

How can we measure mental health outcomes for cohort members?

Summary: MCS6

- MCS6 marks the first time the cohort members reported their mental health status themselves (as opposed to their caretakers reporting it on their behalf).
- MCS6 uses two different scales for measuring the mental health of cohort members: the Short Moods and Feelings Questionnaire or SMFQ (completed by cohort members themselves) and the Strength and Difficulties Questionnaire or SDQ (completed by the cohort members' main parent).
- The two scales measure different aspects of mental health. The SDQ is a broader mental health screening tool, which measures conduct problems, hyperactivity, emotional symptoms, relationship with peers, and prosocial behaviour. The SMFQ only a screening tool for depression.
- Both scales have demonstrated strong validity and reliability for measuring mental health outcomes. Given their respective strengths and limitations, I think the two scales are complementary. In short, my suggestion would be to use both the SDQ and SMFQ to measure mental health in our model.
- In terms of interpretation and scoring:
 - SMFQ can be used to measure the prevalence of depressive symptoms. The output would be a categorical, nominal variable (one hot encoding?).
 - The score ranges from 0 to 26.
 - While there is no single, prescribed threshold that is used in all circumstances (and there is some evidence of gender-based differences), scoring a 12 or higher may indicate depression in the respondent. I suggest we use this as cut-off point.
 - Using this cut-off point would allow us to measure prevalence through categorising cohort members into two groups (depressed vs not depressed).
 - SDQ can be used to measure the degree of mental health across 5 scales, and in total (total difficulties score). The output would be categorical, ordinal variable (ordinal encoding?).
 - The 25 items in the SDQ comprise 5 scales of 5 items each. The 5 scales can be scored individually (f.e. emotional problems score, conduct problems score etc) as well as collectively (total difficulties score). I suggest we use all of the 6 scales (variables below).

SDQ derived variables

Variable name	Description
FDEMOT00	S6 DV SDQ Emotional symptoms
FDCOND00	S6 DV SDQ Conduct problems
FDHYPE00	S6 DV SDQ Hyperactivity/inattention
FDPEER00	S5 DV SDQ Peer problems
FDPROS00	S6 DV SDQ Prosocial
FDEBDTAA	S6 DV SDQ Total difficulties

- A four-fold classification has been created based on a population-based UK community sample. The bandings created attempted to choose cutpoints such that 80% of children scored 'close to average', 10% 'slightly raised' and 5% 'high' and 5% 'very high'. See the table below for more detail on the cut-off points.
- NB:

- The classification bands below are for parent-completed SDQs. The bands for teacher- or self-completed SDQs differ slightly.
- For the Prosocial score, the bracketed heading applies (slightly lowered, low & very low).

Parent completed SDQ	Close to average	Slightly raised (Slightly lowered)	High (Low)	Very high (Very low)
Total difficulties score	0-13	14-16	17-19	20-40
Emotional problems score	0-3	4	5-6	7-10
Conduct problems score	0-2	3	4-5	6-10
Hyperactivity score	0-5	6-7	8	9-10
Peer problems score	0-2	3	4	5-10
Prosocial score	8-10	7	6	0-5
Impact score	0	1	2	3-10

Summary: MCS2-7

Sweep	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
Year	2001	2004	2006	2008	2012	2015	2018	2023
Age	9M	3Y	5Y	7Y	11Y	14Y	17Y	20Y
SDQ	x	✓	✓	✓	✓	✓	✓	?
Mood and Feelings Scale (short form)	x	x	x	x	x	✓	x	?
Young Person Kessler 6 Scale	x	x	x	x	x	x	✓	?

- The type, respondent and focus of measurement scales differs between sweeps MCS1-MCS7:
 - Types: Strengths and Difficulties Questionnaire (SDQ), Kessler 6 Scale, Short Moods & Feelings Questionnaire (SMFW)
 - Respondent: Main parent, partner or cohort members (children/young adults)
 - Focus: Mental health of main parent, partner or cohort members (children/young adults)
- For MCS2-5, the only scale used to screen the mental health of the cohort members is the SDQ, which is completed by the main parent.
- MCS6 uses two scales: SDQ & SMFQ.
 - The Short Moods & Feelings Questionnaire (SMFQ):
 - Focuses on the mental health of the cohort members (as opposed the mental health of their caretakers).
 - Filled out by the cohort members themselves (as opposed to by their caretakers).

- Is only focused on screening for depression.
- Strengths and Difficulties Questionnaire (SDQ)
 - Focuses on the mental health of the cohort members (as opposed the mental health of their caretakers).
 - Filled out by the cohort members' caretakers (as opposed to by the cohort members themselves).
 - Good validity and reliability.
- For MCS7, cohort members self-completed a range of questionnaires on their mental health: the SDQ, Young Person Kessler 6 scale, Short WEMWBS and the Young Person Warwick-Edinburgh Mental Wellbeing Scale (Short WEMWBS). Importantly, cohort members did not complete the SMFQ. The main parent still completed the parent-versions of the SDQ.
 - I can assess these scales in more detail once we are happy with the MVP/MCS6 model.

Mental health measurement scales

SDQ

Focus

Mental health of main parent

Respondents

Main parent via self-completion questionnaire

Description

The SDQ is a behavioural screening questionnaire for 3- to 16-year-olds. It measures 25 items on psychological attributes (Goodman 1997). At MCS6, the P4-17 - SDQ and impact supplement for the parents of 4-17-year-olds version was used.

Method

Self-completion questionnaire.

The respondent is asked to comment on the following statements with response options: Not true, Somewhat true or Certainly true.

Question name	Question	Variables	Equivalent on SDQ
SDPF	Considerate of others' feelings	FPSDPF00	SDQ item 1
SDRO	Restless, overactive, cannot stay still long	FPSDRO00	SDQ item 2
SDHS	Complains of headaches/stomach-aches/sickness	FPSDHS00	SDQ item 3
SDSR	Shares readily with others	FPSDSR00	SDQ item 4
SDTT	Often has temper tantrums	FPSDTT00	SDQ item 5

SDSP	Tends to play alone	FPSDSP00	SDQ item 6
SDOR	Generally obedient	FPSDOR00	SDQ item 7
SDMW	Often seems worried	FPSDMW00	SDQ item 8
SDHU	Helpful if someone is hurt, upset or ill	FPSDHU00	SDQ item 9
SDFS	Constantly fidgeting	FPSDFS00	SDQ item 10
SDGF	Has at least one good friend	FPSDGF00	SDQ item 11
SDFB	Fights with or bullies other children	FPSDFB00	SDQ item 12
SDUD	Often unhappy	FPSDUD00	SDQ item 13
SDLC	Generally liked by other children	FPSDLC00	SDQ item 14
SDDC	Easily distracted	FPSDDC00	SDQ item 15
SDNC	Nervous or clingy in new situations	FPSDNC00	SDQ item 16
SDKY	Kind to younger children	FPSDKY00	SDQ item 17
SD0A	Often lies or cheats	FPSD0A00	SDQ item 18
SDPB	Picked on or bullied by other children	FPSDPB00	SDQ item 19
SDVH	Often volunteers to help others	FPSDVH00	SDQ item 20
SDST	Can stop and think before acting	FPSDST00	SDQ item 21
SDCS	Steals from home, school or elsewhere	FPSDCS00	SDQ item 22
SDGB	Gets on better with adults	FPSDGB00	SDQ item 23
SDFE	Many fears, easily scared	FPSDFE00	SDQ item 24
SDTE	Sees tasks through to the end, good attention span	FPSDTE00	SDQ item 25

The above 25 items are divided between 5 scales:

1. Emotional symptoms

1. Complains of headaches/stomach aches/sickness
2. Often seems worried
3. Often unhappy
4. Nervous or clingy in new situations
5. Many fears, easily scared.

2. Conduct problems

1. Often has temper tantrums
2. Generally obedient
3. Fights with or bullies other children
4. Steals from home, school or elsewhere (In MCS2: Can be spiteful to others)
5. Often lies or cheats (in MCS2: Often argumentative with adults).

3. Hyperactivity/inattention

1. Restless, overactive, cannot stay still for long
2. Constantly fidgeting
3. Easily distracted
4. Can stop and think before acting*
5. Sees tasks through to the end*

4. Peer relationship problems

1. Tends to play alone
2. Has at least one good friend*
3. Generally liked by other children*
4. Picked on or bullied by other children
5. Gets on better with adults.

5. Prosocial behaviour

1. Considerate of others' feelings
2. Shares readily with others
3. Helpful if someone is hurt, upset or ill
4. Kind to younger children
5. Often volunteers to help others.

*Denotes items that are reversed when generating sub-scales on behaviour.

Each of the five scales can be used alone or together to create:

- 1-4 when taken together generate a total difficulties score
- 1 and 4 create an internalising problems score
- 2 and 3 create an externalising conduct score
- 5 alone measures prosocial behaviour

SDQ derived variables

Variable name	Description
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Kessler 6 Scale

Focus

Mental health of main and partner

Respondents

Main parent and partner via self-completion questionnaires

Description

The Kessler 6 (K6) scale is a quantifier of non-specific psychological distress. It consists of six questions about depressive and anxiety symptoms that a person has experienced in the last 30 days.

Method

Self-completion questionnaire

For each question, respondents were offered a self-report scale of five possible answers plus don't know/don't wish to answer:

1. All of the time
2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time
6. Don't know/Don't wish to answer

The questions are preambled by the statement: 'The next few questions are about how you have felt over the last 30 days'. The six questions are:

Question name	Question	Variable
PHDE	During the last 30 days, about how often did you feel so depressed that nothing could cheer you up?	FPPHDE00
PHHO	During the last 30 days, about how often did you feel hopeless?	FPPHHO00

PHRF	During the last 30 days, about how often did you feel restless or fidgety?	FPPHRF00
PHEE	During the last 30 days, about how often did you feel that everything was an effort?	FPPHEE00
PHWO	During the last 30 days, about how often did you feel worthless?	FPPHWO00
PHNE	During the last 30 days, about how often did you feel nervous?	FPPNHE00

Kessler-derived variables

Variable name	Description
FPKESS00	S6 DV Kessler K6 Scale

Short Moods and Feelings Questionnaire

Focus

Children's mental health (specifically depression)

Respondents

Children

Description

The Mood and Feelings Questionnaire (MFQ) was developed by Adrian Angold and Elizabeth J. Costello in 1987 (Angold et al., 1995; Costello & Angold, 1988). The MFQ consists of a series of 33 descriptive phrases regarding how the subject has been feeling or acting recently. It is a screening tool for depression in children and young people aged 6 to 19.

The MFQ exists in six versions: child self-report, parent-report and adult self-report, with each questionnaire available in a long and short version (33 or 13 questions).

Method

Self-completion questionnaire

The next few questions are about how you have been feeling or acting recently. For each question please select the answer which reflects how you have been feeling or acting in the past two weeks. Please select one answer on every row.

- *MDSA I felt miserable or unhappy*
- *MDSB I didn't enjoy anything at all*
- *MDSC I felt so tired I just sat around and did nothing*
- *MDSD I was very restless*
- *MDSE I felt I was no good any more*
- *MDSF I cried a lot*
- *MDSG I found it hard to think properly or concentrate*
- *MDSH I hated myself*
- *MDSI I was a bad person*
- *MDSJ I felt lonely*
- *MDSK I thought nobody really loved me*
- *MDSL I thought I could never be as good as other kids*
- *MDSM I did everything wrong*

8.3.2 Scales

Questions	Topic	Source
SAFF, TRSS, NCLS	Social support	Three items from Social Provisions Scale – short form
HHND – CONP	Sexual experience	Adapted from Adolescent Sexual Activity Index (ALSPAC)
FRUT, BRED, MILK	Diet	Eating Choices Index
PUHG-AGMN	Puberty	Pubertal Development Scale
SATI-GDSF	Wellbeing/self-esteem	Shortened Rosenberg Self-esteem Scale
MDSA-MDSM	Mental health	Moods and Feelings Scale short form

Scoring and interpretation

The MFQ is scored by summing together the point values of responses for each item. The response choices and their designated point values are as follows:

"not true" = 0 points

"sometimes true" = 1 point

"true" = 2 points

Higher scores on the MFQ suggest more severe depressive symptoms.

Scores on the short version of the MFQ range from 0 to 26. Scoring a 12 or higher on the short version may indicate the presence of depression in the respondent.

However, there are no prescribed cut-points for any version the MFQ since there is no single cut-point that is best for use in all circumstances. The author provides a list of publications for determining appropriate cut-points in different circumstances, which is recommended reading when setting a cut-point for your use.

Reliability and validity

Peer-reviewed studies have found the Mood and Feelings Questionnaire to be a reliable and valid measure of depression in children in both clinical and non-clinical samples (Burleson Daviss et al., 2006; Sund et al., 2001; Wood et al., 1995).

Property	Definition	MFQ
Internal consistency	<i>Whether several items that propose to measure the same general construct produce similar score.</i>	Thabrew et al. (2018) reported Cronbach's alphas of .91 and above in a New Zealand sample, indicating excellent internal consistency.
Test-retest reliability	<i>Degree to which the same respondents have the same score after a period when a trait should not have changed.</i>	In a Swedish sample, the test-retest reliability of the questionnaire was high after a three-week period (0.84, $p < 0.01$) and a three-month period (0.80, $p < 0.01$; Sund et al., 2001).
Convergent validity	<i>Degree to which two measures of constructs that theoretically should be related, are in fact related.</i>	The MFQ was significantly correlated with the Spence Children's Anxiety Scale ($r = .62$, $p < .001$) and the Pediatric Quality of Life Enjoyment and Satisfaction Questionnaire ($r = -.73$, $p < .001$) in the study by Thabrew et al. (2018).
Concurrent validity	<i>If a measure correlates well with a measure that has previously been validated.</i>	Thabrew et al. (2018) indicated strong correlations between the MFQ and the Children's Depression Rating Scale—Revised, as well as with the Reynolds Adolescent Depression Scale 2.

Thabrew et al. (2018) also showed that the MFQ had good content validity and criterion validity.

The short Mood and Feelings Questionnaire (sMFQ) ([Angold et al., 1995](#)), is highly correlated with the MFQ ([Thabrew et al., 2018](#)) and has also been validated in both clinical and non-clinical samples ([Thabrew et al., 2018](#); [Thapar and McGuffin, 1998](#); [Turner et al., 2014](#)). It provides a quicker alternative to the MFQ for clinicians and researchers. Whilst the sMFQ has been validated at age 18 ([Turner et al., 2014](#)), to date its validity as a measure of depression post-18 in young adulthood has not been established. There is some evidence that optimal cut-points on the sMFQ may vary by sex in adolescence, with lower cut-points for boys than girls ([Jarbin et al., 2020](#)), but this requires investigation in young adulthood.

Additional metrics: Self-Harm

- Also grouped under category 'How You Feel' in cohort member questionnaire
- Question:
 - In the past year have you hurt yourself on purpose in any way?
 - Yes
 - No

Alcohol questions (AUDIT-PC)

Focus

Mental health of main and partner

Respondents

Main and partner via self-completion questionnaires

Method

Self-completion questionnaire

Description

The alcohol questions in the self-completion section of the main parent questionnaire are a shortened, adapted version of the 10-item Alcohol Use Disorders Identification Test Primary Care (AUDIT-PC), developed by the World Health Organisation. The five questions are:

Question name	Question	Variable
ALDR	How often do you have a drink that contains alcohol?	FPALDR00
AUND	How many standard alcoholic drinks do you have on a typical day when you are drinking?	FPAUND00
AUSD	How often in the last year have you found you were not able to stop drinking once you had started?	FPAUSD00
AUAC	How often in the last year have you failed to do what was expected of you because of drinking?	FPAUAC00
AUCD	Has a relative, friend, doctor or health worker been concerned about your drinking or advised you to cut down?	FPAUCD00

Derived variable FPAUDIT was constructed by summing the five responses. A total of 5+ indicates increasing or higher risk drinking.

AUDIT-PC derived variables

Variable name	Description
FPAUDIT	S6 DV AUDIT-PC Scale