M. E. Lamb & H. Keller (Eds.)

Infant Development:
Perspectives from German Speaking Countries
Chap. 12, pp 245-273. Hillsdale: Lawrence Erlbaum 1991

The Development of Empathy in Infants

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Theoretical considerations

Empathy from a cognitivistic viewpoint

According to current understanding *empathy* is an experience in which people participate in or share the emotional state of somebody else on the basis of this person's expression and/or their situation. The emphasis on the emotional dimension expressed in this definition is rather new. Under Piagetian influence, empathy was more or less equated with cognitive abilities such as role- or perspective-taking. Only recently has its affective component been reacknowledged, but exactly which processes underly the empathic experience is still a matter of controversy. In particular, opinions differ as to whether empathy by itself may be called a mechanism of social cognition supplying insight into another person's emotional state, or whether additional cognitive achievements have to be drawn on to procure this insight, and if so, how they are to be defined (for a survey, see Gladstein, 1984; Strayer, 1987; Wispé, 1987).

Among the authors who still emphasize the predominant role of cognitive factors in the empathic process is Feshbach (1978, 1986). She postulates two *cognitive* and one *affective* preconditions to empathy: (a) The ability to discriminate and label affective states in others; (b) the ability to assume the perspective and role of another person; (c) emotional responsiveness, that is, the affective ability to experience emotions.

The ability to *discriminate* and *label emotions* is usually tested by exposing the subjects to pictures of a person expressing these emotions. At the age of three, children begin to identify some emotions properly, but their performance remains imperfect up to the age of 6 (Borke, 1971; Reichenbach & Masters, 1983; Wiggers & VanLieshout, 1985). Feshbach used a similar setting to investigate what she called *empathy*. She developed a series of picture stories showing a child hero in an emotion-evoking situation. Her subjects were first asked to verbally identify this emotion. In a second step, they had to specify what they themselves felt when inspecting the picture stories. Inasmuch as their own feeling matched the emotion of the hero, empathy was supposed to be present (Feshbach & Roe, 1968). As may be expected, the children were more likely to correctly identify the hero's emotion than they were to declare they felt the same

emotion, so Feshbach concluded that comprehension of another person's affect – that is, cognitive performance - is an undispensible prerequisite for feeling with another.

Role or *perspective taking* means imagining oneself at another person's place and, on this basis, understanding another's point of view and manner of thinking or feeling. Usually this achievement is ascribed to decentering as opposed to egocentric thinking, which is not supposed to develop prior to the concrete-operational phase (Piaget,1972).

Among Feshbach's criteria, only *affective responsiveness* is known to be present at an earlier age. If Feshbach's proposition holds true, empathy could not be expected to occur in children younger than 5 years of age.

However, there is empirical evidence that much younger children also show concern and compassion with another person and behave in a way that justifies the empathic attribute (Dunn & Kentrick, 1982; Zahn-Waxler, Radke-Yarrow & Kind, 1979). This evidence challenges the Feshbach position, particularly with respect to her cognitive presuppositions, which are either too sophisticated or, at least, somewhat overemphazised in their importance. Hoffman (1976) was the first to point out that empathy occurs at a much earlier age, and he was the first to formulate a theory about empathetic development. The present chapter is a modified extension of his approach. It attempts to further clarify the nature of cognitive and affective components of empathy and to develop a process model of their interaction.

Strategy of analysis

Current research in the early childhood development of social cognition is characterized by three features.

1. Children's performances tend to be regarded from the perspective of an adult mind, and sophisticated skills available to grown-ups therefore are often assumed to be undispensable preconditions. What is more, mechanisms of rational reasoning are considered to be the only organizers of behavior, and it remains beyond consideration that other methods of organizing may exist other than rational mechanisms of cognition. In particular, the prerational organizing potential of emotions is underrated in this view (cf. Bischof, 1989). Thus, because emotion plays the main role in behavioral control during the first few years, young children's performances appear as either deficient or limited to a degree which falls short of their factual potentialities.

2. This cognitivistic bias is paralleled by a methodological pecularity. Anxiously striving to be scientific, developmentalists have confined themselves more and more to research paradigms far away from real live conditions. Subjects are confronted with as-if-situations portrayed in narratives or vignettes, they are demanded to reflect about their own and others' experiences, and they are expected to verbalize their judgement. This kind of procedure is all but appropriate in investigating young children (cf. also Eisenberg, 1986). Experimental designs that aim at testing "social knowledge-in-action" (Shantz, 1976) are still rare. Observation and experimenting under

naturalistic conditions is only recently being reacknowledged as research strategy, mainly due to ethological influence (e.g. Strayer, 1980; Zahn-Waxler & Radke Yarrow, 1982).

3. As a result of behaviorism, socialisation is still considered to be the main or even only agent of development. The role of innate propensities and of maturational effects is scarcely discussed at all, and if so, it tends to be confined to temperamental features (e.g. Kagan, 1984). The possibility of empathy being an innate disposition has been suggested by Hoffman (1981), but was not pursued further by contemporary theorists.

The strategy of the present chapter is to examine the problems just outlined in a phylogenetic perspective. With such an approach, it is no longer the level of human adult rationality that serves as a frame of reference. Instead, we start from the baseline of an evolutionary stage on which the achievements under discussion either were not yet present or were only rudimentary. Proceeding from this level, we ask for those phylogenetic changes that, complying with the demand of utmost parsimony, must be postulated in order to account for the novel performances encountered on the next evolutionary stage. This procedure is optimally suited to reveal how prerational mechanisms, in particular emotions, are transformed by, and integrated into, newly evolved cognitive capacities. In a second step, we test whether the insight gained by such an approach may offer working hypotheses on human ontogeny.

The presentation starts with an outline of some findings about *hominization*. Considering the life-style of early hominids it is assumed that sociocognitive skill, particularly empathy, has played an important role in their specific adaptation as cooperative hunters. The picture is supplemented by references to chimpanzees who, being close relatives of man, can serve as a model of earlier hominid stages. It is pointed out why the potential for mental imagination, which we share only with the great apes, has for the first time in phylogeny made true social cognition possible. Socialization hardly plays any role on the anthropoid level, thus the comparative approach is also apt to shed light on the weight of maturation in empathy development.

Based upon these considerations a detailed analysis of the the processes underlying empathy in young children is presented. It is stated that the empathic response requires different explanations depending on whether it was elicited by witnessing other people's expressive behavior or by perceiving the situation they are in. In both cases, however, the existence of a self-concept is crucial because particular facets of self-recognition turn out to play an essential role in the emergence of empathy.

Forming a self-concept is also a prerequisite to recognizing one's own mirror image. Therefore it seemed suggestive to investigate possible correlations between ontogenetic stages of mirror recognition and the onset of empathy in the second year of life. These experiments and their outcome are presented and discussed later in the chapter.

Phylogenetic perspective

From a phylogenetic viewpoint, the phenomenon of empathy presents itself in the following context. Most paleoanthropologists agree that at a rather early point in hominization, man began to supplement his diet with meat acquired through hunting large prey (Isaac, 1978). From comparison with carnivores we know that *cooperation* in hunting and *sharing* of prey are the most essential requirements of a hunting way of life. The evidence is strong that both behavioral features were present in the early hominids.

The psychologically interesting question is how early hominids managed to cooperate, and why they were motivated to share prey with those group members who did not participate in the actual hunting. This question is by no means trivial, because neither cooperation of the kind necessary to efficiently hunt large animals nor sharing of food is in the normal instinctual repertoire of lower primates. These lower primates live on fruit and vegetables that need no sharing, and to cooperate means at best to participate in the same actions as the companion. In contrast, in cooperative hunting, it is necessary to detect the intentions of the other, and to arrange one's own activities in a way that complements the activities of the other.

It is only on the chimpanzee level that indications of these new forms of social interaction emerge. Chimpanzees hunt sporadically and in doing so, they demonstrate cooperation of the more sophisticated kind. Some animals, for instance, cut off the escape route of a victim, or they remain quiet while another chimpanzee is stalking prey. Chimpanzees also share their prey, which indicates an understanding of another's need (Goodall, 1986).

Chimpanzees are equipped with a more sophisticated cognitive apparatus than the lower primates, and this may permit to relate the behavioral pecularities just mentioned to their improved cognitive abilities. By comparison, we may get an impression of how similar abilities could have evolved in early hominids (Bischof-Köhler, 1979; 1985; 1990).

The mind of an ape

What are the characteristics of a chimpanzee's mind? Since Köhler's classical investigations (1921), we have learned that chimps are capable of problem solving. For instance, they pile boxes on top of each other in order to get a banana at the ceiling, or they use sticks to reach for a fruit outside the cage. Meanwhile, it is a well documented fact that they are capable of some kind of symbolic representation that allows them to solve problems by imagination. The process could be compared to a computer simulation which takes place on an - as it were - *mental rehearsal stage*. Mental rehearsal goes beyond mere imagery, it means not only representing adequately but also voluntarily manipulating mental images in a way that takes the laws into account according to which reality is functioning. As far as we know, it is only on the ape level that this kind of problem solving occurs in evolution.

For some time it was taken for granted that the cognitive abilities of chimpanzees evolved because of their selective advantage for tool use and that the same holds true for hominization. But because we have come to know more about their real life under natural conditions, particularly from observations by Goodall (1986), the emphasis on tool intelligence has somewhat waned. Meanwhile the idea is much more favored that the intellectual capabilities of apes evolved in the first place to allow for more sophisticated social interactions (Humphrey, 1976). And we may speculate that the evolution of the human mind took a similar course.

Not only do chimpanzees demonstrate their social intelligence in prosocial interventions such as cooperating, sharing, and assisting conspecifics, they also show a considerable repertoire of social manipulation. In this respect they even try to deceive their conspecifics by suppressing their own expressive behavior. Social manipulation is a main feature of rank confrontations. To aquire a high position is not so much a matter of physical strength, but rather of using intelligent means.

The best insight into the cognitive mechanisms underlying these behaviors has been provided by Premack (Premack 1983; Premack & Premack, 1983, Premack & Woodruff, 1978). He did not confine his chimpanzee experiments to pure language training; rather, he was particularly interested in the cognitive structure that allowed language training to become successful. In one of his investigations, Sarah, a language-trained chimpanzee, was shown video scenes in which a human caregiver was confronted with some problems that he pretended not to be able to solve. For instance, he tried to use a hose that was not connected to the tap. The animal was then exposed to a series of photographs depicting different solutions, among which there was also a photograph of a hose connected to the tap. As it turned out, in most instances, the animal choose the right solution.

This result is quite interesting as far as chimpanzees' problem solving abilities are concerned. The really intriguing point, however, is the question of why Sarah was affected by somebody else's problem in the first place. Not only did she understand his intention, but she participated in this intention and undertook to solve his problem vicariously.

This last one is the important point. It was already made by Köhler: His star chimpanzee, Sultan, watched a somewhat dull group member who was obviously not able to get a banana by using a stick. When Sultan was allowed to intervene, he quickly solved the problem, but then forwent eating the banana himself and, instead, generously pushed it toward the companion. According to Köhler, this response indicated that Sultan really looked at the task from the standpoint of the other animal.

All these findings allow the following conclusion: Chimpanzees have insight into the mental state of other individuals. They obviously understand the connection between inner subjective experience and its outward expression. Of course, social animals below the ape level also behave in a way that takes into account the other's mood or intention. But they do this on the basis of instinctually preprogrammed responses to expressive signals from conspecifis. There is no reason to claim that they have insight into the subjective experience corresponding to this

expressive behavior. What is more important, the situation of another one does not affect them as long as they are not involved in this situation, but rather just observing it. Baboons, for instance, after having watched a companion getting caught in a trap, are not able to learn, from their observing experience, to avoid the same trap themselves (Kummer, 1980). Chimpanzees are the first species in evolution who not only perceive the other's emotion from outside, but are also able to participate in it and to experience the situation from the other's point of view. It is on this evolutionary level that social cognition was invented, particularly in the form of empathy, and probably also in the form of simple performances of perspective taking.

Process Analysis fo Empathy

Definitions

The concept of empathy was originally introduced into psychology under the German name of *Einfühlung*, by Lipps (1907). When discussing empathy, a phenomenological and a functional perspective should be held apart. The former is confined to experiential description, the latter deals with the psychological mechanisms and processes underlying the phenomenon.

Phenomenologically, empathy is the experience of participating in the emotional state of another and thereby understanding it. It is crucial that the emotion, although being shared, retains the quality of belonging to the other person. This specification distinguishes empathy from emotional contagion as, for instance, in panic, in contagious laughter, or in shared ecstasy. In emotional contagion the emotion of another person takes possession of the observers without the observers being aware of this fact. They do not realize that the other one is actually the source of this emotion.

The functional analysis specifies the *stimulus pattern* that elicits empathy, and its *intraorganismic mechanisms*. There are two stimulus patterns that may elicit an empathic response: (a) the expressive behavior of another (*expression-induced empathy*), and (b) the other's situation (*situation-induced empathy*). Also, when analyzing the intraorganismic mechanisms, three aspects have to be taken into account:

(1) The *affective component:* What makes me participate in the other's emotion?
(2) The *social-cognitive component:* How do I know, that it is actually the other's emotion?
(3) The *motivational component:* What am I going to do ?

Responding to expressive behavior of conspecifics is already present in the behavioral repertoire of lower social animals, so expression-induced empathy can build on phylogentically old mechanisms. To emotionally participate in the situation of a conspecific, however, is a novel

feature. So the question of how an uninvolved observer gets affected by another one's situation raises a special problem.

Emotional contagion

In order to understand how emotional participation is achieved in expression-induced empathy, it is worthwhile to analyze emotional contagion in more detail.

Emotional contagion is a phylogenetically old phenomenon of great importance in social animals, well-known to ethologists, who call it *mood induction* (*Stimmungsübertragung*, Lorenz, 1935). It synchronizes motivational states of group members and thus serves to maintain group cohesion. For instance, if one animal flies, the others join into the flight. The contagious response is caused by perceiving the expression of a motivational state in a conspecific.

There have been several attempts to explain the process of emotional contagion (Hoffman, 1982; for a detailed discussion see Bischof-Köhler, 1989). One explanation, mentioned by Hoffman (1982), connects the response to classical conditioning. As a paradigm, he uses the case of a caregiver who, being in an anxious mood, handles the child in such a rough way as to release fear in the latter as well. Thus children would associate the anxious expression of the caregiver with their own fear, until finally the expression all by itself would trigger the response. This explanation seems rather costly, particularly when applied to animals.

Recently the *motor mimicry hypothesis* originally favored by Lipps (1907) has been reinstated (Bavelas et al., 1987). According to this hypothesis, the perception of another person's expressive behavior transforms, via innate sensorimotor connections, into a muscular pattern copying this behavior. The expressive mimicry, thus induced, automatically arouses the corresponding emotion in the observer by way of a James-Lange type feedback. The value of this hypothesis, however, is doubtful because the empirical evidence for both assumptions is all but overwhelming.

The hypothesis favored in this chapter also builds on innate mechanisms, but proposes a more parsimonious explanation. It attributes the response to an innate releasing mechanism; perceiving an emotional expression of a conspecific is hypothesized to directly release the very same emotion in the observer.

In the contemporary discussion of empathy emotional contagion has aquired a dominant role, because there is a strong tendency to identify both. Plutchik (1987, p. 39), for instance, called empathy "a widespread phenomenon in the animal world", exemplifying this by instances of mood induction and social facilitation, that is, emotional contagion. Likerwise, Hoffman's (1982, p. 281) definition of empathy as "an affective response more appropriate to someone else's situation than to one's own" does not indicate a differentiation against emotional contagion. And Eisenberg (1986) explicitly equated the two phenomena:

> "The individual merely reflects the emotion of the other. In this situation the individual feels the same emotion as the other, and is neither highly self-concerned nor other-directed in orientation. I would suggest that this type of emotional orientation be labeled as 'empathy' or 'emotional contagion' and that pure empathic responding occurs most frequently among very young children" (p. 31).

There is a problem with equating empathy with contagion because the latter does not convey insight into another's internal state. Thus the social cognitive component of empathy is neglected.

Being aware of this fact, Hoffman drew on additional cognitive skills to supply empathy with a cognitive component. Starting from *global empathy* already demonstrated by newborns, which is purely contagious, he deemed what he calls *self-other distinction* to be necessary for the next stage, namely, *egocentric empathy*, in which the child is for the first time aware of the fact that it is actually the other person who is in distress. The third stage, *empathy for another's feelings*, presupposes, according to Hoffman, role-taking abilities to understand that "others have feelings and other internal states independent of one's own" (p. 281). Thus Hoffman makes it quite clear that for him empathy by itself would not suffice to allow for social cognition.

For the problem addressed in this chapter, Hoffman's stage of "egocentric" empathy is of particular interest, because it characterizes the first occurrence of an awareness that the experienced emotion belongs to somebody else, hence, of empathy as distinguished from emotional contagion.

The hypothesis to be considered in detail suggests that emotional contagion (global empathy sensu Hoffman) could well have been the phylogenetic and ontogentic "raw material" from which empathy developed as soon as self-other distinction was available.

Here the crucial question arises, which kind of self-other differentiation would be relevant. According to Hoffman (1987, p. 51) it is the "gradual emergence of a sense of the other as physically distinct from the self", and this awareness is supposed to coincide with person permanence. Both could be expected to occur in the first half of the second year. A sense of self as physically distinct from others, however, is already present in infants at a much earlier age (Stern, 1985). Hoffman further stated that "the affective portion of the child's global empathic distress may be transferred to the separate image-of-self and image-of-other that emerge"(p. 51), so it seems obvious that he actually meant something other than separated physical entities. Thus, the concept of self-other distinction needs clarification.

Self-objectification and expression-induced empathy

What kind of self-other distinction could be relevant for empathy, is again indicated by experimental work with chimpanzees. Using a "rouge-test" method similar to the one applied by Amsterdam (1972), Gallup (1970) could prove that chimpanzees are able to recognize their own

mirror image. Gallup concluded they must form a primitive kind of a self-concept that allows for this self-identification.

The term *self-concept* has a specific denotation in social sciences. It refers to experiencing the self as an object. In this sense it was first conceived of by James (1961/1892) who called it the "Me" in contrast to "I", which is the self as a subject. This distinction then became central to the theory of G.H. Mead (1968) and was finally taken over and relabeled by Lewis & Brooks-Gunn (1979) as *existential* and *categorial self*. In all cases, the self as an object refers to the knowledge or image of oneself carried by the subject.

Research on the self as a subject, the "I", is comparably scarce because this kind of experience is far more difficult to grasp. This point was already made by James who found it impossible to define the "I" and ended up paraphrasing the phenomenon in formulations like "the thoughts themselves are the thinker". The problem lies in the "I" actually not being aware of oneself, but only existing in the ongoing process of experience. A conceptualization advanced by Stern (1985, p. 7) may be helpful in this respect. He defines a sense of self as "an invariant pattern of awareness that arises only on the occasion of the infant's action or mental process. This organizing subjective experience is the preverbal, existential counterpart of the objectifiable, self-reflective verbalizable self". Unreflective self-sensing is the characteristic mode in which infants experience themselves before the reflective self concept emerges around the middle of the second year.

In social sciences, research into the self-concept is primarily concerned with the components of self-knowledge. Typical questions relate to how this knowledge is aquired and which factors influence this prosses. The emphasis lies on content analysis. By contrast, the phylogenetically oriented, comparative approach taken in this chapter deals with the more basic question which new dimensions of experience are opened for an organism capable of self-objectification. Therefore, to avoid biased expectations, I shall not use the term *self concept* subsequently, but rather speak of *self-objectification* (for a detailed discussion, cf. Bischof-Köhler, 1989).

To begin with, self-objectification, is an undispensable requirement to solving problems on an imaginative basis. The image of the self has to be shifted around mentally, just like the images of other objects involved in the problem. Self-objectification, though, implies more then only an image of one's own body. It also includes the knowlegde that this body is guided by a mental self, which is the carrier of thinking, feeling, intending, remembering and the like. This reflecion of the self (the "Me" of James) can be conceived of as if it were another person. From this perspective one can realize that there is an outside to the self, which can be encountered in one's own mirror image. Still, this outside is experienced as being only one side of the coin, it is the vessel of the "I" with all its experiental dimensions. Thus self-objectification allows the realization that inner experience and outward expression coincide.

Self-objectification is also the basis for the kind of self-other distinction necessary to provide the social-cognitive component of empathy. Due to self-objectification one is aware of oneself as being somebody separated from the other, not just physically, but rather on a

psychological level, in the sense that self and other are separate carriers of their own inner experience. This again allows the empathical observer to remain aware of the fact that the shared emotion is actually another person's emotion.

Self-objectification depends on mental imagination, thus it does not gradually develop in ontogeny; rather it sets in abruptly with the general emergence of imagination in the middle of the second year. This is indicated by several achievements that depend on imagination: Cildren attain stage 6 of object permanence, they are now capable of transferred imitation, they start solving problems on a mental basis (Piaget, 1969, 1975a,b) and recognize themselves in the mirror (Amsterdam, 1972; Bertenthal & Fischer, 1978; Bischof-Köhler, 1989; Laubach, 1986; Lewis & Brooks-Gunn, 1979; Priel & DeSchonen, 1986; Schmid, 1989; Schulman & Kaplowitz, 1977).

Thus, the social-cognitive component to empathy would be procured by self-objectification. As to the Feshbach postulates of affective responsiveness and the ability to discriminate emotions, there is sufficient evidence that the child in the middle of the second year is well equipped with both. Already in the first year of live infants show joy, interest, fear, anger, disgust, and sorrow and they respond to other people's emotional expressions in a way that allows to conclude that, on a prerational and pre-verbal level, they can very well recognize and discriminate those emotions which they are able to experience themselves (Bühler & Hetzer, 1928; Campos et al., 1983; Haviland & Lelwika, 1987; Izard, 1980; Izard, et al. 1980; LaBabera et al., 1976;).

Emotional contagion, as the "raw material" for expression-induced empathy, is also effective in the first year. On an auditory basis it is well documented already in newborns, who readily join other babies in crying (Hoffman, 1977). Moreover, there is growing evidence of emotional contagion released by another person's mimical expression, although this research has its methodological pitfalls, particularly if conducted with very young infants (Bühler & Hetzer, 1928; Charlesworth & Kreutzer, 1973; Cummings et al. 1981; Field, 1985; Haviland & Lelwika, 1987; for a review see Thompson, 1987). Furthermore, *social referencing* in the second half of the first year is a quite impressive indicator of the effectiveness of emotional contagion (Klinnert et al. 1983).

One question remains to be answered: How does the infant come to know which emotional state coincides to which expressive feature? The analysis of mother-infant interactions offers information as to what kind of experience is relevant in this respect. Caregivers exhibit a striking tendency to "mirror" the child's mood in their expressive behavior (Papousek & Papousek, 1977, 1979) This tendency is a cross-cultural universal. It may be caused by an emotional contagion of caregivers, or on their empathizing with the child. The latter is more probable, because caregivers - though mostly unaware of their mirroring - know very well which mood the infant is in. By perceiving the caregiver's expression, the infant can acquire information about what being in a certain mood looks like from outside. The phenomonen of *affect attunement* as described by Stern (1985) may have a similar function. Given that emotional contagion were

really a conditioned response, the "mirroring" activities of caregivers would, at any rate, procure a much more natural basis for associative learning than the procedure described earlier.

Finally, the development of expression-induced empathy can be hypothesized as follows. Expression-induced empathy will appear on the basis of emotional contagion as soon as children are able to self-objectify, because they now are aware that they and another person are separate carriers of their own experience. When confronted with a person showing distress the children will not just be seized by emotional contagion, but will realize that the distress they encounter actually refers to the other's inner state.

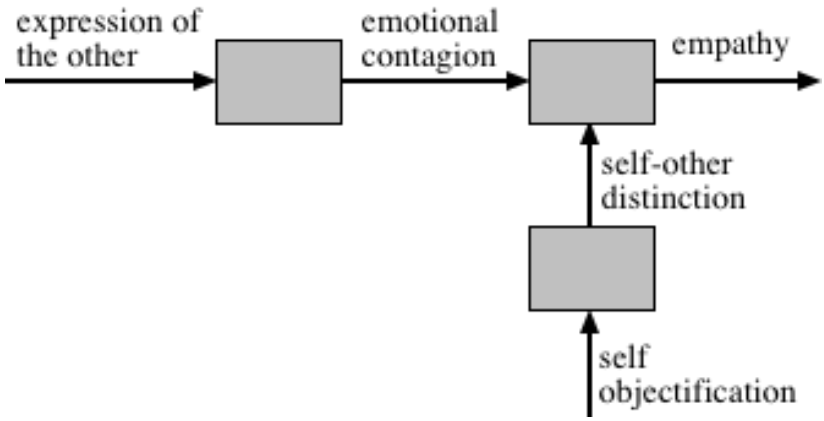

Fig. 1. Expression-induced empathy

As already pointed out, however, this hypothesis can only explain expression-induced empathy. As to the question of how an observer may get empathically involved in the *situation* of somebody else, we have to look for a different explanation.

Synchronic identification and situation-induced empathy

To explain situation-induced empathy we have to draw upon a cognitive category that is a fundamental prerequisite of mental imagery in general, and of self-objectification in particular. This category may be aptly characterized as *synchronic identification.*

Identity is originally a category of perception. It unites separately perceived phenomena as being realizations, aspects, or states of one and the same entity. Identified phenomena may, or may not, be equal in appearance.

The earliest phylo- and ontogenetically form in which this category appears has been labeled *diachronic identity* by Bischof (1985, 1987), because it has a time-bridging function: Phenomena following each other in time are perceived as being subsequent states of the same entity. Diachronic identification allows us (a) to expect something to persist, even though it may not be perceivable all the time, and (b) to recognize two subsequent appearances as belonging to

the same item even when they change in form or quality. The frog who becomes a prince after having been kissed by the princess nevertheless retains his (diachronic) identity.

To be able to represent reality in imagination a second mode of identity perception is required. Here it becomes necessary that two phenomena given at the same time, but separated in space, are perceived as being the same. (Bischof, 1985, 1987) proposed to specify this new form of perceptual categorization as *synchronic identity*. Again, equality of appearance is neither a necessary nor a sufficient condition of identity. One egg looks just like another egg and still they are not the same: incubating one would not make the other one hatch. In contrast, the little puppet into which the voodoo priest sticks his needles, only remotely resembles the life victim, and nevertheless the latter is expected to suffer from the procedure.

The first important function of synchronic identification is to connect images with reality. We must be able to realize that the ideal object which we tentatively shift in our imagination to another place, is identical with the real object still perceivable and unmoved at its old site. In addition, synchronic identity is responsible for the *semantic relation,* that is., it relates verbal concepts to the facts they denote. Thirdly, synchronic identification may relate two facts perceived in reality, making one appear as a symbol of the other, as in the voodoo example or, more commonly, in the case of a photographic image and the original situation. And finally, synchronic identification yokes the "I" as the subject and carrier of one's own experience to the objectified and reflected-on "Me", thereby allowing that "I" recognize my mirror image as "Me" myself.

The latter case provides a clue to our problem how a bystander can become empathically involved in the situation of another person. Here again, it is crucial that "Me" and "You" are perceived as essentially identical. "I" am then related to "You" similar to the way we both relate to "Me". Just as I identify my own outside as the other aspect of my inner experience, I realize that the same holds true for the other's outside. The other's experience, then, is in essence the same as mine. Thus, the other person qualifies as an object of synchronic identification. As a consequence, everything that happens to the other person is perceived as something concerning me as well, and I respond emotionally to the other's situation as if I were in this person's place[i].

The following example may illustrate the process. Imagine sombody sitting down in a chair that collapses. People witnessing the scene burst out laughing, which is a rather embarrassing reaction. Why do they laugh, nevertheless? Laughter after such events means relief from a mild shock. But why were the bystanders shocked in the first place? Obviously, because they

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[i] Whether the empathical response represents the other person's emotional state veridically is of only secondary importance. Empathizers may, to a certain degree, respond in an egocentric fashion. After all, it seems a good strategy to start from the emotional "zero hypothesis" that You and I feel in a similar way. In many cases this expectation will hold true or at least procure a good approximation. Where it fails, perspective-taking skills, as they gradually develop after the onset of empathizing, have to step in and provide a more refined insight into the other's experience

identified with the victim, until the "all clear" signal was given with the insight that nothing really serious has happened and allowed the bystanders to relax.

This kind of experience should not be confounded with perspective-taking. In the latter, I voluntarily imagine myself at the place of the other. In empathic identification, I cannot help but feel as if I were in the other's position. It is for this reason that I prefer using the term "perspective-induction" in the present context (Bischof-Köhler, 1989).

It is important to realize that identification does not result in any form of emotional fusion comparable to emotional contagion. As Fig. 2 shows, in situation-induced empathy self-objectification actually has two functions: It provides one pole for synchronic identification, allowing to experience oneself as being essentially the same as the other, and consequently to perceive his situation as if it were one's own situation (perspective-induction). At the same time, as in expression-induced empathy, it allows for self-other distinction which is necessary to supply the empathic response with insight into the true source of the feeling and thereby to distinguish it from emotional contagion.

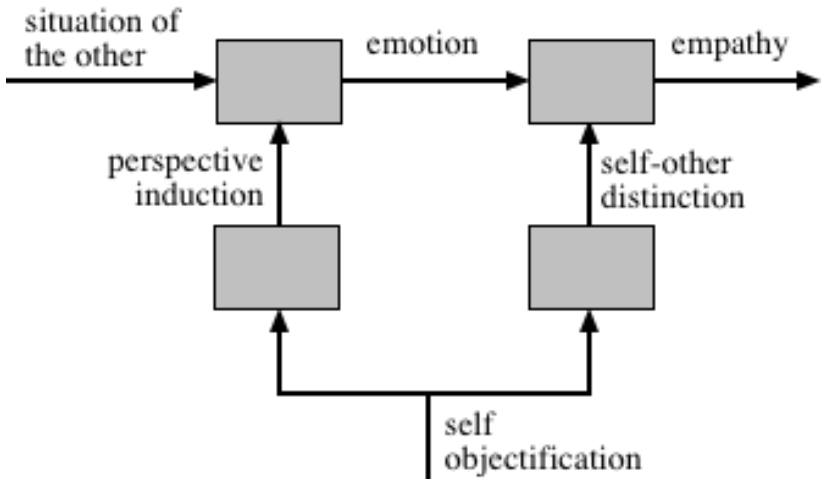

Fig. 2 Situation-induced empathy

Situation-induced empathy, as based on synchronic identification, does not presuppose the association of having gone through a similar situation oneself. As long as the situation of the other, in the first place, has the potential of becoming relevant to the observer, the empathic response will occur. I need not have experienced the loss of a beloved relative to empathize with a mourner. This is nicely demonstrated by the example of a 4-year-old boy who, upon hearing about the death of his friend's mother, said solemnly: "You know, when Bonnie grows up, people will ask her who was her mother, and she will have to say 'I don't know'. You know, it makes tears come in my eyes". (From Radke-Yarrow, Zahn-Waxler & Chapman, 1983). Examples like this reveal that synchronic identification is also the crucial mechanism which allows learning from another person's experience.

Motivational consequences of empathy

The third component of empathy listed earlier, namely, it's motivational consequences, is one of particular importance for the phylognetic problem of how cooperation and sharing of prey were achieved by early hominids. This component may also serve to operationalize empathy on a preverbal developmental level as in apes and young infants.

Empathic distress results in a motivational tension to terminate this distress (Hoffman, 1976; Hornstein, 1978). One solution would be to go away and thereby avoid the source of empathic distress. But, in contrast to emotional contagion, the truely empathic observer is aware of the fact that it is primarily the other person whose condition is at stake. This person's plight remains represented in imagery, therefore running away would not terminate empathic distress. What really matters is to change the situation for others, by comforting them, helping them, or vicariously fullfilling their intention. Cooperation, as well, is primarily based on an empathic response. By identification, the observer participates in the intention ot the other and, after doing so, can figure out which activity is most appropriate to reach the goal.

Not in every case, however, does empathy result in prosocial behavior. There are other factors which may affect the preparedness to intervene. With respect to young children, in particular, the following variables have to be taken into consideration.

First of all, familarity with the person in need is generally known to be a factor of great importance to the promotion of altruism. In small children it counts even more, since an unfamiliar person may release a stranger reaction and fear may prevail. Children's preparedness to help may also be influenced by their individual enterprise and competence, both of which cannot be presumed to be very high in younger children. Finally the child may be preoccupied by another intention and not be able to postpone it.

Furthermore it has to be taken into account that not every prosocial intervention is necessarily released by empathy. Young children may have been trained to respond prosocially, and when they behave accordingly, they may do so without emotional involvement.

Finally a factor has to be mentioned that is scarcely taken into consideration in the literature at all. The majority of writers consider the motivational consequences of empathy to lie exclusively in the prosocial sector. Either the empathic response, whenever it centers on the other person's distress, is just globally called sympathy (Hoffman, 1982; Eisenberg, 1986), or empathy is altogether defined as concern or compassion with another person's welfare (Batson & Coke, 1981).

However, the motives based on empathy are by no means only prosocial. Empathy can very well be focused on the other person and still result in just the opposite of sympathy. Whether empathic observers feel compassion with a distressed person depends on the kind of relationship they hold to this person. If the relationship is bad, the same situation may trigger malicious gloating. In this emotional response the empathically shared distress of the other person is at the same time enjoyed. Likewise, the connection of aggression with empathy may

result in antisocial consequences. Only creatures capable of empathy are able to sense that their aggressive behavior hurts the recipient. In phylogeny, the emergence of empathy was, at the same time, the emergence of intentional cruelty and sadism.

Empirical Investigation

Hypothesis

The ideas already outlined generate questions that can be addressed by empirical research. In the second part of this chapter, some of our own investigations on the development of empathy in human infants are reported. In these experiments we proceeded from the assumption that the affective preconditions of empathy - such as the ability to discriminate emotions, emotional responsiveness in general, and the susceptibility to emotional contagion in particular - are already present in the first year. The cognitive requirements, defined as self-objectification and synchronic identification, emerge, along with the onset of mental imagery, only in the middle of the second year. These two abilities are also responsible for recognizing one's own mirror image, so the hypothesis was generated that empathy should spontaneously occur in all children as soon as they able to recognize their own mirror image.

Presented with a situation in which a person demonstrates distress, empathic children should show emotional concern and compassion, and indicate by their actions that they comprehend the emotional condition of the distressed person to be at stake. We consider concerned other-centered activities to be the only feasible operationalization of empathy at this developmental stage. Verbal inquiry remains beyond question. Matching of emotional expression alone would not suffice to distinguish empathy from emotional contagion and may not even be a feature that necessarily accompanies the empathic response (cf. Strayer, 1980).

Children who have not yet reached this developmental stage should either succumb to emotional contagion and seek comfort for themselves, or they should remain indifferent since they are not yet able to identify themselves with distressed persons and therefore are not affected by their situation.

Experiment

We conducted a pilot study with 17 children (9 girls and 8 boys), and a main investigation with 36 children (19 girls and 17 boys), age-range 16 to 24 months, from the town of Zürich with a Swiss-German speaking middle-class background (Bischof-Köhler, 1988, 1989; Bischof-Köhler & Laubach, 1985; Bischof-Köhler et al., 1986; Heusi, 1987; Laubach, 1986; Schmid-Fieberg, 1989). Both investigations consisted of two parts: an empathy experiment and a test of

mirror recognition. The pilot study was conducted by a single experimenter. In the main study, empathy investigation and mirror-recognition test were conducted by two different students who were kept strictly uninformed about each other's results until the evaluation was completed. The pilot study yielded essentially the same results as the main investigation. Only the results of the main investigation are referred to in detail in this chapter.

Empathy: Design. Empathy was tested in a *main play session* with a grown-up female playmate, who had already been familiarized to the child in a 30-minute unstructured *warm-up session* on a previous day. For the main session the playmate brought a teddybear along, which, after about 20 minutes of handling, she accidentally broke so that it lost its arm. Thereafter she started mourning and sobbing moderately for about 150 sec. (grief period). Once during this period she explicitly verbalized her grief ("my teddy is broken"), meanwhile, the teddy and its arm lay on the floor between herself and the child. Subsequently, if the child had not intervened, the playmate put the teddy aside "in order for him to have a rest", and took up playing again for at least 10 minutes, whereupon she left the room, telling the child that she was going to repair the teddy at home. The mother was present the whole time, but was instructed to hold back and only intervene on the child's request. The teddy's arm could be refixed by the children themselves. Both the warming-up and the main play sessions were videotaped through one-way mirrors.

Mirror recognition: Design. Self recognition was tested with a *rouge test* method (Amsterdam, 1972). At the beginning of the warm-up session the child was exposed to a mirror (110X80 cm) without any markings in a small room for 60 seconds. Then a dark blue eye-shadow marking was inconspicously affixed to the cheek, and the child was again placed in fornt of the mirror, this time for 180 seconds. The room contained no toys except a little rubber foam ball. The mother was present but seated in a way that the child could not perceive her in the mirror. The session was videotaped.

Results

Both empathy investigation and mirror-recognition test were evaluated in three steps. The first evaluation was carried out on the basis of purely intuitive criteria. Both investigators independently had to group the children according to their subjective impression, with respect to empathy, or mirror recognition, respectively. In a second step the experimenters attempted to describe the children's behavior as thoroughly as possible by means of objective categories (empathy: grief period and the subsequent 3 minutes; mirror recognition: whole session). The categories, partly single events, partly interval durations, were encoded and stored in a Computer (PDP model 11/34). Finally, each intuitive group was operationalized by a list of those objective categories that allowed the computer to reconstruct the intuitive grouping.

Empathy: Results. On the intuitive basis, four patterns of subjects' reactions were distinguished (number of subjects in parentheses):

Helpers (11): These children showed concern and/or compassion and tried to change the situation of the playmate, by either trying to console her, or attempting to repair the teddy, or securing help from their mothers.

Blocked helpers (7): The children were concerned and either showed a similar behavior as the helpers, but delayed their helping attempts until after the end of the grief period, or they tried to draw mother's attention to the accident by contineous verbalizing about the event and pointing at the playmate.

Perplexed (10): The children sobered in their expression and could not avert their attention from the playmate. They stopped playing, but did not show any attempt to intervene. They gave the impression that they did not quite understand what was going on and seemed to wait until the playmate resumed playing.

Indifferent (8): These children exhibited a short orienting response but soon lost interest in the playmate and went on playing either by themselves or with their mother. They did not show concern or attempt to help. Two children of this group even walked around with display-like behavior, shouting and showing off.

Helpers and Blocked helpers were classified as Empathizers, the Perplexed and the Indifferent as Non-Empathizers.

Fig.3 shows the decision tree according to which a computer reconstruction of the intuitive grouping could be achieved. The following categories proved relevant for operationalization:

- Prosocial intervention during the grief period or within 3 minutes afterward;
- Repeatedly approaching mother and drawing her attention to playmate;
- Length of play-activity during grief period;
- Length of focusing on playmate and/or teddy during grief period;
- Display behavior.

The main criterium for empathy, *prosocial intervention*, was operationalized by the following behaviors: 'Child repairs teddy'; 'tries to repair teddy'; 'calls mother to repair teddy'; 'offers another toy to playmate'; 'urges mother to approach playmate'; 'stays close to playmate and tries to reinstate eye contact'. The child had to show at least one of these features. Most of them, particularly

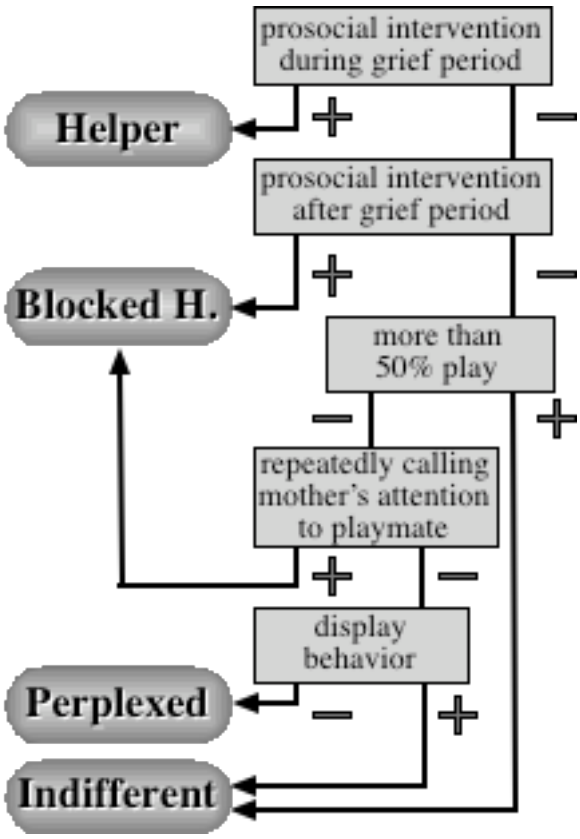

Fig. 3. Decision tree with objective criteria for the empathy grouping

the last one, occured with others[2] .

Children who did not intervene prosocially during or after the grief period were nevertheless rated as empathic, if they approached the mother more than once and called her attention to the playmate by commenting the event with a sad voice four times or more during the grief period. It turned out that, additionally, these children played during less than 50% of the time during the grief period.

Children, who neither intervened nor tried to call their mother's attention were rated as non-empathizers. They divide into two groups according to their play behavior during the grief period. The group of the Perplexed played less than 40% of the grief period time, whereas the Indifferent played more than 50%, or showed repeated display behavior. *Display behavior* is operationally defined as 'shouting with loud voice'; 'marching conspicoulsy'; 'foot-stamping'; 'knocking and rattling on objects'.

Duration of play-activity exhibited significant differences between the Perplexed and the Indifferent ($U=3.60$, $p<0.01$), as well as between Helpers and Indifferent ($U=3.63$, $p<0.01$). The

[2] It should be pointed out that for the empathizers it was really the playmate's condition which counted in the first place.They did not just start mourning because of being deprived of the teddy as a toy, but they became really concerned only after checking back with the playmate and making sure that she was serious about her mourning.

difference between Helpers and Blocked Helpers, and between Blocked Helpers, Perplexed, and Indifferent, was not significant (according to Dunn's Test for large samples).

Duration of focusing on playmate and/or teddy, although not required for computer reconstruction of the intuitive grouping, offers an additional objective criterium for the child's degree of concern. Helpers focus significantly longer on playmate and/ or teddy than the Indifferent ($U=4.28$, $p<0.01$); Blocked Helpers and Perplexed also demonstrate significantly longer focusing than the Indifferent ($U=2.57$, $p<0.05$; $U=2.84$, $p<0.05$). The difference between Helpers, Blocked Helpers and the Perplexed was not significant.

Emotional expressive behavior (voice, mimics) which played an important role for the intuitive grouping was not included into the operationalization. Helpers and Blocked Helpers showed predominantly a concerned expression, Perplexed children demonstrated a bewildered, helpless expression, Indifferent children appeared neutral.

Additionally the following variables were evaluated: "Closeness to mother vs. explorativity"; "relation to playmate"; "relation to teddy", "number of siblings". No correlation between these variables and the empathy grouping could be established. The influence of age and sex is discussed later.

Mirror-recognition: Results. The behavior of the children in front of the mirror was evaluated in two ways.

1. Dichotomous analysis. Children were grouped according to the "hard" criteria of "localization of the marking" and "calling the mirror image by one's own proper name". Children, who localized the marking in their face, or named themselves properly, were classified as mirror-positives (21 mark-localization, partly paralleled by naming, 1 naming alone). Children who did not respond to the marking or who tried to localize it in the mirror, qualified as mirror-negatives (14).

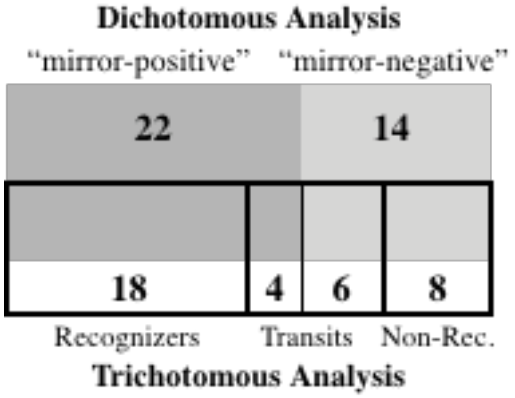

Fig. 4. Results in recognition test. Upper part: Mark localization or proper naming. Lower part: Grouping according to intuitive criteria.

2. Trichotomous analysis. Additionally, an intuitive rating with subsequent computerized operationalization was performed, quite analogous to the method applied in the empathy case. This procedure suggested a division into three groups: Recognizers, Non-Recognizers, and a third group composed of children who showed a striking tendency to avoid their mirror image, by 'going away from the mirror', 'gaze aversion', 'turning away abruptly when catching own gaze', 'trying to avoid mirror altogether'. These children either localized the eye-shadow marking or did not do so. They were called Transitionals. Fig. 4 shows the distribution of subjects according to the two analyses performed.

The decision tree shown in Fig. 5 presents the objective categories that allowed for computer reconstruction of the trichotomic grouping.

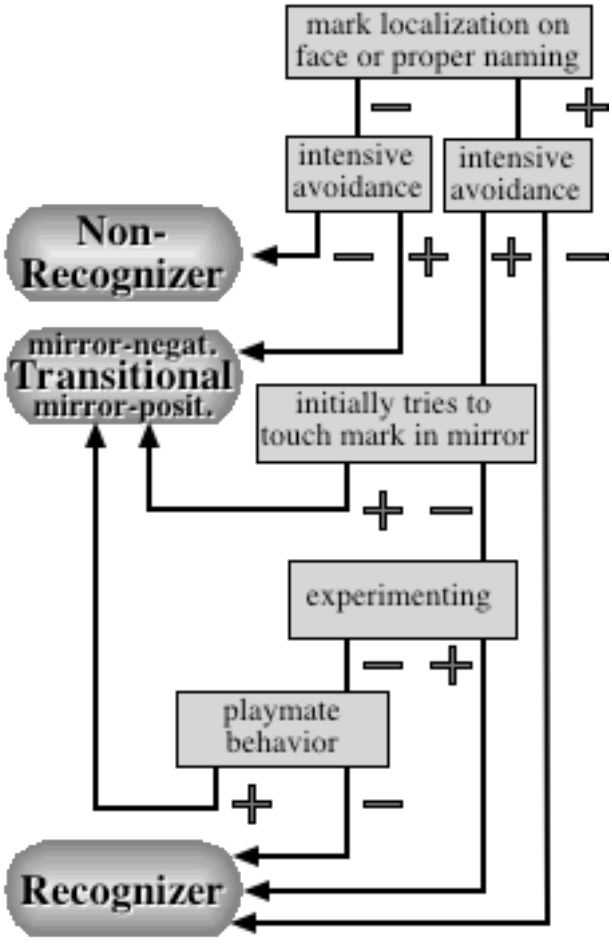

Fig. 5. Decision tree with criteria for the self-recognition grouping

• Children intuitively rated as *Recognizers* turned out to have two or fewer incidents of avoidance, and to be mirror-positive.

• When children had two or fewer incidents of avoidance and were mirror-negative, they were defined as *Non Recognizers*.

• *Transitionals* could be mirror-positive or mirror-negative. They all had three or more incidents of avoidance and differed in this respect significantly from the Non-Recognizers ($U=2.97$, $p<0.01$). However, some of the Recognizers also had more than three incidents of avoidance. Thus additional criteria had to be found to distinguish them from the mirror-positive Transitionals. These criteria were "trying to localize the marking on the mirror surface before localizing it in the face" and/or "playmate behavior" without "experimenting".

Playmate behavior is a typical reaction of Non-Recognizers. They treat their mirror image as if it were another child, by 'offering objects', 'playing hide and seek', 'trying to find somebody behind the mirror'. This behavior declines but does not totally disappear with the onset of self-recognition.

Experimenting - as defined by 'performing mirror-monitored body movements'; 'watching own mimics'; 'grimacing' - occurs significantly more often in Recognizers than in Transitionals ($U=2.94$, $p<0.01$). The difference between Recognizers and Non- Recognizers, and between Transitionals and Non-Recognizers is not significant in this category.

The influence of age and sex is discussed later.

Reliability. The most informative categories were cross-checked by an independent rater. These categories showed the following reliabilities (number of agreements divided by total number of sample): Prosocial intervention and calling mother's attention: .92; distinction between mirror-positives and mirror-negatives: .94; Strong versus weak or no avoidance: .94.

Additionally the category, 'prevailing emotion: concerned versus bewildered', which was not needed for operationalization although it in fact discriminated rather well between Blocked Helpers and Perplexed, was cross-rated (for Blocked Helpers and Perplexed only) with a reliability of .81.

Empathy and mirror recognition: Comparison. Fig. 6 summarizes the relation between empathy and self-recognition. Vertically arranged are the empathy groups, with Helpers and Blocked Helpers summarized as Empathizers, Perplexed and Indifferent as Non-empathizers. Horizontally arranged are the mirror-recognition groups according to trichotomous classification. For comparison, the dichotomous mirror categories are indicated by different colouring of the bars.

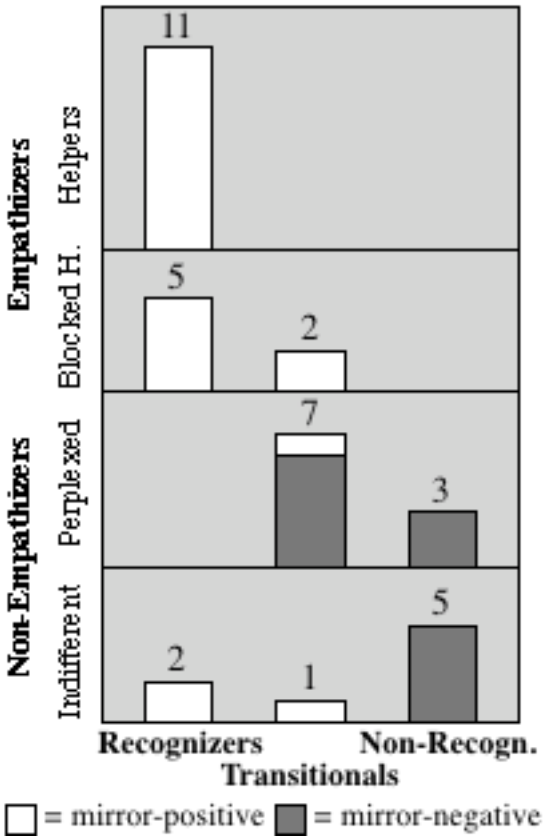

Fig. 6. Relation between empathy and self-recognition

The results are quite straightforward: Empathizers all passed the rouge-test positively, or named themselves properly. Children who did not yet recognize their own mirror image did not show behavior that qualified for empathy. The correlation between Empathizers/Nonempathizers and mirror-positive/mirror-negative behavior is r = .80, p <0.001.

Children who qualified as Transitionals in mirror recognition (if compared with the rest of the children) are over-represented among the Perplexed in the empathy situation (r=.58; p.<0.001).

Mirror recognition and empathy (both counted according to dichotomous grouping) correlate positively with age (empathy vs. age: r=.59, p.<0.001; mirror recognition vs. age: r=.63, p <0.001). The correlation between empathy and mirror recognition prevails, however, when age is partialled out (r=.68, p <0.001).

Fig 7 shows how age and sex relate to the empathy and recognition groupings. There is a (non-significant) tendency for girls to score higher in empathy than boys. However, boys are also (non-significantly) retarded in self-recognition, thus the result does not support the assumption of a true sex difference in empathy.

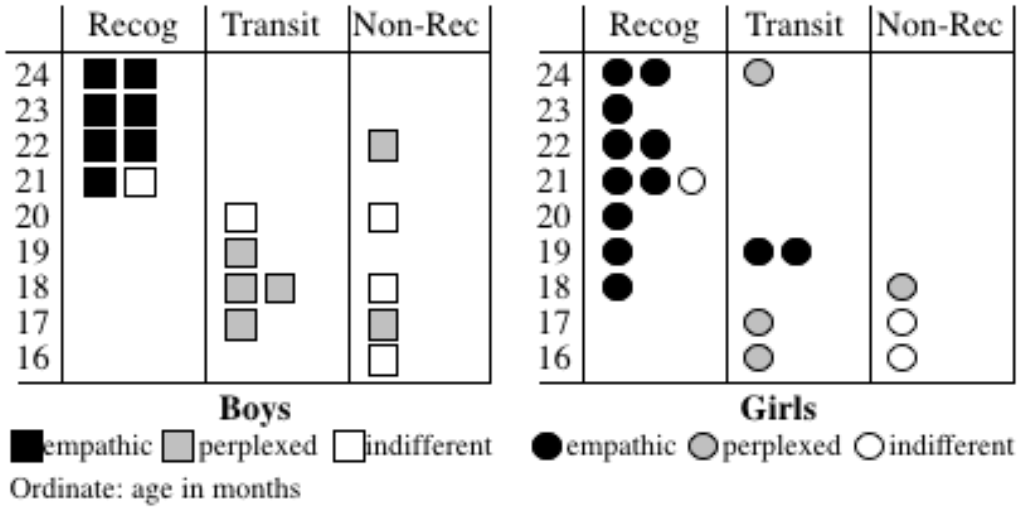

Fig. 7. Empathy and Self-Recognition. Age and sex distribution

Concluding remarks

Summary of experimental evidence

Proceeding from phylogenetic considerations and including experimental evidence on cognitive performances of chimpanzees, the hypothesis was developed and tested that in human ontogeny empathy should emerge spontaneously in all children as soon as they are capable of self-objectification and synchronic identification. Both cognitive achievements are also responsible for recognizing oneself in a mirror, so self-recognition should coincide with the first occurrence of empathy. These expectations were confirmed by our experimental results: Only those children who recognized themselves emphathized with a person in distress. Prosocial interventions and centering of attention on the person in need were taken as criteria to operationalize empathy. Absence of an empathic response in Recognizers or mirror-positive Transitionals, which occurred in only a small percentage of our sample, does not diminish the result because empathically induced prosocial motivation may be curtailed by independent factors. The crucial correlation is unequivocal: None of the children who did not yet recognize themselves showed empathy. Thus, evidence is rather strong that self-objectification and synchronic identification are basic requirements for empathy.

Empathy and self-recognition correlate with age as well, consequently the argument may be put forward that both variables are actually independent of each other and only correlate through age. This, however, is improbable because the correlation stays consistent when age is partialled out.

Further evidence supporting the narrow relationship of empathy and self-recognition comes from the correlation of the Transitionals with the Perplexed, which is also age-independent except for the children of these groups generally belonging to the younger part of our sample.

The most striking feature of the Transitionals is avoidance of their mirror-image. Mirror-avoidance is conformly reported by almost all investigators to occur at an age in which self-reognition is just about to be expected (Amsterdam, 1972; Priel & DeSchonen, 1986; Schulman & Kaplowitz, 1977; Zazzo, 1979). There are two possible explanations for avoidance: (a) The Transitionals who proved mirror-negative already sense their mirror image to be related in a special way to themselves. But they are not yet fully capable of identification and therefore become frightened by a phenomenon which they cannot comprehend. Hence, the avoidant behavior would characterize an immediate pre-stage of recognition. (b) The Transitionals who demonstrate mirror-positive behavior are already able to identify themselves but are reluctant to accept their mirror image as belonging to "Me" because it is still alarming to realize that one has an external side. This would also explain why avoidant behavior still occurs in some Recognizers (for a detailed discussion of the phenomenon, cf. Bischof-Köhler, 1989).

A majority of the Transitionals, particularly those who were mirror-negative, belonged to the group of the Perplexed in the empathy experiment. Here again, they demonstrated a half-hearted response. On the one hand their attention kept being caught by the playmate, on the other hand, they were not really "with" her, and stayed passive. Here, too, they gave the impression of being in a pre-stage, in which identification with the other person had not yet fully started.

Theoretical conclusions

In our theoretical work we addressed two different questions: First, how an emotion similar to that of the observed person is evoked in the observer, and second, how the observer manages to escape the spell of this emotion and keep it confined to the other person. The second question led us to the concept of self-objectification. As to the first question, the distinction made between expression-induced and situation-induced empathy is relevant. Expression-induced empathy in principle may be based on emotional contagion. Situation-induced empathy, however, requires perspective-induction through identification.

Our experiment does not allow us to determine which of both forms of empathy prevailed in the individual case. However, the odds are in favor of situation-induced empathy. Consider that not a single subject of our sample exhibited emotional contagion, although this response would have been expected to occur at least in those children who were not yet able to self-objectify. As a matter of fact, however, neither the perplexed nor the indifferent children were affected by contagious grief, judging by the fact that none of them secured comfort for themselves from the mother. It can be concluded, then, that our experimental setting offered only weak cues to elicit a contagious response, maybe because the playmate, anxious to perform credibly, expressed her grief only in a moderate form, whereas the situational cues were rather pronounced.

The empathic responses observed in our experiments, then, were presumably elicited mainly by the situation, not by the expression, of the playmate. If this were true it would strongly

support the assumption that emotional contagion is not a necessary precondition of empathy, but may be substituted by perspective induction through identification.

Although we proceeded from a somewhat different theoretical perspective, our results, experimentally confirm Hoffman's (1976) hypothesis that empathy (in our sense, i.e., distinct from mere emotional contagion) develops as early as the second year of life. They also parallel the observational findings of Zahn-Waxler and colleages (1979) with the additional effect that in our experimental setting, empathic responses to simulated emotions occurred even though the other person was comparatively unfamiliar.

The view held by cognitivists that empathy requires higher mental abilities and therefore cannot emerge prior to the fifth year proves untenable in the light of this combined evidence. Children do, at a much earlier age, have access to the inner experience of other people, and they are socially competent to intervene in another's favor. A quite different question is whether they are able to reflect on what they are doing. This, indeed, is not the case, and therefore experimental settings in which young children are confronted with vignettes showing persons in a plight, and then asked to verbalize their impressions, cannot be expected to uncover their real social competence. Instead, when studying empathy, it is imperative to involve them in a situation having the character of a real-live event, and allowing them to transform their empathical response into social action.

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