

## CHAPTER 4

# Facial Mirroring in the Origins of Secure Attachment

### DRAWINGS: FACIAL MIRRORING

This sequence depicts a mother and infant at four months where the infant was classified as secure attachment at one year (Beebe et al., 2010).

This sequence of drawings presents 19 frames, over 26 seconds. The mother and infant begin in a mutual gaze with a positive engagement. After a 13-second gap, as the infant looks down and dampens, the mother begins to gently poke her infant's belly as if to say "come back." When the infant opens his eyes, there is a slight mismatch and repair. The mother at first greets the infant with a level of excitement much higher than that of the infant. But the mother immediately repairs by staying closer to the infant's state. Then they gradually build back up to a peak level of mutual positive excitement.

Because it is hard to see exactly what is happening with the hands, we note that the infant's hand is wrapped around the mother's finger as she swings her finger back and forth, until she takes both his hands and moves them out wide (Frames 10–12).

Note: Because of the split screen and the angle of the cameras, it is often hard to know whether mother and infant are directly looking, particularly from one frame. For example, in sequence 4.1, Frame 1 below, from the video in real time, it is clear that the mother and the infant are looking at each other at that moment. We ask the reader to take a leap of faith as we describe the gaze patterns in the drawings that follow.

#### 4.1 MINUTE:SECOND 01:33–01:35

Storyline: The mother and infant rise into mutual delight. They respond to the other's slight head and mouth movements as they increase their positive facial affect with mutual gaze.

**Frame 1.** Minute:Second  
01:33a

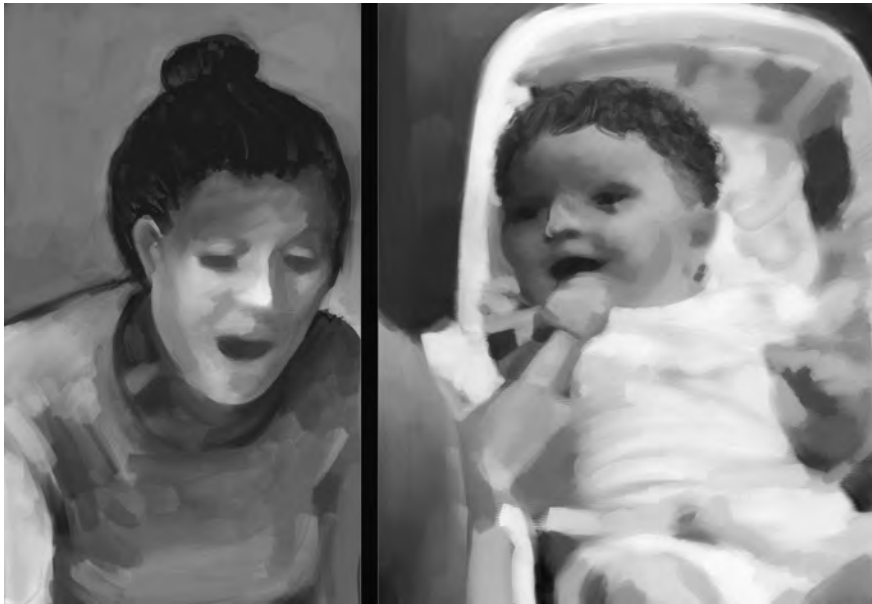
The mother and the infant are directly oriented to each other vis-à-vis and gazing at each other. Their faces have slightly positive interest expressions. The infant holds his mother's finger with his right hand.



**Frame 2.** Minute:Second  
01:33b

From Frame 1 to 2, within the same second, the infant's interest expression becomes more positive, and there is a hint of a smile. The mother partially closes her mouth (from the film we know that she is singing).





**Frame 3.** Minute:Second 01:34

From Frame 2 to 3, in the next second, both continue in mutual gaze and become more positive. The mother has a partial gape smile, while the infant has a full smile. The mother and infant again match the other's facial expressions. The infant continues to hold the mother's finger with his right hand.



**Frame 4.** Minute:Second 01:35

From Frame 3 to 4, one second later, both the mother and infant heighten their smiles. The mother reaches a full gape smile.

**4.2 THIRTEEN SECONDS LATER: MINUTE:SECOND 01:48–01:52A**

Storyline: As the infant begins to look down, to move his head down, and to close his mouth, the mother's smile tenses. She moves forward and gently pokes his tummy. We do not know exactly why the infant looks away here. Likely, he needs a moment of reregulation of his arousal, a time-out.

**Frame 5.** Minute:Second 01:48

After a break of 13 seconds, as this sequence opens, both are looking at the other with a hint of a positive expression. The mother is leaning in. The infant opens the fingers of his left hand. This finger opening movement continues across these four frames. With his right hand, the infant continues to hold the mother's finger, which she is swinging back and forth.

**Frame 6.** Minute:Second 01:49

From Frame 5 to 6, in the next second, the infant looks down, breaking eye contact, and his head moves slightly down. The mother moves back slightly, and her mouth tenses slightly.



**4.3 MINUTE:SECOND 01:52–01:53**

Storyline: As the infant returns to look, a slight mismatch and repair occurs. The mother greets him with an excited smile (Frame 10), but the infant briefly looks down again (Frame 11). When he returns to look, this time the mother greets him with a more moderate smile (Frame 12), closer to his state, and the infant maintains her gaze. As the mother notices very carefully what her infant does, she reregulates herself.



**Frame 7.** Minute:Second 01:50

From Frame 6 to 7, one second later, the infant's head moves down slightly as his mouth begins to close. The mother moves her right hand in to poke the infant gently on his belly. She continues to look at the infant with a slightly tense smile.



**Frame 8.** Minute:Second 01:52a

From Frame 7 to 8, approximately two and a half seconds later, the mother continues to poke the infant's belly, and she continues to look with a slightly tense smile. The infant's head moves further down as his eyes and mouth close. His left hand begins to close.

**Frame 9.** Minute:Second  
01:52b

From Frame 8 to 9, within the same second, the infant opens his eyes and begins to look at his mother. His mouth continues to be fully closed. He has an attentive, interest expression. His left hand is now fully closed. The mother's smile becomes muted, still slightly tensed.

**Frame 10.** Minute:Second  
01:53a

From Frame 9 to 10, a fraction of a second later, the infant looks directly at his mother with a slightly more positive interest expression. The mother smiles, opening her mouth, much more excited than the infant. She begins to reach her right hand toward his left hand.







**Frame 11.** Minute:Second 01:53b

From Frame 10 to 11, within the same second, the infant closes his eyes again. The mother sobers, closing her mouth. Here, she matches his state more closely. This happens very quickly, within less than a half a second. She continues to reach for the infant's left hand.



**Frame 12.** Minute:Second 01:53c

From Frame 11 to 12, within a fraction of a second, the infant opens his eyes and looks with an interest face with a hint of widening, slightly more positive. The mother's smile is more moderate than in Frame 10. She stays close to the infant's lower level of excitement. She is still reaching for the infant's left hand.

**4.4 MINUTE:SECOND 01:54–01:56B**

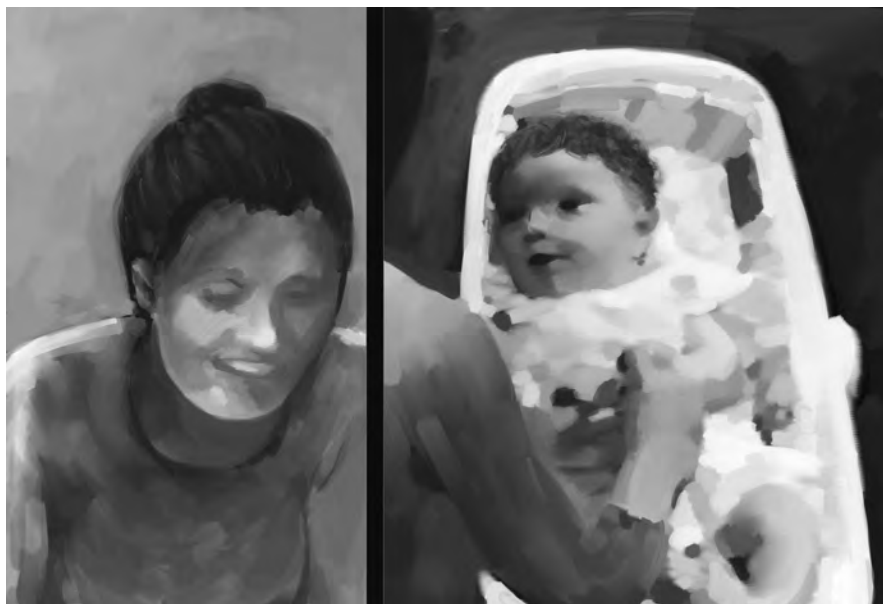
Storyline: Mother and infant rebuild their mutually positive engagement. Each responds to the other with bigger and bigger smiles and mouth openings.

**Frame 13.** Minute:Second 01:54

From Frame 12 to 13, in the next second, each has become slightly more positive. The mother has a slightly more open smile, and the infant has a more positive interest expression. The mother makes full contact with infant's left hand.

**Frame 14.** Minute:Second 01:55

From Frame 13 to 14, one second later, each continues to become slightly more positive. The mother has a bigger smile, and the infant has a slightly more open-mouth, positive interest expression. The mother moves the infant's left hand inward with her right hand.







**Frame 15.** Minute:Second 01:56a

From Frame 14 to 15, approximately a half of a second later, both the mother and infant slightly increase their positive engagement by opening their mouths more. The mother's head moves back, and she shifts the infant's left hand again.



**Frame 16.** Minute:Second 01:56b

From Frame 15 to 16, within the same second, both continue to increase their positive engagement by moving their heads up and opening their mouths more. Mother raises infant's hands up. Both look excited.

**4.5 MINUTE:SECOND 01:57–01:59**

Storyline: Mother and infant each respond to the other's slight shifts as they reach the apex of mutual positive affect. These are the moments that parents and infants love.

**Frame 17.** Minute:Second 01:57

From Frame 16 to 17, in the next second, the mother and infant continue in mutual gaze, and both display the apex of positive affect, full gape smiles. Their heads rise in unison. As the mother raises the infant's left arm up a bit more, the infant lifts his right foot and his toes go up.

**Frame 18.** Minute:Second 01:58

From Frame 17 to 18, one second later, the mother and infant continue to look and smile at each other in a very positive engagement. The mother shifts to a moderate smile, closing her mouth a bit. The infant's gape smile continues.





**Frame 19.** Minute:Second  
01:59

From Frame 18 to 19, in the next second, their positive engagement continues; the mother has a joyous look; the infant continues his full gape smile.

## COMMENTARY ON FACIAL MIRRORING

Facial affect carries unique information with an enormous degree of modulation and subtlety. How each partner's face attracts and responds to the other's face is one of the foundations of intimacy throughout life.

We chose the sequence "Facial Mirroring in the Origins of Secure Attachment" because it illustrates moments in which mother and infant move bit by bit up into peak positive heights of delight together. Portions of the following description are adapted from Beebe and Lachmann (2013).

By now you realize that the level of detail revealed by the frame-by-frame drawings is very different from what we can all see in real time. Mother and infant both move their heads up and increasingly open their mouths as they move incrementally into increasing levels of display of positive facial affect. The extraordinary synchronization of movements is visible only in the microanalysis. The combination of head up and mouth opening has a reaching quality. Similarly, the pair closes down together, moving their heads down and closing their mouths roughly in unison.

The complex interaction that occurs around the moment in which the infant breaks eye contact and looks down also cannot be discerned in real time. Watching in real time, my students often insist that the infant looked down because the mother moved her finger in toward the infant's belly, about to gently poke. But the microanalysis reveals the opposite order: the infant looked down first, the mother reacted with some facial tensing, and then she gently poked the infant's belly.

There is a slight misstep as the infant looks back and seems to be ready to return to the mutual gaze engagement, and the mother is poised to go back up. The mother gives the infant a big open smile. But the infant is dampened (Frame 10). The infant

looks down very quickly one more time (Frame 11). The mother reacts by closing and slightly tensing her mouth. As the infant looks back for the second time, the mother now stays very close to the infant's state. She has a more moderate smile (Frame 12). She does not move ahead of him by beginning to rise into smiles before he is quite ready. This is an important moment as she gives him time to readjust, and she follows his lead. This moment illustrates a very slight disruption and its repair.

They then both move incrementally back up to peak positive shared gape smiles (Frames 16–19). In this process, they are both learning the sequences that lead to intense moments of positive mutual engagement. They are also learning how to gently increment down and disengage from such heights, allowing the infant a moment of reregulation, a visual time-out, as he looks down for a moment. Infants use such moments of looking away to reregulate their arousal, dampening their heart rate down into a more comfortable range, and then they can look back (Field, 1981). Mother and infant then both rejoin in mutual gaze and build back up to the height of positive affect, with fully opened gape smiles. Expectancies of comfortably matching the direction of affective change, moment-by-moment, are thus created in both partners. This expectancy includes room for moments of looking away and reregulation of arousal. This expectancy also includes the possibility of both reaching a marvelous height of fully positive open smiles.

### Illustrations of Expectancies

We now turn to the question of what the infant comes to expect from his or her interactive encounters. How are infant expectancies of social interactions created? We use the descriptions of the drawings to illustrate in more detail how the action sequences of the exchange develop into expectancies. For each pattern, we attempt to translate the action-dialogue into language, as if the infant or mother could put the experience into words.

In the facial mirroring sequence, in a dyad on the way to secure infant attachment, if the action dialogue could be translated into language, we infer that mother and infant create the following expectancies of their interaction: “We follow each other's moves as we look at each other and look away. We follow each other's faces up and down, as we become more and less positive. We can go bit by bit all the way up to the top together, to sunbursts of joyous open smiles. We each can anticipate how the other's gaze, face, and engagement will go. What we feel, and what we do, shows up in the other in a resonant way: We do not have to be vigilant; we do not have to withdraw.” The infant might feel, “I feel secure because I am with you. I feel sensed and joined by you. I feel known by you.” The mother might feel, “I feel secure with you. I feel I know you. I can anticipate how you will feel. I know you love me. I am so happy that you are my baby.”

### Relevant Research

The research findings that underlie this book identified patterns of interaction at four months leading to secure and insecure attachment patterns at one year. Secure attach-

ment at one year is associated in childhood with better peer relations, school performance, and capacity to regulate emotions, as well as less psychopathology (Sroufe, 1983). Here we describe the four-month patterns that predicted secure infant attachment, adapted from Beebe et al. (2010).

In *future secure* dyads at four months, where infants will be classified as secure at one year, mothers and infants followed the other's direction of attention as each looked and looked away from the partner's face. Thus, each can predict the other's likelihood of looking and looking away. Mothers facially followed the direction of infant facial and vocal affect as the infant became more and less positive and negative. Infants reciprocally followed the direction of maternal facial affect with their own facial and vocal affect.

This is a bidirectional facial/vocal mirroring process: Each can predict the other's affective behavior, and each can anticipate that the partner will follow his or her own direction of affective change. As this process repeats, over and over, both mother and infant come to expect matching and being matched, that is, changing in the same affective direction. This is a rough similarity but does not imply any exact matching of facial expression. Each comes to expect the experience of seeing the other's face continuously changing to become roughly more similar to his or her own; each comes to expect the experience of his or her own face continuously changing to become roughly more similar to that of the partner. Both come to expect a split-second, moment-by-moment, contingent interactive process of matching and being matched in the direction of affective change. This matching provides each with a behavioral basis for entering into the other's feeling state. This process operates largely out of awareness for the mother. It is based on procedural, action-sequence knowledge.

Similarity of behavior implies a congruence of feeling, a relationship between matching and empathy. How might this work? The work of Ekman et al. (1983) and Zajonc (1985) showed that matching the expression of the partner is highly correlated with matching the physiological arousal pattern of the partner. Ekman et al. (1983) showed that a particular facial expression is associated with a particular pattern of autonomic activity. Reproducing the expression of another person produces a similar physiological state in the onlooker. This mechanism of empathy is an approximate facial matching, which is correlated with an approximate physiological matching. This mechanism of empathy is equally relevant to parent–infant and adult–adult interactions.

If the research findings could be translated into language, we infer that mothers and infants in *future secure* dyads come to expect, “I can anticipate when you will look and look away; I know your rhythms of looking at me; I feel seen by you. As you feel happy or distressed, I follow your feelings up and down with my own feelings of happiness or distress. As I feel happy or distressed, I can count on you to follow my feelings as well. What I feel and what I do resonates in you. I can count on you to share my feelings, to get what I feel; I feel known by you. I know how your face goes, I know you” (Beebe et al., 2010).

