



## **Supplementary Material**

**Article Title:** Predicting Initial Specialist Mental Health Care Use in Adolescence Using Self-, Parent-, and Teacher-Reported Problem Behavior: A Prospective Community-Based Record-Linkage Study

**Author(s):** Dennis Raven, MSc; Frederike Jörg, PhD; Ellen Visser, PhD; Robert A. Schoevers, MD, PhD; and Albertine J. Oldehinkel, PhD

**DOI Number:** <https://doi.org/10.4088/JCP.17m11484>

### **List of Supplementary Material for the article**

1. [Table 1](#) Descriptive statistics of study variables for three groups of participants...
2. [Table 2](#) Number and percentage of cases with missing values by variable in the raw data.
3. [Table 3](#) Cox regression analyses predicting the effects of standardized self-, parent-, and teacher-reported internalizing and externalizing problems on initial specialist mental health care use...
4. [Table 4](#) Cox regression analyses including children with parent-reported secondary care before 2000...
5. [Table 5](#) Cox regression analyses predicting the effects of standardized self-, parent-, and teacher-reported attention problems, internalizing and externalizing problems on initial specialist mental health care use...

### **Disclaimer**

This Supplementary Material has been provided by the author(s) as an enhancement to the published article. It has been approved by peer review; however, it has undergone neither editing nor formatting by in-house editorial staff. The material is presented in the manner supplied by the author.

**Supplementary Table 1.** Descriptive statistics of study variables for three groups of participants: those without case register data, those who did not meet the inclusion criteria, and those who were included in the study.

	No register data (1) <sup>a</sup>	Excluded participants (2) <sup>b</sup>	Included participants (3) <sup>c</sup>	Group differences ( $p < .05$ ) <sup>d</sup>
	Mean (SD) or %	Mean (SD) or %	Mean (SD) or %	
<b>Sociodemographic covariates</b>				
Male	51.9	64.1	46.5	1,2,3
Separated parents	32.5	54.7	29.0	1,3
Parental internalizing problems (Z score)	0.55 (0.83)	0.79 (0.86)	0.53 (0.77)	1,3
Parental externalizing problems (Z score)	0.20 (0.51)	0.34 (0.61)	0.10 (0.35)	1,2,3
Parental SEP (Z score)	-0.28 (0.80)	-0.25 (0.76)	0.06 (0.78)	2,3
<b>Variables used for imputation (assessed at age 11)</b>				
Ethnic minority	16.7	7.6	8.6	1,2
Attending special education	8.1	20.0	2.9	1,2,3
Intelligence	93.16 (14.80)	95.72 (16.18)	98.95 (14.61)	2,3
Antisocial behavior	0.36 (0.41)	0.40 (0.41)	0.29 (0.31)	2,3
Family functioning	1.80 (0.37)	1.87 (0.35)	1.75 (0.35)	1,2,3
Social behavior	14.00 (12.21)	25.41 (15.87)	10.75 (9.15)	1,2,3
Affiliation	3.85 (0.59)	3.76 (0.63)	3.90 (0.54)	3
Fear	2.47 (0.77)	2.56 (0.73)	2.39 (0.71)	2,3
Surgency	3.27 (0.98)	3.21 (1.02)	3.34 (0.89)	
Shyness	2.54 (0.90)	2.44 (0.96)	2.51 (0.87)	
Effortful control	3.16 (0.66)	2.80 (0.73)	3.30 (0.67)	1,2,3
Academic performance	3.37 (0.93)	3.28 (0.95)	3.76 (0.84)	2,3
<b>Specialist care</b>				
Parent-reported specialist care before 2000	12.5	100.0	—	1

Moved out of the region between T1 and 2012	8.2	8.2	8.3	
Years between 2000 and specialist care	–	3.03 (3.14)	6.52 (3.21)	3
<b>Self-reported problems (YSR/ASR)</b>				
Internalizing age 11	0.36 (0.26)	0.39 (0.26)	0.36 (0.23)	
Internalizing age 13	0.32 (0.25)	0.37 (0.25)	0.33 (0.24)	1,3
Internalizing age 16	0.29 (0.24)	0.40 (0.29)	0.31 (0.24)	1,3
Internalizing age 19	0.24 (0.25)	0.34 (0.29)	0.24 (0.24)	1,3
Externalizing age 11	0.27 (0.20)	0.31 (0.21)	0.27 (0.19)	1,3
Externalizing age 13	0.29 (0.22)	0.31 (0.19)	0.28 (0.19)	3
Externalizing age 16	0.32 (0.20)	0.38 (0.23)	0.31 (0.21)	1,3
Externalizing age 19	0.22 (0.21)	0.32 (0.24)	0.22 (0.20)	1,3
<b>Parent-reported problems (CBCL)</b>				
Internalizing age 11	0.24 (0.19)	0.35 (0.24)	0.23 (0.19)	1,3
Internalizing age 13	0.21 (0.18)	0.30 (0.22)	0.18 (0.18)	1,2,3
Internalizing age 16	0.20 (0.19)	0.30 (0.23)	0.18 (0.18)	1,3
Externalizing age 11	0.26 (0.21)	0.40 (0.27)	0.22 (0.18)	1,2,3
Externalizing age 13	0.20 (0.20)	0.30 (0.26)	0.15 (0.16)	1,2,3
Externalizing age 16	0.22 (0.23)	0.30 (0.27)	0.15 (0.17)	1,2,3
<b>Teacher-reported problems (TCP)</b>				
Internalizing age 11	0.40 (0.41)	0.49 (0.42)	0.28 (0.34)	1,2,3
Internalizing age 13	0.45 (0.43)	0.56 (0.49)	0.38 (0.39)	1,2,3
Internalizing age 16	0.49 (0.43)	0.55 (0.39)	0.40 (0.40)	3
Externalizing age 11	0.29 (0.44)	0.40 (0.49)	0.17 (0.33)	1,2,3
Externalizing age 13	0.28 (0.47)	0.36 (0.52)	0.21 (0.40)	2,3
Externalizing age 16	0.42 (0.57)	0.37 (0.50)	0.18 (0.35)	2,3

<sup>a</sup>Respondents could not be included due to missing consent ( $n=239$ ), refusal to give consent ( $n=293$ ), no unique match ( $n=2$ ) or missing records ( $n=48$ ).

<sup>b</sup>Respondents were excluded if parents reported secondary care before 2000 ( $n=170$ ).

<sup>c</sup> $n=1478$ .

<sup>d</sup>1: groups 1 and 2 differ; 2: groups 1 and 3 differ; 3 groups 2 and 3 differ.

<sup>e</sup>Age 11 represents T1 represents age 11 (mean age 11.1; SD=0.6; age range 10-12 years).

<sup>f</sup>Age 13 represents T2 (mean age 13.6; SD=0.5; age range 12-15 years).

<sup>g</sup>Age 16 represents T3 (mean age 16.3; SD=0.7; age range 15-17 years).

<sup>h</sup>Age 19 represents T4 (mean age 19.1; SD=0.6; age range 18-20 years).

Abbreviations: ASR=Adult Self-Report; CBCL=Child Behavior Checklist; SD=standard deviation; SEP=socio-economic position; TCP=Teacher Checklist of Psychopathology; YSR=Youth Self-Report.

**Supplementary Table 2.** Number and percentage of cases with missing values by variable in the raw data.

	Cases with missing values
	n (%)
<b>Sociodemographic covariates</b>	
Male	0 (0.0)
Separated parents	0 (0.0)
Parental internalizing problems (Z score)	71 (3.2)
Parental externalizing problems (Z score)	65 (2.9)
Lowest 25% parental SEP	42 (1.9)
Middle 50% parental SEP	42 (1.9)
Highest 25% parental SEP	42 (1.9)
<b>Self-reported problems (YSR/ASR)</b>	
T1 Internalizing	59 (2.6)
T2 Internalizing	155 (7.0)
T3 Internalizing	588 (26.4)
T4 Internalizing	539 (24.2)
T1 Externalizing	42 (1.9)
T2 Externalizing	138 (6.2)
T3 Externalizing	569 (25.5)
T4 Externalizing	538 (24.1)
<b>Parent-reported problems (CBCL)</b>	
T1 Internalizing	185 (8.3)
T2 Internalizing	328 (14.7)
T3 Internalizing	734 (32.9)
T1 Externalizing	175 (7.8)
T2 Externalizing	305 (13.7)
T3 Externalizing	723 (32.4)

**Teacher-reported problems (TCP)**

T1 Internalizing	306 (13.7)
T2 Internalizing	704 (31.6)
T3 Internalizing	1308 (58.7)
T1 Externalizing	305 (13.7)
T2 Externalizing	693 (31.1)
T3 Externalizing	1301 (58.3)

---

Abbreviations: ASR=Adult Self-Report; CBCL=Child Behavior Checklist; SEP=socio-economic position; TCP=Teacher Checklist of Psychopathology; YSR=Youth Self-Report.

**Supplementary Table 3.** Cox regression analyses predicting the effects of standardized self-, parent-, and teacher-reported internalizing and externalizing problems on initial specialist mental health care use from late childhood (mean age 9.4 years, SD=0.6)<sup>a</sup> through early adulthood (mean age 21.4 years, SD=0.6)<sup>b</sup>, for self-, parent-, and teacher-reported problems separately (left three columns), and for internalizing and externalizing problems separately (right two columns).

	Self-reported problems	Parent-reported problems	Teacher-reported problems	Internalizing problems	Externalizing problems
	HR (95%) <i>P</i>	HR (95%) <i>P</i>	HR (95%) <i>P</i>	HR (95%) <i>P</i>	HR (95%) <i>P</i>
<b>Sociodemographic covariates</b>					
Male	2.88 (1.60-5.19) <.001	2.91 (1.63-5.20) <.001	3.06 (1.71-5.47) <.001	3.09 (1.73-5.52) <.001	2.78 (1.55-4.97) <.001
Male × time <sup>c</sup>	0.84 (0.77-0.92) <.001	0.82 (0.75-0.89) <.001	0.81 (0.74-0.89) <.001	0.84 (0.77-0.92) <.001	0.81 (0.75-0.89) <.001
Separated parents <sup>c</sup>	1.56 (1.20-2.02) <.001	1.50 (1.15-1.95) .003	1.65 (1.27-2.14) <.001	1.51 (1.16-1.96) .002	1.46 (1.12-1.91) .005
Parental internalizing problems (Z score)	1.26 (1.13-1.40) <.001	1.17 (1.05-1.31) .005	1.23 (1.11-1.38) <.001	1.17 (1.05-1.31) .005	1.23 (1.10-1.37) <.001
Parental externalizing problems (Z score)	1.03 (0.94-1.14) .482	1.03 (0.93-1.13) .581	1.03 (0.93-1.13) .610	1.05 (0.95-1.16) .330	1.00 (0.91-1.10) .959
Low parental SEP	1.81 (1.25-2.63) .002	1.65 (1.13-2.40) .010	1.54 (1.05-2.25) .028	1.62 (1.11-2.36) .013	1.62 (1.11-2.38) .012
Middle parental SEP	1.48 (1.07-2.05) .019	1.43 (1.03-1.98) .032	1.41 (1.02-1.96) .039	1.45 (1.05-2.01) .025	1.43 (1.03-1.98) .033
Age 18-21 <sup>c</sup>	0.51 (0.26-0.99) .045	0.47 (0.24-0.92) .028	0.44 (0.23-0.86) .017	0.46 (0.23-0.91) .025	0.48 (0.25-0.94) .031
<b>Self-reported problems (YSR/ASR)</b>					
Internalizing age 11 → Specialist care age 11-13 <sup>d</sup>	0.97 (0.71-1.31) .828			1.09 (0.82-1.44) .563	
Internalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.35 (1.10-1.67) .004			1.13 (0.90-1.41) .308	
Internalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.68 (1.37-2.07) <.001			1.54 (1.24-1.91) <.001	

Internalizing age 19 → Specialist care age 19-21 <sup>g</sup>	1.48 (1.09-2.02) .013	1.82 (1.46-2.28) <.001
Externalizing age 11 → Specialist care age 11-13 <sup>d</sup>	1.29 (0.97-1.71) .075	1.13 (0.87-1.47) .353
Externalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.38 (1.12-1.71) .003	1.26 (1.01-1.59) .044
Externalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.22 (0.97-1.53) .089	1.21 (0.96-1.52) .107
Externalizing age 19 → Specialist care age 19-21 <sup>g</sup>	1.38 (0.99-1.93) .058	1.83 (1.44-2.33) <.001

#### Parent-reported problems (CBCL)

Internalizing age 11 → Specialist care age 11-13 <sup>d</sup>	0.82 (0.60-1.13) .228	0.89 (0.67-1.18) .428
Internalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.62 (1.33-1.97) <.001	1.54 (1.26-1.87) <.001
Internalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.39 (1.06-1.83) .019	1.38 (1.10-1.73) .006
Externalizing age 11 → Specialist care age 11-13 <sup>d</sup>	1.48 (1.14-1.92) .004	1.18 (0.92-1.51) .203
Externalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.21 (0.98-1.49) .071	1.37 (1.14-1.64) <.001
Externalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.35 (1.04-1.75) .026	1.52 (1.21-1.92) <.001

#### Teacher-reported problems (TCP)

Internalizing age 11 → Specialist care age 11-13 <sup>d</sup>	1.46 (1.15-1.85) .002	1.59 (1.26-2.01) <.001
Internalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.65 (1.37-1.99) <.001	1.37 (1.10-1.70) .005
Internalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.45 (1.17-1.79) <.001	1.26 (0.99-1.60) .063
Externalizing age 11 → Specialist care age 11-13 <sup>d</sup>	1.23 (1.00-1.51) .053	1.26 (1.02-1.56) .033
Externalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.24 (1.04-1.49) .016	1.11 (0.90-1.35) .334
Externalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.23 (0.99-1.52) .064	1.03 (0.81-1.30) .805

<sup>a</sup>Specialist care prior to age 11 not predicted by problem behavior.

<sup>b</sup>Specialist care after age 19 not predicted by parent- and teacher reported problem behavior.



<sup>c</sup>Time-dependent predictors.

<sup>d</sup>Age 11 represents T1 (mean age 11.1; SD=0.6; age range 10-12 years).

<sup>e</sup>Age 13 represents T2 (mean age 13.6; SD=0.5; age range 12-15 years).

<sup>f</sup>Age 16 represents T3 (mean age 16.3; SD=0.7; age range 15-17 years).

<sup>g</sup>Age 19 represents T4 (mean age 19.1; SD=0.6; age range 18-20 years).

Abbreviations: ASR=Adult Self-Report; CBCL=Child Behavior Checklist; CI=confidence interval; HR=Hazard Ratio; SD=standard deviation; SEP=socio-economic position; TCP=Teacher Checklist of Psychopathology; YSR=Youth Self-Report.

**Supplementary Table 4.** Cox regression analyses including children with parent-reported secondary care before 2000, predicting the effects of standardized self-, parent-, and teacher-reported internalizing and externalizing problems on initial specialist mental health care use from late childhood (mean age 9.4 years, SD=0.6)<sup>a</sup> through early adulthood (mean age 21.4 years, SD=0.6)<sup>b</sup>, unadjusted (left column) and adjusted for both sociodemographic covariates and (other) internalizing and externalizing problems at the same time point (right column).

	Unadjusted effects	Effects adjusted for sociodemographic covariates and (other) internalizing and externalizing problems at the same time point
	HR (95% CI)	HR (95% CI)
<b>Sociodemographic covariates</b>		
Male	3.63 (2.39-5.50) <.001	2.64 (1.46-4.76) .001
Male × time <sup>c</sup>	0.80 (0.75-0.85) <.001	0.85 (0.78-0.93) <.001
Separated parents <sup>c</sup>	2.12 (1.73-2.60) <.001	1.44 (1.10-1.88) .008
Parental internalizing problems (Z score)	1.32 (1.19-1.46) <.001	1.19 (1.06-1.33) .002
Parental externalizing problems (Z score)	1.18 (1.09-1.27) <.001	1.03 (0.93-1.14) .578
Low parental SEP	2.41 (1.77-3.29) <.001	1.48 (1.01-2.19) .045
Middle parental SEP	1.78 (1.35-2.37) <.001	1.40 (1.01-1.95) .043
Age 18-21 <sup>c</sup>	0.54 (0.29-0.99) .047	0.49 (0.25-0.96) .039
<b>Self-reported problem behavior (YSR/ASR; Z score)</b>		
Internalizing age 11 → Specialist care age 11-13 <sup>d</sup>	1.10 (0.87-1.38) .433	1.00 (0.71-1.40) .983
Internalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.52 (1.28-1.79) <.001	1.05 (0.81-1.36) .714
Internalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.82 (1.53-2.16) <.001	1.63 (1.26-2.11) <.001
Internalizing age 19 → Specialist care age 19-21 <sup>g</sup>	1.96 (1.59-2.43) <.001	1.52 (1.10-2.09) .011
Externalizing age 11 → Specialist care age 11-13 <sup>d</sup>	1.32 (1.08-1.63) .008	1.19 (0.86-1.64) .299
Externalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.63 (1.39-1.90) <.001	1.27 (0.98-1.65) .075

Externalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.51 (1.26-1.80) <.001	1.00 (0.75-1.33) .990
Externalizing age 19 → Specialist care age 19-21 <sup>g</sup>	1.75 (1.38-2.20) <.001	1.40 (0.99-1.99) .055
<b>Parent-reported problem behavior (CBCL; Z score)</b>		
Internalizing age 11 → Specialist care age 11-13 <sup>d</sup>	1.26 (1.02-1.56) .033	0.75 (0.53-1.08) .122
Internalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.82 (1.59-2.09) <.001	1.50 (1.13-1.97) .004
Internalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.89 (1.59-2.26) <.001	1.06 (0.73-1.52) .773
Externalizing age 11 → Specialist care age 11-13 <sup>d</sup>	1.79 (1.51-2.13) <.001	1.35 (0.96-1.90) .089
Externalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.75 (1.52-2.02) <.001	1.06 (0.79-1.44) .689
Externalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.82 (1.54-2.16) <.001	1.46 (0.98-2.17) .064
<b>Teacher-reported problem behavior (TCP; Z score)</b>		
Internalizing age 11 → Specialist care age 11-13 <sup>d</sup>	1.62 (1.34-1.95) <.001	1.60 (1.23-2.08) <.001
Internalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.72 (1.46-2.02) <.001	1.37 (1.09-1.73) .008
Internalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.54 (1.26-1.89) <.001	1.27 (0.98-1.64) .074
Externalizing age 11 → Specialist care age 11-13 <sup>d</sup>	1.55 (1.32-1.81) <.001	1.10 (0.85-1.43) .459
Externalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.45 (1.24-1.68) <.001	1.14 (0.92-1.42) .228
Externalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.31 (1.07-1.61) .009	1.10 (0.82-1.48) .511

<sup>a</sup>Specialist care prior to age 11 not predicted by problem behavior.

<sup>b</sup>Specialist care after age 19 not predicted by parent- and teacher reported problem behavior.

<sup>c</sup>Time-dependent predictors.

<sup>d</sup>Age 11 represents T1 (mean age 11.1; SD=0.6; age range 10-12 years).

<sup>e</sup>Age 13 represents T2 (mean age 13.6; SD=0.5; age range 12-15 years).

<sup>f</sup>Age 16 represents T3 (mean age 16.3; SD=0.7; age range 15-17 years).

<sup>g</sup>Age 19 represents T4 (mean age 19.1; SD=0.6; age range 18-20 years).

Abbreviations: ASR=Adult Self-Report; CBCL=Child Behavior Checklist; CI=confidence interval; HR=Hazard Ratio; SD=standard deviation; SEP=socio-economic position; TCP=Teacher Checklist of Psychopathology; YSR=Youth Self-Report.

**Supplementary Table 5.** Cox regression analyses predicting the effects of standardized self-, parent-, and teacher-reported attention problems, internalizing and externalizing problems on initial specialist mental health care use from late childhood (mean age 9.4 years, SD=0.6)<sup>a</sup> through early adulthood (mean age 21.4 years, SD=0.6)<sup>b</sup>, with attention problems only adjusted for sociodemographic covariates (left column) and problem scores adjusted for sociodemographic covariates, attention problems, and (other) internalizing and externalizing problems at the same time point (right column).

	Attention problems adjusted for sociodemographic covariates	Attention problems adjusted for internalizing and externalizing problems, and sociodemographic covariates
	HR (95% CI) P	HR (95% CI) P
<b>Sociodemographic covariates</b>		
Male	2.64 (1.48-4.71) .001	2.55 (1.41-4.62) .002
Male × time <sup>c</sup>	0.81 (0.74-0.89) <.001	0.85 (0.77-0.92) <.001
Separated parents <sup>c</sup>	1.48 (1.14-1.92) .003	1.41 (1.08-1.85) .011
Parental internalizing problems (Z score)	1.21 (1.09-1.35) <.001	1.19 (1.06-1.33) .003
Parental externalizing problems (Z score)	1.01 (0.92-1.12) .789	1.03 (0.93-1.14) .584
Low parental SEP	1.68 (1.15-2.44) .007	1.47 (1.00-2.16) .049
Middle parental SEP	1.40 (1.01-1.94) .043	1.37 (0.99-1.91) .059
Age 18-21 <sup>c</sup>	0.46 (0.24-0.91) .024	0.49 (0.25-0.96) .038
<b>Self- (YSR/ASR), parent- (CBCL), and teacher-reported (TCP) attention problems</b>		
YSR attention age 11 -> Specialist care age 11-13 <sup>d</sup>	1.17 (0.89-1.54) .266	1.14 (0.80-1.64) .472
YSR attention age 13 -> Specialist care age 13-16 <sup>e</sup>	1.17 (0.92-1.49) .192	0.93 (0.67-1.29) .655
YSR attention age 16 -> Specialist care age 16-19 <sup>f</sup>	1.56 (1.22-1.99) <.001	1.28 (0.91-1.81) .153

ASR attention age 19 -> Specialist care age 19-21 <sup>g</sup>	1.76 (1.31-2.36) <.001	0.97 (0.61-1.55) .913
CBCL attention age 11 -> Specialist care age 11-13 <sup>d</sup>	1.32 (0.99-1.75) .057	1.30 (0.92-1.84) .137
CBCL attention age 13 -> Specialist care age 13-16 <sup>e</sup>	1.46 (1.18-1.81) <.001	1.07 (0.78-1.45) .681
CBCL attention age 16 -> Specialist care age 16-19 <sup>f</sup>	1.47 (1.16-1.85) .001	1.22 (0.86-1.74) .259
TCP attention age 11 -> Specialist care age 11-13 <sup>d</sup>	1.25 (0.94-1.65) .123	1.02 (0.72-1.45) .903
TCP attention age 13 -> Specialist care age 13-16 <sup>e</sup>	1.28 (1.01-1.62) .045	1.10 (0.82-1.47) .519
TCP attention age 16 -> Specialist care age 16-19 <sup>f</sup>	1.11 (0.85-1.45) .452	1.00 (0.71-1.40) .996

#### Self-reported problems (YSR/ASR)

Internalizing age 11 → Specialist care age 11-13 <sup>d</sup>	0.95 (0.65-1.37) .769
Internalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.07 (0.79-1.46) .649
Internalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.48 (1.12-1.97) .007
Internalizing age 19 → Specialist care age 19-21 <sup>g</sup>	1.49 (1.06-2.10) .021
Externalizing age 11 → Specialist care age 11-13 <sup>d</sup>	1.13 (0.81-1.58) .463
Externalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.28 (0.96-1.71) .093
Externalizing age 16 → Specialist care age 16-19 <sup>f</sup>	0.91 (0.66-1.24) .543
Externalizing age 19 → Specialist care age 19-21 <sup>g</sup>	1.43 (0.97-2.11) .074

#### Parent-reported problem behavior (CBCL; Z score)

Internalizing age 11 → Specialist care age 11-13 <sup>d</sup>	0.73 (0.52-1.03) .076
Internalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.48 (1.12-1.96) .006
Internalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.05 (0.75-1.46) .781
Externalizing age 11 → Specialist care age 11-13 <sup>d</sup>	1.22 (0.87-1.72) .255
Externalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.03 (0.77-1.39) .847
Externalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.23 (0.84-1.79) .283

#### Teacher-reported problem behavior (TCP; Z score)

Internalizing age 11 → Specialist care age 11-13 <sup>d</sup>	1.55 (1.19-2.02) .001
Internalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.30 (1.00-1.68) .048
Internalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.25 (0.97-1.61) .079
Externalizing age 11 → Specialist care age 11-13 <sup>d</sup>	1.03 (0.78-1.36) .842
Externalizing age 13 → Specialist care age 13-16 <sup>e</sup>	1.13 (0.89-1.43) .322
Externalizing age 16 → Specialist care age 16-19 <sup>f</sup>	1.10 (0.81-1.48) .537

<sup>a</sup>Specialist care prior to age 11 not predicted by problem behavior.

<sup>b</sup>Specialist care after age 19 not predicted by parent- and teacher reported problem behavior.

<sup>c</sup>Time-dependent predictors.

<sup>d</sup>Age 11 represents T1 (mean age 11.1; SD=0.6; age range 10-12 years).

<sup>e</sup>Age 13 represents T2 (mean age 13.6; SD=0.5; age range 12-15 years).

<sup>f</sup>Age 16 represents T3 (mean age 16.3; SD=0.7; age range 15-17 years).

<sup>g</sup>Age 19 represents T4 (mean age 19.1; SD=0.6; age range 18-20 years).

Abbreviations: ASR=Adult Self-Report; CBCL=Child Behavior Checklist; CI=confidence interval; HR=Hazard Ratio; SD=standard deviation; SEP=socio-economic position; TCP=Teacher Checklist of Psychopathology; YSR=Youth Self-Report.