

Supplementary File

Comparing Pathways to Higher Education through Vocational and General Upper Secondary Schools

Table A1. Measurement of the independent variables

Variable	Measurement	Coding	Time of measurement
Upper secondary school track	Respondents' school biography	0 = GUSS 1 = VUSS	At the beginning of the upper secondary school track (waves 5 to 8)
Social origin			
Parents' ISCED	Parents' highest educational level based on the International Standard Classification of Education (ISCED 2011)	0 = ISCED 1-3 (ref.) 1 = ISCED 4-6	Grade 9, wave 1 (if missing, wave 5 or 7)
Parents' HISEI	Parents' highest International Socio-Economic Index of Occupational Status (ISEI-08; Ganzeboom, 2010)	Range: 16 to 90	Grade 9, wave 1 (if missing, wave 5 or 7)
Prior achievement at the end of lower secondary education			
Mathematical competence	Estimated WLE score		Grade 9 (wave 1)
Reading competence	Estimated WLE score		Grade 9 (wave 1)
GPA in grade 9	Average of students' (self-reported) grades in Maths and German on annual report card in grade 9	Range: 1 (insufficient) to 6 (very good)	Grade 9 (wave 1)

9 **Table A1 (continued)**

Variable	Measurement	Coding	Time of measurement
<i>Aspirations at the end of lower secondary education</i>			
<i>Occupational aspirations (ISEI)</i>	Realistic occupational aspiration measured by the International Socio-Economic Index of Occupational Status (ISEI-08; Ganzeboom 2010).	Range: 1 (insufficient) to 6 (very good)	Grade 9 (wave 1)
<i>School achievement in upper secondary education</i>			
GPA in grade 11	Average of students' (self-reported) grades in Maths and German on annual report card in grade 11	Range: 1 (insufficient) to 6 (very good)	Grade 11 (wave 5)
<i>Educational considerations at the end of upper secondary education</i>			
Perceived benefits of VET	Sum scale of four items ($\alpha = 0.71$). Item 1 'How favourably would you judge your prospects of getting a well-paid job if you obtained a vocational training qualification?' Item 2 'How good would be your prospects of getting a socially prestigious job if you obtained a vocational training qualification?' Item 3 'How favourable would you judge your prospects of getting an interesting job if you obtained a vocational training qualification?' Item 4 'What would be the risk of becoming unemployed if you obtained a vocational training qualification?' (recoded)	Range: 1 (very low) to 5 (very high)	Wave 7 (if missing wave 8 or 9)
Perceived direct costs of VET	'During a vocational training or higher education program, certain things have to be paid for, e.g. travel costs, books, or even fees. How difficult would it be for you and your family to cover these costs if you took up vocational training?'	Range: 1 (very difficult) to 5 (very easy)	Wave 7 (if missing wave 8 or 9)
Perceived opportunity costs of VET	'Similarly, during vocational training or higher education you will only have limited opportunities to earn money in order to cover your living costs. How great would be your loss of income if you took up vocational training?'	Range: 1 (very high) to 5 (very low)	Wave 7 (if missing wave 8 or 9)

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11 **Table A1 (continued)**

Variable	Measurement	Coding	Time of measurement
Expected probability to complete VET	'How likely is it in your opinion that you could successfully complete vocational training?'	Range: 1 (very unlikely) to 5 (very likely)	Wave 7 (if missing wave 8 or 9)
Expected probability of status maintenance through VET	'How would be your prospects of getting a job as good as or better than your mother and father's job if you would complete a vocational training qualification?'	Range: 1 (very bad) to 5 (very good)	Wave 7 (if missing wave 8 or 9)
Perceived benefits of higher education	Sum scale of four items ($\alpha = 0.70$). Item 1 'How favourably would you judge your prospects of getting a well-paid job if you completed a higher education program? Item 2 'How good would be your prospects of getting a socially prestigious job if you completed a higher education program? Item 3 'How favourable would you judge your prospects of getting an interesting job if you completed a higher education program? Item 4 'What would be the risk of becoming unemployed if you completed a higher education program?' (recoded)	Range: 1 (very low) to 5 (very high)	Wave 7 (if missing wave 8 or 9)
Perceived direct costs of higher education	'During a vocational training or higher education program, certain things have to be paid for, e.g. travel costs, books, or even fees. How difficult would it be for you and your family to cover these costs if you took up a higher education program?'	Range: 1 (very difficult) to 5 (very easy)	Wave 7 (if missing wave 8 or 9)
Perceived opportunity costs of higher education	'Similarly, during vocational training or higher education you will only have limited opportunities to earn money in order to cover your living costs. How great would be your loss of income if you took up a higher education program?'	Range: 1 (very high) to 5 (very low)	Wave 7 (if missing wave 8 or 9)
Expected probability to complete higher education	'How likely is it in your opinion that you could successfully complete higher education?'	Range: 1 (very unlikely) to 5 (very likely)	Wave 7 (if missing wave 8 or 9)
Expected probability of status maintenance through higher education	'How would be your prospects of getting a job as good as or better than your mother and father's job if you completed a higher education program?'	Range: 1 (very bad) to 5 (very good)	Wave 7 (if missing wave 8 or 9)

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13 **Table A2.** Descriptive statistics on the entire sample by type of track

	Total (N = 5,032)						VUSS (N = 713)		GUSS (N = 4,319)	
	Percent	Mean	SD	Min.	Max.	N(valid)	Percent	Mean	Percent	Mean
DV1: Acquisition of a HEEQ in upper secondary school track										
No (ref.)	9.2%			0	1	464	25.1%		6.6%	
Yes	90.8%			0	1	4,568	74.9%		93.4%	
Social origin										
Parents' HISEI ¹		-0.0	1.0	-2.5	1.6	4942		-0.5		0.7
Parents' ISCED										
ISCED 1-3 (ref.)	21.4%			0	1	716	40.2%		18.3%	
ISCED 4-6	78.6%			0	1	2,775	59.8%		81.7%	
School achievement at the end of lower secondary education										
Reading competence (z-standardized)		0.6	1.1	-4.7	3.3	4,742		-0.1		0.8
Mathematical competence (z-standardized)		0.7	1.2	-3.3	4.6	4,854		-0.2		0.9
GPA in grade 9 (z-standardized)		0.0	1.0	-3.8	2.3	4,749		-0.4		0.1
Aspirations at the end of lower secondary education										
ISEI of realistic occupational aspiration (z-standardized)		-0.0	1.0	-2.9	1.3	2,990		-0.6		0.1
School achievement in upper secondary education										
GPA in grade 11 (z-standardized)		-0.0	1.0	-4.5	2.2	4,142		-0.3		0.0
Educational considerations in upper secondary education: VET										
Perceived benefits of VET		3.4	0.6	1	5	3,844		3.6		3.4
Perceived direct costs of VET		2.2	0.8	1	5	3,853		2.3		2.2
Perceived opportunity costs of VET		2.5	0.8	1	5	3,749		2.5		2.4
Expected probability to complete VET		4.5	0.6	1	5	3,804		4.3		4.5
Expected probability of status maintenance through VET		3.2	1.0	1	5	3,840		3.6		3.1

14 **Table A2** (continued)

	Total (N = 5,032)						VUSS (N = 713)		GUSS (N = 4,319)	
	Percent	Mean	SD	Min.	Max.	N(valid)	Percent	Mean	Percent	Mean
Educational considerations in upper secondary education: higher education										
Perceived benefits of higher education		4.0	0.5	1	5	3,867		4.0		4.1
Perceived direct costs of higher education		3.1	0.9	1	5	3,778		3.1		3.1
Perceived opportunity costs of higher education		2.8	1.0	1	5	3,888		2.8		2.7
Expected probability to complete higher education		3.9	0.8	1	5	3,878		3.5		3.9
Expected probability of status maintenance through higher education		4.2	0.6	1	5	3,849		4.2		4.2

15 Notes: GPA = grade point average; HISEI = highest socio-economic index of occupational status; HEEQ = higher education entrance qualification; N(valid) refers to the total number of respondents
 16 with valid information. NEPS SC4 SUF 14.0.0, [column percentages or means with standard deviations of imputed data \(m = 20\)](#), the imputation model is based on a joint imputation of sample
 17 [1 \(students of VUSS and GUSS\)](#) and sample 2 (graduates from VUSS and GUSS), own calculations.

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19 **Table A3.** Descriptive statistics on graduates of upper secondary education by type of track.

	Total (N = 3,607)						VUSS (N = 414)		GUSS (N = 3,193)	
	Percent	Mean	SD	Min.	Max.	N(valid)	Percent	Mean	Percent	Mean
DV2: Transition after upper secondary school track										
VET (ref.)	28.6%			0	1	1,033	62.8%		24.2%	
Higher education	71.4%			0	1	2,574	37.2%		75.8%	
Social origin										
Parents' HISEI ¹		0.0	1.0	-2.4	1.6	3,559		-0.4		0.1
Parents' ISCED										
ISCED 1-3 (ref.)	18.4%			0	1	438	35.2%		16.2%	
ISCED 4-6	81.6%			0	1	2,057	64.8%		83.8%	
School achievement at the end of lower secondary education										
Reading competence (z-standardized)		0.7	1.1	-4.7	3.3	3,410		0.0		0.8
Mathematical competence (z-standardized)		0.8	1.2	-3.3	4.6	3,499		-0.1		0.9
GPA in grade 9 (z-standardized)		0.1	1.0	-3.8	2.3	3,432		-0.4		0.1
Aspirations at the end of lower secondary education										
ISEI of realistic occupational aspiration (z-standardized)		0.1	1.0	-2.9	1.3	2,161		-0.6		0.1
School achievement in upper secondary education										
GPA in grade 11 (z-standardized)		0.1	1.0	-4.5	2.2	3,087		-0.3		0.1
Educational considerations in upper secondary education: VET										
Perceived benefits of VET		3.4	0.6	1	5	2,989		3.6		3.4
Perceived direct costs of VET		2.2	0.9	1	5	2,992		2.2		2.2
Perceived opportunity costs of VET		2.4	0.8	1	5	2,905		2.5		2.4
Expected probability to complete VET		4.5	0.6	1	5	2,959		4.4		4.6
Expected probability of status maintenance through VET		3.2	1.0	1	5	2,981		3.7		3.1

20 **Table A3** (continued)

	Total (N = 3,607)						VUSS (N = 414)		GUSS (N = 3,193)	
	Percent	Mean	SD	Min.	Max.	N(valid)	Percent	Mean	Percent	Mean
Educational considerations in upper secondary education: higher education										
Perceived benefits of higher education		4.1	0.5	1	5	3,005		4.0		4.1
Perceived direct costs of higher education		3.1	1.0	1	5	2,926		3.1		3.1
Perceived opportunity costs of higher education		2.7	1.0	1	5	3,017		2.8		2.7
Expected probability to complete higher education		3.9	0.8	1	5	3,016		3.6		4.0
Expected probability of status maintenance through higher education		4.3	0.7	1	5	2,992		4.2		4.2

21 Notes: GPA = grade point average; HISEI = highest socio-economic index of occupational status; HEEQ = higher education entrance qualification; N(valid) refers to the total number of respondents
 22 with valid information. NEPS SC4 SUF 14.0.0, [column percentages or means with standard deviations of imputed data \(m = 20\)](#), the imputation model is based on a joint imputation of sample
 23 [1 \(students of VUSS and GUSS\)](#) and [sample 2 \(graduates from VUSS and GUSS\)](#), own calculations.

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25 **Table A4.** Pairwise correlation matrix (Pearson correlation) for the entire sample of VUSS and GUSS students.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.
1. Achieving a HEEQ (ref.: VET)																		
2. Attending VUSS (ref.: GUSS)	-.22																	
3. Parents' HISEI	.18	-.19																
4. Parents' ISCED	.23	-.18	.42															
5. GPA in grade 9	.18	-.16	.12	.13														
6. Reading competence in grade 9	.21	-.26	.20	.19	.28													
7. Mathematical competence in grade 9	.22	-.30	.23	.22	.39	.42												
8. Occupational aspirations in grade 9	.23	-.26	.19	.16	.23	.22	.24											
9. GPA in grade 11	.19	-.11	.12	.13	.63	.26	.35	.16										
10. Perceived benefits of VET	-.08	.10	-.06	.01	-.03	-.07	-.08	-.11	-.05									
11. Perceived direct costs of VET	-.13	.03	-.18	-.18	-.07	-.07	-.14	-.06	-.09	-.08								
12. Perceived opportunity costs of VET	-.08	.05	-.04	-.07	-.04	-.09	-.13	-.03	-.05	-.05	.29							
13. Expected probability to complete VET	.15	-.10	.10	.10	.14	.12	.14	.07	.18	.10	-.23	-.11						
14. Expected probability of status maintenance through VET	-.16	.19	-.47	-.30	-.16	-.20	-.24	-.21	-.14	.30	.16	.04	-.07					
15. Perceived benefits of higher education	.04	-.05	.05	.05	.06	.02	.05	.07	.08	.30	-.19	-.10	.26	.01				
16. Perceived direct costs of higher education	-.02	.01	-.09	-.07	-.00	-.03	-.04	-.04	-.01	-.07	.16	.31	-.03	.08	-.06			
17. Perceived opportunity costs of higher education	-.06	.03	-.25	-.19	-.06	-.01	-.09	-.08	-.07	-.08	.61	.10	-.14	.21	-.17	.34		
18. Expected probability to complete higher education	.29	-.19	.25	.19	.30	.27	.30	.31	-.33	-.01	-.21	-.08	.42	-.22	.23	-.12	-.22	
19. Expected probability of status maintenance through higher education	.01	-.01	-.20	-.13	.03	.04	-.02	.02	.05	-.01	-.00	-.08	.17	.39	.26	.05	.10	.11

26 Notes. $N = 5,032$. Average estimates pooled over 20 imputed data sets; the imputation model is based on a joint imputation of sample 1 (students of VUSS and GUSS) and sample 2 (graduates
 27 from VUSS and GUSS). Level of significance (two-sided tests): bold coefficients indicate significant correlations ($p < 0.05$). Data: NEPS SC4 SUF 14.0.0, own calculations

28 **Table A5.** Pairwise correlation matrix (Pearson correlation) for graduates from VUSS and GUSS.¹

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.
1. Entering higher education (ref.: VET)																		
2. Attending VUSS (ref.: GUSS)	-.27																	
3. Parents' HISEI	.19	-.17																
4. Parents' ISCED	.09	-.16	.37															
5. GPA in grade 9	.23	-.18	.10	.10														
6. Reading competence in grade 9	.21	-.23	.17	.15	.27													
7. Mathematical competence in grade 9	.27	-.27	.19	.19	.37	.39												
8. Occupational aspirations in grade 9	.28	-.24	.16	.11	.23	.20	.22											
9. GPA in grade 11	.22	-.11	.09	.09	.63	.23	.32	.13										
10. Perceived benefits of VET	-.23	.09	-.06	.02	-.03	-.07	-.08	-.10	-.05									
11. Perceived direct costs of VET	-.04	.01	-.16	-.14	-.06	-.03	-.11	-.03	-.07	-.08								
12. Perceived opportunity costs of VET	-.02	.04	-.02	-.05	-.03	-.07	-.11	-.02	-.04	-.04	.27							
13. Expected probability to complete VET	.04	-.08	.08	.07	.11	.09	.12	.05	.15	.09	-.20	-.09						
14. Expected probability of status maintenance through VET	-.26	.17	-.46	-.27	-.15	-.18	-.22	-.20	-.11	.31	.15	.03	-.04					
15. Perceived benefits of higher education	.01	-.05	.04	.03	.05	.01	.05	.08	.08	.30	-.18	-.08	.25	.03				
16. Perceived direct costs of higher education	-.05	.01	-.08	-.06	.00	-.02	-.04	-.04	-.00	-.07	.16	.31	-.03	.08	-.06			
17. Perceived opportunity costs of higher education	-.07	.03	-.25	-.16	-.06	.00	-.10	-.08	-.06	-.08	.60	.09	-.13	.21	-.16	.34		
18. Expected probability to complete higher education	.32	-.18	.22	.13	.28	.23	.27	.29	.29	-.01	-.17	-.07	.37	-.20	.23	-.11	-.22	
19. Expected probability of status maintenance through higher education	-.01	-.02	-.21	-.13	.03	.04	-.02	.01	.05	.01	.01	-.07	.16	.40	.26	.06	.11	.10

29 Notes. ¹ includes only graduates from VUSS or GUSS who entered higher education or VET after graduation from upper secondary education ($N = 3,607$). Average estimates pooled over 20
30 imputed data sets; the imputation model is based on a joint imputation of sample 1 (students of VUSS and GUSS) and sample 2 (graduates from VUSS and GUSS). Level of significance (two-
31 sided tests): bold coefficients indicate significant correlations ($p < 0.05$). Data: NEPS SC4 SUF 14.0.0, own calculations