



# Movement Behaviour Questionnaire

## Baby Closed Version

### (MBQ-B)

#### OVERVIEW

- The MBQ is a validated rapid assessment tool for measuring movement behaviours in children aged 0 – 5 years.
- The MBQ-B measures tummy time or active play, restrained time, screen time and sleep.

#### TARGET POPULATION

For babies from 0 years who are *yet to reach their walking milestone*.

#### HOW IT IS MEASURED

- 6 items
- Closed questions
- Self-report
- Hard-copy or electronic completion (REDCap data dictionary available upon request)
- Supplemented by the User guide for administration and scoring (hard copy or REDCap versions available)

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Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

## Movement Behaviour Questionnaire (MBQ-B)

### DIRECTIONS

This survey will ask you questions about your baby's movement behaviours (activity, screen time, and sleep) on a typical day.

A typical day is a day when your baby does things they normally do.

Please respond to all the questions as best as you can.

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How old is your baby?

- 0 – 3 months [1]
- 4 – 11 months [2]
- 12 months or older [3]

This section is about your baby's tummy time and active play

Does your baby roll?

- Yes [1] – skip Q1A and Q1B and answer question Q2.
- No [0] – answer Q1A and Q1B and skip Q2.

**Q1A.** This question is about the times when your baby is awake and placed on their tummy for playtime while you are watching them.

Thinking about the past week, how many times EACH DAY did you usually place your baby on their tummy for play?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

**Q1B.** How long did each tummy time usually last?

- Less than 5 min [1]
  - 5 – 10 min [2]
  - 11 – 15 min [3]
  - 16 – 20 min [4]
  - 21 – 25 min [5]
  - 26 – 30 min [6]
  - More than 30 min [7]
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**Q2.** Thinking about the past week, on a TYPICAL DAY, how much time in total did you do some active play with your baby? *Active play could be crawling on the floor with your baby, rolling around the floor with your baby, playing at the park, dancing with your baby, chasing your baby.*

- 0 min per day [0]
- Between 1 and 15 min per day [1]
- Between 15 and 30 min per day [2]
- Between 30 and 60 min per day [3]
- Between 1 and 1½ hrs per day [4]
- Between 1½ and 2 hrs per day [5]
- More than 2 hrs per day [6]

This section is about your baby's restrained time (e.g., pram/stroller, highchair, or baby carrier)

**Q3A.** Thinking about the past week, on a TYPICAL DAY, how many times did you place your baby in a baby carrier or sling, car seat or capsule, stroller or pram, highchair, bouncer, jolly jumper or play pen?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

**Q3B.** When your baby was in one of those devices, how long were they usually in it?

- Less than 15 min per day [1]
- Between 15 and 30 min per day [2]
- Between 30 and 45 min per day [3]
- Between 45 and 60 min per day [4]
- Between 1 and 1½ hrs per day [5]
- Between 1½ and 2 hrs per day [6]
- More than 2 hrs per day [7]

**This section is about your baby's screen time**

**Q4.** Thinking about the past week, on a TYPICAL DAY, how much time did your baby spend watching television programs, videos/internet clips or movies on a television, computer or portable/mobile device such as iPad, tablet or smartphone?

- 0 min per day [0]
- Between 1 and 15 min per day [1]
- Between 15 and 30 min per day [2]
- Between 30 and 60 min per day [3]
- Between 1 and 1½ hrs per day [4]
- Between 1½ and 2 hrs per day [5]
- More than 2 hrs per day [6]

**Q5** Thinking about the past week, on a TYPICAL DAY, how much time did your baby spend playing games, looking at photos, or video chatting (e.g. FaceTime, Zoom, Skype) on a screen-based device such as a computer or laptop, video game console, iPad, tablet, or smartphone?

- 0 min per day [0]
- Between 1 and 15 min per day [1]
- Between 15 and 30 min per day [2]
- Between 30 and 60 min per day [3]
- Between 1 and 1½ hrs per day [4]
- Between 1½ and 2 hrs per day [5]
- More than 2 hrs per day [6]

**This section is about your baby's sleep**

**Q6.** Thinking about the past week, on a TYPICAL NIGHT, how much time did your baby sleep in total during the night?

- Less than 6 hrs per night [1]
- Between 6 and 8 hrs per night [2]
- Between 8 and 10 hrs per night [3]
- Between 10 and 12 hrs per night [4]
- Between 12 and 14 hrs per night [5]
- More than 14 hrs per night [6]

**Q7.** Thinking about the past week, on a TYPICAL DAY, how much time did your baby sleep in total during the day?

- Less than 1 hr per day [1]
- Between 1 and 2 hrs per day [2]
- Between 2 and 3 hrs per day [3]
- Between 3 and 4 hrs per day [4]
- More than 4 hrs per day [5]

--- Thank you for completing the MBQ ---

## Calculation of outcome variables

Outcome variable	Calculation
<b>TUMMY TIME</b>	
Usual tummy time (minutes/bout)	Q1B: [1] = 2.5; [2] = 7.5; [3] = 12.5; [4] = 18; [5] = 23; [6] = 28; [7] = 30
Total tummy time (minutes/day)	_____times (Q1A) x usual tummy time (Q1B)
<b>ACTIVE PLAY</b>	
Total Active Play (minutes/day)	Q2: [0] = 0; [1] = 7.5; [2] = 22.5; [3] = 45; [4] = 75; [5] = 105; [6] = 120
<b>RESTRAINED TIME</b>	
Usual restrained time (minutes/bout)	Q3B: [1] = 7.5; [2] = 22.5; [3] = 37.5; [4] = 52.5; [5] = 75; [6] = 105; [7] = 120
Total restrained time (minutes/day)	_____times (Q3A) x usual restrained time (Q3B)
<b>SCREEN TIME</b>	
Non-interactive screen time (minutes/day)	Q4: [0] = 0; [1] = 7.5; [2] = 22.5; [3] = 45; [4] = 75; [5] = 105; [6] = 120
Interactive screen time (minutes/day)	Q5: [0] = 0; [1] = 7.5; [2] = 22.5; [3] = 45; [4] = 75; [5] = 105; [6] = 120
Total screen time (minutes/day)	Non-interactive screen time + Interactive screen time
<b>SLEEP</b>	
Night sleep (minutes)	Q6: [1] = 300; [2] = 420; [3] = 540; [4] = 660; [5] = 780; [6] = 840
Day sleep (minutes)	Q7: [1] = 30; [2] = 90; [3] = 150; [4] = 210; [5] = 240
Total sleep (minutes per 24 hours)	Night Sleep + Day Sleep

## Truncation of extreme values

Implausible or extreme values for the following outcome variables are truncated (that is recoded) to the value equivalent of the 95th percentile from the validation study dataset.

Outcome variable	Truncated value
Total tummy time	180 minutes per day
Total restrained time	360 minutes per day

## Adherence to Guidelines

### Physical Activity

Tummy time (for babies who are yet to roll) – at least 30 minutes of tummy time per day.

Active Play (for babies who can roll) – at least 30 minutes of active play per day.

### Restrained Time

Not more than 60 minutes (1 hour) at a time of restrained time (such as in a stroller, car seat or highchair).

### Screen time

No screen time for babies/children under 2 years.

### Sleep

Age = 0 – 3 months: At least 840 minutes (14 hours) per day.

Age = 4 – 11 months: At least 720 minutes (12 hours) per day.

Age = 12 months or older: At least 660 minutes (11 hours) per day.

### 24-hour movement guidelines

**For babies who are yet to roll:** meets all 3 guidelines for tummy time, screen time and sleep.

**For babies who can roll** meets all 3 guidelines for active play, screen time and sleep.

# MBQ Index

MBQ Index variable	Calculation
<b>TUMMY TIME AND ACTIVE PLAY</b>	
Tummy time index	IF 'Total tummy time' > 40, Tummy time index = 100  IF 'Total tummy time' <= 40, Tummy time index = ( 'Total tummy time' /40) x 100
Active Play index	IF 'Total Active Play' > 40, Active Play index = 100  IF 'Total Active Play' <= 40, Active Play index = ( 'Total Active Play' /40) x 100
<b>RESTRAINED TIME</b>	
Restrained time index	IF Q3B = 1, Restrained time index = 100 IF Q3B = 2, Restrained time index = 95 IF Q3B = 3, Restrained time index = 85 IF Q3B = 4, Restrained time index = 75 IF Q3B = 5, Restrained time index = 50 IF Q3B = 6, Restrained time index = 25 IF Q3B = 7, Restrained time index = 0
<b>SCREEN TIME</b>	
Non-interactive screen time index	IF Q4 = 0, Non-interactive screen time index = 100 IF Q4 = 1, Non-interactive screen time index = 75 IF Q4 = 2, Non-interactive screen time index = 50 IF Q4 = 3, Non-interactive screen time index = 25 IF Q4 = 4, Non-interactive screen time index = 10 IF Q4 = 5, Non-interactive screen time index = 5 IF Q4 = 6, Non-interactive screen time index = 0
Interactive screen time index	IF Q5 = 0, Interactive screen time index = 100 IF Q5 = 1, Interactive screen time index = 75 IF Q5 = 2, Interactive screen time index = 50 IF Q5 = 3, Interactive screen time index = 25 IF Q5 = 4, Interactive screen time index = 10 IF Q5 = 5, Interactive screen time index = 5 IF Q5 = 6, Interactive screen time index = 0
<b>SLEEP</b>	
Sleep index raw score	<b>IF baby is aged 0 to 3 months [1].</b>

	<p>Sleep index raw score =  <math>((\text{'Total sleep'} - 300) / 720) * 100</math>  (Index = 100 when Total Sleep is 17 hours or more)</p> <p><b>IF baby is aged 4 to 11 months [2].</b></p> <p>Sleep index raw score =  <math>((\text{'Total sleep'} - 300) / 560) * 100</math>  (Index = 100 when Total Sleep is 14.3 hours or more)</p> <p><b>IF baby is aged 12 months or older [3].</b></p> <p>Sleep index raw score =  <math>((\text{'Total sleep'} - 300) / 480) * 100</math>  (Index = 100 when Sleep is 13 hours or more)</p>
Sleep index	<p>IF Sleep index raw score &gt; 100, Sleep index = 100</p> <p>IF Sleep index raw score &lt;= 100, Sleep index = Sleep index raw score</p>
<b>MBQ Index – Summary Score</b>	
MBQ-B index summary score	<p>MBQ Index summary score is based on the average of index scores for each behaviour.</p> <p><b>IF baby is yet to roll [0]:</b></p> <p>MBQ-B index summary score = Mean (Tummy time index, Restrained time index, Non-interactive screen time index, Interactive screen time index, Sleep index)</p> <p><b>IF baby can roll [1]:</b></p> <p>MBQ-B index summary score = Mean (Active play index, Restrained time index, Non-interactive screen time index, Interactive screen time index, Sleep index)</p>