Supplement to

Perceived Need and Barriers to Care in Adolescents: Agreement Between Adolescents and Their Parents

Running head: Adolescent-parent agreement on perceived need and barriers

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Content

eTable 1 Classification of adolescent-parent agreement on overall perceived need (N=2,310).

		Adolescents			
		Fully met need	Partially met need	Unmet need	No need
Parents	Fully need	A	C	C	D
	Partially met need	D	B	C	D
	Unmet need	D	D	B	D
	No need	C	C	C	E

Note N/n: unweighted number of respondents with 'N' representing total population and 'n' representing sub-population.

The categories of the dependent variables are (see also table below A, B, C, D):

- A: Adolescents and parents agree on fully met need (reference group, n=131),
- B: Adolescents and parents agree on either partially met or unmet need (n=93),
- C: Adolescents perceived a greater level of need than their parents (n=488),
- D: Parents perceived a greater level of need than their child (n=407),
- E: Adolescents and parents agree on having no need (n=1,191).

eMaterial 1 Additional measures, how they were used in this study.

What was measured	**Measure (questionnaire or questions)**	**How we used the measure** (categories of measures are indicated in *italic*)	**Regression used as:**
Adolescents' probable disorder	Sum score of four subscales of the 'Strengths and Difficulties Questionnaire' (SDQ) (Goodman 1997, 2001) for total difficulties: emotional symptoms, hyperactivity, conduct problems, and peer problems. Total difficulties score ranges from 0-40 with higher scores indicating more problems and with 80% of adolescents in the community having normal levels of difficulties and 10% either borderline or abnormal levels. Abnormal levels are referred to as an indication for having a probable disorder (Goodman 2001). For total difficulties in this study of adolescents aged 13-17: Cronbach's $\alpha_{(\text{parent report})}$=0.72; Cronbach's $\alpha_{(\text{adolescent report})}$=0.70.	We defined the *presence* of a probable disorder as either adolescents or parents reporting total difficulties on an abnormal level, while we defined the *absence* of probable disorder as both adolescents and parents reporting total difficulties on a normal or borderline level. This allowed us to consider both adolescents' and parents' perceptions about adolescent mental health problems because their agreement on symptoms is typically modest (Rescorla *et al.* 2013).	Independent variable
Adolescents' probable internalising disorder or probable externalising disorder	SDQ subscales can be summarised into internalising (emotional and peer subscale) and externalising (conduct and hyperactivity subscales) problems (Goodman *et al.* 2010). Each of the subscale ranges from 0-10 with higher scores indicating more problems and with 80% of adolescents in the community having normal levels of problems in respective subscale and 10% either borderline or abnormal levels. Abnormal levels are used as an indication for having a probable emotional, conduct or hyperactivity disorder (Goodman 2001). For probable internalising disorder in this study: Cronbach's $\alpha_{(\text{parent report})}$=0.62; Cronbach's $\alpha_{(\text{adolescent report})}$=0.60. For probable externalising disorder in this study Cronbach's $\alpha_{(\text{parent report})}$=0.70; Cronbach's $\alpha_{(\text{adolescent report})}$=0.68.	First, separately for adolescents and parents, probable internalising disorders were defined as reporting abnormal levels on the subscales emotional and/or peer problems; probable externalising disorders as reporting abnormal levels on conduct and/or hyperactivity problems. Second, we defined the *presence* of a probable internalising disorder as either adolescents *or* parents reporting it on an abnormal level, while we defined the *absence* of probable internalising disorder as both adolescents and parents reporting internalising disorders on a normal or borderline level. We proceeded accordingly for the presence and absence of externalising disorders. This was done before by (Downs *et al.* 2013).	Independent variable

eMaterial 1 *continued*

What was measured	**Measure (questionnaire or questions)**	**How we used the measure** (categories of measures are indicated in *italic*)	**Regression used as:**
Parents' knowledge about adolescents' feelings	Question: 'How much do your parents know about how you are feeling?' Answered on a 4-point likert scale from 'a lot' to 'not at all'.	We collapsed four categories into two ('*a lot/some*' and '*a little/not at all*').	Independent variable
General family functioning	Reliable and valid six items version (Boterhoven De Haan *et al.* 1985) of the McMaster Family Functioning scale (Epstein *et al.* 1983). Items are rated on a 4-point likert scale, answers are summed up and divided by the number of items to receive a score between 1-6 (Miller *et al.* 1985). In this study including parents with adolescents aged 13-17, Cronbach's α=0.87.	Used as proposed by Miller and colleagues (1985): score of >2 indicate *healthy* and ≤2 *unhealthy family* functioning.	Control variable
Parental psychopathology	(1) Parents levels of psychological distress in the past four weeks was assessed with the 10-item Kessler Psychological Distress Scale (Kessler *et al.* 2003). In this study including parents with adolescents aged 13-17, Cronbach's α=0.90. (2) Question for lifetime disorder: 'Have you ever been told by a doctor or mental health professional that you have any of these problems?': • Panic attacks • Post-traumatic stress disorder (PTSD) • Obsessive-compulsive disorder (OCD) • Any other anxiety problems • Depression • Attention Deficit Disorder (ADD) / Attention Deficit Hyperactivity Disorder (ADHD) • Schizophrenia • Bipolar disorder or any other psychosis • Alcohol or drug dependence • Other mental health problem	Based on an earlier YMM study (Johnson *et al.* 2018), parental psychopathology was considered to be *present* if parents reported a lifetime diagnosis of a mental disorder and/or (very) high levels of psychological distress in the past four weeks according to the 10-item Kessler Psychological Distress Scale. Otherwise, parental psychopathology was considered to be *absent*.	Control variable

eMaterial 1 *continued*

What was measured	**Measure (questionnaire or questions)**	**How we used the measure** (categories of measures are indicated in *italic*)	**Regression used as:**
Family type	The Young Minds Matter (YMM) survey assessed family type according to the Australian Bureau of Statistic's (ABS) definition of family blending as living with: (1) two biological parents (nuclear family), (2) other two parent family, (3) sole parent family), (4) other.	We collapsed these four categories into two: (1) *family with two biological parents* or (2) other *family type*.	Control variable
Remoteness	YMM assessed remoteness according to the Australian Statistical Geography Standard-Remoteness Area (ASGS-RA) provided by the ABS. It is a geographical classification which defines place of residence/location in terms of remoteness. Remoteness is categorised as: (1) Major cities of Australia, (2) inner regional Australia, (3) outer regional Australia, (4) remote Australia.	We collapsed remoteness into the two categories '*major cities*' (1) and '*regional and remote areas*' (2-4).	Control variable
Socio-economic advantage and disadvantage (IRSAD)	YMM assessed socio-economic advantage and disadvantage according to the Socio-Economic Index for Areas (SEIFA index) of the ABS. The SEIFA index defines socio-economic advantage and disadvantage according to the place of residence rather than to the individuals' actual status of socio-economic advantage and disadvantage. The SEIFA index contains the 'index of relative socio-economic advantage and disadvantage' (IRSAD) which was used in this study. IRSAD can be divided into quintiles with lowest quintile (most disadvantaged) to second quintile, to third quintile, to fourth quintile and to highest quintile (most advantaged).	We collapsed IRSAD quintiles into *advantaged* (highest and fourth quintile) and *disadvantaged* (lowest, second and third quintile).	Control variable
Parental education	Parent/primary carer was asked: 'What is the level of the highest post-school qualification that you have completed?': • Postgraduate degree, graduate diploma or graduate certificate • Bachelor degree, advanced diploma or diploma • Certificate III/IV, certificate I/II • Certificate not further defined • No non-school qualification • Level not determined	Highest level of parental education was collapsed in two categories '*bachelor degree or higher*' and *'diploma or certificate III/IV or lower*'.	Control variable
Adolescents' sex	Female or male	*Female* or *male*	Control variable

eTable 2 Sample characteristics of adolescents aged 13-17.

	Total sample (N=2,310)	Sub-sample[a] (n=1,119)
	%(SE)	*%(SE)*
Sex[b]		
Female	48.7(1.16)	46.2(1.68)
Male	51.3(1.16)	53.8(1.68)
Index of relative socio-economic disadvantage (IRSAD)[b]		
Advantaged	45.4(2.58)	43.7(2.78)
Disadvantaged	54.6(2.58)	56.3(2.78)
Remoteness[b]		
Major cities of Australia	64.0(2.51)	65.3(2.72)
Regional or remote areas in Australia	36.0(2.51)	34.7(2.72)
Family type[b]		
Family with two biological parents	59.9(1.27)	52.6(1.76)
Other family type	40.1(1.27)	47.4(1.76)
Parental education[b]		
Bachelor degree or higher	38.0(1.41)	39.1(1.77)
Diploma or certificate III/IV or lower	62.0(1.41)	60.9(1.77)
Parental psychopathology[b]		
Lifetime diagnosis or *current high/very high psychological distress*	41.6(1.17)	49.3(1.78)
None	58.4(1.17)	50.7(1.78)
Family functioning[b]		
Healthy level of functioning	95.9(0.45)	93.6(0.83)
Unhealthy level of functioning	4.1(0.45)	6.4(0.83)
Adolescents' probable disorder[b]		
Present	16.7(0.93)	29.4(1.61)
Absent	83.3(0.93)	70.6(1.61)
Adolescents' probable externalising disorder[b]		
Present	27.0(1.10)	39.4(1.73)
Absent	73.0(1.10)	60.6(1.73)
Adolescents' probable internalising disorder[b]		
Present	31.4(1.11)	46.9(1.68)
Absent	68.6(1.11)	53.1(1.68
Parental knowledge about adolescents' feelings[b]		
A Lot/some	68.7(1.11)	58.7(1.67)
Little/not at all	31.3(1.11)	41.4(1.67)

[a] *either* adolescent *or* parent identified a perceived need for any type of care; [b] for details on measures and their use see eMaterial 1.

Note N/n: unweighted number of participants; SE: standard error; %: weighted percent.

eTable 3 Distribution and comparison of past 12 months overall perceived need and types of help needed among sub-sample of adolescents (aged 13-17) with a probable disorder and their parents.

Level of perceived need, by type of help	*Total sample with a probable disorder (n=390)*		*Sub-samples*, either *adolescent* or *parent identified a perceived need*	
	Adolescents, *%(SE)*	Parents, *%(SE)*	Adolescents, *%(SE)*	Parents, *%(SE)*
Any type of help			n=325 (82.2%(SE=2.11))[a]	
No need	39.9(2.85)	31.6(2.52)	27.0(2.98)	16.8(2.21)
Fully met need	20.9(2.15)	24.6(2.36)	25.4(2.55)	29.9(2.78)
Partially met need	27.4(2.44)	28.6(2.46)	33.3(2.87)	34.8(2.89)
Unmet need	11.8(1.82)	15.2(2.05)	14.3(2.17)	18.5(2.42)
	$F_{(8.69,4761.31)}$=7.01; V=0.25		$F_{(8.67,4752.12)}$=8.23; V=0.30	
Counselling			n=290 (73.6%(SE=2.44))[a]	
No need	53.7(2.83)	37.3(2.68)	37.2(3.24)	14.8(2.23)
Fully met need	21.9(2.62)	25.7(2.49)	29.7(2.91)	34.9(3.17)
Partially met need	14.9(1.96)	18.9(2.18)	20.2(2.61)	25.7(2.81)
Unmet need	9.5(1.57)	18.1(2.16)	12.9(2.07)	24.6(2.83)
	$F_{(8.51,4664.31)}$=9.68; V=0.28		$F_{(8.50,4657.53)}$=10.45; V=0.34	
Medication			n=158 (37.3%(SE=2.69))[a]	
No need	69.8(2.48)	76.0(2.36)	19.0(3.29)	35.6(4.20)
Fully met need	11.3(1.60)	12.9(1.88)	30.4(3.72)	34.7(4.30)
Partially met need	6.6(1.29)	5.1(1.2)	17.6(3.18)	13.7(3.15)
Unmet need	12.3(1.80)	5.9(1.23)	33.1(4.28)	16.0(3.01)
	$F_{(8.46,4634.30)}$=20.28; V=0.44		$F_{(8.37,4586.47)}$=11.99; V=0.55	
Information			n=248 (62.1%(SE=2.63))[a]	
No need	60.4(2.83)	55.4(2.82)	36.3(3.57)	28.2(3.11)
Fully met need	19.1(2.15)	19.1(2.29)	30.8(3.26)	30.8(3.38)
Partially met need	10.0(1.59)	10.8(1.73)	16.1(2.41)	17.4(2.68)
Unmet need	10.5(2.83)	14.6(1.97)	16.8(2.70)	23.6(2.98)
	$F_{(8.30,4549.50)}$=5.35; V=0.21		$F_{(8.26,4527.60)}$=9.32; V=0.35	
Skill training			n=209 (52.9%(SE=2.77))[a]	
No need	70.8(2.33)	65.4(2.53)	44.8(3.50)	34.6(3.35)
Fully met need	10.0(1.64)	7.3(1.40)	19.0(2.95)	13.8(2.56)
Partially met need	7.1(1.29)	5.1(1.31)	13.4(2.43)	9.6(2.42)
Unmet need	12.1(1.68)	22.2(2.22)	22.8(2.89)	42.0(3.55)
	$F_{(8.28,4538.78)}$=3.31; V=0.16		$F_{(8.33,4567.03)}$=13.37; V=0.43	

[a] of total sample with a probable disorder.

Note N/n: unweighted number of respondents; SE: standard error; %: weighted percent; V: Cramer's V of 0.1, 0.3, and 0.5 represent small, medium, and large strength of association.

eTable 4 Details of agreement on overall perceived need and each type of help needed between adolescents (aged 13-17) and their parents

			Parents			
			Overall perceived need, *n (%)*			
			Fully met need	Partially met need	Unmet need	No need
Adolescents	Overall perceived Need, *n (%)*	Fully need	131 (5.7)	65 (2.8)	25 (1.1)	196 (8.5)
		Partially met need	59 (2.5)	70 (3.0)	17 (0.7)	83 (3.6)
		Unmet need	25 (1.1)	13 (0.6)	23 (1.0)	112 (4.8)
		No need	125 (5.4)	62 (2.7)	113 (4.9)	**1,191 (51.6)**
			Need for counselling, *n (%)*			
			Fully met need	Partially met need	Unmet need	No need
	Need for counselling, *n (%)*	Fully need	113 (4.9)	46 (2.0)	17 (3.5)	81 (3.5)
		Partially met need	44 (1.9)	27 (1.2)	9 (0.4)	32 (1.4)
		Unmet need	16 (0.7)	11 (0.5)	22 (1.0)	104 (4.5)
		No need	112 (4.9)	56 (2.4)	131 (5.7)	**1,489 (64.5)**
			Need for medication, *n (%)*			
			Fully met need	Partially met need	Unmet need	No need
	Need for medication, *n (%)*	Fully need	47 (2.0)	9 (0.4)	0 (0.0)	18 (0.8)
		Partially met need	17 (0.7)	10 (0.4)	0 (0.0)	6 (0.3)
		Unmet need	4 (0.2)	1 (0.1)	5 (0.2)	83 (3.6)
		No need	18 (0.8)	5 (0.2)	24 (1.0)	**2,063 (89.3)**
			Need for information, *n (%)*			
			Fully met need	Partially met need	Unmet need	No need
	Need for information, *n (%)*	Fully need	50 (2.2)	14 (0.6)	17 (0.7)	208 (9.0)
		Partially met need	20 (0.9)	11 (0.5)	6 (0.2)	50 (2.1)
		Unmet need	5 (0.2)	7 (0.4)	9 (0.4)	81 (3.5)
		No need	101 (4.4)	36 (1.5)	74 (3.2)	**1,621 (70.2)**
			Need for skill training, *n (%)*			
			Fully met need	Partially met need	Unmet need	No need
	Need for skill training, *n (%)*	Fully need	19 (0.8)	2 (0.1)	18 (0.8)	109 (4.7)
		Partially met need	2 (0.1)	5 (0.2)	18 (0.8)	31 (1.3)
		Unmet need	9 (0.4)	4 (0.2)	19 (0.8)	126 (5.5)
		No need	67 (2.9)	22 (0.9)	132 (5.7)	**1,729 (74.8)**

Note n: unweighted number of respondents; %: unweighted percent; cells shaded in blue mark those adolescents and parents that agree, cell frequencies in **bold** mark the ones with the largest agreement for overall perceived need and for each of the types of help.

eTable 5. Adolescent-parent agreement on perceived need among sub-sample of adolescents with a probable disorder.

	Agreement on perceived need (all levels) (n=390) *%, Cohen's kappa(SE)*	Agreement on perceived need (excluding 'no need') (n=325) *%, Cohen's kappa(SE)*
Any type of help	41.8, 0.20(0.03)	30.2, 0.05(0.03)
Counselling	44.9, 0.22(0.03)	25.9, 0.01(0.03)
Medication	71.3, 0.39(0.03)	29.1, 0.05(0.04)
Information	48.7, 0.16(0.03)	19.4, -0.10(0.04)
Skill training	51.5, 0.05(0.03)	9.6, -0.27(0.04)

Note unweighted %; kappa of <0.00, 0.00-0.20, 0.21-0.40, 0.41-0.60, 0.61-0.80, and 0.81-1.00 are considered to represent poor, slight, fair, moderate, substantial, and almost perfect agreement (Landis & Koch 1977).

eTable 6 All results of multinomial logistic regressions of variables associated with patterns of agreement on perceived need (n=1,119).

	Agreed that needs were fully met		Agreed that needs were partially met or unmet		Adolescent reported greater level of need than their parent		Parent reported greater level of need than the adolescent	
	Unadjusted	Fully adjusted [a]	Unadjusted	Fully adjusted [a]	Unadjusted	Fully adjusted [a]	Unadjusted	Fully adjusted [a]
	RRR	RRR	RRR (95%-CI)	RRR (95%-CI)	RRR (95%-CI)	RRR (95%-CI)	RRR (95%-CI)	RRR (95%-CI)
Adolescents' probable disorder								
Present	1.00	1.00	3.77(2.02-7.04)	2.86(1.46-5.61)	0.61(0.38-0.96)	0.50(0.30-0.82)	1.01(0.64-1.60)	0.77(0.47-1.24)
Parental knowledge about adolescents' feelings								
Little/not at all	1.00	1.00	5.36(2.85-10.09)	4.69(2.38-9.28)	3.12(1.98-4.90)	3.45(2.16-5.51)	1.83(1.16-2.90)	1.91(1.19-3.04)
Sex								
Female	1.00	1.00	1.93(1.04-3.58)	1.87(1.00-3.48)	1.28(0.84-1.95)	1.23(0.80-1.89)	0.61(0.40-0.95)	0.60(0.38-0.93)
Index of relative socio-economic advantage and disadvantage (IRSAD)								
Disadvantaged	1.00	1.00	0.57(0.32-1.03)	0.48(0.25-0.94)	0.71(0.47-1.07)	0.72(0.46-1.13)	0.96(0.62-1.49)	0.78(0.49-1.25)
Remoteness								
Regional or remote area	1.00	1.00	0.91(0.50-1.66)	0.96(0.50-1.85)	0.91(0.57-1.44)	0.95(0.58-1.54)	1.35(0.85-2.13)	1.23(0.76-1.99)
Family type								
Living with two biological parents	1.00	1.00	1.63(0.94-2.83)	2.13(1.16-3.90)	1.92(1.25-2.95)	1.81(1.15-2.82)	1.18(0.76-1.85)	1.39(0.86-2.14)
Parental education								
Diploma or certificate III/IV or lower	1.00	1.00	1.31(0.73-2.37)	1.33(0.70-2.55)	1.06(0.70-1.60)	1.36(0.88-2.11)	1.97(1.27-3.04)	2.13(1.35-3.38)
Parental psychopathology								
Current symptoms or lifetime disorder	1.00	1.00	1.26(0.72-2.22)	1.39(0.78-2.48)	0.61 0.40-0.93)	0.75(0.49-1.14)	1.15(0.75-1.77)	1.17(0.78-1.82)
Family functioning								
Unhealthy level of functioning	1.00	1.00	5.19(1.28-21.03)	3.81(0.94-15.40)	2.13(0.56-8.11)	2.63(0.70-9.93)	3.26(0.90-11.78)	2.94(0.80-10.81)

[a] All variables are added simultaneously to the model.

Reference categories of independent/control variables are: male sex, advantaged IRSAD, major cities (remoteness), living in another family constellation (family type), bachelor degree or higher (parental education), normal family functioning, adolescent probable disorder absent, parent has 'a lot/some' knowledge of adolescent feelings.

Note RRR: relative risk ratio; CI: confidence interval; $F_{(27,522)}$=6.76.

eTable 7 Multinomial logistic regressions of variables associated with patterns of agreement on perceived need among those with a probable disorder (n=325).

	Agreed that needs were fully met		Agreed that needs were partially met or unmet		Adolescent reported greater level of need than their parent		Parent reported greater level of need than the adolescent	
	Unadjusted	Fully adjusted [a]	Unadjusted	Fully adjusted [a]	Unadjusted	Fully adjusted [a]	Unadjusted	Fully adjusted [a]
	RRR	RRR	RRR (95%-CI)	RRR (95%-CI)	RRR (95%-CI)	RRR (95%-CI)	RRR (95%-CI)	RRR (95%-CI)
Parental knowledge about adolescents' feelings								
Little/not at all	1.00	1.00	3.76 (1.86-7.63)	2.90 (1.19-7.12)	3.75 (2.13-6.61)	3.88 (1.74-8.68)	1.93 (1.12-3.34)	2.39 (1.14-5.03)
Sex								
Female	1.00	1.00	1.89 (0.76-4.69)	0.63 (0.25-4.45)	1.60 (0.76-3.39)	1.50 (0.72-3.15)	0.53 (0.24-1.16)	0.53 (0.24-1.13)
Index of relative socio-economic advantage and disadvantage (IRSAD)								
Disadvantaged	1.00	1.00	0.71 (0.30-1.69)	0.65 (0.31-1.59)	0.88 (0.41-1.92)	0.76 (0.33-1.77)	1.98 (0.91-4.28)	1.47 (0.65-3.34)
Remoteness								
Regional or remote area	1.00	1.00	1.32 (0.55-3.16)	1.18 (0.46-3.06)	1.20 (0.52-2.76)	1.10 (0.45-2.67)	1.52 (0.71-3.23)	1.23 (0.54-2.77)
Family type								
Family with two biological parents	1.00	1.00	1.89 (0.80-4.45)	2.25 (0.89-5.70)	1.32 (0.60-2.90)	1.39 (0.55-3.51)	0.89 (0.41-1.91)	1.17 (0.50-2.71)
Parental education								
Diploma or certificate III/IV or lower	1.00	1.00	1.19 (0.45-3.18)	1.69 (0.58-4.99)	1.66 (0.73-3.76)	1.86 (0.75-4.56)	2.48 (1.06-5.84)	2.24 (0.88-5.75)
Parental psychopathology								
Current symptoms or lifetime disorder	1.00	1.00	1.31 (0.54-3.19)	1.69 (0.68-4.20)	0.59 (0.26-1.33)	0.68 (0.30-1.54)	1.49 (0.65-3.38)	1.51 (0.65-3.49)
Family functioning								
Unhealthy level of functioning	1.00	1.00	2.50 (0.44-14.25)	2.51 (0.43-14.58)	2.09 (0.30-11.05)	2.63 (0.47-14.60)	2.49 (0.49-12.65)	2.49 (0.42-14.87)

[a] All variables are added simultaneously to the model.

Reference categories of independent/control variables are: male sex, advantaged IRSAD, major cities (remoteness), living in another family constellation (family type), bachelor degree or higher (parental education), normal family functioning, parent has 'a lot/some' knowledge of adolescent feelings. The presence of a probable disorder was defined as either adolescents or parents reporting total difficulties (SDQ) on an abnormal level.

Note RRR: relative risk ratio; CI: confidence interval; $F_{(24, 525)}$=2.43.

eTable 8 All results of multinomial logistic regressions of variables associated with patterns of agreement on perceived need; internalising and externalising disorder separately (n=1,119).

	Agreed that needs were fully met		Agreed that needs were partially met or unmet		Adolescent reported greater level of need than their parent		Parent reported greater level of need than the adolescent	
	Unadjusted	Fully adjusted [a]	Unadjusted	Fully adjusted [a]	Unadjusted	Fully adjusted [a]	Unadjusted	Fully adjusted [a]
	RRR	RRR	RRR (95%-CI)	RRR (95%-CI)	RRR (95%-CI)	RRR (95%-CI)	RRR (95%-CI)	RRR (95%-CI)
Adolescents' probable externalising disorder								
Present	1.00	1.00	1.99(1.07-3.71)	1.67(0.84-3.29)	0.63(0.41-0.97)	0.68(0.43-1.08)	1.23(0.79-1.92)	1.16(0.73-1.84)
Adolescents' probable internalising disorder								
Present	1.00	1.00	3.03(1.59-5.78)	2.07(1.06-4.03)	0.50(0.33-0.77)	0.45(0.29-0.72)	0.67(0.44-1.03)	0.57(0.36-0.91)
Parental knowledge about adolescents' feelings								
Little/not at all	1.00	1.00	5.36(2.85-10.09)	4.76(2.48-9.15)	3.12(1.98-4.90)	3.61(2.26-5.79)	1.83(1.16-2.90)	1.91(1.19-3.04)
Sex								
Female	1.00	1.00	1.93(1.04-3.58)	1.84(0.99-3.43)	1.28(0.84-1.95)	1.31(0.86-2.02)	0.61(0.40-0.95)	0.66(0.43-1.03)
Index of relative socio-economic advantage and disadvantage (IRSAD)								
Disadvantaged	1.00	1.00	0.57(0.32-1.03)	0.47(0.25-0.91)	0.71(0.47-1.07)	0.74(0.48-1.16)	0.96(0.62-1.49)	0.79(0.50-1.26)
Remoteness								
Regional or remote area	1.00	1.00	0.91(0.50-1.66)	0.97(0.51-1.84)	0.91(0.57-1.44)	0.95(0.59-1.55)	1.35(0.85-2.13)	1.21(0.75-1.96)
Family type								
Living with two biological parents	1.00	1.00	1.63(0.94-2.83)	1.97(1.09-3.54)	1.92(1.25-2.95)	1.69(1.08-2.64)	1.18(0.76-1.85)	1.32(0.84-2.07)
Parental education								
Diploma or certificate III/IV or lower	1.00	1.00	1.31(0.73-2.37)	1.40(0.74-2.66)	1.06(0.70-1.60)	1.37(0.89-2.11)	1.97(1.27-3.04)	2.18(1.38-3.44)
Parental psychopathology								
Current symptoms or lifetime disorder	1.00	1.00	1.26(0.72-2.22)	1.36(0.76-2.43)	0.61 0.40-0.93)	0.78(0.51-1.19)	1.15(0.75-1.77)	1.21(0.78-1.87)
Family functioning								
Unhealthy level of functioning	1.00	1.00	5.19(1.28-21.03)	4.00(0.96-16.66)	2.13(0.56-8.11)	2.87(0.77-10.77)	3.26(0.90-11.78)	3.09(0.85-11.25)

[a] All variables are added simultaneously to the model.

Reference categories of independent/control variables are: male sex, advantaged IRSAD, major cities (remoteness), living in another family constellation (family type), bachelor degree or higher (parental education), normal family functioning, adolescent probable disorder absent, parent has 'a lot/some' knowledge of adolescent feelings.

Note RRR: relative risk ratio; CI: confidence interval; $F_{(30,519)}=5.78$.

Table 9 Barriers to care among sub-sample where either the adolescent or parent identified an unmet or partially met need

	Subsamples[a]		*Both* adolescents *and* parents have either a fully or partially unmet need (n=123)		
	Barriers endorsed by adolescents (n=515), *% (SE)*	Barriers endorsed by parents (n=402), *% (SE)*	Barriers endorsed by adolescents, *% (SE)*	Barriers endorsed by parents, *% (SE)*	Adolescent-parent agreement, *%, Cohen's kappa (SE)*
Any attitudinal barriers [b]	86.8 (1.75)	85.0 (1.82)	88.2 (3.37)	85.7 (3.15)	56.2, -0.03 (0.06)
afraid what others might think	48.5 (2.49)	3.3 (1.02)	50.3 (5.26)	3.3 (2.04)	-
self-reliance	55.1 (2.39)	32.5 (2.78)	52.2 (4.97)	27.5 (5.17)	-
unsure if help needed	54.8 (2.34)	24.9 (2.48)	53.4 (4.79)	20.8 (4.10)	-
unsure where to get help	21.2 (1.87)	27.6 (2.42)	25.5 (4.57)	27.7 (4.30)	-
problem will get better by itself	52.2 (2.43)	23.8 (2.48)	63.4 (4.77)	26.2 (4.44)	-
child refused	-	38.7 (2.69)	-	42.3 (5.11)	-
Any structural barriers [c]	25.3 (1.91)	33.0 (2.60)	40.3 (4.88)	36.6 (4.56)	53.3, 0.02 (0.09)
problem finding service that could help	3.4 (0.87)	15.0 (1.97)	9.7 (3.10)	19.1 (4.00)	-
couldn't afford it	16.4 (1.63)	20.0 (2.27)	23.5 (4.18)	19.9 (3.84)	-
couldn't get appointment	4.2 (0.94)	16.7 (2.09)	7.7 (2.56)	23.6 (4.04)	-
asked for help at school but didn't get any	9.1 (1.33)	-	15.2 (3.25)	-	-

[a] adolescents *or* parents reported barriers to care; [b] at least one attitudinal barrier was endorsed; [c] at least one structural barrier was endorsed.

Note n: unweighted number of respondents in sub-population; %: weighted percent; SE: standard error; percent in cells do not add up to 100% because naming multiple barriers was possible; kappa of <0.00, 0.00-0.20, 0.21-0.40, 0.41-0.60, 0.61-0.80, and 0.81-1.00 are considered to represent poor, slight, fair, moderate, substantial, and almost perfect agreement (Landis & Koch 1977).

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eMaterial 2 Stata and R scripts.

```
* ************************************************************
* ************************************************************
* ************************************************************
* Young Minds Matter 01
* Analysis for perceived needs of adolescents and their parents and relationship between the two

* Author: Nina
* Date: September/October 2018
* ************************************************************
* ************************************************************
* ************************************************************

/* explanation to data set
1.  Not needed variables were deleted from both data sets (youth and parent).
2.  Youth and parent YMM data sets were merged 1:1 according to variable householdID.
3.  Not all adolescents participated in self report. Variable yint11 was used to identify responders and delete all non-responders from data set.
--> non-responders: 13-17 year olds n=290, 11-12 year olds n=77 (total n=367)
4.  In surveys where weights and clustering refer to youth >= 11 years, 11-12 year olds can not just be deleted from data set.
--> Define subpopulation 'adolescents' for analyses.
*/

di in red c(os)

if "`c(os)'" == "MacOSX" {

        cd "/Users/admin/research/publications/08_YMM_PerceivedNeedAndBarriersToCare/"

}

* data set that will be used for analyses (excluding non-responder adolescents n=290)
use     Data/YMM2/AdolescentsParents_complete, clear

numlabel, add

* ************************************************************
* ************************************************************
* eFigure 1 response rate
* use variable yint11 to determine response rate of adolescents aged 13-17
use     Data/YMM2/cleaned_merged/YouthParents_merged, clear

preserve
```

```
42          keep if Age >= 13
43          tab Age, m
44          tab yint11, m
45  restore
46
47  * ****************************************************************
48  * ****************************************************************
49
50  * ****************************************************************
51  * ****************************************************************
52  * declare survey design for dataset
53  * one-stage clustered design (with youth weight)
54  use     Data/YMM2/AdolescentsParents_complete, clear
55
56  svyset  cluster [pweight=YouthWeightC]
57
58  * generate subgroup identifying variable
59  gen     adolescents = (Age >= 13) if !missing(Age)
60  tab     adolescents
61  * correctly identified subpopulation. No one has missing Age!!
62  numlabel, add
63
64  /* subpopulation: adolescents with any perceived need
65  gen     ado_PN = (Age >= 13) if !missing(Age) & (needanyy == 1)
66  tab     ado_PN
67  * save  Data/YMM2/AdolescentsParents_complete, replace*/
68
69  * ****************************************************************
70  * ****************************************************************
71  * Missing Data: exclude cases with missing data
72  preserve
73      keep if adolescents == 1
74      misstable summarize sex IRSAD_dich Remoteness_dich
    family_type_dich par_education par_psychopathology ///
75                          fadbi par_feelings totdiff_adoORpar
    externalising_adoORpar internalising_adoORpar
76  restore /* totally 2 missings in par_psychopathology and
    par_feelings */
77
78  preserve
79      keep if adolescents == 1
80      tab par_feelings par_psychopathology, m
81  restore /* not same person has missing  */
82
83  * percent missing
84  display (4/2314)*100
85
86  * generate subgroup adolescents complete (adoelscents_comp) to
    use for svy analyses
87  gen     adolescents_comp = (Age >= 13) if !missing(Age) & !
    missing(par_psychopathology) & !missing(par_feelings)
88  tab     adolescents_comp
```

```
 89
 90  * Reviewer 2: systematic differences in dropped and retained
     participants?
 91  * parental psychopathology and parental feelings not included
     because that's where the missings are
 92  preserve
 93      keep if adolescents == 1
 94      tab adolescents_comp, m
 95  restore
 96
 97  recode  adolescents_comp (1=1) (.=0), pre(new_)
 98
 99  preserve
100      keep if adolescents == 1
101      foreach systematic in   sex IRSAD_dich Remoteness_dich
     family_type_dich par_education ///
102                              fadbi totdiff_adoORpar {
103                              logit `systematic' i.
     new_adolescents_comp, or
104                              }
105      mlogit  agree_need_outcome i.new_adolescents_comp
106      regress Age i.new_adolescents_comp
107  restore
108
109  * cross-tab to see where problem lies
110  preserve
111      keep if adolescents == 1
112      foreach systematic in   IRSAD_dich fadbi {
113                              tab `systematic' new_adolescents_comp
     , chi2 exact expected
114                              }
115  restore
116  * zero cell frequencies. Expected cell frequencies <5 which
     violates assumptions of chi-square test. Fisher's exact test is
     an option.
117
118  * ****************************************************************
119  * ****************************************************************
120  * eTable 2 Sample characteristics
121  * total sample
122  foreach character in    sex IRSAD_Quintile IRSAD_dich
     Remoteness_dich family_type_dich par_education
     par_psychopathology ///
123                          fadbi totdiff_adoORpar
     externalising_adoORpar internalising_adoORpar par_feelings {
124                          svy, subpop(adolescents_comp): tab
     `character', percent cell se
125  }
126  svy, subpop(adolescents_comp): mean Age
127  estat sd
128
129  * results export to word
```

```
130 tabout      sex IRSAD_dich Remoteness_dich family_type_dich
    par_education par_psychopathology ///
131             fadbi totdiff_adoORpar par_feelings using
    "Article/Tables_Figures/Results_Excel/Table1.txt", ///
132             c(col se) f(3 3) clab(Row_% 95%_CI) svy npos(lab)
    percent ///
133             replace ///
134             style(txt) bt font(bold) cl1(2-6) /* this is
    complete rubbish */
135
136 * subsample excluding pairs that agreed on having no need
137 foreach character in    sex IRSAD_Quintile IRSAD_dich
    Remoteness_dich family_type_dich par_education
    par_psychopathology ///
138                         fadbi totdiff_adoORpar
    externalising_adoORpar internalising_adoORpar par_feelings {
139                         svy, subpop(if adolescents_comp == 1 &
    agree_need_outcome != 4): tab `character', percent cell se
140 }
141 svy, subpop(if adolescents_comp == 1 & agree_need_outcome != 4):
    mean Age
142 estat sd
143
144
145 * ******************************
146 * characteristics of those with any overall perceived need,
    adolescent report
147 foreach character in    sex IRSAD_Quintile IRSAD_dich
    Remoteness_dich family_type_dich par_education
    par_psychopathology ///
148                             fadbi totdiff_adoORpar par_feelings {
149                             svy, subpop(if adolescents_comp == 1
    & needanyy == 1): ///
150                             tab `character', percent cell se
151     }
152 svy, subpop(if adolescents_comp == 1 & needanyy == 1): mean Age
153 estat sd
154
155 * ******************************
156 * characteristics of those with any overall perceived need,
    parent report
157 foreach character in    sex IRSAD_Quintile IRSAD_dich
    Remoteness_dich family_type_dich par_education
    par_psychopathology ///
158                             fadbi totdiff_adoORpar par_feelings {
159                             svy, subpop(if adolescents_comp == 1
    & needany == 1): ///
160                             tab `character', percent cell se
161     }
162 svy, subpop(if adolescents_comp == 1 & needany == 1): mean Age
163 estat sd
164
```

```
* ******************************
* comparing adolescent and parent any overall perceived need
svy, subpop(adolescents_comp): tab needanyy needany, percent cell
 se

* ************************************************************
* ************************************************************
* Table 1 Overall Perceived Need and Types of Help Needed: group
comparisons, agreement and kappa
* for reporting use design-based analysis (e.g. F statistic)
because it accounts for survey design (weighting, clustering (&
stratification))

* comparing perceived needs of adolescents and parents
* overall
svy, subpop(adolescents_comp): tab pneedby pneedb, percent cell
pearson se
* effect size Cramer's V for svy:
local denom = e(r)-1
if e(c)< e(r){
local denom = e(c)-1
}
di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))

* counselling
svy, subpop(adolescents_comp): tab pneed_counsy pneed_couns,
percent cell pearson se
local denom = e(r)-1
if e(c)< e(r){
local denom = e(c)-1
}
di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))

* medication
svy, subpop(adolescents_comp): tab pneed_medsy pneed_meds,
percent cell pearson se
local denom = e(r)-1
if e(c)< e(r){
local denom = e(c)-1
}
di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))

* information
svy, subpop(adolescents_comp): tab pneed_infoy pneed_info,
percent cell pearson se
local denom = e(r)-1
if e(c)< e(r){
local denom = e(c)-1
}
di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))

* skill training
```

```
svy, subpop(adolescents_comp): tab pneed_skillsy pneed_skills,
percent cell pearson se
local denom = e(r)-1
if e(c)< e(r){
local denom = e(c)-1
}
di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))

* for right two columns in new Table 1 (by 13 March 2019) see at
the end of this file

* ****************************
* Table 2 kappa correlation - agreement (svy command does not
support kappa statistics)
* total agreement (four categories: unmet, partially met, fully
met, no need)
preserve
    keep if adolescents_comp == 1
    kap     pneedby pneedb, tab
    kap     pneed_counsy pneed_couns, tab
    kap     pneed_medsy pneed_meds, tab
    kap     pneed_infoy pneed_info, tab
    kap     pneed_skillsy pneed_skills, tab
restore

* agreement on any need (two categories: yes/no)
preserve
    keep if adolescents_comp == 1
    kap     needany needanyy, tab
restore

* ****************************
* comparing and kappa agreement of any need excluding no need
* overall need
preserve
    keep if adolescents_comp == 1 & agree_NO_overall == 0
    kap     pneedby pneedb, tab
restore

* need for counselling
preserve
    keep if adolescents_comp == 1 & agree_NO_counselling == 0
    kap     pneed_counsy pneed_couns, tab
restore

* need for medication
preserve
    keep if adolescents_comp == 1 & agree_NO_medication == 0
    kap     pneed_medsy pneed_meds, tab
restore

* need for information
```

```
257 preserve
258     keep if adolescents_comp == 1 & agree_NO_info == 0
259     kap     pneed_infoy pneed_info, tab
260 restore
261
262 * need for skill training
263 preserve
264     keep if adolescents_comp == 1 & agree_NO_skill == 0
265     kap     pneed_skillsy pneed_skills, tab
266 restore
267
268 * ************************************************************
269 * ************************************************************
270 * David: same as above but exclude the ones where both
    adolescents and parents report SDQs in normal range (agreement
    higher?)
271
272 * eTable 3
273 * comparing perceived needs of adolescents and parents
274 * overall
275 svy, subpop(if adolescents_comp == 1 & totdiff_adoORpar == 1):
    tab pneedby pneedb, percent cell pearson se
276 local denom = e(r)-1
277 if e(c)< e(r){
278 local denom = e(c)-1
279 }
280 di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))
281
282 * counselling
283 svy, subpop(if adolescents_comp == 1 & totdiff_adoORpar == 1):
    tab pneed_counsy pneed_couns, percent cell pearson se
284 local denom = e(r)-1
285 if e(c)< e(r){
286 local denom = e(c)-1
287 }
288 di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))
289
290 * medication
291 svy, subpop(if adolescents_comp == 1 & totdiff_adoORpar == 1):
    tab pneed_medsy pneed_meds, percent cell pearson se
292 local denom = e(r)-1
293 if e(c)< e(r){
294 local denom = e(c)-1
295 }
296 di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))
297
298 * information
299 svy, subpop(if adolescents_comp == 1 & totdiff_adoORpar == 1):
    tab pneed_infoy pneed_info, percent cell pearson se
300 local denom = e(r)-1
301 if e(c)< e(r){
302 local denom = e(c)-1
```

```
}
di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))

* skill training
svy, subpop(if adolescents_comp == 1 & totdiff_adoORpar == 1): tab pneed_skillsy pneed_skills, percent cell pearson se
local denom = e(r)-1
if e(c)< e(r){
local denom = e(c)-1
}
di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))

* for right two columns in new eTable 3 (by 13 March 2019) see at the end of this file

* ****************************
* eTable 5
* kappa correlation - agreement
* total agreement (four categories: unmet, partially met, fully met, no need)
preserve
    keep if adolescents_comp == 1 & totdiff_adoORpar == 1
    kap     pneedby pneedb, tab
    kap     pneed_counsy pneed_couns, tab
    kap     pneed_medsy pneed_meds, tab
    kap     pneed_infoy pneed_info, tab
    kap     pneed_skillsy pneed_skills, tab
restore

* comparing and kappa agreement of any need excluding no need
* overall need
preserve
    keep if adolescents_comp == 1 & agree_NO_overall == 0 & totdiff_adoORpar == 1
    kap     pneedby pneedb, tab
restore

* need for counselling
preserve
    keep if adolescents_comp == 1 & agree_NO_counselling == 0 & totdiff_adoORpar == 1
    kap     pneed_counsy pneed_couns, tab
restore

* need for medication
preserve
    keep if adolescents_comp == 1 & agree_NO_medication == 0 & totdiff_adoORpar == 1
    kap     pneed_medsy pneed_meds, tab
restore

* need for information
```

```
349 preserve
350     keep if adolescents_comp == 1 & agree_NO_info == 0 &
    totdiff_adoORpar == 1
351     kap     pneed_infoy pneed_info, tab
352 restore
353
354 * need for skill training
355 preserve
356     keep if adolescents_comp == 1 & agree_NO_skill == 0 &
    totdiff_adoORpar == 1
357     kap     pneed_skillsy pneed_skills, tab
358 restore
359
360 * ************************************************************
361 * ************************************************************
362 * eTable 1 classification of patterns of agreement (N/n per
    category, without svy just unweighted numbers)
363 preserve
364     keep if adolescents_comp == 1
365     tab     agree_need_outcome, m
366 restore
367
368 * ************************************************************
369 * ************************************************************
370 * eTable 4 cell frequencies of agreement on overall perceived
    need (cross-tab)
371 preserve
372     keep if adolescents_comp == 1
373     tab     pneedby pneedb, m
374     tab     pneed_counsy pneed_couns, m
375     tab     pneed_medsy pneed_meds, m
376     tab     pneed_infoy pneed_info, m
377     tab     pneed_skillsy pneed_skills, m
378 restore
379
380 * ************************************************************
381 * ************************************************************
382 * there will be five options of outcome:
383 * 1 -   four groups of agreement: agree on fully met (reference
    category); agree on either partially met or unmet; ado need >
    parent; parent need > ado
384 * 2 -   three groups of agreement: agree on either fully met,
    partially met or unmet; ado need > parent; parent need > ado
385 * 3 -   two groups of agreement: agree on either fully met,
    partially met or unmet; disagreement
386 * 4 -   three groups of agreement: agree on fully met (reference
    category); agree on partially met or unmet; disagree
387 * 5 -   two groups of agreement: agree on fully met need
    (reference group, received what was needed); not received what
    was needed (incl.
388 *       agree on partially met or unmet, and disagreement)
389 * ************************************************************
```

```
390 * ************************************************************
391
392 * ************************************************************
393 * Option 1 (decision on 18 December 2018: we go with the first
    option)
394
395 * ******************
396 * ******************
397 * four category outcome (agree_need_outcome) --> refernce
    category: agree on fully met need
398 * first: simple multinomial logistic regressions
399 * second: fully adjusted model
400
401 * Table 3 & eTable 6
402
403 * ******************
404 * first
405 * unadjusted: socio, family and clinical characteristics (ado or
    parent identified a problem)
406 * additionally according to reviewer 1 comment (split up
    probable disorder into internalising and externalising) (eTable 7)
407 foreach unadjusted in   i.sex i.IRSAD_dich i.Remoteness_dich ib1.
    family_type_dich i.par_education i.par_psychopathology ///
408                          i.fadbi i.totdiff_adoORpar i.
    externalising_adoORpar i.internalising_adoORpar i.par_feelings {
409     svy, subpop(if adolescents_comp == 1 & agree_need_outcome !=
    4): mlogit agree_need_outcome `unadjusted', base(0) rrr
410     }
411
412 * ******************
413 * second
414 * fully adjusted (all socio, family and clinical variables in)
415 svy, subpop(if adolescents_comp == 1 & agree_need_outcome != 4):
    ///
416 mlogit agree_need_outcome   i.sex i.IRSAD_dich i.Remoteness_dich
    ib1.family_type_dich i.par_education i.par_psychopathology ///
417                             i.fadbi i.totdiff_adoORpar i.
    par_feelings, base(0) rrr
418 mlogitgof, table
419 /* if mlogitgof is specified after this version of subgroup
    specification, it does not take subgroup into account
420 but computes it on basis of hole sample. Use estimates from
    subpop() command and mlogitgof from version bellow. SE slightly
    differs */
421
422 * use: other option to specify subpopulation
423 svy:    mlogit agree_need_outcome   i.sex i.IRSAD_dich i.
    Remoteness_dich ib1.family_type_dich i.par_education i.
    par_psychopathology ///
424                                     i.fadbi i.totdiff_adoORpar i.
    par_feelings ///
425         if adolescents_comp == 1 & agree_need_outcome != 4, base(
```

```
    0) rrr
426 mlogitgof, table
427 /* indicates lack of model fit (p=0.009)
428 Clyde Schechter says this on
    https://www.statalist.org/forums/forum/general-stata-discussion/ge
    neral/389818-goodness-of-fit-test-for-logistic-regression-on-surve
    y-data:
429 "The problem with the Hosmer-Lemeshow test is precisely that it
    is a goodness of fit test,
430 and goodness of fit is really only minimally relevant for most
    practical purposes. The logistic model is almost always a
    mismatch to a
431 real-life data generating process. If you have a sufficiently
    large sample, that misfit will be detected, even if the model is
    doing a pretty
432 good job of matching predicted to observed probabilities. If you
    have a sufficiently small sample (it looks like you have around
    80 observations),
433 when you divide them into deciles, as H-L does, you will have,
    optimally (if there are no ties), 8 in each group--so your power
    to detect even
434 substantive deviations between predicted and observed is going
    to be fairly low, and almost any model will pass muster on the p
    < 0.05 criterion."
435 --> use the -,table- to see whether option the model's predicted
    probabilities are close to observed probabilities and yes they
    look quite good.
436 */
437
438 * discrete change: how do Predicted Probabilites change as IV
    changes (e.g. from 0 to 1)
439 * dydx after margins computes difference change between e.g. 0
    and 1
440 margins /* reports predicted value of the DV for each
    observation. I.e. disagreement cat. are quite well predicted
    (ca. 40%) and agreement ones not (ca. 10%) */
441 margins totdiff_adoORpar sex family_type_dich fadbi /* predicted
    probabilities for significant variables on outcome holding rest
    constant */
442 margins, dydx(totdiff_adoORpar sex family_type_dich fadbi) /*
    average marginal effect if categories change holding rest
    constant */
443 marginsplot
444 coefplot, drop(_cons) xline(0) keep(*:)
445
446 * *****************
447 * second part deux: with reviewer's 1 variable
448 * fully adjusted (all socio, family and clinical variables in)
449 svy, subpop(if adolescents_comp == 1 & agree_need_outcome != 4):
    ///
450 mlogit agree_need_outcome   i.sex i.IRSAD_dich i.Remoteness_dich
    ib1.family_type_dich i.par_education i.par_psychopathology ///
```

```
451                                 i.fadbi i.externalising_adoORpar i.
    internalising_adoORpar i.par_feelings, base(0) rrr
452 * use: other option to specify subpopulation
453 svy:    mlogit agree_need_outcome   i.sex i.IRSAD_dich i.
    Remoteness_dich ib1.family_type_dich i.par_education i.
    par_psychopathology ///
454                                       i.fadbi i.
    externalising_adoORpar i.internalising_adoORpar i.par_feelings ///
455         if adolescents_comp == 1 & agree_need_outcome != 4, base(
    0) rrr
456 mlogitgof, table
457
458 * *****************
459 * sensitivity analysis 1: take variable 'parental knowledge of
    adolescents' feelings' from model and see what changes
460 svy, subpop(if adolescents_comp == 1 & agree_need_outcome != 4):
    ///
461 mlogit agree_need_outcome   i.sex i.IRSAD_dich i.Remoteness_dich
    ib1.family_type_dich i.par_education i.par_psychopathology ///
462                                 i.fadbi i.totdiff_adoORpar, base(0)
    rrr
463
464 svy:    mlogit agree_need_outcome   i.sex i.IRSAD_dich i.
    Remoteness_dich ib1.family_type_dich i.par_education i.
    par_psychopathology ///
465                                       i.fadbi i.totdiff_adoORpar ///
466         if adolescents_comp == 1 & agree_need_outcome != 4, base(
    0) rrr
467 mlogitgof, table
468 coefplot, drop(_cons) xline(0) keep(*:)
469
470 * *****************
471 * sensitivity analysis 2: same model subsample with a mental
    health problem (n=648) (eTable 8)
472 * first: unadjusted
473 foreach unadjusted in   i.sex i.IRSAD_dich i.Remoteness_dich ib1.
    family_type_dich i.par_education i.par_psychopathology ///
474                           i.fadbi i.par_feelings {
475     svy, subpop(if adolescents_comp == 1 & agree_need_outcome !=
    4 & totdiff_adoORpar == 1): mlogit agree_need_outcome
    `unadjusted', base(0) rrr
476     }
477
478 * second: fully adjusted
479 svy, subpop(if adolescents_comp == 1 & agree_need_outcome != 4 &
    totdiff_adoORpar == 1): ///
480 mlogit agree_need_outcome   i.sex i.IRSAD_dich i.Remoteness_dich
    ib1.family_type_dich i.par_education i.par_psychopathology ///
481                                 i.fadbi i.par_feelings, base(0) rrr
482
483 svy:    mlogit agree_need_outcome   i.sex i.IRSAD_dich i.
    Remoteness_dich ib1.family_type_dich i.par_education ///
```

```
484                                         i.par_psychopathology i.fadbi
     i.par_feelings ///
485         if adolescents_comp == 1 & agree_need_outcome != 4 &
    totdiff_adoORpar == 1, base(0) rrr
486 mlogitgof, table
487
488 * ************************************************************
489 /* Option 2
490
491 * ******************
492 * ******************
493 * three category outcome (agree_need_outcome_tri) --> reference
    category: agree on fully met, partially met or unmet need
494 * first: simple multinomial logistic regressions
495 * second: fully adjusted model
496 * third: only those categories that were sign in simple logistic
    regression
497
498 * ******************
499 * first
500 * unadjusted: socio, family and clinical characteristics (ado or
    parent identified a problem)
501 foreach unadjusted in   i.sex i.IRSAD_dich i.Remoteness_dich
    i.family_type_dich i.par_education i.par_psychopathology ///
502                           i.fadbi i.totdiff_adoORpar
    i.par_feelings {
503     svy, subpop(if adolescents_comp == 1 &
    agree_need_outcome_tri !=3): mlogit agree_need_outcome_tri
    `unadjusted', base(0) rrr
504     }
505
506 * ******************
507 * second
508 svy:    mlogit agree_need_outcome_tri   i.sex i.IRSAD_dich
    i.Remoteness_dich i.family_type_dich i.par_education
    i.par_psychopathology ///
509                                         i.fadbi
    i.totdiff_adoORpar i.par_feelings ///
510         if adolescents_comp == 1 & agree_need_outcome_tri != 3,
    base(0) rrr
511 mlogitgof, table /* indicates ok model fit (p=0.145) */
512
513 * ************************************************************
514 * Option 3
515
516 * ******************
517 * ******************
518 * binary outcome agree/disagree on perceived need
    (agree_need_outcome_dich)
519 * Logistic Regression
520 * pseudo R2 not reported because of cluster (pseudo R2 is
    computed using log likelihoods and they assume that cases are
```

```
    independent of each other)
521
522 * *****************
523 * first
524 * unadjusted: socio, family and clinical characteristics (ado or
    parent identified a problem)
525 foreach unadjusted in   i.sex i.IRSAD_dich i.Remoteness_dich
    i.family_type_dich i.par_education i.par_psychopathology ///
526                          i.fadbi i.totdiff_adoORpar
    i.par_feelings {
527     svy, subpop(if adolescents_comp == 1 &
    agree_need_outcome_dich != 2): logistic agree_need_outcome_dich
    `unadjusted'
528     }
529
530 * *****************
531 * second
532 * fully adjusted model based on earlier studies (all socio,
    family and clinical variables in)
533 svy: logistic   agree_need_outcome_dich i.sex i.IRSAD_dich
    i.Remoteness_dich i.family_type_dich i.par_education
    i.par_psychopathology ///
534                 i.fadbi i.totdiff_adoORpar i.par_feelings ///
535                 if adolescents_comp == 1 &
    agree_need_outcome_dich != 2
536 estat gof /* that works, model fit ok */
537 mlogitgof, table /* should be same as estat gof as logistic
    regression but not same result?! */
538 linktest /* if linktest not significant, there should not be a
    specification error.
539 * See:
    https://stats.idre.ucla.edu/stata/webbooks/logistic/chapter3/lesso
    n-3-logistic-regression-diagnostics-2/ */
540
541 * predicted probabilities (only for sign. variables)
542 margins
543 margins totdiff_adoORpar sex par_education
544 margins, dydx(totdiff_adoORpar sex par_education) /* we expect
    that on average the probability of disagreement is 11% lower
    among those with a mh problem */
545 marginsplot, noci
546 margins, dydx(totdiff_adoORpar) at(sex=(0 1)) /* tests if
    margins for mh problems differ by sex (not really) */
547 margins, dydx(totdiff_adoORpar) at(par_education=(0 1)) /* tests
    if margins for mh problems differ by parental education (not
    really) */
548 coefplot, drop(_cons) xline(0) keep(*:)
549
550 * *****************
551 * *****************
552 * test assumptions for logistic regression
553 * 1: independence of observation --> ok
```

```
554 * 2: data must not show multicollinearity --> only problematic
    when main iv is highly correlated with a control variable
    (problem for interpretation)
555 preserve
556     keep if agree_need_outcome_dich !=2
557     regress agree_need_outcome_dich i.sex i.Remoteness_dich
    i.family_type_dich i.par_psychopathology ///
558         i.par_education i.IRSAD_dich i.fadbi i.totdiff_adoORpar
    /* estat vif only works after regress not logit*/
559     estat vif /* checks for multicollinearity betwenn dv --> no
    multicoll because VIF always only bit above 1.0 */
560 * 3: specification problem? see above linktest --> ok
561 * 4: linear relation between continuous iv and logit
    transformation of dv with boxtid (we don't have continous ivs...)
562 restore
563
564
565 * ************************************************************
566 * Option 4
567
568 * ******************
569 * ******************
570 * three category outcome (agree_need_outcome_tri) --> reference
    category: agree on fully met, partially met or unmet need
571 * first: simple multinomial logistic regressions
572 * second: fully adjusted model
573 * third: only those categories that were sign in simple logistic
    regression
574
575 * ******************
576 * first
577 * unadjusted: socio, family and clinical characteristics (ado or
    parent identified a problem)
578 foreach unadjusted in   i.sex i.IRSAD_dich i.Remoteness_dich
    i.family_type_dich i.par_education i.par_psychopathology ///
579                         i.fadbi i.totdiff_adoORpar
    i.par_feelings {
580     svy, subpop(if adolescents_comp == 1 &
    agree_need_outcome_tri2 !=3): mlogit agree_need_outcome_tri2
    `unadjusted', base(0) rrr
581     }
582
583 * ******************
584 * second: fully adjusted (analysis for estimates)
585 svy, subpop(if adolescents_comp == 1 & agree_need_outcome_tri2
    != 3): ///
586 mlogit agree_need_outcome_tri2  i.sex i.IRSAD_dich
    i.Remoteness_dich ib1.family_type_dich i.par_education
    i.par_psychopathology ///
587                             i.fadbi i.totdiff_adoORpar
    i.par_feelings, base(0) rrr
588
```

```
589 * other specification of model for gof
590 svy:    mlogit agree_need_outcome_tri2  i.sex i.IRSAD_dich
    i.Remoteness_dich i.family_type_dich i.par_education
    i.par_psychopathology ///
591                                          i.fadbi
    i.totdiff_adoORpar i.par_feelings ///
592         if adolescents_comp == 1 & agree_need_outcome_tri2 != 3,
    base(0) rrr
593 mlogitgof, table /* indicates ok model fit (p=0.583) */
594
595 * ************************************************************
596 * Option 5
597
598 * ******************
599 * ******************
600 * binary outcome agree/disagree on perceived need
    (agree_need_outcome_dich)
601 * Logistic Regression
602 * pseudo R2 not reported because of cluster (pseudo R2 is
    computed using log likelihoods and they assume that cases are
    independent of each other)
603
604 * ******************
605 * first
606 * unadjusted: socio, family and clinical characteristics (ado or
    parent identified a problem)
607 foreach unadjusted in   i.sex i.IRSAD_dich i.Remoteness_dich
    i.family_type_dich i.par_education i.par_psychopathology ///
608                          i.fadbi i.totdiff_adoORpar
    i.par_feelings {
609     svy, subpop(if adolescents_comp == 1 &
    agree_need_outcome_dich2 != 2): logistic
    agree_need_outcome_dich2 `unadjusted'
610     }
611
612 * ******************
613 * second
614 * fully adjusted model (for estimates)
615 svy, subpop(if adolescents_comp == 1 & agree_need_outcome_dich2
    != 2): logistic agree_need_outcome_dich2 ///
616                 i.sex i.IRSAD_dich i.Remoteness_dich
    i.family_type_dich i.par_education i.par_psychopathology ///
617                 i.fadbi i.totdiff_adoORpar i.par_feelings
618
619 * for gof
620 svy: logistic   agree_need_outcome_dich2 i.sex i.IRSAD_dich
    i.Remoteness_dich i.family_type_dich i.par_education
    i.par_psychopathology ///
621                 i.fadbi i.totdiff_adoORpar i.par_feelings ///
622                 if adolescents_comp == 1 &
    agree_need_outcome_dich2 != 2
623 estat gof */
```

```
624
625 * ************************************************************
626 * ************************************************************
627 * eTable 9
628 * Any barriers to care separately for adolescents and parents
    (see also plot in R, Figure)
629 preserve
630     keep if adolescents_comp == 1
631     tab agree_need_barrier, m
632 restore
633
634 * total subsample where either adolescent or parent identified
    fully or partially unmet need
635 foreach barrier0 in AnyAttitAdo AnyStructAdo AnyAttitPar
    AnyStructPar {
636             svy, subpop(adolescents_comp):  tab `barrier0',
    percent cell se
637     }
638
639 * adolescents and parents have fully or partially unmet need
    (agree_need_barrier == 1)
640 foreach barrier1 in AnyAttitAdo AnyStructAdo AnyAttitPar
    AnyStructPar {
641             svy, subpop(if adolescents_comp == 1 &
    agree_need_barrier == 1): tab `barrier1', percent cell se
642     }
643
644     * cross-tab for this sub-sample (ado vs. parent)
645     svy, subpop(if adolescents_comp == 1 & agree_need_barrier ==
    1): tab AnyAttitAdo AnyAttitPar, percent cell pearson se
646     local denom = e(r)-1
647     if e(c)< e(r){
648     local denom = e(c)-1
649     }
650     di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))
651
652
653
654 * adolescents only have fully or partially unmet need
    (agree_need_barrier == 2)
655 foreach barrier2 in AnyAttitAdo AnyStructAdo {
656             svy, subpop(if adolescents_comp == 1 &
    agree_need_barrier == 2): tab `barrier2', percent cell se
657     }
658
659 * parents only have fully or partially unmet need
    (agree_need_barrier == 3)
660 foreach barrier3 in AnyAttitPar AnyStructPar {
661             svy, subpop(if adolescents_comp == 1 &
    agree_need_barrier == 3): tab `barrier3', percent cell se
662     }
663
```

```
664 * ************************
665 * eTable 9 continued
666 * Single barriers to care
667
668 * adolescent identified unmet or partially met need
669 foreach barrier1 in     ado_stigma ado_selfrel ado_unsneed
    ado_unswhere ado_bettself ado_getserv ado_cost ado_appoint
    ado_school {
670             svy, subpop(adolescents_comp):  tab `barrier1',
    percent cell se
671     }
672
673 * parent identified unmet or partially met need
674 foreach barrier1 in par_stigma par_selfrel par_unsneed
    par_unswhere par_bettself par_refuse par_getserv par_cost
    par_appoint {
675             svy, subpop(adolescents_comp):  tab `barrier1',
    percent cell se
676     }
677
678 * adolescents and parents have fully or partially unmet need
    (agree_need_barrier == 1)
679 foreach barrier1 in par_stigma par_selfrel par_unsneed
    par_unswhere par_bettself par_refuse par_getserv par_cost
    par_appoint ///
680                         ado_stigma ado_selfrel ado_unsneed
    ado_unswhere ado_bettself ado_getserv ado_cost ado_appoint
    ado_school {
681             svy, subpop(if adolescents_comp == 1 &
    agree_need_barrier == 1): tab `barrier1', percent cell se
682     }
683
684 * adolescents only have fully or partially unmet need
    (agree_need_barrier == 2)
685 foreach barrier2 in ado_stigma ado_selfrel ado_unsneed
    ado_unswhere ado_bettself ado_getserv ado_cost ado_appoint
    ado_school {
686             svy, subpop(if adolescents_comp == 1 &
    agree_need_barrier == 2): tab `barrier2', percent cell se
687     }
688
689 * parents only have fully or partially unmet need
    (agree_need_barrier == 3)
690 foreach barrier3 in par_stigma par_selfrel par_unsneed
    par_unswhere par_bettself par_refuse par_getserv par_cost
    par_appoint {
691             svy, subpop(if adolescents_comp == 1 &
    agree_need_barrier == 3): tab `barrier3', percent cell se
692     }
693
694 * ************************
695 * adolescent-parent agreement on barriers among the subsample
```

```
    where both report an either unmet or partially met need
696 preserve
697     keep if adolescents_comp == 1 & agree_need_barrier == 1
698     kap AnyAttitAdo AnyAttitPar, tab
699     kap AnyStructAdo AnyStructPar, tab
700 restore
701
702 * ************************************************************
703 * ************************************************************
704 * comment Michael regarding that 1/3 of either ados or parents
    report a perceived need for care and this likely relating to
    different individuals
705 * how frequent is any need, partially met need etc. if
    adolescents or parents report it?
706 * Table 1 addition
707
708 * ************************
709 * any type of help
710 gen     pneed_adoORpar = .
711 replace pneed_adoORpar = 0 if agree_need_outcome == 4
712 replace pneed_adoORpar = 1 if agree_need_outcome == 0 |
    agree_need_outcome == 1 | agree_need_outcome == 2 |
    agree_need_outcome == 3
713 la de   PNadoORpar 0 "ado and parent no perceived need" 1 "ado
    or parent any perceived need"
714 la val  pneed_adoORpar PNadoORpar
715 la var  pneed_adoORpar "Either adolescent or parent perceive a
    need for any type of care"
716 tab     pneed_adoORpar, m
717 * missings = ados that did not respond to self-report
718 tab     pneed_adoORpar
719
720 * % of total population where either ado or parent reported a
    need for any type of care
721 svy, subpop(adolescents_comp): tab pneed_adoORpar, percent cell se
722
723 * how many % of adolescents or parents have fully met, partially
    met, unmet need among those where either one of them has a PN
    for any type of care
724 svy, subpop(if adolescents_comp == 1 & pneed_adoORpar == 1): tab
    pneedby pneedb, percent cell pearson se
725 * Cramer's V:
726 local denom = e(r)-1
727 if e(c)< e(r){
728 local denom = e(c)-1
729 }
730 di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))
731
732 * ************************
733 * counselling
734 gen     pneedcouns_adoORoar = .
735 replace pneedcouns_adoORoar = 0 if  pneed_couns == 4 &
```

```
    pneed_counsy == 4
736 replace pneedcouns_adoORoar = 1 if  pneed_couns == 1 &
    pneed_counsy == 1 | ///
737                                     pneed_couns == 2 &
    pneed_counsy == 2 | pneed_couns == 3 & pneed_counsy == 3 | ///
738                                     pneed_counsy == 3 &
    pneed_couns == 2 | pneed_counsy == 3 & pneed_couns == 1 |
    pneed_counsy == 3 & pneed_couns == 4 | ///
739                                     pneed_counsy == 2 &
    pneed_couns == 1 | pneed_counsy == 2 & pneed_couns == 4 | ///
740                                     pneed_counsy == 1 &
    pneed_couns == 4 | ///
741                                     pneed_couns == 3 &
    pneed_counsy == 2 | pneed_couns == 3 & pneed_counsy == 1 |
    pneed_couns == 3 & pneed_counsy == 4 | ///
742                                     pneed_couns == 2 &
    pneed_counsy == 1 | pneed_couns == 2 & pneed_counsy == 4 | ///
743                                     pneed_couns == 1 &
    pneed_counsy == 4
744 la val  pneedcouns_adoORoar PNadoORpar
745 la var  pneedcouns_adoORoar "Either adolescent or parent
    perceive a need for counselling"
746 tab     pneedcouns_adoORoar, m
747
748 * % of total population where either ado or parent reported a
    need for counselling
749 svy, subpop(adolescents_comp): tab pneedcouns_adoORoar, percent
    cell se
750
751 * how many % of adolescents or parents have fully met, partially
    met, unmet need among those where either one of them has a PN
    for counselling
752 svy, subpop(if adolescents_comp == 1 & pneedcouns_adoORoar == 1):
     tab pneed_counsy pneed_couns, percent cell pearson se
753 local denom = e(r)-1
754 if e(c)< e(r){
755 local denom = e(c)-1
756 }
757 di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))
758
759 * ************************
760 * medication
761 gen     pneedmeds_adoORoar = .
762 replace pneedmeds_adoORoar = 0 if   pneed_meds == 4 & pneed_medsy
     == 4
763 replace pneedmeds_adoORoar = 1 if   pneed_meds == 1 & pneed_medsy
     == 1 | ///
764                                     pneed_meds == 2 & pneed_medsy
     == 2 | pneed_meds == 3 & pneed_medsy == 3 | ///
765                                     pneed_medsy == 3 & pneed_meds
     == 2 | pneed_medsy == 3 & pneed_meds == 1 | pneed_medsy == 3 &
    pneed_meds == 4 | ///
```

```
766                                         pneed_medsy == 2 & pneed_meds
     == 1 | pneed_medsy == 2 & pneed_meds == 4 | ///
767                                         pneed_medsy == 1 & pneed_meds
     == 4 | ///
768                                         pneed_meds == 3 & pneed_medsy
     == 2 | pneed_meds == 3 & pneed_medsy == 1 | pneed_meds == 3 &
    pneed_medsy == 4 | ///
769                                         pneed_meds == 2 & pneed_medsy
     == 1 | pneed_meds == 2 & pneed_medsy == 4 | ///
770                                         pneed_meds == 1 & pneed_medsy
     == 4
771 la val  pneedmeds_adoORoar PNadoORpar
772 la var  pneedmeds_adoORoar "Either adolescent or parent perceive
    a need for medication"
773 tab     pneedmeds_adoORoar, m
774
775 * % of total population where either ado or parent reported a
    need for medication
776 svy, subpop(adolescents_comp): tab pneedmeds_adoORoar, percent
    cell se
777
778 * how many % of adolescents or parents have fully met, partially
    met, unmet need among those where either one of them has a PN
    for medication
779 svy, subpop(if adolescents_comp == 1 & pneedmeds_adoORoar == 1):
    tab pneed_medsy pneed_meds, percent cell pearson se
780 local denom = e(r)-1
781 if e(c)< e(r){
782 local denom = e(c)-1
783 }
784 di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))
785
786 * ************************
787 * information
788 gen     pneedinfo_adoORoar = .
789 replace pneedinfo_adoORoar = 0 if   pneed_info == 4 & pneed_infoy
     == 4
790 replace pneedinfo_adoORoar = 1 if   pneed_info == 1 & pneed_infoy
     == 1 | ///
791                                         pneed_info == 2 & pneed_infoy
     == 2 | pneed_info == 3 & pneed_infoy == 3 | ///
792                                         pneed_infoy == 3 & pneed_info
     == 2 | pneed_infoy == 3 & pneed_info == 1 | pneed_infoy == 3 &
    pneed_info == 4 | ///
793                                         pneed_infoy == 2 & pneed_info
     == 1 | pneed_infoy == 2 & pneed_info == 4 | ///
794                                         pneed_infoy == 1 & pneed_info
     == 4 | ///
795                                         pneed_info == 3 & pneed_infoy
     == 2 | pneed_info == 3 & pneed_infoy == 1 | pneed_info == 3 &
    pneed_infoy == 4 | ///
796                                         pneed_info == 2 & pneed_infoy
```

```
     == 1 | pneed_info == 2 & pneed_infoy == 4 | ///
797                                         pneed_info == 1 & pneed_infoy
     == 4
798  la val  pneedinfo_adoORoar PNadoORpar
799  la var  pneedinfo_adoORoar "Either adolescent or parent perceive
     a need for information"
800  tab     pneedinfo_adoORoar, m
801
802  * % of total population where either ado or parent reported a
     need for information
803  svy, subpop(adolescents_comp): tab pneedinfo_adoORoar, percent
     cell se
804
805  * how many % of adolescents or parents have fully met, partially
     met, unmet need among those where either one of them has a PN
     for information
806  svy, subpop(if adolescents_comp == 1 & pneedinfo_adoORoar == 1):
     tab pneed_infoy pneed_info, percent cell pearson se
807  local denom = e(r)-1
808  if e(c)< e(r){
809  local denom = e(c)-1
810  }
811  di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))
812
813  * ************************
814  * skill training
815  gen     pneedskills_adoORoar = .
816  replace pneedskills_adoORoar = 0 if pneed_skills == 4 &
     pneed_skillsy == 4
817  replace pneedskills_adoORoar = 1 if pneed_skills == 1 &
     pneed_skillsy == 1 | ///
818                                         pneed_skills == 2 &
     pneed_skillsy == 2 | pneed_skills == 3 & pneed_skillsy == 3 | ///
819                                         pneed_skillsy == 3 &
     pneed_skills == 2 | pneed_skillsy == 3 & pneed_skills == 1 |
     pneed_skillsy == 3 & pneed_skills == 4 | ///
820                                         pneed_skillsy == 2 &
     pneed_skills == 1 | pneed_skillsy == 2 & pneed_skills == 4 | ///
821                                         pneed_skillsy == 1 &
     pneed_skills == 4 | ///
822                                         pneed_skills == 3 &
     pneed_skillsy == 2 | pneed_skills == 3 & pneed_skillsy == 1 |
     pneed_skills == 3 & pneed_skillsy == 4 | ///
823                                         pneed_skills == 2 &
     pneed_skillsy == 1 | pneed_skills == 2 & pneed_skillsy == 4 | ///
824                                         pneed_skills == 1 &
     pneed_skillsy == 4
825  la val  pneedskills_adoORoar PNadoORpar
826  la var  pneedskills_adoORoar "Either adolescent or parent
     perceive a need for skill training"
827  tab     pneedskills_adoORoar, m
828
```

```
* % of total population where either ado or parent reported a need for skill training
svy, subpop(adolescents_comp): tab pneedskills_adoORoar, percent cell se

* how many % of adolescents or parents have fully met, partially met, unmet need among those where either one of them has a PN for skill training
svy, subpop(if adolescents_comp == 1 & pneedskills_adoORoar == 1 ): tab pneed_skillsy pneed_skills, percent cell pearson se
local denom = e(r)-1
if e(c)< e(r){
local denom = e(c)-1
}
di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))

* **********************
* **********************
* eTable 3 addition
* comparing perceived needs of adolescents and parents
* overall
svy, subpop(if adolescents_comp == 1 & totdiff_adoORpar == 1 & pneed_adoORpar == 1): tab pneedby pneedb, percent cell pearson se
local denom = e(r)-1
if e(c)< e(r){
local denom = e(c)-1
}
di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))

* counselling
svy, subpop(if adolescents_comp == 1 & totdiff_adoORpar == 1 & pneedcouns_adoORoar == 1): tab pneed_counsy pneed_couns, percent cell pearson se
local denom = e(r)-1
if e(c)< e(r){
local denom = e(c)-1
}
di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))

* medication
svy, subpop(if adolescents_comp == 1 & totdiff_adoORpar == 1 & pneedmeds_adoORoar == 1): tab pneed_medsy pneed_meds, percent cell pearson se
local denom = e(r)-1
if e(c)< e(r){
local denom = e(c)-1
}
di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))

* information
svy, subpop(if adolescents_comp == 1 & totdiff_adoORpar == 1 & pneedinfo_adoORoar == 1): tab pneed_infoy pneed_info, percent
```

```
    cell pearson se
870 local denom = e(r)-1
871 if e(c)< e(r){
872 local denom = e(c)-1
873 }
874 di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))
875
876 * skill training
877 svy, subpop(if adolescents_comp == 1 & totdiff_adoORpar == 1 &
    pneedskills_adoORoar == 1): tab pneed_skillsy pneed_skills,
    percent cell pearson se
878 local denom = e(r)-1
879 if e(c)< e(r){
880 local denom = e(c)-1
881 }
882 di "Cramer's V: " sqrt(e(cun_Pear)/(e(N)*`denom'))
883
884 * % of total sample with probable disorder where either ado aor
    parent reported a need for any and each type of help
885 foreach oftotal in      pneed_adoORpar pneedcouns_adoORoar
    pneedmeds_adoORoar pneedinfo_adoORoar pneedskills_adoORoar {
886                         svy, subpop(if adolescents_comp == 1 &
    totdiff_adoORpar == 1): tab `oftotal', percent cell se
887 }
888
889 * ************************************************************
890 * ************************************************************
891 * Reviewer 2 Cronbach's alpha for SDQ (total difficulties) (from
    scale scores)
892 use     Data/YMM2/cleaned_merged/YouthParents_merged, clear
893
894 * parents
895 preserve
896     keep if Age >= 13
897     alpha   ppeer phyper pemotion pconduct, std item
898 restore
899
900 * adolescents
901 alpha   Ypeer Yhyper Yemotion Yconduct, std item
902
903 * Cronbach's alpha for SDQ (probable internalising or
    externalising disorder)
904 * parents internalising
905 preserve
906     keep if Age >= 13
907     alpha   ppeer pemotion, std item
908 restore
909
910 * parents externalising
911 preserve
912     keep if Age >= 13
913     alpha   phyper pconduct, std item
```

```
914  restore
915
916  * adolescents internalising
917  alpha   Ypeer Yemotion, std item
918
919  * adolescents externalising
920  alpha   Yhyper Yconduct, std item
921
922  * ***********
923  * Cronbach's alpha for K10 (parents) and for McMaster Family
     Functioning Scale
924  use     Data/YMM2/OriginalData/parents
925
926  preserve
927      keep if Age >= 13
928      alpha   PFI1-PFI10, std item
929      alpha   PFI22B-PFI22L, std item
930  restore
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
```

Survey Kappa

Specify comlex survey design and subpopulation

Stata's svy command does not support kappa statistics. R has this option in the package 'survey'.

```
# one-stage cluster sample (we don't have variables for multistage sampling to include: https://www.sta
YMM_survey <- svydesign(id = ~cluster,
                        probs = NULL,
                        strat = NULL,
                        weight = ~YouthWeightC,
                        data = YMM_PN,
                        nest = FALSE)

# restrict survey design to subpopulation
YMM_surv_ado <- subset(YMM_survey, Age>=13)
```

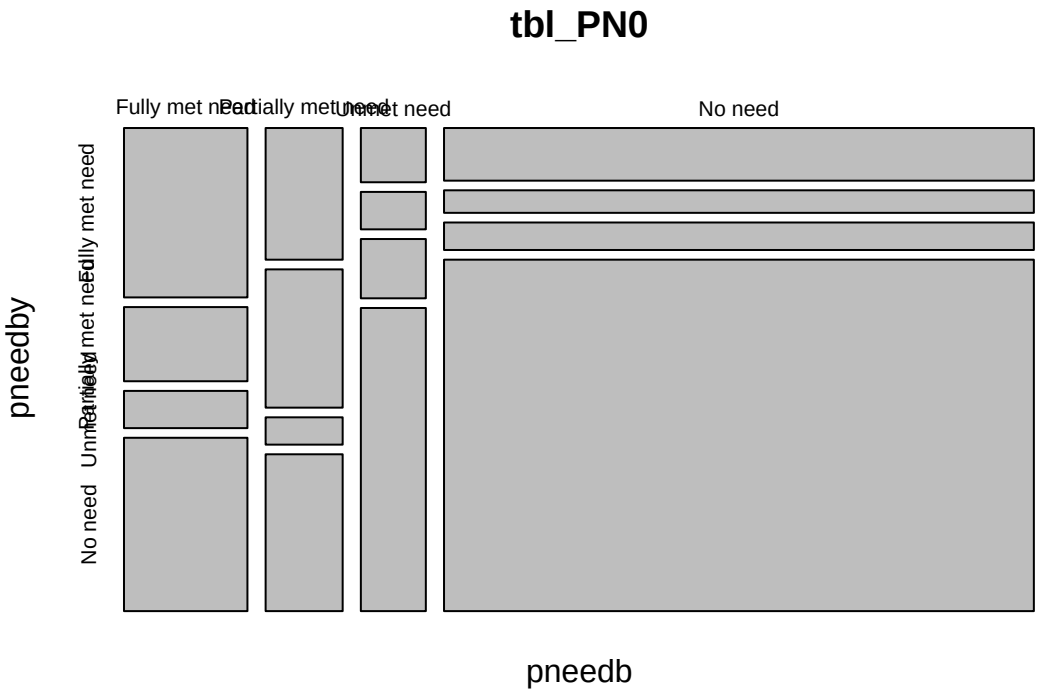
Survey estimates

We compared the survey estimates of Stata (command svy: tab) with those of R (command svytable).

```
# Note that the `echo = FALSE` parameter in code chunk above would prevent printing of the R code that
(tbl_PN0 <- svytable(~pneedb+pneedby, YMM_surv_ado)) # returns population count, not proportions
```

```
##                     pneedby
## pneedb               Fully met need Partially met need Unmet need
##   Fully met need          76638.066          33545.025  16836.717
##   Partially met need      37166.779          39026.063   7707.256
##   Unmet need              12917.666           8916.073  14117.845
##   No need                113796.348          48683.640  59421.803
##                     pneedby
## pneedb                  No need
##   Fully met need      78417.113
##   Partially met need  44260.377
##   Unmet need          72181.154
##   No need            759581.630
```

```
plot(tbl_PN0) # funny plot
```




```
svychisq(~pneedb+pneedby, YMM_surv_ado) # chi-square with F statistic: same results as in stata
```

```
##
##  Pearson's X^2: Rao & Scott adjustment
##
## data:  svychisq(~pneedb + pneedby, YMM_surv_ado)
## F = 37.801, ndf = 8.8023, ddf = 4709.2321, p-value < 2.2e-16
```

```
prop <- svymean(~pneedb, YMM_surv_ado)  # gives proportion for each category of variable pneedb
prop
```

```
##                               mean     SE
## pneedbFully met need      0.144347 0.0081
## pneedbPartially met need 0.090050 0.0064
## pneedbUnmet need          0.075978 0.0067
## pneedbNo need             0.689625 0.0111
```

Survey kappa

How does survey kappa estimated in R compare with kappa estimated in stat?

```
kapOvPN <-
  svykappa(~pneedb+pneedby, YMM_surv_ado)
kapOvPN # leads to the same estimate as just using 'normal' kappa. SE 0.02 (rounded) bit different.
```

```
##         nlcon     SE
## kappa 0.24928 0.0178
```

```
# kappa for overall perceived need (PN) excluding those with agreement on no need ####
YMM_surv_ado_excl <- subset(YMM_surv_ado, agree_NO_overall == "no")
svytable(~agree_NO_overall, YMM_surv_ado_excl)
```

```
## agree_NO_overall
##       no      yes
```

```
## 663631.9      0.0
```

```
svytable(~pneedb+pneedby, YMM_surv_ado_excl)
```

```
##                      pneedby
## pneedb                Fully met need Partially met need Unmet need
##   Fully met need           76638.066          33545.025  16836.717
##   Partially met need       37166.779          39026.063   7707.256
##   Unmet need               12917.666           8916.073  14117.845
##   No need                 113796.348          48683.640  59421.803
##                      pneedby
## pneedb                   No need
##   Fully met need       78417.113
##   Partially met need   44260.377
##   Unmet need           72181.154
##   No need                  0.000
```

```
kapOvPNex <-
  svykappa(~pneedb+pneedby, YMM_surv_ado_excl)
kapOvPNex # leads to same estimate and SE as using 'normal' kappa.
```

```
##          nlcon     SE
## kappa -0.10551 0.0192
```

Survey kappa in R leads to same estimates and SE as kappa estimated in stata without survey prefix.

R script for graphs

Perceived Need

Plot for overall perceived need for care (any type of care) and for perceived need for four different types of care (information, medication, counselling, skill-training)

Same plot as above but only including subsample of adolescents with a mental health problem.

Agreement on overall perceived need

Circos https://jokergoo.github.io/circlize_book/book/the-chorddiagram-function.html to plot agreement and disagreement of adolescents and parents on overall perceived need (for any type of care).

Subsetting and preparation

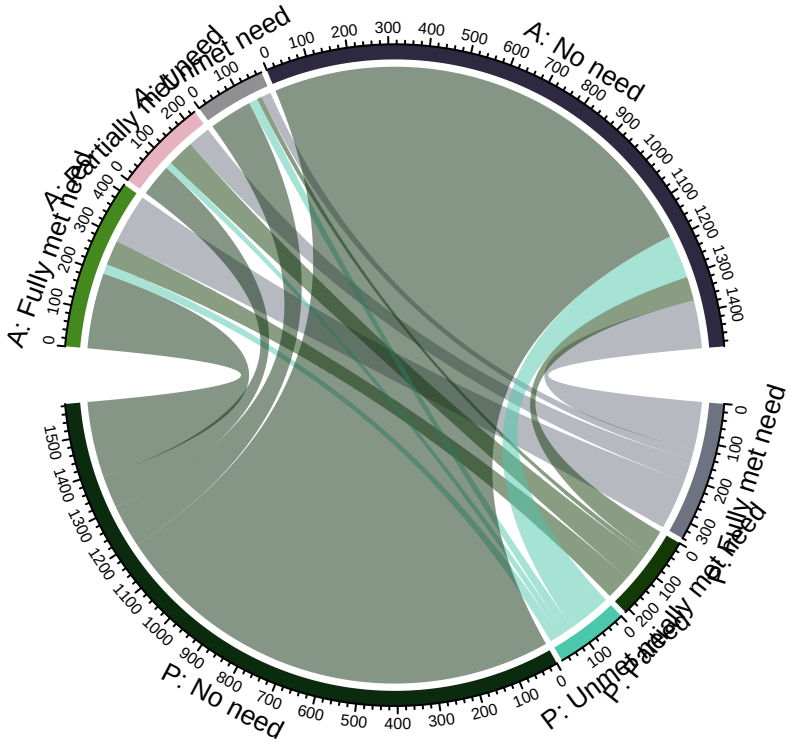
```
library(circlize)
library(janitor) # used to clean names

Overall <- tab(YMM_pn, pneedb, pneedby)
```

```
##
##             pneedb              pneedby      Freq.  Percent     Cum.
##
##     Fully met need       Fully met need        131     5.66     5.66
##     Fully met need   Partially met need         59     2.55     8.21
##     Fully met need           Unmet need         25     1.08     9.29
##     Fully met need              No need        125     5.40    14.69
## ------------------- ------------------- ----------------------------
## Partially met need       Fully met need         65     2.81    17.50
## Partially met need   Partially met need         70     3.03    20.53
## Partially met need           Unmet need         13     0.56    21.09
## Partially met need              No need         63     2.72    23.81
## ------------------- ------------------- ----------------------------
##         Unmet need       Fully met need         25     1.08    24.89
##         Unmet need   Partially met need         17     0.73    25.63
##         Unmet need           Unmet need         23     0.99    26.62
##         Unmet need              No need        113     4.88    31.50
## ------------------- ------------------- ----------------------------
##            No need       Fully met need        197     8.51    40.02
##            No need   Partially met need         84     3.63    43.65
##            No need           Unmet need        112     4.84    48.49
##            No need              No need       1192    51.51   100.00
```

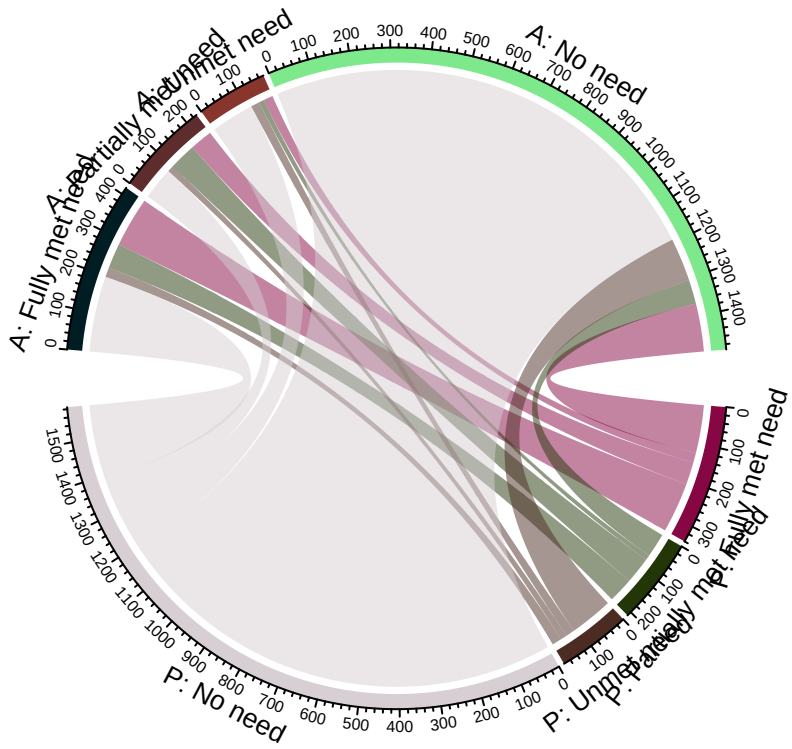
```
Overall <- as.data.frame(Overall[, c(1:3)])
Overall <- plyr::rename(Overall, c("pneedb" = "Overall Need Parents",
                           "pneedby" = "Overall Need Adolescents",
                           "Freq." = "Frequency"))

Overall_agg <- Overall %>%
  clean_names()
rm(Overall)
```

Circos Plot

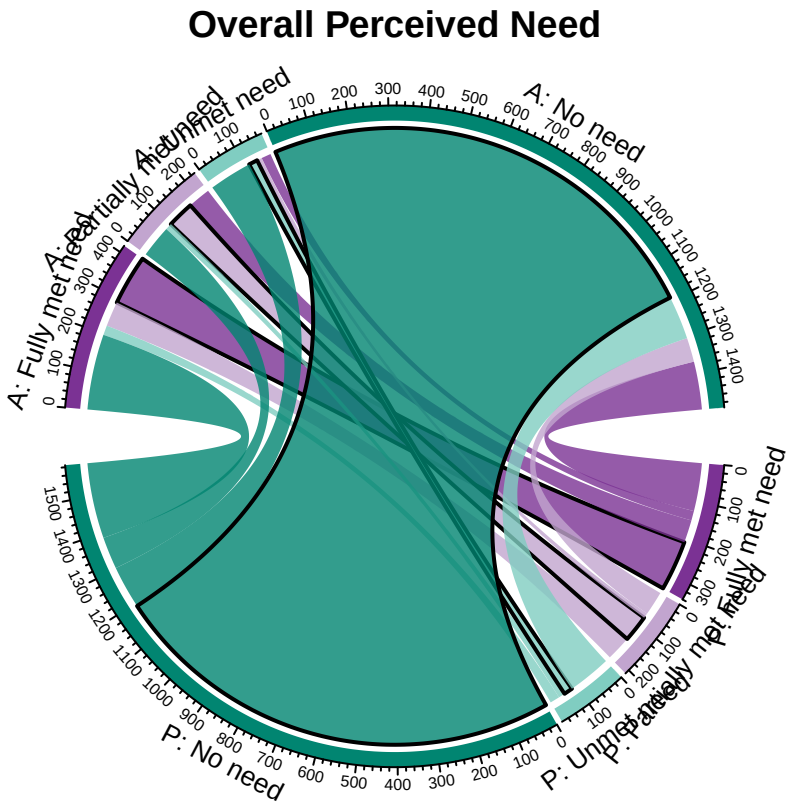
```r
# total sample ####

# Values for adults & kids cannot be the same, otherwise we get rubbish :/
Overall_agg$overall_need_parents <- paste("P:", Overall_agg$overall_need_parents)
Overall_agg$overall_need_adolescents <- paste("A:", Overall_agg$overall_need_adolescents)

circos.clear()
chordDiagram(Overall_agg)
```




```r
# there is an option to specify order...
circos.clear() # always use this to reset to default graphical settings
chordDiagram(Overall_agg,
             order = c("P: Fully met need", "P: Partially met need", "P: Unmet need", "P: No need",
                       "A: Fully met need", "A: Partially met need", "A: Unmet need", "A: No need"))
```




```
# ... and to specify grid colours: same categories have same colours
grid.col = c("P: Fully met need" = "#7b3294", "P: Partially met need" = "#c2a5cf",
             "P: Unmet need" = "#80cdc1", "P: No need" = "#018571",
             "A: Fully met need" = "#7b3294", "A: Partially met need" = "#c2a5cf",
             "A: Unmet need" = "#80cdc1", "A: No need" = "#018571")

# ... link borders: add border/frame to agreement on each category
border_df = data.frame(c("P: Fully met need", "P: Partially met need", "P: Unmet need", "P: No need"),
                       c("A: Fully met need", "A: Partially met need", "A: Unmet need", "A: No need"),
                       c(1, 1, 1, 1))
# ... thickness of borders
lwd_df = data.frame(c("P: Fully met need", "P: Partially met need", "P: Unmet need", "P: No need"),
                    c("A: Fully met need", "A: Partially met need", "A: Unmet need", "A: No need"),
                    c(2, 2, 2, 2))

circos.clear()
chordOverall <- chordDiagram(Overall_agg,
                order = c("P: Fully met need", "P: Partially met need", "P: Unmet need", "P: No need",
                          "A: Fully met need", "A: Partially met need", "A: Unmet need", "A: No need"),
                grid.col = grid.col,
                transparency = 0.2,
                link.border = border_df,
                link.lwd = lwd_df)
title("Overall Perceived Need")
```



Barriers to care

Next, we will have a look at the distribution of adolescents and parents barriers to care (first without then second with survey weighted including confidence intervals).

```
# work with very long data and facet_wrap ####
YMM_barrier <- select(YMM_ado, householdID, par_selfrel:ado_school)
names(YMM_barrier)
```

```
##  [1] "householdID"  "par_selfrel"  "par_unsneed"  "par_unswhere"
##  [5] "par_bettself" "par_getserv"  "par_cost"     "par_appoint"
##  [9] "par_stigma"   "par_refuse"   "ado_selfrel"  "ado_unsneed"
## [13] "ado_unswhere" "ado_bettself" "ado_getserv"  "ado_cost"
## [17] "ado_appoint"  "ado_stigma"   "ado_school"
```

```
YMM_barrier[, c(2:19)] <-
  lapply(YMM_barrier[, c(2:19)], factor,
         labels = c("no", "yes"))
table(YMM_barrier$par_selfrel)
```

```
##
##  no yes
## 284 119
```

```
#### first: long data sets for adolescents and parents separately ####
# parents
YMM_barrier_parents <- select(YMM_barrier, par_selfrel:par_refuse)
YMM_barrier_parents$par_school <- NA
YMM_barrier_parents <- plyr::rename(YMM_barrier_parents, c("par_selfrel" = "self-reliance (A)",
```

```
                                                    "par_unsneed" = "unsure if help needed (A)",
                                                    "par_unswhere" = "unsure where to get help (A)",
                                                    "par_bettself" = "problem will get better by itself
                                                    "par_getserv" = "problem finding service that could
                                                    "par_cost" = "couldn't afford it (S)",
                                                    "par_appoint" = "couldn't get appointment (S)",
                                                    "par_stigma" = "stigma (A)",
                                                    "par_refuse" = "child refused",
                                                    "par_school" = "asked for help at school but didn't

YMM_barrier_long_parents <- YMM_barrier_parents %>%
  gather("self-reliance (A)", "unsure if help needed (A)",
         "unsure where to get help (A)", "problem will get better by itself (A)",
         "problem finding service that could help (S)", "couldn't afford it (S)",
         "couldn't get appointment (S)", "stigma (A)",
         "child refused", "asked for help at school but didn't get it (S)",
         key = "question", value = "noyes")
```

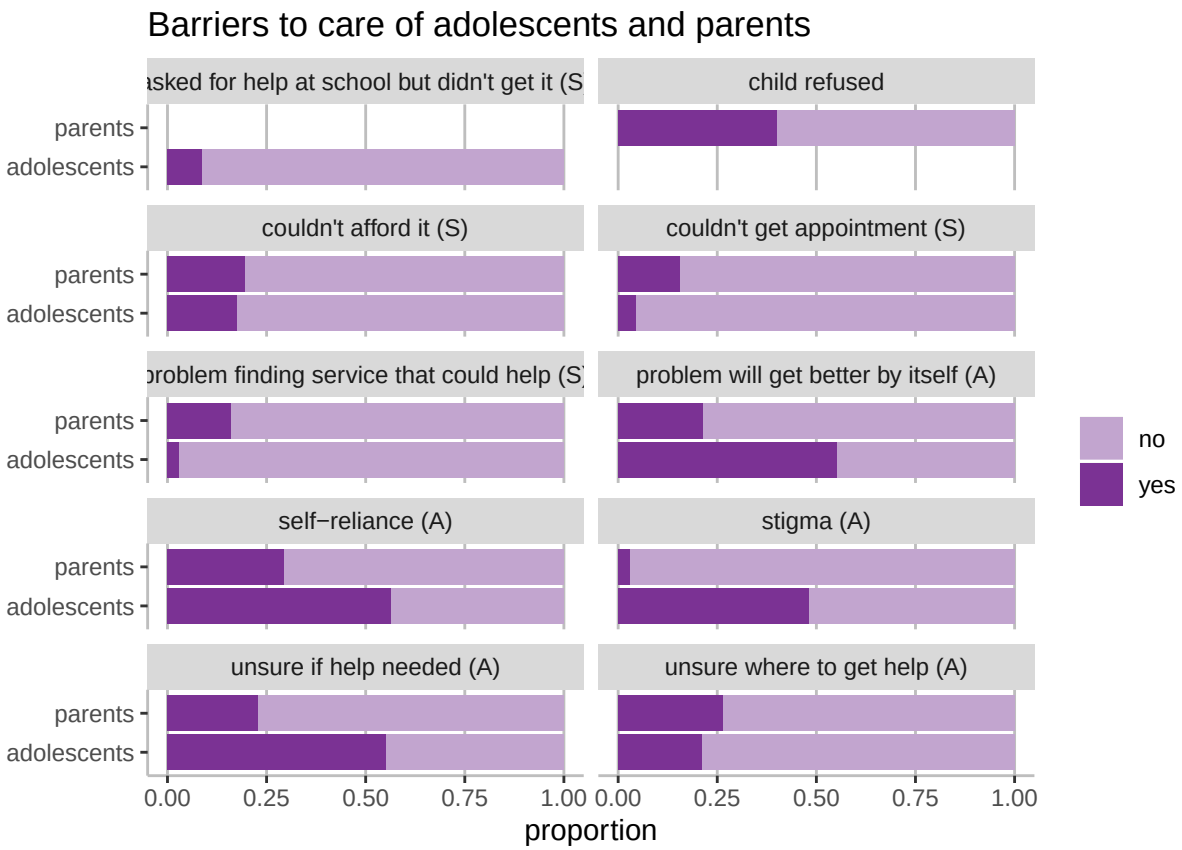
```
## Warning: attributes are not identical across measure variables;
## they will be dropped
```

```
YMM_barrier_long_parents$source <- "parents"

# adolescents
YMM_barrier_adolescents <- select(YMM_barrier, ado_selfrel:ado_school)
YMM_barrier_adolescents$ado_refuse <- NA
YMM_barrier_adolescents <- plyr::rename(YMM_barrier_adolescents, c("ado_selfrel" = "self-reliance (A)",
                                                                   "ado_unsneed" = "unsure if help needed (A)
                                                                   "ado_unswhere" = "unsure where to get help
                                                                   "ado_bettself" = "problem will get better
                                                                   "ado_getserv" = "problem finding service t
                                                                   "ado_cost" = "couldn't afford it (S)",
                                                                   "ado_appoint" = "couldn't get appointment
                                                                   "ado_stigma" = "stigma (A)",
                                                                   "ado_refuse" = "child refused",
                                                                   "ado_school" = "asked for help at school bu

YMM_barrier_long_adolescents <- YMM_barrier_adolescents %>%
  gather("self-reliance (A)", "unsure if help needed (A)",
         "unsure where to get help (A)", "problem will get better by itself (A)",
         "problem finding service that could help (S)", "couldn't afford it (S)",
         "couldn't get appointment (S)", "stigma (A)",
         "child refused", "asked for help at school but didn't get it (S)",
         key = "question", value = "noyes")
```

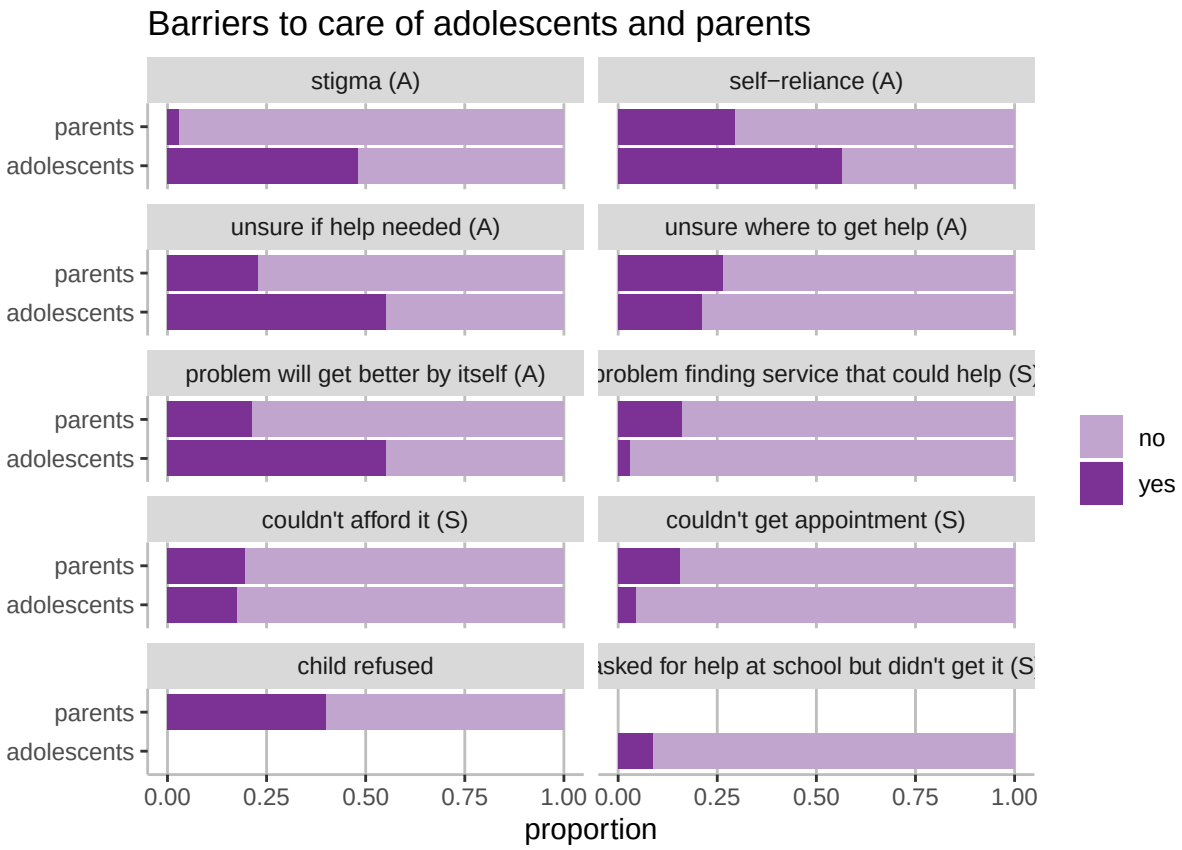
```
## Warning: attributes are not identical across measure variables;
## they will be dropped
```

```
YMM_barrier_long_adolescents$source <- "adolescents"

#### second: merge two long data sets into one very long ####
YMM_barrier_long <- rbind(YMM_barrier_long_parents, YMM_barrier_long_adolescents)

#### third: plot with facet_wrap ####
ggplot(na.omit(YMM_barrier_long), mapping = aes(x= source, fill = noyes)) +
```

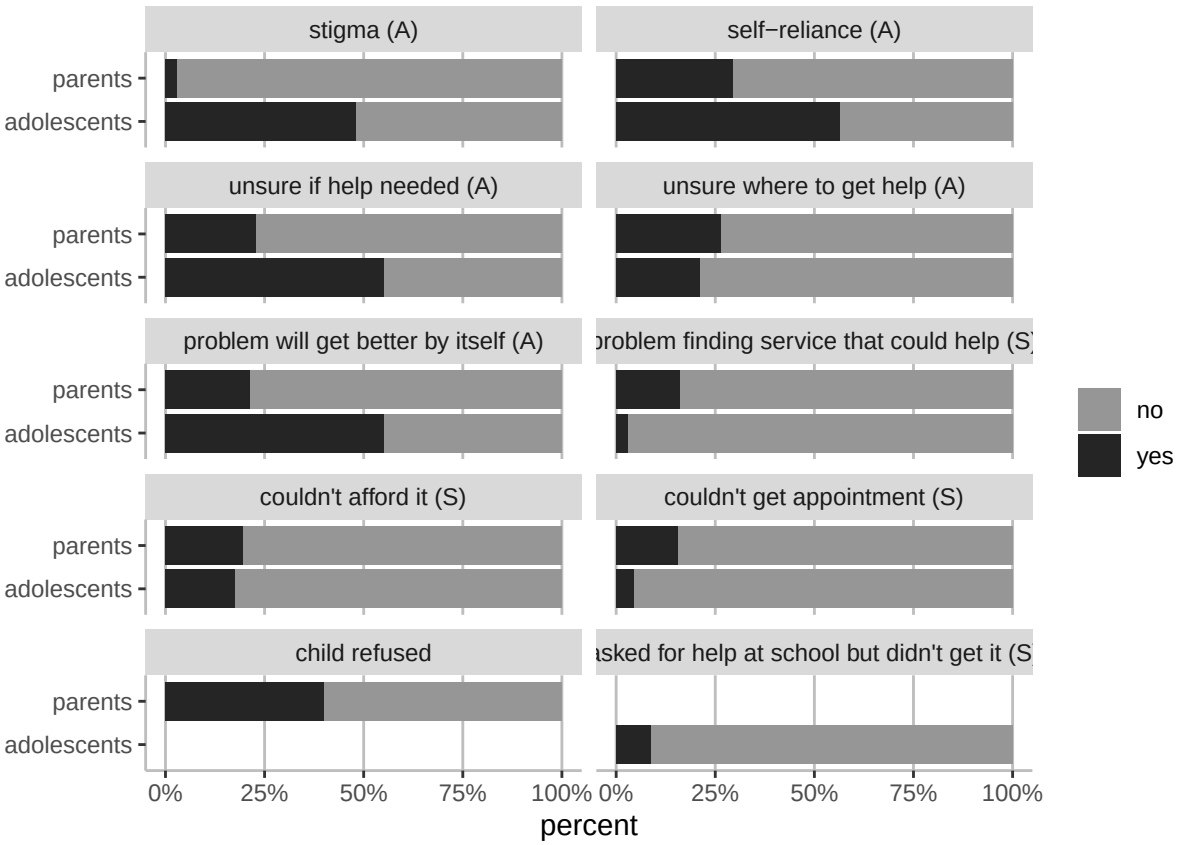
```
  geom_bar(position = "fill") +
  facet_wrap(~question, nrow = 5, ncol = 2) + coord_flip() + xlab("") + ylab("proportion") +
  ggtitle("Barriers to care of adolescents and parents") +
  scale_fill_manual("", values = c("#c2a5cf", "#7b3294")) +
  theme(panel.grid.major.x = element_line(colour = "grey"), panel.background = element_blank(),
        axis.line = element_line(colour = "grey"))
```




```
# without numbers before labels (01_, 02_, 03_) order not as i want it to be #### solution ####
YMM_barrier_long$question_f = factor(YMM_barrier_long$question,
                                     levels = c("stigma (A)", "self-reliance (A)",
                                                "unsure if help needed (A)","unsure where to get help (
                                                "problem will get better by itself (A)",
                                                "problem finding service that could help (S)", "couldn'
                                                "couldn't get appointment (S)",
                                                "child refused", "asked for help at school but didn't g

# plot with new order ####
ggplot(na.omit(YMM_barrier_long), mapping = aes(x= source, fill = noyes)) +
  geom_bar(position = "fill") +
  facet_wrap(~question_f, nrow = 5, ncol = 2) + coord_flip() + xlab("") + ylab("proportion") +
  ggtitle("Barriers to care of adolescents and parents") +
  scale_fill_manual("", values = c("#c2a5cf", "#7b3294")) +
  theme(panel.grid.major.x = element_line(colour = "grey"), panel.background = element_blank(),
        axis.line = element_line(colour = "grey"))
```




```
# plot with new order and grey bars for publication, no title, and percent instead of proportion ####
library(dplyr)
YMM_barrier_long_perc <- YMM_barrier_long %>%
  group_by(source,question_f,noyes) %>%
  summarise(count=n()) %>%
  mutate(perc=count/sum(count))

brks <- c(0, 0.25, 0.5, 0.75, 1)

ggplot(na.omit(YMM_barrier_long_perc), mapping = aes(x = source, y = perc, fill = noyes)) +
  geom_bar(position = "fill", stat = "identity") +
  scale_y_continuous(breaks = brks, labels = scales::percent(brks)) +
  facet_wrap(~question_f, nrow = 5, ncol = 2) + coord_flip() + xlab("") + ylab("percent") +
  scale_fill_manual("", values = c("#969696", "#252525")) +
  theme(panel.grid.major.x = element_line(colour = "grey"), panel.background = element_blank(),
        axis.line = element_line(colour = "grey"))
```




```
# rm data sets
rm(YMM_barrier_parents, YMM_barrier_adolescents, YMM_barrier)
rm(YMM_barrier_long_adolescents, YMM_barrier_long_parents)
```

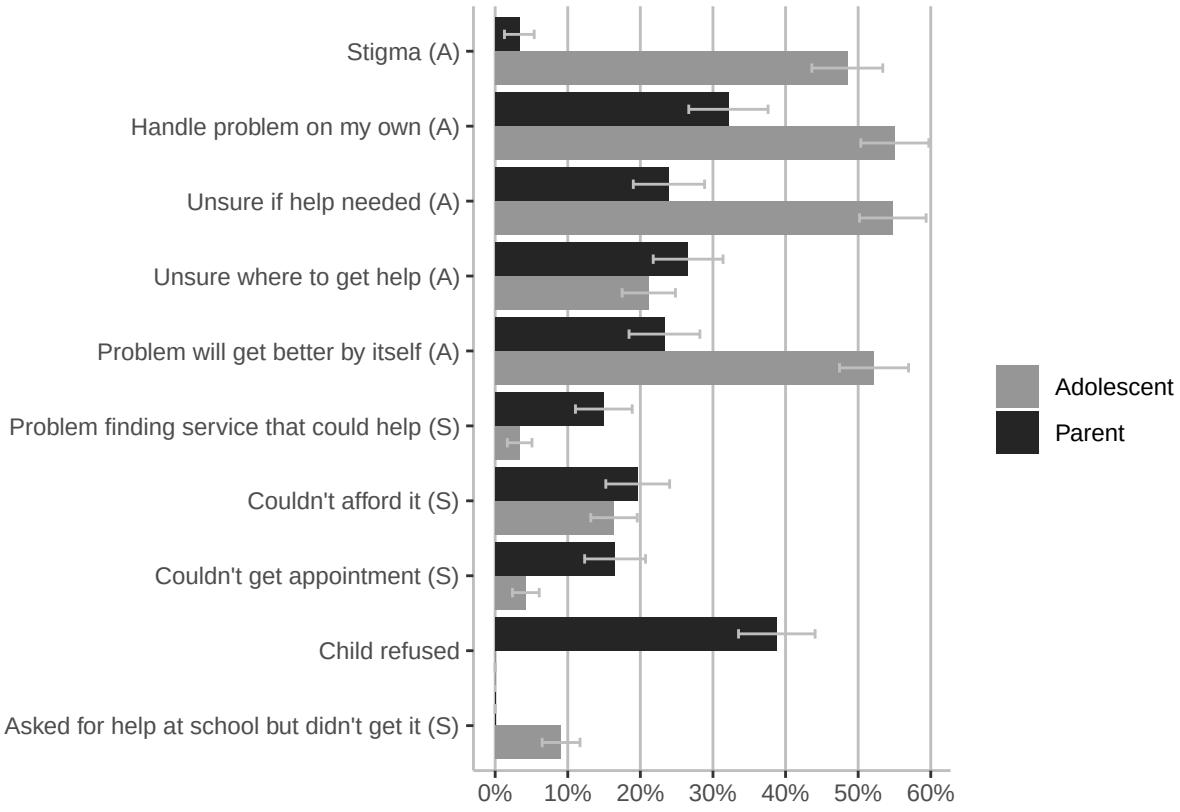
Survey weighted

```
# chose variables for survey analysis
YMM_barrier_survey <- select(YMM, householdID, cluster, Age, YouthWeightC, par_selfrel:ado_school)

YMM_barrier_survey$par_school <- NA
YMM_barrier_survey$ado_refuse <- NA

# survey design
# one-stage cluster sample (we don't have variables for multistage sampling to include: https://www.sta

YMM_survey <- svydesign(id = ~cluster,
                        probs = NULL,
                        strat = NULL,
                        weight = ~YouthWeightC,
                        data = YMM_barrier_survey,
                        nest = FALSE)

# restrict survey design to subpopulation
YMM_surv_ado <- subset(YMM_survey, Age>=13)
```

```
# approach 2: estimates for ados and parents separately, then merge so we have two groups.
# parents
barriers_par <- svymean(~par_stigma + par_selfrel + par_unsneed +
```

```
                      par_unswhere + par_bettself + par_getserv +
                      par_cost + par_appoint + par_refuse,
                      YMM_surv_ado, na.rm = TRUE)

barriers_CI_par <- confint(svymean(~par_stigma + par_selfrel + par_unsneed +
                      par_unswhere + par_bettself + par_getserv +
                      par_cost + par_appoint + par_refuse,
                      YMM_surv_ado, na.rm = TRUE)) # 95% confidence intervalls instead of SE

barriers_par <- cbind(barriers_par, barriers_CI_par)

barriers_par <- as_tibble(barriers_par)

barriers_par <- barriers_par[c(2, 4, 6, 8, 10, 12, 14, 16, 18), ] # chose only "yes" answers

par_school <- c(0, 0, 0) # add row to parent df for adolescent barrier "asked at school but didn't get
barriers_par <- rbind(barriers_par, par_school)

barriers_par$question <- c("Stigma (A)", "Handle problem on my own (A)", "Unsure if help needed (A)",
                       "Unsure where to get help (A)", "Problem will get better by itself (A)",
                       "Problem finding service that could help (S)",
                       "Couldn't afford it (S)", "Couldn't get appointment (S)", "Child refused",
                       "Asked for help at school but didn't get it (S)")

barriers_par$group <- "Parent"

# rename couple of variables
barriers_par <- plyr::rename(barriers_par, c("barriers_par"="estimate", "2.5 %"="lower", "97.5 %"="upper

# adolescents
barriers_ado <- svymean(~ado_stigma + ado_selfrel + ado_unsneed +
                        ado_unswhere + ado_bettself + ado_getserv +
                        ado_cost + ado_appoint + ado_school,
                        YMM_surv_ado, na.rm = TRUE)

barriers_CI_ado <- confint(svymean(~ado_stigma + ado_selfrel + ado_unsneed +
                        ado_unswhere + ado_bettself + ado_getserv +
                        ado_cost + ado_appoint + ado_school,
                        YMM_surv_ado, na.rm = TRUE))

barriers_ado <- cbind(barriers_ado, barriers_CI_ado)

barriers_ado <- as_tibble(barriers_ado)

barriers_ado <- barriers_ado[c(2, 4, 6, 8, 10, 12, 14, 16, 18), ]

ado_refuse <- c(0, 0, 0) # add row to adolescent df for parent barrier "child refused"
barriers_ado <- rbind(barriers_ado, ado_refuse)

barriers_ado$question <- c("Stigma (A)", "Handle problem on my own (A)", "Unsure if help needed (A)",
                       "Unsure where to get help (A)", "Problem will get better by itself (A)",
                       "Problem finding service that could help (S)",
                       "Couldn't afford it (S)", "Couldn't get appointment (S)",
```

```
                        "Asked for help at school but didn't get it (S)", "Child refused")

barriers_ado$question = factor(barriers_ado$question,
                               levels = c("Stigma (A)", "Handle problem on my own (A)", "Unsure if help
                                          "Unsure where to get help (A)", "Problem will get better by its
                                          "Problem finding service that could help (S)",
                                          "Couldn't afford it (S)", "Couldn't get appointment (S)", "Chil
                                          "Asked for help at school but didn't get it (S)")) # same order

barriers_ado$group <- "Adolescent"

# rename couple of variables
barriers_ado <- plyr::rename(barriers_ado, c("barriers_ado"="estimate", "2.5 %"="lower", "97.5 %"="upper

# merge ado and parent data sets by question
barriers_both <- rbind(barriers_par, barriers_ado)

# order of factors messy again (doesn't inherit order specified above). Display will be from bottom to
barriers_both$question <- factor(barriers_both$question,
                                 levels = c("Asked for help at school but didn't get it (S)", "Child re
                                            "Couldn't afford it (S)", "Problem finding service that cou
                                            "Problem will get better by itself (A)", "Unsure where to g
                                            "Unsure if help needed (A)", "Handle problem on my own (A)"

# graph
brks <- c(0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6) # specified in original values
dodge <- position_dodge(width=0.9) # to make the error bars narrower

ggplot(barriers_both, mapping = aes(x = question, y = estimate, fill = group)) +
  geom_col(position = "dodge") +
  geom_errorbar(aes(x=question, ymin = lower, ymax = upper), colour = "grey",
                position = dodge, width = 0.25) +
  coord_flip() + xlab("") + ylab("") +
  scale_y_continuous(breaks = brks, labels = scales::percent(brks, accuracy = 1)) +
  scale_fill_manual("", values = c("#969696", "#252525")) +
  theme(panel.grid.major.x = element_line(colour = "grey"), panel.background = element_blank(),
        axis.line = element_line(colour = "grey"))
```


Stigma (A)
Handle problem on my own (A)
Unsure if help needed (A)
Unsure where to get help (A)
Problem will get better by itself (A)
Problem finding service that could help (S)
Couldn't afford it (S)
Couldn't get appointment (S)
Child refused
Asked for help at school but didn't get it (S)
0%
10%
20%
30%
40%
50%
60%
Adolescent
Parent