	10.34%	10.71%	10.59%	10.57%	11.59%	11.82%	12.23%	12.65%	2.85%	3.04%
IRL	1.50%	3.15%	3.34%	3.48%	3.45%	3.57%	3.87%	4.16%	4.28%	4.18%	1.65%	1.92%
ISL	4.06%	7.09%	7.56%	7.48%	7.39%	7.62%	8.34%	8.63%	8.84%	9.05%	4.09%	4.45%
ISR	3.52%	5.80%	6.05%	6.12%	6.15%	6.38%	6.47%	6.56%	6.64%	6.94%	3.52%	3.67%
ITA	3.49%	5.15%	5.37%	5.83%	5.58%	5.85%	5.98%	6.41%	6.41%	6.62%	3.58%	3.67%
JPN	0.92%	2.41%	2.41%	2.60%	2.45%	2.59%	2.05%	2.27%	2.35%	2.27%	0.42%	0.65%
KOR	0.81%	0.82%	0.93%	1.02%	0.82%	0.82%	0.97%	1.02%	1.09%	1.11%	0.82%	0.72%

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Table A6: Effort variables missing values shares (continue).

Country	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
LUX	3.17%	9.10%	9.45%	9.55%	9.36%	9.66%	12.40%	12.55%	12.78%	13.02%	3.11%	3.62%
LVA	1.68%	3.08%	3.45%	3.84%	3.47%	3.47%	3.59%	3.92%	4.13%	4.19%	1.60%	1.77%
MEX	1.57%	8.40%	8.88%	8.80%	8.81%	9.09%	9.95%	10.10%	10.35%	10.64%	1.57%	2.17%
NLD	4.23%	4.25%	4.66%	4.75%	4.62%	4.62%	6.74%	6.95%	7.13%	7.09%	4.12%	4.29%
NOR	4.64%	7.22%	7.42%	7.55%	7.61%	7.55%	8.19%	8.45%	8.56%	8.60%	4.69%	4.86%
NZL	4.25%	9.14%	9.23%	9.49%	9.40%	9.69%	10.53%	10.93%	11.04%	10.97%	4.23%	4.69%
POL	0.98%	1.85%	2.12%	2.17%	2.10%	2.17%	1.81%	1.99%	1.97%	2.08%	0.98%	1.23%
PRT	1.98%	3.78%	3.93%	4.07%	3.95%	4.22%	5.15%	5.47%	5.64%	5.91%	2.06%	2.25%
SVK	5.15%	7.23%	8.52%	8.65%	8.27%	8.41%	9.34%	9.92%	9.83%	10.14%	5.39%	5.56%
SVN	4.36%	3.54%	3.98%	4.03%	4.06%	3.93%	7.04%	7.24%	7.38%	7.52%	4.34%	4.59%
SWE	4.38%	10.63%	10.81%	10.83%	10.72%	10.99%	12.50%	12.72%	12.88%	12.62%	4.71%	4.69%
TUR	1.78%	4.38%	4.68%	5.06%	4.97%	5.11%	4.94%	5.22%	5.56%	5.78%	1.98%	2.19%
USA	2.85%	3.59%	3.89%	3.99%	3.97%	4.24%	4.97%	5.22%	5.46%	5.55%	2.75%	3.13%
OECD	3.59%	7.21%	7.51%	7.71%	7.63%	7.73%	8.90%	9.19%	9.36%	9.48%	3.61%	3.84%

Source: OECD, PISA 2018 Database (<https://www.oecd.org/pisa/data/2018database/>)

Note: each column correspond to a question on efforts presented in section A.2.

Table A7: Correlation matrix (whole sample).

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	1.00	-0.14	0.05	0.04	0.05	-0.02	0.02	-0.10	-0.10	-0.12	-0.14	-0.02	0.03
2	-0.14	1.00	0.13	0.14	0.12	-0.06	0.08	0.71	0.67	0.80	0.83	0.65	-0.25
3	0.05	0.13	1.00	0.63	0.42	0.34	0.59	0.06	0.07	0.07	0.12	0.14	-0.03
4	0.04	0.14	0.63	1.00	0.08	-0.03	0.32	0.07	0.08	0.08	0.12	0.15	-0.04
5	0.05	0.12	0.42	0.08	1.00	-0.42	0.09	0.07	0.08	0.08	0.10	0.08	0.04
6	-0.02	-0.06	0.34	-0.03	-0.42	1.00	-0.02	-0.04	-0.05	-0.05	-0.05	-0.01	-0.04
7	0.02	0.08	0.59	0.32	0.09	-0.02	1.00	0.03	0.03	0.03	0.07	0.09	-0.01
8	-0.10	0.71	0.06	0.07	0.07	-0.04	0.03	1.00	0.57	0.83	0.49	0.49	-0.25
9	-0.10	0.67	0.07	0.08	0.08	-0.05	0.03	0.57	1.00	0.79	0.47	0.45	-0.24
10	-0.12	0.80	0.07	0.08	0.08	-0.05	0.03	0.83	0.79	1.00	0.53	0.50	-0.24
11	-0.14	0.83	0.12	0.12	0.10	-0.05	0.07	0.49	0.47	0.53	1.00	0.47	-0.18
12	-0.02	0.65	0.14	0.15	0.08	-0.01	0.09	0.49	0.45	0.50	0.47	1.00	-0.39
13	0.03	-0.25	-0.03	-0.04	0.04	-0.04	-0.01	-0.25	-0.24	-0.24	-0.18	-0.39	1.00

Note: 1 = resilience dummy, 2 = ESCS, 3 = grit, 4 = perseverance, 5 = passion, 6 = lon-term goals, 7 = motivation, 8 = MISCED, 9 = FISCED, 10 = HISCED, 11 = HISEI, 12 = school mean ESCS, 13 = school ESCS s. d.

Source: OECD, PISA 2018 Database (<https://www.oecd.org/pisa/data/2018database/>)

Table A8: Correlation matrix (low-ESCS sample).

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	1.00	0.05	0.15	0.12	0.17	-0.07	0.07	0.03	0.03	0.02	0.02	0.10	0.00
2	0.05	1.00	0.08	0.10	-0.05	0.06	0.05	0.64	0.61	0.71	0.39	0.72	-0.40
3	0.15	0.08	1.00	0.65	0.43	0.35	0.61	-0.00	0.00	-0.00	0.04	0.11	0.02
4	0.12	0.10	0.65	1.00	0.06	-0.01	0.34	0.03	0.03	0.03	0.05	0.13	0.00
5	0.17	-0.05	0.43	0.06	1.00	-0.36	0.09	-0.04	-0.04	-0.04	-0.05	-0.03	0.08
6	-0.07	0.06	0.35	-0.01	-0.36	1.00	-0.02	0.03	0.02	0.02	0.05	0.06	-0.06
7	0.07	0.05	0.61	0.34	0.09	-0.02	1.00	-0.01	-0.01	-0.01	0.03	0.08	0.02
8	0.03	0.64	-0.00	0.03	-0.04	0.03	-0.01	1.00	0.63	0.85	0.06	0.42	-0.33
9	0.03	0.61	0.00	0.03	-0.04	0.02	-0.01	0.63	1.00	0.82	0.06	0.40	-0.32
10	0.02	0.71	-0.00	0.03	-0.04	0.02	-0.01	0.85	0.82	1.00	0.04	0.44	-0.35
11	0.02	0.39	0.04	0.05	-0.05	0.05	0.03	0.06	0.06	0.04	1.00	0.28	-0.15
12	0.10	0.72	0.11	0.13	-0.03	0.06	0.08	0.42	0.40	0.44	0.28	1.00	-0.14
13	0.00	-0.40	0.02	0.00	0.08	-0.06	0.02	-0.33	-0.32	-0.35	-0.15	-0.14	1.00

Note: 1 = resilience dummy, 2 = ESCS, 3 = grit, 4 = perseverance, 5 = passion, 6 = lon-term goals, 7 = motivation, 8 = MISCED, 9 = FISCED, 10 = HISCED, 11 = HISEI, 12 = school mean ESCS, 13 = school ESCS s. d.

Source: OECD, PISA 2018 Database (<https://www.oecd.org/pisa/data/2018database/>)

Table A9: Country fixed effect estimates of the impact of effort variables on the probability of being resilient student (math score).

	(1)	(2)	(3)
Constant	-4.418 *** (0.086)	-4.368 *** (0.086)	-4.622 *** (0.089)
Perseverance	0.294 *** (0.026)		
Passion	0.322 *** (0.023)		
L.-T. Goals	0.040 (0.022)		
Motivation	0.089 *** (0.023)		
Grit		0.353 *** (0.021)	0.355 *** (0.021)
Sex			0.464 *** (0.039)
N	193514	193514	193514
AIC	28838.77	29016.73	28872.55
BIC	29235.52	29382.96	29248.96
Pseudo R2	0.023	0.017	0.022

Notes: Standard errors in parenthesis (***) $p < 0.001$; ** $p < 0.01$; * $p < 0.05$). All continuous predictors are mean-centered and scaled by 1 standard deviation.

Source: OECD, PISA 2018 Database

(<https://www.oecd.org/pisa/data/2018database/>)

Table A10: Country fixed effect estimates of the impact of effort and circumstance variables on the probability of being resilient student (math score).

	(4)	(5)	(6)	(7)	(8)
Constant	-3.080 *** (0.093)	-3.053 *** (0.093)	-3.417 *** (0.096)	-3.060 *** (0.093)	-3.563 *** (0.097)
Grit	0.586 *** (0.023)	0.586 *** (0.023)	0.554 *** (0.024)	0.585 *** (0.023)	
Sex	0.583 *** (0.040)	0.586 *** (0.040)	0.619 *** (0.041)	0.585 *** (0.040)	0.597 *** (0.042)
MISCED	0.017 (0.028)		0.121 ** (0.045)		
FISCED	-0.010 (0.028)		0.068 (0.040)		
HISCED		-0.064 * (0.027)	-0.278 *** (0.060)		
HISEI		-0.045 * (0.021)	-0.115 *** (0.022)		
School ESCS			0.861 *** (0.035)		0.809 *** (0.035)
School ESCS s.d.				0.055 * (0.025)	
Perseverance					0.506 *** (0.031)
Passion					0.511 *** (0.025)
L.-T. Goals					-0.039 (0.023)
Motivation					0.141 *** (0.026)
N	38713	38713	38713	38713	38713
AIC	19186.43	19178.21	18534.40	19179.82	18025.80
BIC	19520.42	19512.21	18894.08	19505.25	18376.92
Pseudo R ²	0.067	0.067	0.107	0.067	0.138

Notes: Standard errors in parenthesis (***) $p < 0.001$; ** $p < 0.01$; * $p < 0.05$). All continuous predictors are mean-centered and scaled by 1 standard deviation.

Source: OECD, PISA 2018 Database (<https://www.oecd.org/pisa/data/2018database/>)

Table A11: Country fixed effect estimates of the impact of effort variables on the probability of being mobile student.

	(1)	(2)	(3)
Constant	-1.550 *** (0.026)	-1.534 *** (0.026)	-1.603 *** (0.026)
Perseverance	0.288 *** (0.008)		
Passion	0.253 *** (0.007)		
L.-T. Goals	0.082 *** (0.007)		
Motivation	0.138 *** (0.007)		
Grit		0.374 *** (0.007)	0.376 *** (0.007)
Sex			0.137 *** (0.012)
N	193514	193514	193514
AIC	181068.34	182063.93	181931.09
BIC	181465.09	182430.16	182307.49
Pseudo R ²	0.038	0.030	0.031

Notes: Standard errors in parenthesis (***) $p < 0.001$; ** $p < 0.01$; * $p < 0.05$). All continuous predictors are mean-centered and scaled by 1 standard deviation.

Source: OECD, PISA 2018 Database

(<https://www.oecd.org/pisa/data/2018database/>)

Table A12: Country fixed effect estimates of the impact of effort and circumstance variables on the probability of being mobile student.

	(4)	(5)	(6)	(7)	(8)
Constant	-0.759 *** (0.031)	-0.835 *** (0.031)	-1.145 *** (0.032)	-0.765 *** (0.031)	-1.147 *** (0.033)
Grit	0.679 *** (0.008)	0.673 *** (0.008)	0.652 *** (0.009)	0.678 *** (0.008)	
Sex	0.267 *** (0.014)	0.265 *** (0.014)	0.309 *** (0.014)	0.272 *** (0.014)	0.305 *** (0.015)
MISCED	0.105 *** (0.009)		0.070 *** (0.014)		
FISCED	0.070 *** (0.009)		0.047 *** (0.013)		
HISCED		0.110 *** (0.009)	-0.079 *** (0.019)		
HISEI		0.225 *** (0.007)	0.126 *** (0.008)		
School ESCS			0.838 *** (0.012)		0.874 *** (0.012)
School ESCS sd				-0.054 *** (0.009)	
Perseverance					0.514 *** (0.009)
Passion					0.535 *** (0.009)
L.-T. Goals					0.039 *** (0.008)
Motivation					0.208 *** (0.009)
N	96739	96739	96739	96739	96739
AIC	118940.77	118163.99	113027.79	119225.73	109586.36
BIC	119310.48	118533.70	113425.94	119585.97	109975.034626559
Pseudo R ²	0.118	0.128	0.192	0.114	0.232

Notes: Standard errors in parenthesis (**p < 0.001; *p < 0.01; * p < 0.05). All continuous predictors are mean-centered and scaled by 1 standard deviation.

Source: OECD, PISA 2018 Database (<https://www.oecd.org/pisa/data/2018database/>)