ProChil: Curriculum for Early Childcare Professionals

Annex 1: Born to socialise

ProChil: Professional Childcare in European Nurseries.
The project is co-financed by the Erasmus+ programme of the European Union under the registration number: 2017-1-CZ01-KA202-035558.

From the moment they are born, babies make contact with the world around them. Using their eyes and hands, their body and their voice, they react to impressions and give messages. How do you understand their signals? Is a baby crying because he's hungry or wants to be cuddled? Does he want peace and quiet or does he want to play? Does he understand what you say? We believe that infants understand a lot and that they like to také the initiative. But how can you understand them and how can you respond to their initiatives?

The **Born to socialize project** of the Karel de Grote University College Antwerpen answers the questions above using current insights based on recent scientific research. The material is intended for pedagogical support staff in various organisations that work with infants.

In the beginning of the ProChil project 6 topics were part of the Born to socialize material:

- Theme 1: crying
- Theme 2: recognising faces and emotions
- Theme 3: imitating and predicting
- Theme 4: conversing through vocalisations
- Theme 5: pointing and vocalising
- Theme 6: following a gaze

During the ProChil project the material were finalized and a 7th topic was added especially for the purposes of the ProChil Curriculum for Early Childcare Professionals.

- Theme 7: cooperation

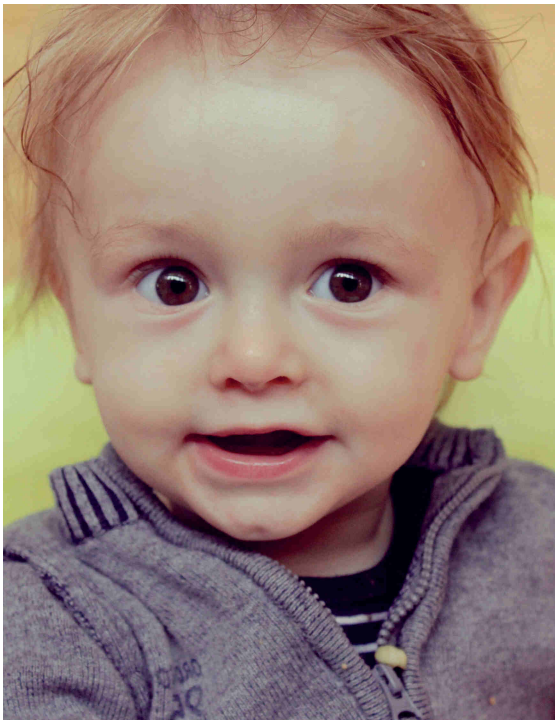
In contrast to the other parts of the curriculum the Born to socialize methodology is intended to being used for in-staff training rather than for initial training, because it presents the topic using a step-by-step plan for three learning phases of the ECEC professionals:

- reflection
- observation
- implementation

Even if the topic of Born to socialize is very specific the ProChil team decided to include it to the Curriculum, because it represents a new and innovative way of learning through doing and it can significantly contribute to the quality of ECEC services provided through boosting the skills of ECEC professionals in ProChil countries.

Born to socialise

Interacting with infants



KdG Expert

Karel de Grote Hogeschool

Contents

Born to socialise

From the moment they are born, babies make contact with the world around them. Using their eyes and hands, their body and their voice, they react to impressions and give messages. How do you understand their signals? Is a baby crying because he's hungry or wants to be cuddled? Does he want peace and quiet or does he want to play? Does he understand what you say? We believe that infants understand a lot and that they like to take the initiative. But how can you understand them and how can you respond to their initiatives?

First of all, you don't need to be a mind reader. You can learn a lot simply by observing infants closely and watching how they experience the world. We have no doubt that this is something you already do. You can also take a look at scientific research. A lot of researchers are trying to find out what infants do and don't understand and how they interact with adults and with other children. The results of this research are published in specialised journals. It takes a great deal of effort to find, select and process all this information. In this brochure, we present some recent findings and show you how to use them in your observations. This will help you develop a deeper relationship with the infants in your care.

This brochure summarises current insights based on recent scientific research. Research is always time-specific and culturally conditioned. Our aim is therefore not to interpret the results as the new 'gospel truth' about how to work with infants or about how they develop, but as a way to re-awaken amazement at what they are capable of. Based on this new way of looking at things, we want to disseminate the intuitive knowledge that everyone who works with young children already has. This brochure focuses on the pedagogical choices that you make when applying this knowledge, rather than on new norms or age categories. Every child develops at his own pace.

In this document, all references to he or him should be read as including she and her, where appropriate.

Target group

Our material is intended for pedagogical support staff in various organisations that work with infants. They can use it to inspire childcare practitioners to observe infants and interact with them.

Themes

We selected six themes from the scientific literature, using three criteria:

- The themes are relevant for professional childcare practitioners.
- Recent research has revealed new information about the themes.
- This new information has not yet been included in the current textbooks for childcare practitioners.

The themes are:
- Crying (focusing on infants of 3-4 months)
- Recognising faces and emotions (focusing on infants of 5-6 months)
- Imitating and predicting (focusing on infants of 7-9 months)
- 'Conversing' through vocalisations (focusing on infants of 10-12 months)
- Pointing (focusing on infants of 13-15 months)
- Following a gaze (focusing on infants of 12-18 months)

You can tackle each one separately, in any order you like. We develop each of the themes for a specific age group.

Each theme begins with a research story, in which we discuss one or more recent research projects. You can read just the introduction, which summarises the research, or the full story.

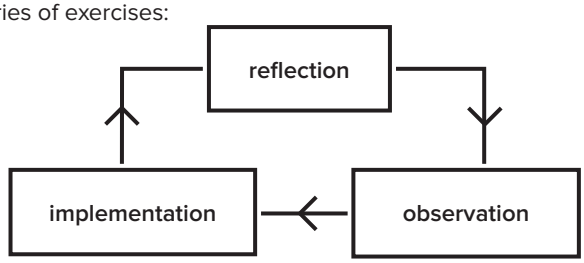
You and your team can also work your way through a three-phase series of exercises: reflection, observation and implementation. In the first phase, you tell the story to the team and reflect together on the research results.

The discussion questions can help structure this exercise. Together with the team, you can then look at what kind of behaviour and what signals the team members want to observe and who they will observe. The team also chooses two questions from the list of observation questions. There is space to mark these questions on the poster. The team members use the questions chosen to observe a number of infants, watching the infants' reaction to what they say and do. Each observation is jotted down on a post-it note, which you then place on the poster. These notes form the basis of a group discussion in which observations are shared and discussed.

In the third phase, the team members can try out some activities. The list of suggestions can provide inspiration, but team members can also come up with their own ideas. In a group discussion, they then share their experiences of the activities undertaken. What was the significance of a particular activity? What can the team members learn from it?

Each phase concludes with a group discussion in which the team swaps experiences and makes choices for the next phase. In the first phase, the team members discuss the theme and choose what and who they want to observe. At the end of the second phase, they share their observations and choose the activities for the third phase. After this, the team can continue with observing and can choose new activities, or can move on to a new theme.

Series of exercises:



Phase 1: reflect on the story using discussion questions / Phase 2: using post-it notes, write down observations on some questions from the poster / Phase 3: Join in. Activities that use the new information. / Each phase ends with a group discussion in which the team members look back and look ahead.

Theme 1: crying

(3-4 months)

What do babies do?

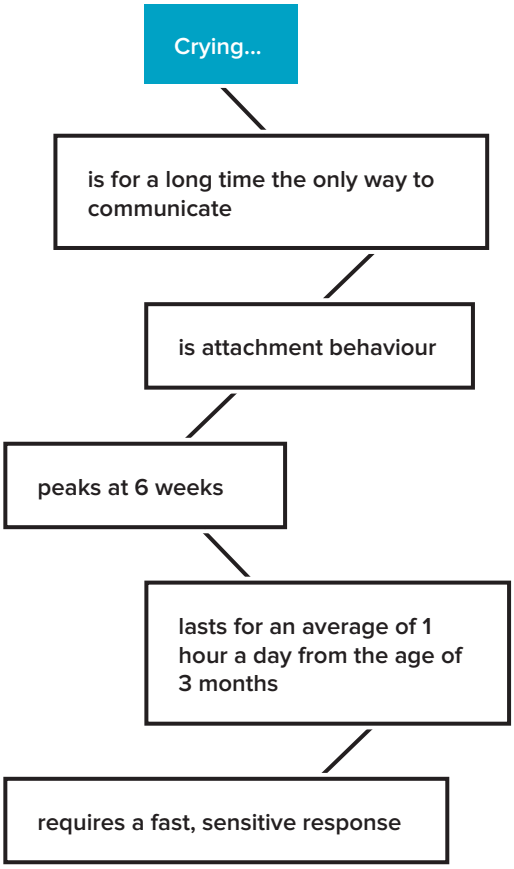
Babies cry. It's the first thing they do and for a long time it's the only way they have to communicate. They cry when they're hungry, have a wet or soiled nappy, are bored or need a cuddle, for instance. Crying is a powerful signal and it urges caregivers to listen, understand the type of cry and respond to it.

Babies are individuals: some cry more than others. Crying increases during the first few weeks after birth. It also becomes increasingly louder. Infant crying peaks at about 6 weeks of age, but then gradually drops off to an average of one hour a day by the time they are 3 months old.[1]

It's best to respond quickly when a baby cries. In a busy childcare centre, however, this is not always possible. Fortunately, research has shown that not only the speed of response, but also the quality of response helps stop a baby crying.[2] So you should respond sensitively. Incidentally, up to the age of 6 months, it is impossible to spoil an infant.[3]

Calm and order are important factors in dealing with crying.[4] Routine teaches babies what to expect. If the world around them is more predictable, this will help reduce crying.[5] It can take a while to teach a baby regular habits, but once there is a clear routine, this will help him learn how to soothe himself.

Crying is innate attachment behaviour. Although babies cry when they feel distress (e.g. pain, discomfort or separation anxiety), crying should really be understood as an expression of attachment, bonding and love. A crying infant is seeking the protection and attention of his parents or other caregivers. The further along in the attachment process, the fussier babies become, reaching a peak during the period when they experience separation anxiety and fear of strangers (from 7 months).


Crying...
is for a long time the only way to communicate
is attachment behaviour
peaks at 6 weeks
lasts for an average of 1 hour a day from the age of 3 months
requires a fast, sensitive response

Background

When we experience physical or mental stress, adrenaline is released into the bloodstream. This is a natural response that prepares us for action (fight or flight). At the same time, we also produce cortisol, a stress hormone that helps to break down the adrenaline and relax our bodies. In other words, cortisol helps to reduce stress levels. That is why it is important in development. The stress levels that infants experience influence their development and self-regulation ability. When children's stress levels are too high, they are less able to control their emotions, thoughts and feelings, receive feedback and adapt their behaviour to their environment.

On the other hand, a child should not produce cortisol too often or for too long, as that would mean he is experiencing a lot of stress.[6]

Crying is very stressful and, like any stressful situation, has both an emotional and a physiological impact. We will discuss below a study on the physiological impact of crying. The researchers link the presence of the stress hormone cortisol in infants with the quality of their relationship with their mother, and investigate whether a sensitive relationship helps them respond better to stressful situations.

Previous research showed that parents influence their child's stress level. The more parents respond to a crying baby in a sensitive, responsive way, the lower the stress level the baby experiences[7] and the less cortisol he has to produce to lower the stress. The new study[8] looks at two issues. First, the researchers explore whether it is true that 3-month-old babies who have a better-quality maternal relationship produce a smaller amount of the stress hormone cortisol while crying because they are less stressed. Second, they examine whether these infants recover more quickly from the stressful situation.

The experiment

By measuring the amount of cortisol in the saliva of 3-month-old infants, the researchers can find out how much stress the baby is experiencing at that moment and how long it lasts. The measurements were carried out after the mother had taken the baby out of the bath, since this is an acceptable stressful situation. The researchers videotaped the baby being bathed to rate the mother's sensitivity.

The results

The study shows that babies produce cortisol when they are taken out of the bath. They cry and experience stress. When the mother responds in a more sensitive way to her baby crying during this unpleasant experience, the baby will recover quickly and cortisol levels will fall rapidly. Infants whose mothers are less sensitive will maintain a high cortisol level for longer after the stressful event.

A baby is not yet able to control his own emotional and physiological state properly. He needs other people to feed, wash and soothe him, and to protect him from undue stress. More sensitive mothers help to reduce the physiological effects of stress and indirectly teach the baby how to cope better with stress.

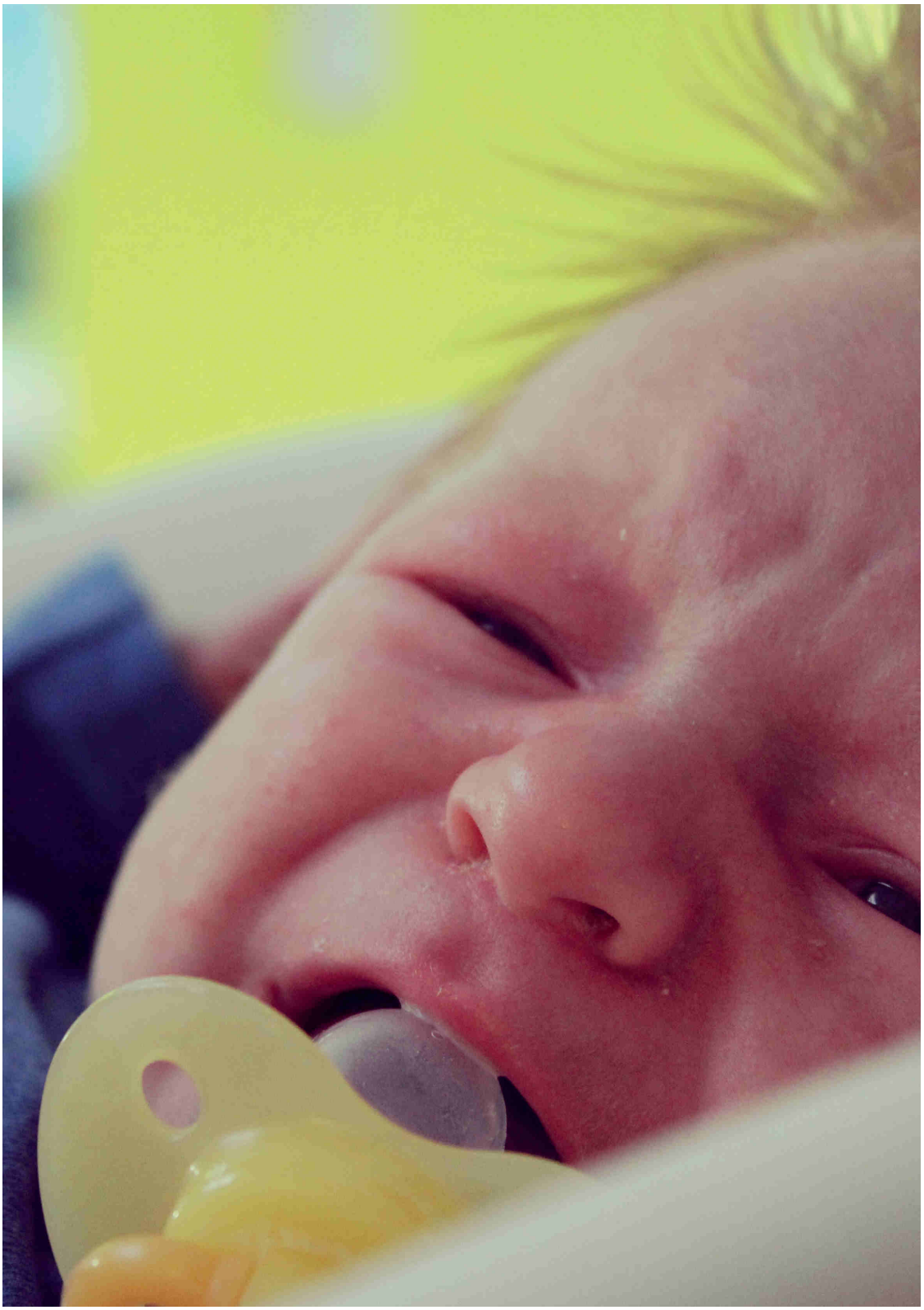
A stress response is a natural reflex. Parents and caregivers cannot prevent it, but they can help the baby to deal with it better physiologically by responding as sensitively as possible to the baby's signals. This also has a longer-term impact, as too much stress is detrimental to infant development.

Crying is associated with a physiological stress response.

Babies need other people to protect them from undue stress.

A sensitive approach can help babies learn to control stress hormones.

When you respond in a sensitive way, they will quickly recover physiologically from the stress they experienced.



In practice

As if by magic, Lauren stops crying the moment her mummy or daddy take her from the childcare practitioner.

Aziza is a trainee. On her first day in her new trainee post, she had a hard time soothing a crying baby. By the end of her work experience, she knew the babies and they knew her. Now she has no problem with crying infants.

Sensitivity is not just important for the emotional development and attachment of babies; it also influences the way in which they physically cope with stress. A good relationship and a sensitive approach have biological, emotional and relational effects and will help to soothe infants effectively.

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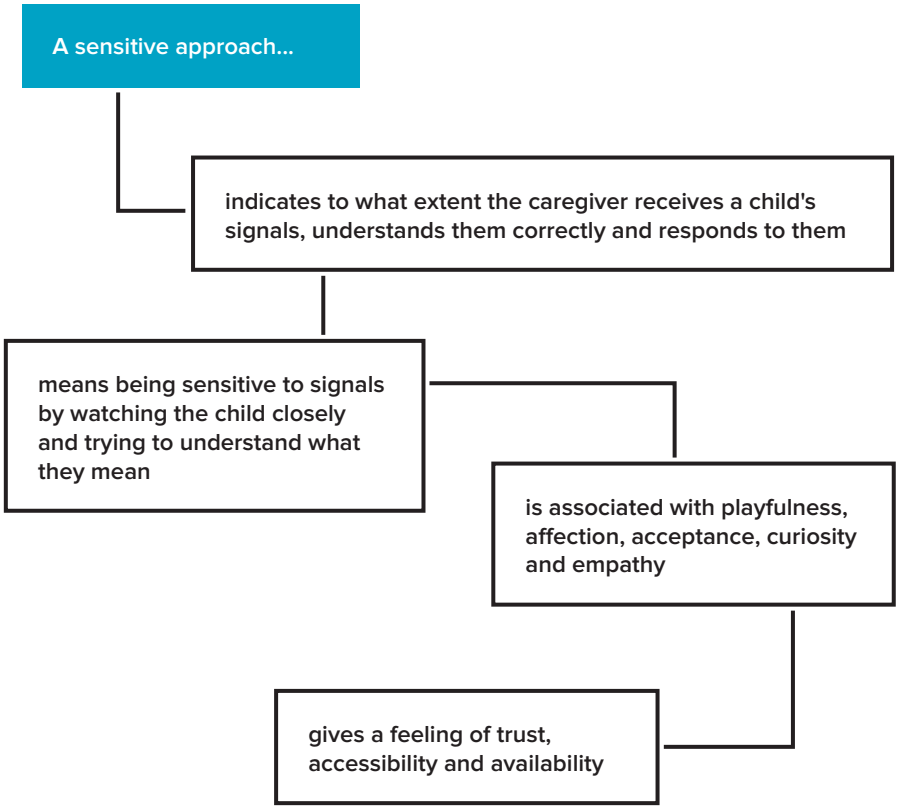
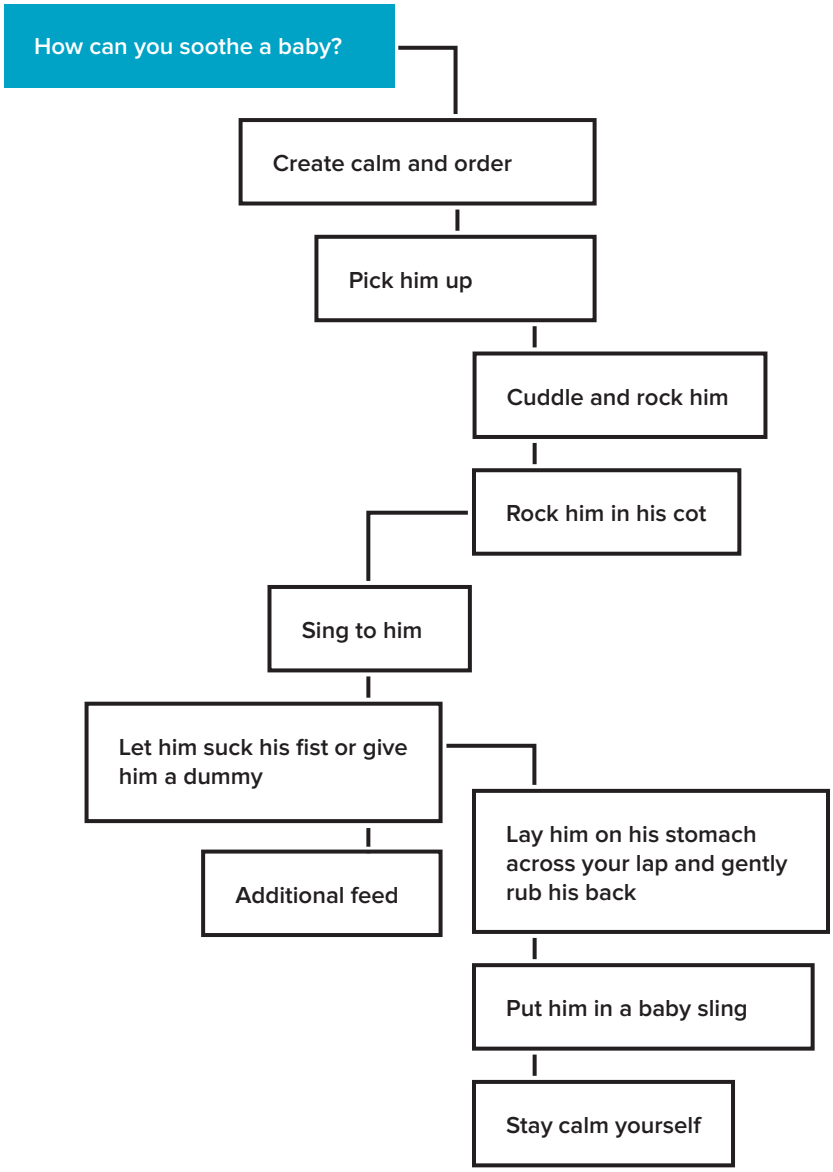

A sensitive approach...
indicates to what extent the caregiver receives a child's signals, understands them correctly and responds to them
means being sensitive to signals by watching the child closely and trying to understand what they mean
is associated with playfulness, affection, acceptance, curiosity and empathy
gives a feeling of trust, accessibility and availability



Source: scientific dossier on crying. Kind en Gezin and Hush now baby: Mothers' and fathers' strategies for soothing their infants and associated parenting outcomes (2014)

Subjects for discussion

01 Do the research findings change your view of infants or a specific baby in your group? How?

02 Did you expect crying to be associated with a strong physiological and hormonal stress response?

03 Did you know what a sensitive approach means?

04 Have you ever noticed that a good relationship helps to soothe a baby?

05 Have you ever found that parents can quickly soothe their baby without doing anything specific?

06 Are the sleeping, playing, reception and eating areas organised in such a way that you can sensitively respond to babies?

07 Where and when do babies cry the most?

08 What and who would you like to observe?

Observation

01 Have you noticed that babies cry to give a message? What do they want to tell?

02 When do babies cry the most? Have you noticed a difference between crying from hunger, crying because of a wet or soiled nappy or crying out of boredom?

03 Do you see and hear a difference between younger and older infants' crying?

04 Have you noticed that babies get attached to other people? How can you tell? Is there a difference between younger and older infants?

05 How do babies respond to their parents? What do you see happening?

06 Are the babies particularly attached to someone in the childcare centre? How can you tell?

07 Have you noticed that babies calm down faster when you try to understand their signals (not just when they're crying)?

08 Do babies feel more at ease when you sit with them and give them your full attention? Or do they feel just as much at ease when there are other babies present?

09 How do babies respond to their siblings?

Implementation

01 Babies love hearing your voice. Sing simple children's songs together, such as 'Mary had a little lamb', 'Twinkle twinkle little star', 'Old MacDonald had a farm', 'The wheels on the bus', etc.

02 Babies don't immediately and automatically feel at home at the childcare centre. What do you do to make the transition easier for them? How do you help a baby settle into the childcare environment? How do you get to know the baby?

When the infant first starts childcare, consider the situation from the point of view of the baby and his parents. How do parents get to know you? How can the baby get to know you and discover his new surroundings?

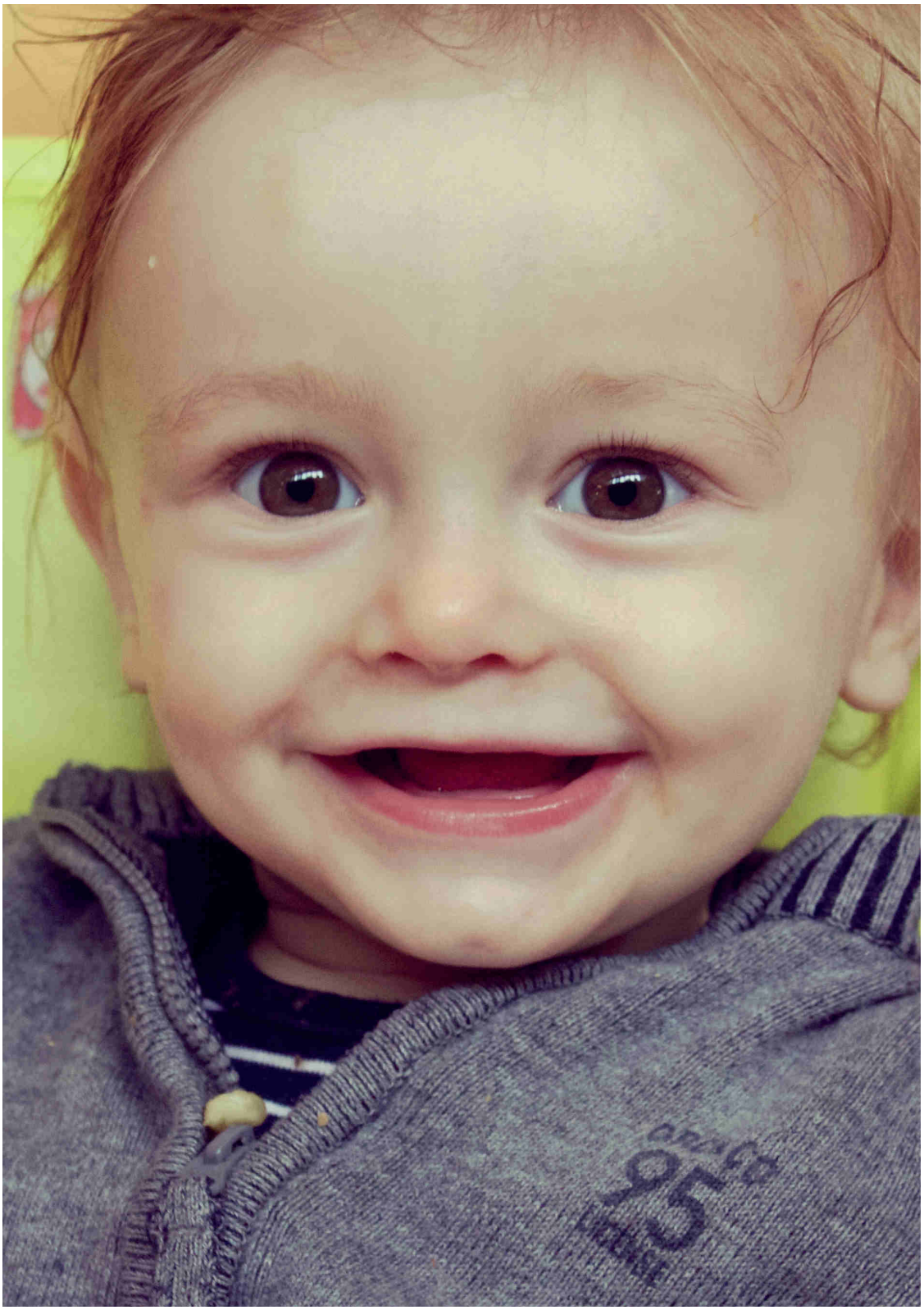
03 Describe what is happening to the baby. Hearing about what he is experiencing will make him more aware of himself. A baby starts babbling from the age of 2 or 3 months. Give him time to respond to your story.

04 Often babies can be soothed more quickly if you can understand their signals better and know what they want. Ask the parents how they soothe their child at home. Does the baby perhaps like being carried in a particular way?

05 An infant learns very early on that he can influence a relationship. He tries to get a response by laughing, crying or making sounds or gestures. Observe the baby closely and try to respond to all signals.

06 Babies like to look around. They love bright colours and contrasts such as black/white. Looking at a high-contrast book is very interesting for young babies and will keep them occupied for a long time. When they've had enough, they will try to turn away. While looking, you can describe what the baby is seeing.

07 Physical contact is very important. Hold a baby on your lap, cuddle him and walk around together, even if he is not crying. A massage can also be a nice way to bond with a baby. Massage involves touching purposefully and with sensitivity.



Theme 2: recognising faces and emotions

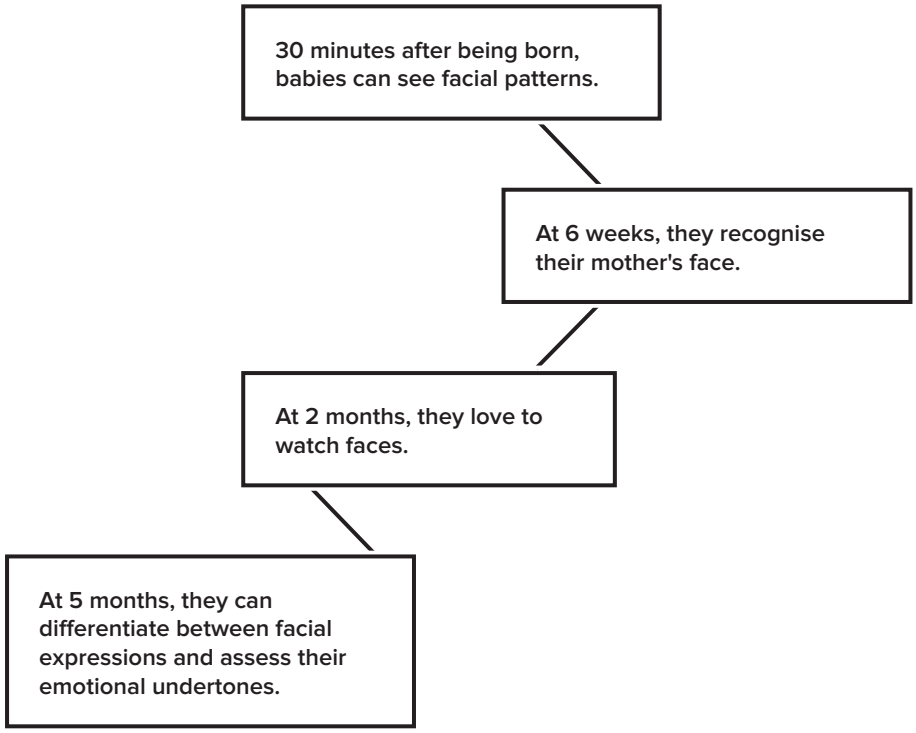
(5-6 months)

What do babies do?

Thirty minutes after being born, babies can already see facial patterns.[1] From the age of 6 weeks they recognise their mother's face by looking at the relationship between her eyes, nose and mouth.[2] From 2 months, babies love to watch faces.[3] By the age of 5 months, they can differentiate between various facial expressions of adults and assess the emotional undertones of those expressions.

The fact that babies can do all this is remarkable, since their sight has not yet fully developed. A newborn's vision is 30 times weaker than that of an adult. Babies can barely see colours, cannot differentiate between basic shapes and are not yet able to focus on distant or very close objects. Nor can they move their eyes as quickly and easily as adults do.[4] Often they stare at one detail for a long time.

So why is it that babies are nevertheless able to perceive and recognise different faces? And how can they distinguish emotions at the age of just 5 months? On the next few pages we will explain what recent scientific studies have discovered about this. For further reading suggestions, see the references at the end of the brochure.


30 minutes after being born, babies can see facial patterns.
At 6 weeks, they recognise their mother's face.
At 2 months, they love to watch faces.
At 5 months, they can differentiate between facial expressions and assess their emotional undertones.

Background

In the 1960s and 1970s scientists discovered that babies mainly look at the contour and hairline of a face and not at details. They don't start paying attention to the eyes, nose and mouth until they reach the age of 3 months.[5] Researchers learned this by following the eye movements of babies while they were looking at photos or drawings of faces. They observed how long the babies looked at the details of the photos and how quickly they turned to a new photo of a different face. Other scientists later built on this research and studied facial recognition and babies' interest in certain facial expressions.

We now know that 1-month-old babies can recognise their mother's face correctly, except in profile.[6] Three-month-old infants can see the difference between a small and a big smile from their mother[7], and they themselves laugh differently when their mother looks angry than they do when she laughs.[8] At 4 months, babies smile most often when they see their mother smiling.[9]

Bornstein and Arterberry investigated whether infants between the ages of 5 and 7 months can discriminate between angry, happy, fearful and surprised faces in different adults.[10] They conducted three experiments with different groups of infants.

Experiment 1

Can 5-month old infants recognise the face of a stranger in a series of smiling poses of different intensities? The first experiment therefore investigates face recognition. Do the infants recognise the face of a stranger, even if the person has slightly different facial expressions? In the first phase, habituation, the infants were shown four colour photographs of the same woman, smiling in a different way in each one, ranging from a weak to a broad smile. They saw each of the pictures separately until they recognised the person and lost interest.

In the subsequent test phase, the infants were presented with two photos simultaneously: one of the woman with four degrees of smiles and one of another woman. Both women were smiling with the same average intensity.

By observing how long the infants looked at the two different faces, the experimenters found that the test subjects recognised the face of the woman they had seen earlier. This is because infants look longer at novel than at familiar things. In the study, the infants gazed longest at the photo of the new woman. The experimenters were therefore able to deduce that they recognised the first woman's face, even though they saw her with a different smile each time.

1 2 4 5 3 3

In the first phase, habituation, the infants were shown photographs 1-2-4-5, each one separately. In the second phase, the test phase, they were shown the two photos numbered 3. Both women are smiling with the same average intensity. Can 5-month-old infants tell that the second woman is someone different?

Experiment 2

Can 5-month-old infants also discriminate a smiling from a fearful facial expression in the same person? The test proceeded in the same way as the first experiment. Once again the test subjects were first shown four colour photographs of the same woman, smiling in a different way in each one, ranging from a weak to a broad smile. In the subsequent test phase, they were presented with two photos of the same woman, one in which she is smiling with average intensity and the other in which she looks fearful.

Here, too, the experimenters checked which photos the infants looked at longest. They found that infants can discriminate between smiling and looking fearful, based on the fact that the test subjects looked at the novel facial expression for much longer.

1 2 4 5 3 F

In the first phase, the infants were shown photographs 1-2-4-5, each one separately. In the second phase, they were shown photos 3 and F simultaneously. Can infants see the different facial expression?

Experiment 3

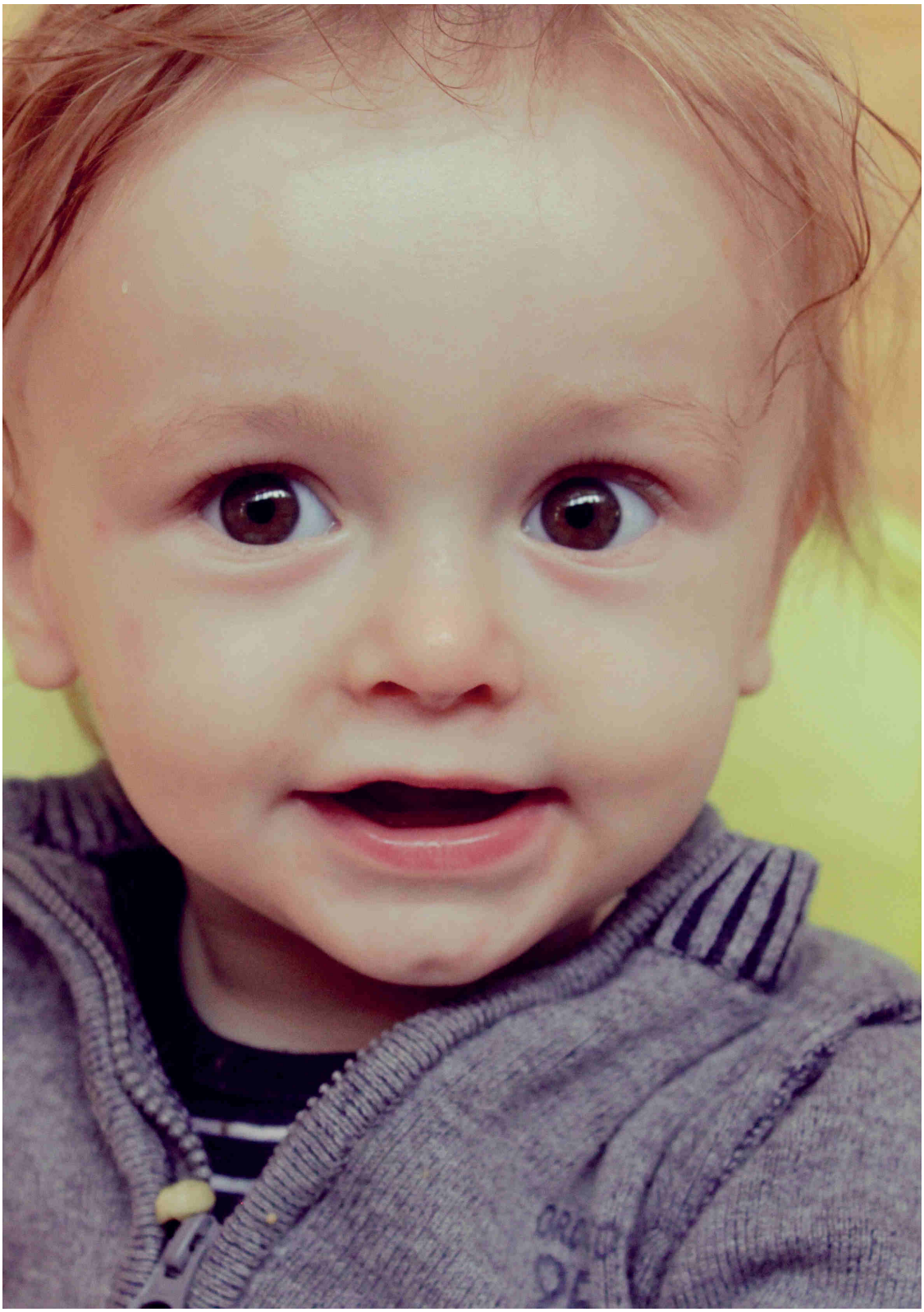
The final experiment was the most ambitious. Can 5-month-old infants differentiate between a smiling expression of different people and a fearful expression of yet another face?

The test method was once again the same, but this time using photographs of different people, each smiling with a different degree of intensity. In the test phase, the infants were shown two completely new faces, but this time one had a neutral smile and the other looked fearful. The infants looked at the photo of the fearful expression for longer. They can therefore discriminate a smiling from a fearful face in different adult strangers.

1 2 4 5 3 F

In the first phase, the infants were shown photos 1-2-4-5, each one separately. In the test phase, they were presented with photos 3 and F simultaneously. Can infants differentiate between facial expressions, even when worn by adults who are complete strangers?

Images: from Recognition, discrimination and categorization of smiling by 5-month-old infants[10]



In practice

The three experiments show that 5-month-old infants can discriminate between faces and that they can recognise different facial expressions worn by the same person and by other adults.

Samira, a childcare practitioner from another group, comes along to help when it's busy. Warre (6 months) is lying on the mat playing. He looks at Samira: who are you? Samira smiles at Warre and he immediately feels more relaxed.

Two older toddlers are climbing and jumping around. They knock over a large box. Baby Dunya (5 months) sees practitioner Ann jump and immediately starts crying.

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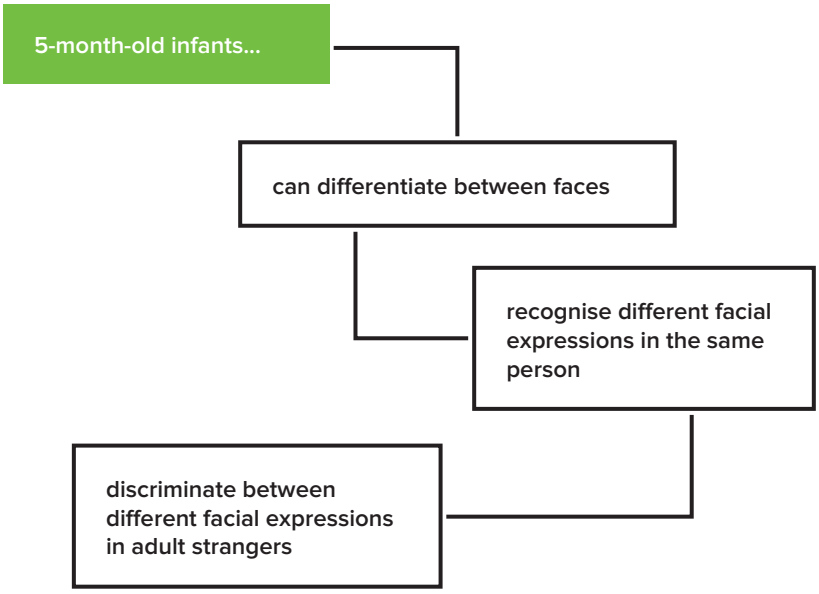


Subjects for discussion

01 Do the research findings change your view of infants or a specific baby in your group? How?

02 Did you expect 5-month-old infants to be able to recognise the difference between different facial expressions? Did you expect them to be able to do that with different people?

03 Can you use facial expressions to communicate with babies, to make them relaxed or happy? What are your experiences in this area?

04 Are the sleeping, playing, reception and eating areas organised in such a way that babies can observe your facial expressions, as well as those of the parents and/or your colleagues?

05 What materials might help improve babies' ability to recognise facial expressions and emotions?

06 Where and when can babies look at your face for the longest time? For approximately how long?

07 What and who would you like to observe?

Observation

01 When, how and for how long do the babies in your group look at your face? Is it the same for all the infants?

02 Do the babies in your group react differently to a laughing face than they do to a serious, scared or surprised face?

Describe their reaction.

03 Do infants younger than 5 months watch your face in a different way from older infants? Do they react differently to different emotions?

04 Do the babies in your group react to you differently than they do to one of your colleagues? Describe their reaction.

05 Do the babies react differently to you than they do to their parents? Describe their reaction.

06 Do babies look at one another's facial expressions? How can you tell?

07 Do babies themselves use facial expressions to express their emotions? Which ones?

Implementation

01 Working with a colleague, try to take photographs of how babies react to different facial expressions. Don't scare them.

02 Sit down in front of a mirror with a baby. How does he react to his and your facial expressions reflected in the mirror? Try expressing the same emotion with different degrees of intensity. Observe whether the baby reacts differently.

03 Put together a photo album of different facial expressions of the babies and practitioners in the group. Look at the album with the infants. How do they react to the photos?

If you use a folder with plastic pockets, you can add and change photos as you wish. That way the collection will keep on growing.

04 Investigate whether the effect of a particular facial expression is the same for infants of different ages.

05 Try to communicate with facial expressions at a different time from when you usually do, for instance in the baby bouncer instead of on the changing mat, while feeding the babies instead of when they wake up.

06 Ask the parents how their baby reacts to facial expressions at home.

Theme 3: imitating and predicting

(7-9 months)

What do babies do?

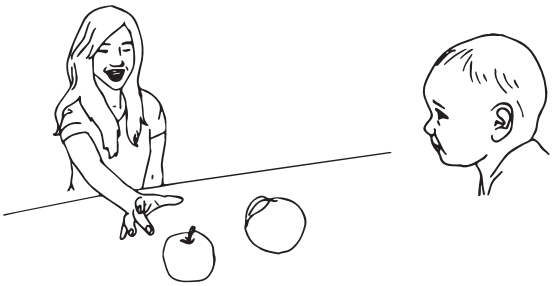
Our actions are purposeful. We pick up a tumbler to take a drink, move a box to prevent us knocking it over, push the door shut with our foot when our hands are full, and so on. We do it quickly and without thinking and can also understand what other people are doing. We're not surprised when someone who's picked up a key heads towards a door. We know that he wants to unlock the door. Babies develop this knowledge early on and are able to predict certain actions by other people before their first birthday.

Infants learn by watching. They see how a practitioner picks up a tumbler and drinks out of it. They give meaning to this action and see more than the movement of the person's arm. When they're given a tumbler, they will also try to take a drink, even though they're not quite able to do so yet. Babies will imitate an action if they can do it themselves and if they understand the purpose of it.

Imitating and predicting behaviour is important not only for learning what objects are used for; it also encourages social development. You can't do something for someone until you can work out what that person wants.

Background

To find out whether infants look at an action or at its underlying goal, experimenters placed an apple and an orange on the table between themselves and an infant aged between 6 and 9 months. Initially, the test subjects saw the experimenter reaching for the apple time and again. Then the apple and orange were switched round. Some of the infants now witnessed the experimenter reaching for the orange, which was sitting where the apple had been. Another group saw the experimenter reaching for the apple, which of course was sitting where the orange had been.



The test subject sees the experimenter reaching for the apple.
Illustration taken from: Infants' understanding of object-directed action: An interdisciplinary synthesis[1]

By watching what exactly the test subjects looked at and for how long, the experimenters found that 6-month-old infants assumed that the experimenter would reach for the apple. This is because they didn't look at the new reaching movement for long because the purpose, i.e. to get the apple, had not changed. The infants who saw the experimenter reaching for the orange were surprised and watched the action for much longer. The arm movement was the same; the only difference was that the orange was now where the apple had previously been. The infants therefore did not concentrate on the movement, but rather on its purpose, i.e. to get the apple or orange.

6-month-old infants understand the purpose of everyday objects because you use them.

Infants understand this even when they cannot use the objects themselves.

11-month-olds can predict what you want to get based on what you did previously.

It is 20 years since this research was conducted and the findings have been refined and supplemented since then. We now know that infants know the purpose of an action, even if they cannot yet perform the action themselves. For example, a 6-month-old baby knows that you should put a tumbler to your mouth and a phone to your ear. We also know that infants rely not just on what someone is doing at that moment, but also on what that person did previously. Eleven-month-olds can predict which object you want to get if you have merely looked at it, and infants over 1 year old use all these skills when they mimic someone. When toddlers see someone switching on a light using his forehead because his hands are full, they will imitate the action by simply switching on the light with their hands. In other words, they don't copy the action itself but rather its purpose, i.e. to switch on the light.

Thoermer, Woodward, Sodian, Perst and Kristen went on to investigate whether 7-month-old infants imitate an adult differently when the latter accidentally or intentionally touches an object.

The experiment

Seven-month-old infants were seated on their mother's or father's lap opposite the experimenter. A tray containing two toys was placed between the experimenter and the test subjects. During the first phase, the tray was within easy reach of the experimenter. The infants could see the toys, but not touch them. The experimenter attracted the child's attention by saying: 'Look!' She then stretched out her hand and either deliberately grasped one of the two toys or accidentally touched one of them with the back of her hand.

In the second phase of the test, the experimenter pushed the tray of toys within reach of the infants and said: 'Now you'. The infants could then choose a toy.

The results

When the infants had seen the experimenter grasping a toy, they chose that one in the second phase. If they had seen the experimenter accidentally touching the toy, they chose a toy randomly in the second phase. The infants' choice was therefore based on what they saw the experimenter doing and on their assessment whether she did it intentionally or otherwise.

Perhaps the difference in choice was due to the infants' looking behaviour? To exclude this, the experimenters analysed whether the test subjects looked at the different actions for the same length of time. This turned out to be the case. The experimenters concluded that the infants' choices were influenced by whether the experimenter's action was intentional or accidental. Seven-month-old infants are therefore able to assess whether an action is accidental or deliberate. This affects what infants learn about objects in their surroundings and is related to the choices they themselves make.

7-month-old infants can discriminate between an accidental and an intentional action: touching something accidentally or grasping it intentionally.

Infants' behaviour is based on what they see someone else do.

Infants examine a toy more quickly if you've also grasped it.

In practice

Jorgen (8 months) sees how practitioner Pamela is looking at her smartphone. He's holding a toy mobile phone, but drops it. He wants Pamela's smartphone. If she's looking at it so attentively, it must be worth having.

Practitioner Mariska's slipper comes off while she's playing. Sinem (9 months) is sitting next to her and tries to put it back on her foot.

Subjects for discussion

01 Do the research findings change your view of infants or a specific baby in your group? How?

02 Did you expect 7-month-old infants to be able to distinguish between intentional and accidental touching? Did you expect them to be able to predict what you're about to do with an object?

03 Have you ever noticed that a baby knows the purpose of an object, even though he can't use it himself yet? What are your experiences in this area?

04 Are the sleeping, playing, reception and eating areas organised in such a way that babies can see what you or your colleagues are doing?

05 What everyday objects can you help babies get to know? With what everyday objects can they experiment themselves?

06 Where and when can babies look at what you're doing for the longest time? For approximately how long?

07 What and who would you like to observe?

Observation

01 When do babies imitate your actions? Do you notice a difference when you handle toys and when you use other everyday objects?

02 How do babies react when you use an everyday object in a different way? Describe their reaction. Is there a difference between younger and older infants?

03 Have you ever noticed that babies can predict what you're going to pick up if you just look at it? From what age can they do this?

04 Do babies recognise standard activities such as changing a nappy? Can they predict what you're about to do? How can you tell?

05 Do babies expect something different from you than they do from one of your colleagues? What makes you think that?

06 Can babies predict what you're going to do when they hear a signal, for instance the bell going, the phone ringing or the microwave pinging? What do they look at when they hear the sound?

07 Do babies also look at what other babies are doing? Do they imitate one another?

Implementation

01 Using only actions, i.e. without any words, see whether a baby can learn what an everyday object can do. For example, rolling out dough with a rolling pin or typing on a keyboard.

02 What do babies do with everyday objects? Give them pots and pans, cups, spoons, a computer keyboard and mouse, an old mobile phone or a remote control and use them together. Do the babies do what you expected?

Collect suitable objects ahead of time. You don't find old mobiles, laptops and cooking pans just lying around.

03 Being able to predict what someone wants is important for social development. See whether babies hand you an object when you look at it or when you try to pick it up but can't quite reach it.

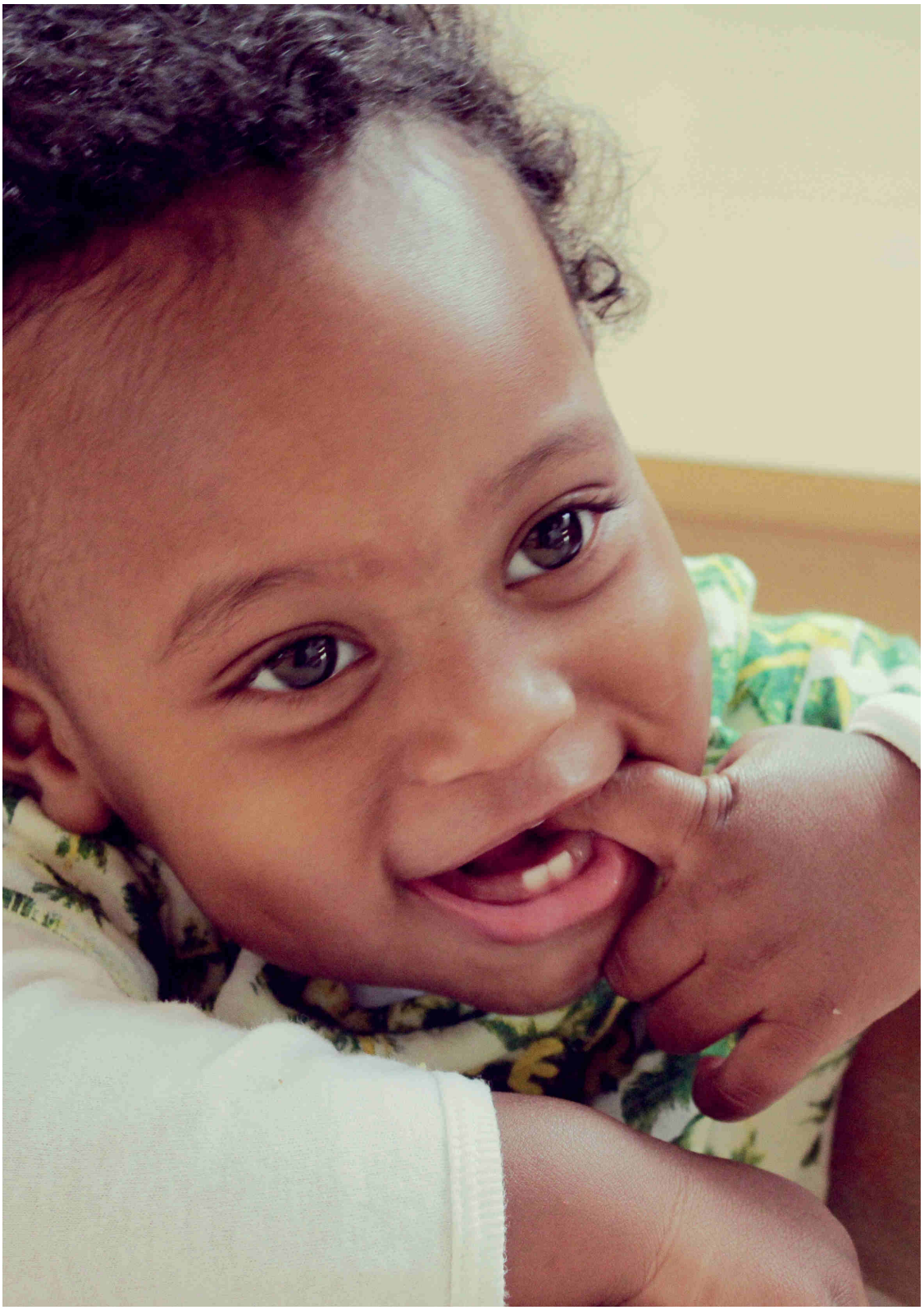
04 You probably have some interactive toys that light up or make music when you press a button. How do the babies react when you switch them off? What do they do when you switch them on again? Find out together with them.

05 Let the babies crawl to the sleeping room themselves when it's nap time. Do they know where their own cot is?

06 Sing a song or a nursery rhyme with gestures together, such as 'If you're happy and you know it', 'The wheels on the bus' or 'Incy wincy spider'. Do the infants join in?

Theme 4: conversing through vocalisations

(10-12 months)



What do babies do?

Before their first word, babies already have a lot to say for themselves: 'a-aa', 'gaga', 'yayaya', 'i-ii'. They make many different kinds of sounds. It starts with crying, chuckling and hiccupping and gradually develops into gibberish that sounds like a real language. Babies have little control over their first individual, physical vocalisations, but they soon discover how to produce sounds and use them to 'converse' with other people. We respond to all these sounds, or to many of them at least. Babies watch, listen and learn from every conversation.

The responses of others are very important for infants. Each interaction influences their attention, their exploratory behaviour and their cognitive and language development. Recent studies[1] have found that babies make more advanced sounds when their caregiver shows interest in the messages they're trying to give, even if the caregiver's response is non-verbal. The baby's vocalisations sound more like real speech, contain more consonant-vowel pairs and are directed at the caregiver.

Research has shown that the sound of the vocalisations influences the mothers' responses.[2] During the first few months of life, for instance, they respond differently and more often to positive vocalisations than to negative ones.[3] When the infants' vocalisations become less nasal and more complex, their responses also change. Mothers imitate vocalisations containing consonants more frequently, and often respond to those containing only vowels with play sounds such as 'yoohoo' or 'boom'.

Babies make other, more complex sounds when a caregiver responds appropriately.

All vocalisations made by infants are part of their language development, including crying, chuckling, hiccupping and sighing.

Mothers adapt their responses to their baby's vocalisations. They respond more often to positive vocalisations than to negative ones and mainly imitate consonant sounds.

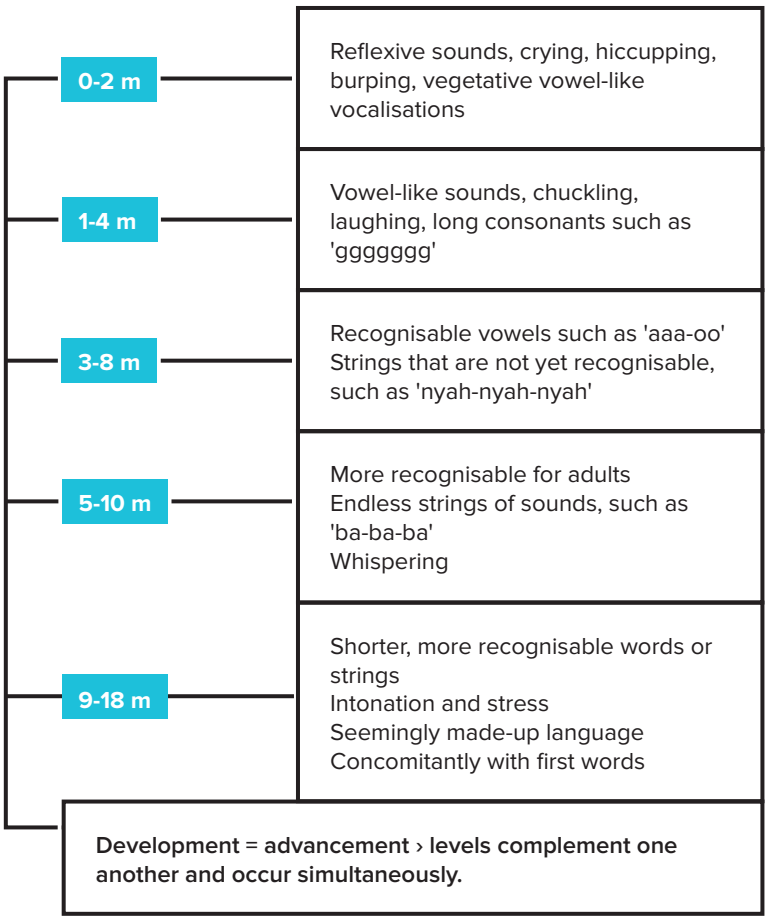
Background

Babies develop sounds in a specific order.[4] There are several ways to classify this development. The classification we use has five development levels[5], where the vocalisations have an increasingly different, more complex form. From birth to 2 months, babies make reflexive sounds, such as crying, burping and hiccupping, but also primitive vegetative vowel-like vocalisations.

During the second stage, which develops between 1 and 4 months, they produce vowel-like sounds, which are still very different from the vowels that adults use. They can also chuckle and laugh and make long consonants such as 'gggggg'.

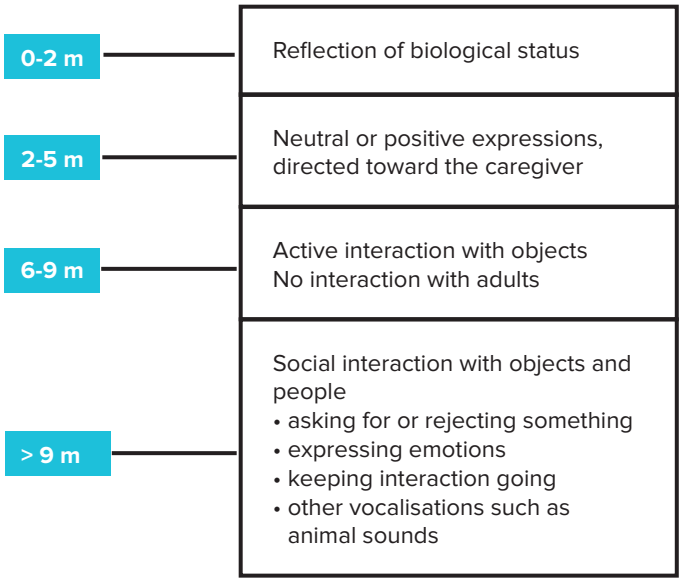
The third level occurs between 3 and 8 months, when vowels become recognisable: 'aaa', 'ooo'. Babies also repeat strings of vowels and consonants, e.g. 'nyah-nyah-nyah', which don't yet sound like real speech.

At the fourth level, between 5 and 10 months, the vocalisations become more recognisable for adults. Babies are now putting together seemingly endless strings, reduplicating the same sounds or combinations of letters, such as 'ba-ba-ba-ba' or 'da-da-da-da'. They are also learning to whisper around now. The fifth and final level overlaps with the first real words. At between 9 and 18 months old, infants make more complex vocalisations. The strings of sounds are no longer endless and at times the infants seem to speak their own, made-up language. They are now also using intonation and stress to give their vocalisations meaning.
Each level in this development complements the previous one. Infants keep reproducing all sounds from each level. It is therefore quite possible that a 6- and a 12-month-old will make the same sounds at some point.


0-2 m
Reflexive sounds, crying, hiccupping, burping, vegetative vowel-like vocalisations
1-4 m
Vowel-like sounds, chuckling, laughing, long consonants such as 'ggggggg'
3-8 m
Recognisable vowels such as 'aaa-oo'
Strings that are not yet recognisable, such as 'nyah-nyah-nyah'
5-10 m
More recognisable for adults
Endless strings of sounds, such as 'ba-ba-ba'
Whispering
9-18 m
Shorter, more recognisable words or strings
Intonation and stress
Seemingly made-up language
Concomitantly with first words
Development = advancement › levels complement one another and occur simultaneously.

Why do babies make all these sounds? Opinions are still divided on this subject. Some researchers think that the sounds are reflexive and have no meaning. They assume that babies make them to explore their breathing and articulation.[6] Others think that it is a form of self-stimulation and that the sounds impart information about what the baby is feeling and looking at.[7] Moreover, researchers attribute a social function to the sounds and believe that these facilitate learning.[8]

Stark[9] categorised sound development based on the possible meaning of vocalisations produced. She divided them into four phases: infants up to 2 months old make mainly natural sounds, such as crying, hiccupping and yawning. They then go on to make sounds that are directed toward the caregiver and have a neutral or positive meaning. In the third phase, the infants start actively interacting with objects, but not with adults. From 9 months, in the fourth phase, Stark talks about infants' social interaction with the objects and people around them. Infants may have different reasons for acting in this way: expressing desire for or rejection of something, or expressing a feeling or a desire to keep the interaction going. Infants also copy other sounds, such as animal noises.



The experiment

The experimenters[10] wanted to investigate maternal responses to different vocalisations, building on earlier studies that showed that mothers respond differently when infants produce sounds containing consonants. This experiment looked at two questions. First, they considered whether infant vocal production changes depending on the game they are playing with their mother. Second, they examined whether mothers respond differently during various games and whether they adapt their response when their child makes different vocalisations.

The experimenters observed mothers playing three different games with their children: puppet play, toy play and book reading.

The results

The study found that the type of game influenced the infants' vocalisations, with more sounds produced during book reading and puppet play, and fewer when they played with a toy with their mother. The vocalisations were also different, depending on the game. The experimenters noticed that the infants produced more consonant sounds when they were reading a book with their mother than during the other two activities.

Maternal responses also varied, the most common being acknowledgement, naming, questions and play noises such as 'yippee' or 'oops'. Directives and imitations of vocalisations occurred less frequently. When they read a book or played with a puppet together, the mothers mainly gave acknowledgement to their child and asked questions. In a book reading context, they also often named what they could see. During toy play, acknowledgement was the most frequent maternal response type, and there were fewer questions.

Generally speaking, the mothers in the study responded to many infant vocalisations (78%). They imitated consonant sounds more often than other vocalisations and expanded them in their own response. They also complimented these sounds more often than vocalisations with only vowels.

Infants make more sounds when you're reading a book or playing with a hand puppet with them than they do during another activity.

Infants produce more complex vocalisations during book reading than during other activities.

Adults mainly respond with compliments, questions or naming. They also make play sounds such as 'oops' and 'gotcha'.

Adults give compliments for consonant sounds more often than for vocalisations with only vowels.

In practice

Noah (11 months) is sitting on the mat with a board book. 'Ahsaah,' he says. 'Yes,' says practitioner Matti enthusiastically. 'That's a house and what's this?' Noah turns the page. 'Eeeh,' he says. Matti tries to point to what's on the page but Noah keeps turning to the next one. He thinks it's great to flip through the book. He's not particularly interested in the pictures at this stage.

'Bang, it all falls down,' says practitioner Ikram cheerfully. The tower of building blocks she was making with Lize (12 months) and Louie (13 months) falls over. 'Kaboo,' says Louie. 'Paaaa,' says Lize. 'Come on, let's build a new tower,' responds Ikram.

Subjects for discussion

01 Do the research findings change your view of infants or a specific baby in your group? How?

02 Did you expect our responses to infants to be influenced by the game we're playing or the sounds a baby makes?

03 Have you ever noticed a baby trying to keep the conversation going by making sounds? Or that he rejects or asks for something by producing vocalisations? Have you ever seen or heard how infants express their emotions using vocalisations?

04 Are the sleeping, playing, reception and eating areas organised in such a way that babies get the chance to have conversations with you or others?

05 Where and when do babies produce the most sounds?

06 Have you ever noticed that babies like making sounds when you're playing with them?

07 What and who would you like to observe?

Observation

01 Have you noticed babies vocalising? How do they sound?

02 When do babies make sounds? Do you notice a difference when you're playing with them, feeding them, changing them, or doing something else with them?

03 What sounds do the babies in your group make? Is there a difference between younger and older infants?

04 How do you react when a baby vocalises? Do you acknowledge it? Do you name the things you see and what's happening? Do you imitate the sounds made by the baby? Do you ask questions? Do you make play noises? What do your colleagues do?

05 Do the babies talk to one another? Do they react to one another's vocalisations? Describe what you see and hear.

06 Do the babies make sounds when they see their parents? How do the parents react to the sounds? Describe the conversations.

07 Babies vocalise more and differently during a book reading activity. What sounds do the babies in your group make while you're reading? Describe them.

08 What sounds do babies make when they're playing? Describe their reactions and the game they're playing.

09 Do the infants in your group speak their own language? For example, do they always make the same specific sounds for certain things like eating, drinking, sleeping or a wet or soiled nappy?

Implementation

01 Reading aloud is a precious moment of sharing between an adult and a child. Read a book with one child. At the age of about 12 months, children are not always interested in the pictures. They want to feel, touch and taste the book and learn how to handle it. They love flipping haphazardly through the pages. Reading to them is simply talking about what's happening. 'Oh, yes, round and round and round' or 'Stroke the little duck' in the case of a touch and feel book. The child is in charge of the book. Your task is to ensure that he can do what he wants with it, except tear it of course.

Reading with one child is not easy when there are a dozen other infants who also deserve attention. It can cause tension in the team because it looks like you're leaving all the work to your colleagues. To prevent frustration, agree among yourselves beforehand who will read when and where.

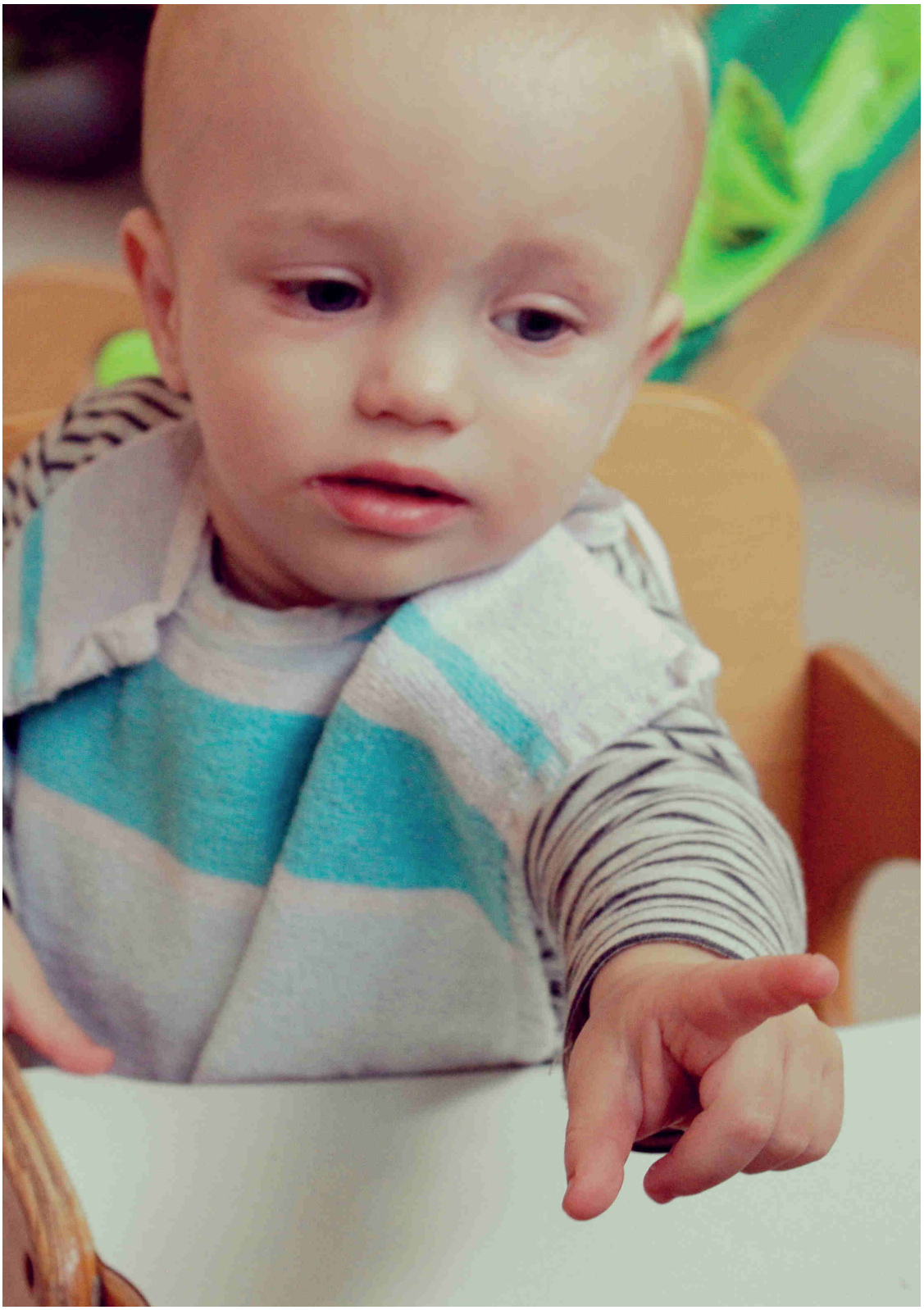
02 Have you ever used a hand puppet? There are several kinds and you can also make one yourself. Give the puppet a voice that matches its personality and let it talk and sing with the children. It can also ask questions and respond, or tell a story. This can become a daily ritual and can be lots of fun for the children and the practitioners.

03 We tend to name things when we're talking to young children. What other reactions could we have, what questions could we ask other than 'what's that?'? Give it a try while playing, telling stories or at other times.

04 New experiences lead to new conversations. Let the children discover new things, for example by letting them feel a bowl of corn, rice or cold, cooked spaghetti with their hands. Engage in a conversation with them. You can even make it a complete feeling trail. And using your feet makes it a completely different adventure.

05 A supermarket is full of coloured items, such as fruit and vegetables, and even the aisle with cleaning products looks attractive. Go shopping with a few children and explore together. This will open up new topics of conversation and may inspire ideas for other new experiences.

06 Big experiences trigger intense reactions and memories. What games or activities could you literally make bigger? For example, you could stack shoeboxes instead of making a tower of building blocks, or create a giant rattle. Or you could spread large sheets of paper on the floor and randomly place little pots or splodges of paint on them. Let the children crawl around through the paint. They'll need a bath afterwards, but the experience is more than worth it.



Theme 5: pointing and vocalising

(13-15 months)

What do babies do?

From the age of 12 months, infants initiate interaction in different ways and keep 'conversations' going. They do this by pointing and making sounds (vocalising).

When a child points, the tendency is to respond using language: 'Do you want the ball? Here it is' or 'Oh, a fire engine, nee-naw-nee-naw, goes the siren.' This helps the child learn new words. But is that what he wants when he points: to learn new words? Or do infants also want something else?

Background

Picture the scene: you're on holiday in a country and you don't speak the local language. You want to buy something from a fruit and vegetable stall at a market. It's your turn to be served and because you and the stallholder don't have a common language, you point to what you want. You manage to attract the stallholder's attention, and after a few tries you work out together exactly what it is you want to buy. When you pay him you accidentally drop your change. The stallholder saw it happen and points towards where he saw the coins rolling.

Pointing is not unequivocal. In the example, you were pointing because you wanted something; the stallholder was also pointing, not because he wanted something, but to help you. The context and the interaction help to understand what pointing might mean.

As surprising as it may be, various studies[1] have shown that infants of about 14 months can also do this. At first it was thought that infants only point for egocentric reasons[2], for instance because they want a particular toy and you can hand it to them. More recent research[3] has found that infants also point to tell people things. They want to share something with someone[4], for example that they've seen a fire engine. Or they want to provide information[5] and indicate, for instance, where the pen is you're looking for.

Infants of about 14 months generally point for the following reasons:

1. They want you to give them something.
   I want my bottle.

2. They want to share an interest.
   Look, a bird!

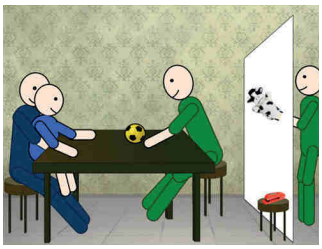
3. They want to provide information.
   I saw your keys falling, they're lying there.

The experiment

Infants often make a noise when they point. The experimenters wanted to find out whether these sounds change depending on the situation in which the child is pointing. In other words, they wanted to investigate whether there is a connection between the pointing message and the vocalisations produced while pointing.

Two experiments were conducted to test this. We will concentrate on the first one. The testing set-up was quite complex, as it is very difficult to get an infant to point without prompting. If you would you like to find out more, you can read all about it in the article on the study. One important point is that one of the two experimenters hid behind a sheet and, through a hole in it, made toys appear and disappear for the test subjects. The other experimenter sat with his back to the sheet, so he couldn't see what was happening (see illustration). The infants reacted to the toy by pointing and producing sounds (vocalising).

During the experiment, the experimenters observed the manner of pointing: with one finger or with the whole hand. They also studied the vocalisations that accompanied pointing, as well as their intonation and intensity and the extent to which they resembled 'real language'.



One of the experimenters sat with his back to the sheet. Through a hole in the sheet, the other experimenter made objects appear and disappear.
Illustration taken from: Prelinguistic vocalizations distinguish pointing acts[6]

The results

The findings indicate that infants point more often when they want to get something than when they want to tell you something or share an interest. In 87% of cases, pointing gestures are accompanied by vocalisations. There are significant differences in the sounds they make while pointing. When they want to share something or tell you something, infants' babbling is more speech-like than when they want to get something. For example, they have a rising intonation more often. When they want to get something, their vocalisations are flatter. Infants also point in different ways. When they want to get something, the use their whole hand more often. When they want to tell you something, they tend to use their index finger more.

You may already have noticed, but when discussing these results we have not considered the difference between 'providing information' and 'sharing interest'. This is because the study did not find much difference between these two reasons for pointing. There was consistently a clear difference between pointing to get something and the other two types, which were themselves very similar. Henceforth, we will therefore talk about just two general reasons for pointing: to get something and to share something (either an interest or information).

Infants point more often when they want to get something than when they want to share something.

In almost all cases (87%), infants babble when they point.

Characteristics of pointing to get something:
- flat intonation
- with whole hand

Characteristics of pointing to share something:
- rising intonation, more speech-like
- with the index finger

In practice

Practitioner Yildiz comes in carrying food. Loes (13 months) and Stien (14 months) immediately start babbling, and point at and reach for the food. 'The food's just coming,' answers Yildiz cheerfully.

Paulo, Laura's daddy, comes in. Kasim (15 months) sees him straight away and points to him.

Haley (12 months) has fallen over and is crying. Onan (15 months) saw it happening and walks over to where the dummies are hanging. He points to Haley's dummy.

Subjects for discussion

01 Do the research findings change your view of infants or a specific baby in your group? How?

02 Did you expect 14-month-old infants to know the difference between pointing to get something and pointing to share something? Did you think they already used that difference themselves? Did you think that 14-month-old infants could share not only their interest but also information by pointing?

03 Have you ever noticed that toddlers point and babble to give a message? What do they point at and what sounds do they make while doing so?

04 Have you already seen the children in your group using different ways of pointing and vocalising? Which ones?

05 Are the sleeping, playing, reception and eating areas organised in such a way that infants can point at toys or other things they want to get? Are there interesting objects for them to point at?

06 What are the things that infants can point at in your group? How could you respond to them pointing?

07 Where and when do infants point the most?

08 What and who would you like to observe?

Observation

01 Have you noticed that infants point and babble to give a message? What do they want to tell? Do they usually want to get something? Or share something?

02 When do infants point and babble? Do you notice a difference between pointing to get something and pointing to share something?

03 Do you see and hear a difference in the pointing and babbling behaviour of younger and older infants?

04 How do children react when you respond to them pointing (try to find out why they're pointing and use it in your response)? Describe their reaction. Is there a difference between younger and older infants?

05 Do infants also point at parents? How do they point at their own parents? Do they vocalise at the same time?

06 Have you lost something? Has an infant ever helped you look for it?

07 Do infants point at things in their group? What do they point at?

08 Do infants point and babble at one another?

Implementation

01 Outdoors you can see and feel a lot of things in a way that isn't possible indoors. Go for a walk with a few children, for instance in a cart. Tell them about everything they can see. What do they point at?

02 Make a family photo wall at the children's eye level. You can ask parents to bring photos from home or suggest taking a picture on the spot in a nice-looking photo corner. How do the children react to the photo wall?

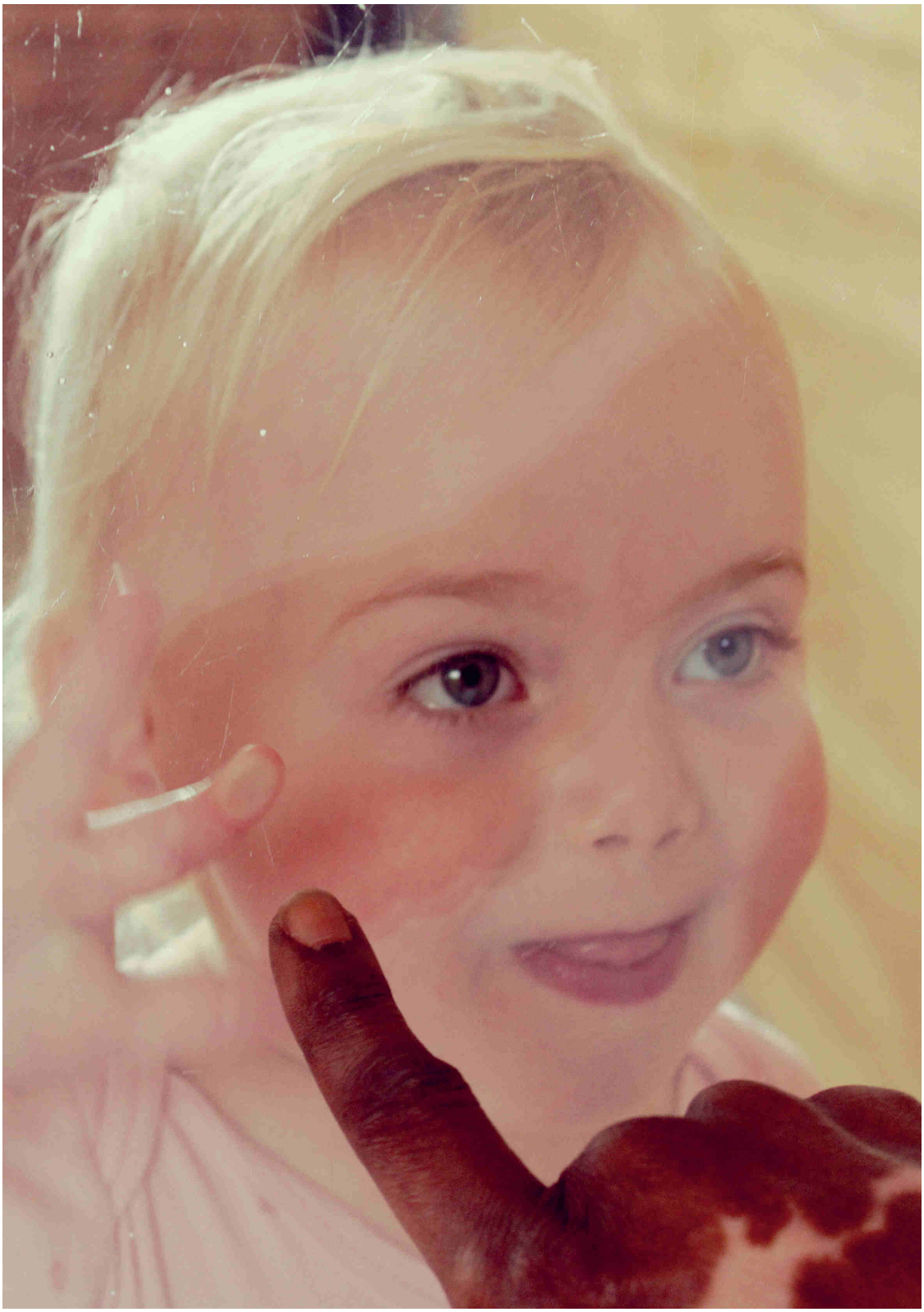
03 Children love books. From about the age of 13 months, they start being fascinated by the pictures; before then reading was mostly about discovering and learning how to handle a book. Read a book with one child. The child is in charge of the book. What page does he turn to? Is he already looking at the pictures? Does he point? Does he babble? Describe what he's pointing at: 'Oh... a pussy cat... and there are his eyes... do you have eyes too? ... Pussy says miaow...'.

When it's not possible to read one-on-one with a child, try reading with two children, or with a few children around a table. Make sure you give each child some individual attention.

04 Take a look around the playing area. Can children indicate (by pointing and/or babbling) which toy they want to play with? Can you make it easier for them to indicate the toys by themselves, for example by placing objects more at their eye level or putting photos of the toys on the boxes?

05 While you're changing an infant's nappy can he look at and point to things he likes? Affix something on the ceiling above the changing mats, such as a mobile, a poster, a drawing, a balloon or a mirror. Describe what the child can see or what is happening at that moment.

06 Is there a window through which you can look outside with the children? What do they see? What do they point at? Do they vocalise? React by telling them what they can see.



Theme 6: following a gaze

(12-18 months)

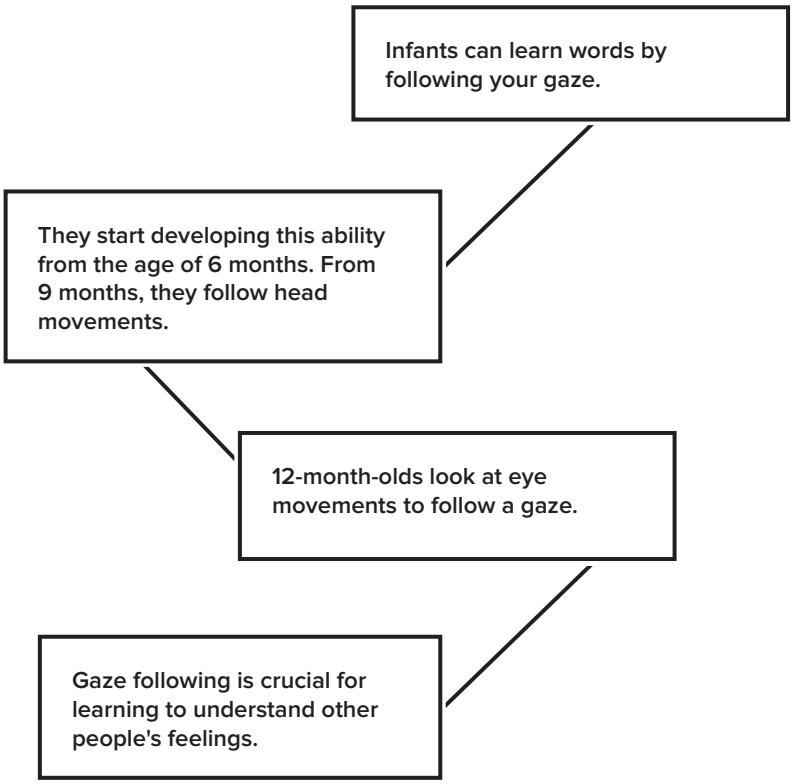
What do babies do?

At 9 months, babies start following the head movements of others to try and discover what someone is looking at.[1] They soon grasp that it is better to follow eye movements, and can do this by their first birthday.[2] This enables them to find out exactly what another person is looking at, which provides them with a wealth of information about objects, safety and social interactions.

Gaze following helps children to discover the world around them and to develop their language skills. For example, by following the gaze of a childcare practitioner when he asks them to get a teddy bear, infants can form a more accurate idea of what the words 'teddy bear' mean. Just think about how much there is to learn when a practitioner looks at a wobbly tower of building blocks, which subsequently falls over.

Gaze following is also important for social development. After all, friendship and relationships are built not only by paying attention to each other, but also by experiencing things together. Following someone's gaze and then turning to look in the same direction is a fundamental aspect of this.

What's more, gaze-following ability is crucial for learning to understand other people's feelings. We have seen that babies 5 to 6 months old are capable of recognising different emotions. They can see when someone is scared, for instance. By following the person's gaze, older infants can also find out why that person is scared.


Infants can learn words by following your gaze.
They start developing this ability from the age of 6 months. From 9 months, they follow head movements.
12-month-olds look at eye movements to follow a gaze.
Gaze following is crucial for learning to understand other people's feelings.

Background

Infants who can follow the gaze of another person are able to learn new words and get to know objects in a different way.[3] Many studies therefore investigate the correlation between gaze-following behaviour and language development. For instance, researchers have found that children who can easily follow another person's gaze at 12 months understand certain words at 18 months. When infants also point or vocalise while following someone's gaze, they are even more likely to know these words.[4]

Infants aged 18 months create a spatial relationship between a person and the first object in the direction in which that person is looking.[5] Younger children can also follow the person's gaze, but do not necessarily make a connection between the person and the object. When a researcher tested whether infants also follow someone's gaze if an object is shielded from that person, it was found that 18-month-olds did not do so. They noticed that the person could not see the object and so did not follow his gaze. Infants aged 14 months did, however, gaze-follow. When the object was then placed behind a glass screen, i.e. visible for the person, the 18-month-olds once again followed his gaze. With the 14-month-olds, there was no difference. They looked just as often as when there was a solid barrier.

The experiment

We know from previous studies that infants are able to follow the gaze of an individual with whom they are interacting.[6] The aim of this experiment is to ascertain whether 12- and 18-month-olds can also gaze-follow when they are present during a conversation as a third party, but do not themselves actively participate.[7]

To test this, the parent was seated next to the infant, and the experimenter opposite. A toy was placed on either side of the table. The parent and the experimenter engaged in a brief conversation about the weather, holidays or their favourite pastimes. The infant was not addressed and was not part of the conversation at any stage of the experiment. He was therefore a third party. In the course of the conversation, the experimenter looked at one of the two toys at fixed intervals, with the parent following suit. A few seconds later the toy began to move. The parent and the experimenter then looked at one another again. This happened several times. Observation determined whether the infant followed the experimenter's gaze and could therefore predict which toy would move.

It is possible that infants look at an unknown adult and their parent differently. In the second experiment, the adults therefore switched positions. The infant was now seated next to the experimenter and opposite his parent. The rest of the experiment proceeded in the same way.

The results

The study found that 18-month-old children are able to follow someone's gaze, even if they are not directly involved in the interaction. Twelve-month-olds can also do this when they are interacting with someone, but not as a third party.

Around their first birthday, infants realise that it can be interesting to follow a gaze, even when they are not personally engaged in the interaction. Over the next six months, they develop the ability to follow the gaze of non-interactive others. At 18 months, they actively follow gaze and regard it as useful.

In an interaction, 12-month-old infants can follow the gaze of another person and establish links between what they see and that person.

18-month-olds can also do this when they are not actively involved in the conversation.

In practice

Kaity (16 months) is sitting at the table and knocks over her cup of water. Liam (18 months) sees practitioner Deborah looking angrily at the cup and the water on the table. He holds tightly onto his cup.

Ianthe (17 months) sees practitioner Amalia looking worriedly at Dorian (14 months) and taking his temperature. What could be wrong?

'Watch out!' says practitioner Dirk to Yara (15 months). He looks at the older toddlers running towards them with buggies. Yara follows his gaze and sees the children coming. She bumps into Ophelia (20 months).

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Subjects for discussion

01 Do the research findings change your view of infants or a specific baby in your group? How?

02 Did you expect 18-month-old infants to be able to follow the gaze of other people, even if they have no direct contact with those people?

03 Have you ever noticed that an 18-month-old knows what you're looking it, even if he's not part of the conversation?

04 Are the sleeping, playing, reception and eating areas organised in such a way that infants can follow your or your colleagues' gaze?

05 What could an infant learn from following your gaze?

06 Where and when can infants best follow your gaze? For approximately how long?

07 What and who would you like to observe?

Observation

01 Have you noticed infants following your gaze? Do they do anything with the information? If so, what?

02 When do children follow your gaze? Is there a difference between younger and older infants?

03 When have you noticed infants following your gaze, even though they were not part of a conversation or interaction?

04 How do children react when following your gaze? Describe their reaction. Is there a difference between younger and older infants?

05 From the age of 18 months, children can also follow a gaze when they're not part of a conversation. Have you noticed this during drop-off and pick-up? Describe how they do this. Do they also do it when another child's parent is present and not their own?

06 Has a child ever found out why you're angry, happy, sad, frustrated, etc. by following your gaze? What makes you think that?

07 Do infants discover objects by following your gaze? Do they learn new words or actions? Describe how they do that.

08 Do infants also follow one another's gaze? Describe how they do that and when.

Implementation

01 While playing with children, tell them who or what you see. You don't always have to talk about objects you're holding; you can also describe things that are further away.

02 Make sure that children can see where you're looking and can follow your gaze during mealtimes or when you're taking care of them. When something happens that makes you happy, angry, scared or sad, for example, briefly explain to them what caused it and why you feel that way. The children may have followed your gaze and your explanation will help them understand it better.

03 Look at the toys and the toy box while tidying up. Make it clear which toys should go in the box. When you explicitly ask a child to pass you something, look at the object or toy in question.

04 Outside there are millions of insects and other creatures flying or crawling around. Take the children outside and discover the world together. Autumn with its falling leaves offers a host of new experiences, but rain, snow and ice can also be really interesting. Kneel down with the children so that they can see where you're looking and can follow your gaze.

Lay a mirror on the ground and look at the trees or the sky together. Note, however, that it will be more difficult for the children to follow your gaze.

05 Can infants follow your gaze while you're changing their nappy? Tell them what you can see and what you're doing.

06 From the age of 18 months, toddlers can follow a gaze when they're not part of a conversation. Make sure that infants frequently get the chance to do this during drop-off and pick-up, and also when other parents are around.

Footnotes

Theme 1: crying

[1] Cook, F., Bayer, J., Le, H.N., Mensah, F., Cann, W. & Hiscock, H. (2012). Baby business: A randomized controlled trial of a universal parenting program that aims to prevent early infant sleep and cry problems and associated parental depression. BMC Pediatrics, 12, 1-10.

Kind & Gezin. (2006). Wetenschappelijk dossier huilen. [Brochure]

Kurth, E., Kennedy, H.P., Spichiger, E., Hösli, I. & Stutz, E.Z. (2011). Crying babies, tired mothers: What do we know? A systematic review. Midwifery, 27, 187-194.

McGlaughlin, A. & Grayson, A. (1999). A prospective study of crying during the first year of infancy. Journal of Reproductive and Infant Psychology, 17(1), 41-52.

Solter, A.J. (2000). De taal van huilen: Positief omgaan met huilen en boosheid van baby's en kinderen tot 8 jaar. Haarlem: De Toorts.

[2] Cecchini, M., Lai, C. & Langher, V. (2007). Communication and crying in newborns. Infant Behavior and Development, 30, 655-665.

[3] Kind & Gezin. (2006). Wetenschappelijk dossier huilen. [brochure]

[4] Johnson & Johnson Pediatric Institute. (2007). Early infant crying: A guide for parents and caregivers. [brochure]

[5] Kind & Gezin. (2006). Wetenschappelijk dossier huilen. [Brochure]

[6] Adam, E.K., Klimes-Dougan, B. & Gunnar, M.R. (2006). Social regulation of stress physiology in infancy, childhood and adulthood: Implications for mental health and education. In D. Coch, G. Dawson & K. Fischer (Eds.), Human behavior and the developing brain: Atypical development. New York: Guilford Press.

Gunnar, M.R. & Donzella, B. (2002). Social regulation of the cortisol levels in early human development. Psychoneuroendocrinology, 27, 199–220.

[7] Haley, D.W. & Stansbury, K. (2003). Infant stress and parent responsiveness: Regulation of physiology and behavior during still-face and reunion. Child Development, 74, 1534–1546.

[8] Albers, E.M., Riksen-Walraven, J.M., Sweep, F.C.G.J. & de Weerth, C. (2008). Maternal behavior predicts infant cortisol recovery from a mild everyday stressor. Journal of Child Psychology and Psychiatry, 49, 97-103. doi:10.1111/j.1469-7610.2007.01818.x

Theme 2: recognising faces and emotions

[1] Johnson, M.H., Dziurawiec, S., Ellis, H. & Morton, J. (1991). Newborns' preferential tracking of facelike stimuli and its subsequent decline. Cognition, 40, 1-9.

[2] de Schonen, S. & Mathiver, E. (1990). Hemispheric asymmetry in a face discrimination task in infants. Child Development, 61, 1192-1205.

[3] Fantz, R.L. (1963). Pattern vision in newborn infants. Science, 140, 296-297.

[4] van Elk M. & Hunnius, S. (2010). Het babybrein: Over de ontwikkeling van de hersenen bij baby's. Bert Bakker: Amsterdam.

[5] Hainline, L. (1978). Developmental changes in visual scanning of face and nonface patterns by infants. Journal of Child Psychology, 25, 90-115.

[6] Sai, F.Z. & Bushnell, I.W.R. (1988). The perception of faces in different poses by 1-month-olds. British Journal of Developmental Psychology, 6, 35–41.

[7] Kuchuk, A., Vibbert, M. & Bornstein, M.H. (1986). The perception of smiling and its experiential correlates in three-month-old infants. Child Development, 57, 1054–1061.

[8] Kahana-Kalman, R. & Walker-Andrews, A.S. (2001). The role of person familiarity in young infants' perception of emotional expressions. Child Development, 72, 352–369.

[9] Messinger, D.S., Fogel, A. & Dickson, K.L. (1999). What's in a smile? Developmental Psychology, 35, 701–708.

[10] Bornstein, M.H. & Arterberry, M.E. (2003). Recognition, discrimination and categorization of smiling by 5-month-old infants. Developmental Science, 6, 585–599.

Theme 3: imitating and predicting

[1] Berk, L.E. (2007). Development through the lifespan. Boston, MA: Pearson.

Robsen, S.J. & Kuhlmeier, V.A. (2016). Infants' understanding of object-directed action: An interdisciplinary synthesis. Frontiers in Psychology, 7, 111-126. doi: 10.3389/fpsyg.2016.00111

[2] Woodward, A.L. (1998). Infants selectively encode the goal object of an actor's reach. Cognition, 69, 1–34. doi: 10.1016/S0010-0277(98)00058-4

[3] Kanakogi, Y. & Itakura, S. (2011). Developmental correspondence between action prediction and motor ability in early infancy. Nature Communications, 2, 341.

[4] Hunnius, S. & Bekkering, H. (2014). What are you doing?: How active and observational experience shape infants' action understanding. Philosophical Transactions of the Royal Society B, 369, 1-9.

[5] Phillips, A.T., Wellman, H.M. & Spelke, E.S. (2002). Infants' ability to connect gaze and emotional expression to intentional action. Cognition, 85(1), 53–78.

[6] Gergely, G., Bekkering, H. & Kiraly, I. (2002). Rational imitation in preverbal infants. Nature, 415, 755-756.

[7] Thoermer, C., Woodward, A., Sodian, B., Perst, H. & Kristen, S. (2013). To get the grasp: Seven-month-olds encode and selectively reproduce goal-directed grasping. Journal of Experimental Child Psychology, 116, 499-509.

Theme 4: conversing through vocalisations

[1] Miller, J.L. & Gros-Louis, J. (2013). Socially guided attention influences infants' communicative behavior. Infant Behavior and Development, 36, 627-634.

[2] Gros-Louis, J., West, M.J. & King, A.P. (2016). The influence of interactive context on prelinguistic vocalizations and maternal responses. Language Learning and Development, 12(3), 280-294.

[3] Keller, H. & Scholmerich, A. (1987). Infant vocalizations and parental reactions during the first four months of life. Developmental Psychology, 23, 62-67.

[4] Oller, D.K. (2000). The emergence of the speech capacity. Mahwah, NJ: Erlbaum.

[5] Nathani, S., Ertmer, D.J. & Stark, R.E. (2006). Assessing vocal development in infants and toddlers. Clinical Linguistics & Phonetics, 20, 351-369

[6] Locke, J.L. & Pearson, D.M. (1992). Vocal learning and the emergence of phonological capacity: A neurobiological approach. In C.A. Ferguson, L. Menn & C. Stoel-Gammon (Eds.), Phonological development: Models, research, implications (pp. 91-129). Timonium, MD: York Press.

[7] Adamson, L.B. (1995). Communication development during infancy. Madison, WI: Brown & Benchmark.

[8] Goldstein, M.H., Schwade, J.A., Briesch, J. & Syal, S. (2010). Learning while babbling: Prelinguistic object-directed vocalizations indicate a readiness to learn. Infancy, 15, 362-391.

[9] Stark, R.E., Bernstein, L.E. & Demorest, M.E. (1993). Vocal communication in the first 18 months of life. Journal of Speech, Language, and Hearing Research, 36, 548-558.

[10] Gros-Louis, J., West, M.J. & King, A.P. (2016). The influence of interactive context on prelinguistic vocalizations and maternal responses. Language Learning and Development, 12(3), 280-294.

Theme 5: pointing and vocalising

[1] Bates, E., Camaioni, L. & Volterra, V. (1975). The acquisition of performatives prior to speech. Merrill-Palmer Quarterly of Behavior and Development, 21(3), 205-226.

[2] Carpenter, M., Nagell, K., Tomasello, M., Butterworth, G. & Moore, C. (1998). Social cognition, joint attention, and communicative competence from 9 to 15 months of age. Monographs of the Society for Research in Child Development, 63(4), 1-143.

[3] Bourdais, C., Danis, A., Bacle, C., Santolini, A. & Tijus, C. (2012). Do 10- and 13-month-old infants provide informative gestures for their mothers in a hiding game? Infant Behavior and Development, 36, 94-101.

[4] Liszkowski, U., Carpenter, M., Henning, A., Striano, T. & Tomasello, M. (2004). Twelve-month-olds point to share attention and interest. Developmental Science, 7(3), 297-307.

[5] Liszkowski, U., Carpenter, M., Striano, T. & Tomasello, M. (2006). 12- and 18-month-olds point to provide information for others. Journal of Cognition and Development, 7(2), 173-187.

[6] Grünloh, T. & Liszkowski, U. (2015). Prelinguistic vocalizations distinguish pointing acts. Journal of Child Language, 42(2), 1-25.

[7] Grünloh, T. & Liszkowski, U. (2015). Prelinguistic vocalizations distinguish pointing acts. Journal of Child Language, 42(2), 1-25.

Theme 6: following a gaze

[1] Corkum, V. & Moore, C. (1998). The origins of joint visual attention in infants. Developmental Psychology, 34, 28-38

[2] Brooks, R. & Meltzoff, A.N. (2002). The importance of eyes: How infants interpret adult looking behavior. Developmental Psychology, 38(6), 958-966.

[3] Law, B., Houston-Price, C. & Loucas, T. (2012). Using gaze direction to learn words at 18 months: Relationships with later vocabulary. Language, 4, 3-14.

[4] Brooks, R. & Meltzoff, A.N. (2005). The development of gaze following and its relation to language. Developmental Science, 8(6), 535-543.

[5] Doherty, M.J. (2006). The development of mentalistic gaze understanding. Infant and Child Development, 15, 179-186.

[6] Beier, J.S. & Spelke, E.S. (2012). Infants' developing understanding of social gaze. Child Development, 83(2), 486-496.

[7] Collicott, C., Collins, S. & Moore, C. (2009). The development of gaze following in a third-party context. Infancy, 14(3), 363-376.

Thank you!

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Theme 7: cooperation

What do babies and toddlers do?

Babies and toddlers cannot collaborate. At least, that is what is generally assumed. But does that hold for all situations? We view collaboration as a cooperative action where two or more children try to achieve the same goal. One toddler pushing a chair, thus enabling another toddler to grab a toy they both want, for instance. Toddlers engaging in parallel play on playmates or in play kitchens do not fit this view.

Although collaborating is not always easy, we seldom ponder how many different social skills it requires. It involves following another person's gaze (theme 6), understanding what he wants to achieve and how (theme 3). Also interpreting facial expression (theme 2) and pointing (theme 5) may come into play. No wonder that collaborating is difficult for babies and toddlers and that it often incites conflict.

Collaborating requires several social skills such as:

- Following gazes
- Predicting
- Recognising emotions
- Pointing

Combining these skills is challenging for babies and toddlers.

Background

Babies and toddlers need adults to learn what collaboration entails. Until the age of 12 months, babies will only respond when adults invite them to converse or engage in peekaboo games.[1] This changes after the child's first birthday. Babies then start to seek out interaction: they make noises, move, point or try to involve adults using facial expressions.[2] Until the age of 2-2,5 children continue to develop these skills. Taking the initiative in complex collaborations only occurs around the age of 3-3,5.[3] During all of these years providing opportunities to practice and building exemplar relations remains of utmost importance.[4]

Babies and toddlers need exemplar relationships with adults to learn what collaboration entails.

From the age of 18 months onwards collaboration between children starts to occur more often.

Aligning actions remains difficult for a long time. That is why young toddlers do not achieve a common goal when they collaborate.

From the age of 2 – 2,5 onwards collaboration starts to expand and improve.

From the age of 18 months onwards collaborations and cooperative, coordinated play between children starts to occur more often.[5] But at this age children seldom succeed in achieving the same goal. Research has shown that 18 months old children are capable of executing part of an intended action, but that they fail to cooperate with their peers.[6] Achieving a common goal is coincidental. When they have turned 2 or 2,5, however, they succeed more often and manage to achieve a common goal. Between the age of 2,5 and 3 children start to use gestures and sounds to shape collaborative actions,[7] thus conveying that they comprehend the importance of aligning their actions with those of their peers.

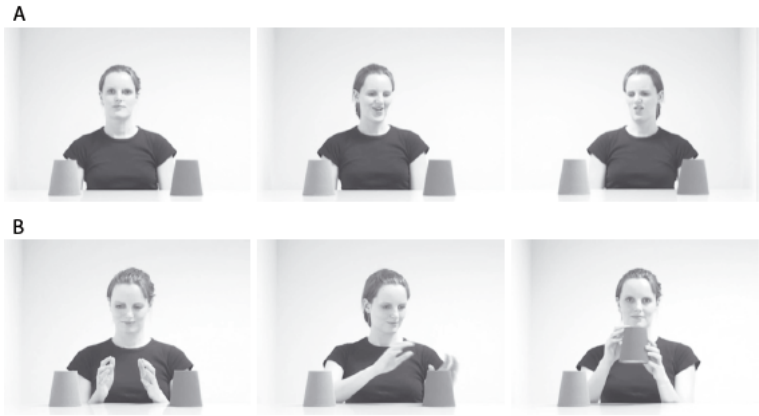
Although toddlers slowly start to collaborate better, the differences among children are great. This individual variation is caused by different factors. Researchers[8] have found that toddlers who are good at predicting future behaviour tend to collaborate better with their peers (see theme 3). They also found that children who can properly follow an adult's gaze (theme 6) consider their partners more during collaborations and thus succeed in achieving the same goal more often.[9] When children are required to collaborate with someone they do not know, the mothers' expectations play a role as well. These expectations do not only influence the way children reach out to one another but also whether they succeed to collaborate or not. [10]

Considering these findings, a note of caution is warranted . Although all the aforementioned skills are interrelated, we cannot assume causal relations. It is possible that other so far unknown and researched elements play a role in the perceived cooperative actions.

The experiment

Hunnius, Bekkering and Celissen[11] investigated the extent to which social insight of toddlers of 19 months is related to their interaction behavior when they cooperate with an unfamiliar peer.

The experiment has two phases. In the first part of the experiment the researchers test how good the toddlers are in predicting someone's behavior. The researchers measure how the children react to a clip by following their eye movements with a specialized camera. Now they can see if a toddler can predict which item the person in the clip will choose after this person showed a preference to one of the two items.



The first phase of the experiment checks to which extent children can predict future behavior in a short clip.

Picture from *The Association Between Intention Understanding and Peer Cooperation in Toddlers.*[11]

In the second part of the experiment two unfamiliar toddlers need to cooperate on a simple task. The goal of the game is to roll a ball through a tube. To do this one toddler needs to hold the tube and open a cover, so that the other toddler can put the ball in.

While the toddlers execute this task, the researchers watch their behavior. They make a distinction between affiliative and antagonistic behavior. Examples of affiliative behavior are communicating, approaching the peer or demonstrating what needs to be done. Antagonistic behavior included protesting, taking away the ball or tube, undermining the actions of the peer or aggressive behavior. The researchers also keep up if and how often the toddlers manage to roll the ball through the tube.

The results

The toddlers react enthusiastic to the task, but don't succeed very often in the goal, letting the ball roll down the tube. The amount of social insight didn't affect the success of the task. It's not at all remarkable children of this age don't succeed in the collaboration task. As we wrote earlier, this is very difficult for toddlers.

The researchers did found a coherence between the social insight of toddlers and their behavior during the game. Toddlers that are better in predicting behavior in the first task of the experiment, show more affiliative behavior when they collaborate with a peer. Children with less social insight show more antagonistic behavior.

Over all the children associate to each other in a positive way. Aggressive behavior like pushing or hitting, is rather rare. Remarkably the researchers found that toddlers answer negative behavior with negative behavior, but don't necessarily answer positive behavior with positive behavior.

The amount of social insight doesn't influence the success of the task.

There is a cohesion between the social insight of toddlers and their behavior during the cooperation task.

Toddlers with more social insight show more affiliative behavior during the cooperation task.

Children with less social insight show more antagonistic behavior.

Over all children associate to each other in a positive way

In practice

After the holiday new children joined the toddler group. Though there are enough engaging toys, practitioner Isa notices the children find it difficult to play together. They take away each other's toys and interrupt each other when they play. Six months later the same children succeed better in playing together. There are still conflicts, but not as many.

Practitioner Thierry notices that Sibel (22 months) hurts other children when she wants something. He decides to play more often with Sibel during the next week to show her how to play and share together.

Subjects for discussion

1. Do the research findings change your view of the children in your group?

2. Did you expect a coherence between predicting or estimating a preference and the way children behave during a game or collaboration?
3. Did you expect that for toddlers collaborating, playing and talking with an adult is an example for relations with peers? Did you expect toddlers need this example and this relationship with adults until they're three years?
4. Have you ever noticed social insight of a toddler? How can you tell?
5. Have you ever noticed toddlers cooperate or play together successfully? What did they do?
6. Do the organization of the room and the toys allow children to experiment with collaboration?
7. How do you react when children show antagonistic behavior when cooperating? Do the research findings change your point of view on this matter? In what way?
8. Where and when can toddlers play with you?
9. Where and when can toddlers play together?
10. What and who would you like to observe?

Observation

1. When do toddlers show their social insight? How can you tell?
2. How do children react when they cooperate or play together? Describe their behavior.
3. Have you noticed children approaching each other or engaging each other in a game in a positive way? What do the children do?
4. When can children choose to work together and pursue the same goal? Which goal do they want to achieve and how do they try to do this?
5. How do children respond to new children in the group? Do you see a difference between older and younger children?
6. When can children practice collaborating or playing together with a collegue? How can you tell?
7. Which differences do you see between younger and older children cooperating or playing together?
8. Do you notice that toddlers gradually become better and quicker in estimating what someone else wants? Do you notice that they can follow a gaze more easily? Do you notice them using these skills when they cooperate with a peer or and adult?

Implementation

1. Let toddlers help you with the housekeeping. Children can help you in turns or do little easy tasks in duo. They can throw all the bibs in the bin for example, or help to divide fruit to the children.
2. Give toddlers the chance to experiment with cooperation. Keep a low profile and don't intervene immediately when they're not reaching their goal. In case of aggressive behavior, you act appropriately.

   When do children get the chance to solve their own conflicts?
3. Toddlers need relations and practice moments with adults to learn how to intercommunicate and collaborate with peers. Make sure every toddlers has a chance for these kinds of moments with a practitioner by conversing, playing a game or fulfilling a task.
4. How can toddlers help you when you (un)dress them? Can they help each other?
5. Toddlers tend to play side by side but not together. Can you alter their game so they collaborate under your guidance? They can for example build a large sandcastle together, build a giant tower, paint a large painting or help each other in a searching game.
6. Ask parents if and how their children cooperate with them or with their siblings. How is this going?
7. Give toddlers the chance to explore something new together. Take a walk with the children or play outside and investigate what every season has to offer: herbs and flowers in spring and summer, chestnuts or rain in autumn or ice and snow in winter.

[1] Brownell, C.A. (2011). Early developments in joint action. *Review of Philosophy and Psychology. 2.* 193-211. DOI 10.1007/s13164-011-0056-1

[2] Liszkowski, U., M. Carpenter, T. Striano, and M. Tomasello. (2006). 12- and 18-month-olds point to provide information for others. *Journal of Cognition and Development 7*. 173–187.

[3] Brownell, C.A. (2011). Early developments in joint action. *Review of Philosophy and Psychology. 2.* 193-211. DOI 10.1007/s13164-011-0056-1

[4] Meyer, M., van der Wel, R.P.R.D., Hunnius, S. (2016). Planning my actions to accommodate yours: joint action development during early childhood. *Philosophical Transactions B. 371*. 20150371. http://dx.doi.org/10.1098/rstb.2015.0371

[5] Hunnius, S., Bekkering, H., & Celissen, A. H. N. (2009). The Association Between Intention Understanding and Peer Cooperation in Toddlers. *International Journal of Developmental Science, 3*(4), 368–388. https://doi.org/10.3233/DEV-2009-3404

[6] Brownell, C., & Carriger, M.. (1990). Changes in cooperation and self-other differentiation during the second year. *Child Development, 61*. 1164–1174.

[7] Brownell, C.A. (2011). Early developments in joint action. *Review of Philosophy and Psychology. 2.* 193-211. DOI 10.1007/s13164-011-0056-1

[8] Krogh-Jespersen, S., Liberman, Z., & Woodward, A. L. (2015). Think fast! The relationship between goal prediction speed and social competence in infants. *Developmental Science, 18*(5), 815–823. https://doi.org/10.1111/desc.12249

[9] Brownell, C., Ramani, G. & Zerwas. S (2006). Becoming a social partner with peers: Cooperation and social understanding in one- and two-year-olds. *Child Development, 77*. 804–821.

[10] Schuhmacher, N., & Kärtner, J. (2015). Explaining interindividual differences in toddlers' collaboration with unfamiliar peers: individual, dyadic, and social factors. *Frontiers in Psychology, 6*. https://doi.org/10.3389/fpsyg.2015.00493

[11] Hunnius, S., Bekkering, H., & Celissen, A. H. N. (2009). The Association Between Intention Understanding and Peer Cooperation in Toddlers. *International Journal of Developmental Science, 3*(4), 368–388. https://doi.org/10.3233/DEV-2009-3404