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Differences between children with older, younger and
without siblings
in self-other distinction during empathy”

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Abstract

This study investigated differences between children with and without siblings (aged 3 - 5 years, $n = 40$) in self-other distinction during empathy. With a novel paradigm that used music to induce positive or negative emotion an emotional egocentricity bias (EEB) was examined, a concept derived from empathy. The results confirmed the existence of an EEB in kindergarten children. However, contrary to my hypothesis, the EEB was larger for children with siblings but this was only significant for the condition where positive emotions were induced. There was one correlation that indicated that a higher number of older siblings results in a higher EEB, which did, however, not hold for the total sample that included younger siblings as well. Additionally, a positive correlation between the sibling relationship quality and the EEB was found, but only for the factor relative status/power. This means that the more status or power the child has over the sibling, the higher is the EEB. And finally, considering gender differences, only girls, but not boys, with siblings showed a higher EEB than girls without siblings.

Keywords: siblings, children, egocentricity bias, egocentric bias, emotional egocentricity bias, empathy.

1. Introduction

Empathy

Empathy and prosocial behavior is important in every stage of life, for the community as a whole, as well as for every individual in detail, and, therefore, it is a fascinating area of research, where many themes can be of interest. Especially for developmental psychology it plays an important role because empathy is part of the social-cognitive development. Additionally, it is of great interest when it comes to the social development of children (Murphy, Shepard, Eisenberg, Fabes & Guthrie, 1999).

Many studies showed that from the early age of only two years (sometimes even before), children are able to show prosocial behavior and empathy. From then on, empathy is continuously increasing (Knafo, Zahn-Waxler, van Hulle & Robinson, 2008; van der Mark, van IJzendoorn & Bakermans-Kranenburg, 2002; Vollbrecht, Lemery-Chalfant, Aksan, Zahn-Waxler & Goldsmith, 2007; Young, Fox & Zahn-Waxler, 1999; Zahn-Waxler, Radke-Yarrow, Wagner & Chapman, 1992a; Zahn-Waxler, Robinson & Emde, 1992b).

In the stage of life between three and six years, children of the same age become more and more important and the *social play* becomes the most significant activity. During this time span, the cognitive development of a child is in the *preoperational stage* and the *symbol awareness*, as Jean Piaget calls it, awakens (Gerrig & Zimbardo, 2008). This means that children can now adapt roles in social plays with peers and, therefore, learn how to process emotions and empathize with their playmates. In other words, between three and six years children learn empathy (Konecny & Leitner, 2009; Largo, 2007).

But what exactly is empathy or in other words, what is prosociality and how can it be distinguished from similar phenomena? Where lies its origin and why do feel it?

Many explanations of what empathy is, exist. Eisenberg (2000, p. 671), for example, defines empathy as “an affective response that stems from the apprehension or comprehension of another’s emotional state or condition and is similar to what the other person is feeling or would be expected to feel”. Eisenberg

and Fabes (1990) state that empathy refers to various emotional responses like sympathy or personal distress. Eisenberg (2000) adds guilt and shame as two more emotional responses. So one could say that empathy means to identify with another person's feelings, which simply means that if a child sees a happy person and, therefore, feels happy, too, it experiences the concept of empathy.

Cognitive and affective empathy

Empathy used to be differentiated into having a cognitive and an affective component. Until the 1970s, when cognitivism was predominant, the cognitive component of empathy was mostly stressed and only until later, empathy was described via an affective component (Bischof-Köhler 1993; 2011).

Hoffman (2000) explains cognitive empathy as having cognitive consciousness about inner states like thoughts, feelings, views and intentions of another person. Affective empathy is described as having empathized emotional reactions on the inner states of another person.

Some requirements are the development of the above mentioned Self-Other distinction and the knowledge about inner states of persons (Eisenberg & Strayer, 1987; Bischof-Köhler, 1993) as well as an adoption of perspectives (De Vignemont & Singer, 2006). Additionally, the situation has to be understood and the emotions have to be registered and internalized adequately (De Vignemont & Singer, 2006).

Therefore, empathy is, on the one hand, an affective reaction on the emotional state of another person and, on the other hand, empathy requires cognitive skills (Decety & Jackson, 2006).

Differentiation between empathy and related concepts

However, some authors argue that it is important to differentiate between empathy, as defined above, and a concept, which is defined as "infection with feelings". Therefore, Bischof-Köhler (2011) adds to her definition of empathy that the feeling can be experienced but as belonging to the other person. That means that one can

feel a certain emotion but, nevertheless, knows that he is feeling it due to the interaction with the other person who is feeling the emotion in question.

De Vignemont and Singer (2006) even add four criteria that have to be fulfilled when speaking about empathy and through that they establish a border between empathy and the similar concepts of “infection with feelings”, sympathy and “adoption of perspectives”. The four criteria are:

1. person is in an affective state-of-mind
2. this affective state has to be identical with affective state of another person
3. origin of affective state = another observed or imagined person
4. awareness that another person = starting point of the own feeling

When looking at the first criterion, it can be seen that only when a person is in an affective state-of-mind we can talk about empathy. The emotional involvement is important in distinguishing empathy from “adoption of perspectives” because when a person adopts a perspective it does not mean that this person actually feels the same emotion as the other person, but that she simply understands what the person is going through. Bischof-Köhler (2011) refers to this understanding of emotions as a pure rational act (instead of the emotional act that refers to empathy).

The second criterion stresses the importance that the affective state of the person in question has to be identical with the affective state of the other person and, therefore, it can be distinguished from the concept of sympathy as the person who is experiencing sympathy for another person does not feel exactly like the other person but rather feels bad for the person that something happened to her or him. So feeling sympathy is mostly connected to feeling concern or sorrowfulness and is not really equal to the actual feeling of the other person (Eisenberg et al., 1996; Valiente et al., 2004).

What is, however, possible, is the fact that empathy can turn into either sympathy, which is targeted at another person, or personal distress, which is targeted towards oneself (Eisenberg & Miller, 1987).

The last two criteria are similar and the only difference is that the fourth criterion mentions the awareness that the other person is accountable for the own

emotions. Here the difference to the concept of infection with feelings is becoming clear because awareness is normally not given when people are simply infected with feelings but is given when empathy is present.

Bischof-Köhler (1993; 2011) also explains this difference of the concepts of empathy and infection with feelings and stresses the awareness of the other person as the origin for the feeling for empathy. She mentions the term “Self-Other-Differentiation” and states that only through this distinction of the self and others, people are able to attribute their own feelings to other persons and, as a consequence, experience empathy.

On the other hand, Hoffman (1987) has a rather different definition of empathy. He claims that personal distress, which belongs to the concept of infection of feelings, is the first stage of empathy development and, therefore, belongs already to a “global empathy”. Hoffman (1987) also states that the child is, as already mentioned in previous definitions, not able to distinguish between the self and others and is, therefore, not able to identify the starting point of her or his emotions. The only difference from his definition to the definitions from Bischof-Köhler (1993; 2011) and De Vignemont and Singer (2006) is that Hoffman (1987), nevertheless, integrates personal distress into the concept of empathy.

Eisenberg and Miller (1987) have yet another definition in that they do not demarcate empathy from personal distress explicitly, even though they see personal distress as occurring before empathy develops.

Similar to empathy and sympathy or personal distress is the concept of prosocial behavior. Prosocial behavior is a voluntary, goal-directed behavior that is supposed to be helping or supporting another person (Eisenberg & Miller, 1987). Empathy, however, does not automatically lead to prosocial behavior. Some researchers suppose that when empathy is transitioned to sympathy, this might play an important role in using prosocial behavior (Hoffman, 2000; De Vignemont & Singer, 2006).

Only when a person has sympathy for another person, a prosocial act can be classified as having a prosocial motive. When this is not the case, a person mostly helps out of self-interest. That is, she helps only to reduce the feeling of indisposition (Hoffman, 2000).

To sum this up, empathy is preceded by infection with feelings and followed by

sympathy, which in turn is necessary for prosocial behavior. Additionally, empathy has the prerequisites of the ability to self-other distinction, take on different perspectives and know about different inner states. So, therefore, one can see that empathy is an individual concept on its own and not the same as concepts like infection with feelings, sympathy or prosocial behavior.

Development of empathy

Hoffman (1987) is describing four developmental stages when it comes to the development of empathy. These four stages are called: “global empathy”, “egocentric empathy”, “empathy for another’s feelings” and “empathy for another’s life condition”.

1. “global empathy”: In the first year of one’s life the Self cannot be distinguished from the Other. The distress of another person is experienced as if it actually happened to the observing child her-/himself. In this developmental stage it is often the case that infants start to cry when they hear another infant cry, so they “cry-with” somebody else, which belongs to the concept of infection with feelings, in this case infection with sad feelings.
2. “egocentric empathy”: With the development of the object permanence and a beginning comprehension of the physical disconnectedness between Self and Other, it is possible for the child to recognize that the other person is actually suffering and not the child her-/himself. The child has not yet been able to realize that other persons have different inner thoughts and feelings. An example of this would be, when children think another child can be comforted in the same way as they themselves can be comforted.
3. “empathy for another’s feelings”: At the age of two to three years, the adoption of perspectives is developing and with that an understanding that other persons have their own thoughts and feelings that do not have to conform with private feelings.
4. “empathy for another’s life condition”: The empathic reaction is not limited to a concrete situation anymore, but rather can refer to situations beyond,

for example, to the whole life of another person or a whole group of people.

Temporal stability and situational (in)dependence of empathy

Several different studies showed that the older children become, the less they connect the pain of another person to the own distress and agitation. Instead, they show greater activity-oriented and constructive behavior (Zahn- Waxler et al., 1992; Young et al., 1999; Diener & Kim, 2004; Vollbrecht et al., 2007).

Empathy can, therefore, be seen as a predisposition, which is fairly stable over time and context (Knafo et al., 2008).

The temporal stability or continuity of empathy was proven in different studies. Thereby, measurements of empathy at an earlier point in time could account for a considerable amount of variance of empathy at a later point in time (Knafo et al., 2008). In other words, the two measurements were significantly correlated (Zahn-Waxler et al., 1992b; Vollbrecht et al., 2007) even when the second measure was obtained two years later (Moreno, Klute & Robinson, 2008).

Concerning the situational dependence or independence, the studies are discordant. On the hand, some studies have also shown the situational independence of empathy. They revealed that empathy is shown independently of the person. This means that it did not matter if a suffering person was the mother or a strange person (Knafo et al., 2008; Moreno et al., 2008). On the other hand, however, there is also some research that states that empathy towards the mother is different than empathy towards a strange person. These results showed that children were more empathic and prosocial when it came to their mother (Young et al., 1999; Spinrad & Stifter, 2006).

Sensation of empathy

The question of why people feel empathy and how differences in the sensation of empathy can be explained is not yet answered.

According to some studies, individual differences are there due to genetic- and

environmental differences. So, due to nature and nurture, if one prefers it that way (Vollbrecht, 2007; Knafo et al., 2008; Knafo et al., 2009). Knafo et al. (2008) showed that empathy in 24 months old children was explained due to genetics for 34 % and in 36 months old children for 47%.

Concerning the question about the reason for experiencing empathy, neuroscience has delivered some interesting results. Lamm and colleagues (2011) showed, for example, that when simply looking at another person in pain, for instance, when someone stings a person with a needle in the hand, the same neuronal structures are activated as if the person her-/himself (the one who is just looking) would actually be in pain. These results demonstrate that the ability to feel empathy is already fixed in the brain.

Contributing factors to emotional understanding

Before children can really identify with feelings, it is important that they learn to understand different emotions. Two major contributing factors are the parents and the children's temperament.

1. Parents

Especially parents are of great help when it comes to the development of emotional understanding. The more the parents verbalize feelings and talk about the context of emotions, the faster the children learn how to deal with different emotions (Dunn, Brown, Slomkowski, Tesla & Youngblade, 1991; Howe & Ross, 1990).

Another factor stated by Panfilie and Laible (2012), which influences empathy, and which also concerns parents in a way, is attachment. It is easier for securely attached children to regulate their emotions, and this, in turn, affects the experience of empathy in a positive way.

In a secure attachment, the mother helps the child with the regulation of emotions (Ahnert, 2008). Thereby, the child learns step-by-step to handle his emotions and regulate them. This, in turn, has a positive effect on the social-emotional development. Besides, children with a secure attachment have sensitive mothers who are able to evaluate the child's needs. This presupposes a certain

degree of empathic ability. These children develop empathy more easily because they learn from a model, which is the mother who sets an example (Spinrad & Stifter, 2006).

Eisenberg & Museen (1989) also stress this relevance of identification with a model. This identification is crucial in deciding if a certain behavior is taken up or not. If we identify with a person depends on the warmth and competence of that person. In a secure attachment, this warmth and competence is higher and, therefore, the behavior of this person is internalized more strongly.

Many studies investigated this hypothesis and found that a secure attachment is positively correlated with empathy (Bischof-Köhler, 2000; Panfile & Laible, 2012) as well as with the general social development of the child (Stams, Juffer & van Ijzendoorn, 2002; Jaffari-Bimmel, Juffer, van Ijzendoorn, Bakermans-Kranenburg & Mooijjaart, 2006).

The sensitivity of mothers, which is positively correlated with secure attachment, is also associated with a stronger sense of empathy (Spinrad & Stifter, 2006), more prosocial behavior (Kiang, Moreno & Robinson, 2004) and a positive social development in general (Jaffari-Bimmel et al., 2006).

However, there are also contradictory results, where this correlation with empathy (van der Mark et al., 2002) or prosocial behavior (Volland & Trommsdorff, 2003; Spinrad & Stifter, 2006) could not be replicated.

In a study about parenting and co-parenting, the results showed no correlation between secure attachment to the mother and empathy of the child. However, there was a positive correlation between the secure attachment to the day nanny, who was not related to the child but known by the child, and empathy of the child (Hammer, 2011).

As already mentioned at the beginning of this paper, it is important not to forget the interaction of nature and nurture. Therefore, the understanding of emotions is never only composed out of only the mother or only the child but it is a complex interplay between features of the child, the mother and the interaction between mother and child or, in other words, the parent-child relationship (van der Mark et al., 2002).

Pluess & Belsky (2009) argue that children have a differential predisposition for protective factors from the environment and they call this phenomenon

“differential susceptibility”. That means that not all children are, in the same way, able to profit from a secure attachment during their course of social development, in other words, during their development of empathy and prosocial behavior. Empathy is, therefore, the product of a mutual interplay between temperamental features and attachment experiences.

The question of what these temperamental features are, is the next step that needs to be considered. Van der Mark and colleagues (2002) list accessibility (meaning the degree of inhibition) as one feature that has an influence on the development of empathy. This feature is explained in more detail in the next section.

2. Temperament

As already mentioned above, interpersonal factors play a crucial role in the understanding of emotions and, therefore, in the development of empathy. Besides cognitive ability, temperament is a crucial factor that needs to be considered here (Dunn et al., 1991; Howe & Ross, 1990).

Speaking of temperament, general mood is one feature, amongst others, that plays an important part in the understanding of empathy. Wood, Saltzberg and Goldsamt (1990) argue that with a positive mood, like happiness, the focus of attention is directed outwards. On the other side, a negative mood, like sadness, directs the focus of attention inwards. Moreover, an outwards oriented focus of attention is connected to a more intense and prompt perception of the environment and, therefore, individuals who have a positive mood can detect a person in suffering faster and feel it in a more intense way. As a consequence, children with this kind of temperament often react with offering help faster. An inwards directed focus leads to a greater attention to the own emotions instead of the emotions of others.

One example that looked at the experience of sympathy is the study from Eisenberg et al. (1996). They investigated children between four and eight years and found that the one's with a positive mood showed more sympathy. Whereas a negative mood was correlated negatively with the experience of sympathy.

Additionally, Eisenberg et al. (1993) looked at preschoolers and showed that negative affect is connected to lower social competences in general. However, this is only valid for boys.

Volbrecht and colleagues (2007) found this correlation already for children in

their second year of life. Children with a positive mood were better able to understand a person's suffering and, as a consequence, helped more often. Furthermore, sex differences concerning the understanding of suffering and the concern about the person in suffering were shown, namely boys showed greater understanding and girls showed greater concern.

One temperamental feature, which blocks emotional understanding, is inhibition. The construct of inhibition overlaps with the construct of fearfulness because with inhibition comes anxiety and, therefore, anxious children are in turn inhibited. Children in early toddler age who are inhibited show heightened motor activity and negative affect in new situations. It takes them longer to approximate unknown persons or objects and they experience more anxiety and, therefore, draw back more easily. As a consequence, inhibited children can have difficulties to overcome their own fear and react to another person in distress (Young et al., 1999; Hastings, Rubing & DeRose, 2005).

Liew et al. (2011) explain that this phenomenon lies in a physiological overarousal, which means it lies in the own distress of anxious children. To reduce this overarousal, anxious children more often draw back and try to escape situations, which involve another person in distress. Therefore, it is not possible for them to respond to a person in suffering, not to mention help such a person.

In fact, researchers found that anxious or inhibited children in their second year of life show less empathy (Young et al., 1999; van der Mark, 2002) and help strange persons less (Young et al., 1999; Liew et al., 2011).

Some studies, however, only showed a correlation for girls, and others only showed a correlation for boys. For example, in the study by Diener and Kim (2004), kindergarten teachers described socially withdrawn girls as being less prosocial. But in the study by Kienbaum, Volland & Ulich (2001) the tendency to experience less sympathy was only holding up for inhibited boys and not for inhibited girls.

Interestingly, it seems that inhibition and fearfulness in children does not play an essential role when it comes to an empathic reaction towards the mother. Also, girls and boys did not differ for this hypothesis (Young et al., 1999; van der Mark, 2002). Spinrad and Stifter (2006) even showed that anxious children are more worried about the mother.

Another temperamental feature that has an influence on empathy is the ability

to regulate. With a greater ability to regulate, especially with a distinct emotion regulation, it is possible to empathize with negative emotions of another person, but without becoming overwhelmed. Thereby, one can respond to feelings of another person instead of being occupied with own emotions (Murphy et al., 1999).

If a person manages to regulate the own negative emotions to a degree which does not limit any activity, the person is able to respond to another person's distress. If it is not possible to regulate emotions, one can be overwhelmed by negative emotions, which is called overarousal (a term already mentioned above), and the person in question directs any behavior towards oneself. Research in this area is mostly done with children over three years of age and is usually looking at the experience of sympathy. These studies showed a positive correlation between the ability to regulate and sympathy which was shown by children between four and eight years old. That means that children showed more sympathy and less distress when their ability to regulate was greater (Eisenberg et al., 1996; Valiente et al., 2004).

The same results could be obtained for children between ten and twelve years of age. Here, the experience of sympathy was predicted through the estimated ability to regulate (Murphy et al., 1999).

Additionally, concerning this correlation, there seems to be a sex difference in the way that especially boys profit from a greater ability to regulate when it comes to the development of empathy. Studies with children between the age of preschool and their ninth year of age showed that there was a positive correlation between the ability to regulate and sympathy (Eisenberg et al., 2007) or prosocial behavior (Diener & Kim, 2004) only for boys.

Another study by Eisenberg et al. (1993) that was done with preschoolers, the ability to control the attention was positively correlated with social competences.

Already at the age of three years, emotion regulation is able to predict empathy (Panfile & Laible, 2012). That means that if children manage to regulate their emotions, they show more empathy.

Advantages of empathy

But are there actual advantages of empathy for the human being?

De Vignemont und Singer (2006) list the possibility for people to predict and evaluate the behavior of another person as one advantage of empathy. One could argue that with a simple adaptation of perspectives this is also possible but empathy is the faster and more precise way for predicting and evaluating actions. The reason for that is that the same emotional networks activate similar motivational- and activational areas. One further advantage that they state is that empathy makes it possible to learn out of someone else's mistakes without going through these mistakes oneself. One example would be when a person observes someone burning a hand on the stove and takes it as a warning to be careful not to put a hand on the hot stove.

Evolutionary theory argues that empathy has to bring a selectivity advantage along (De Waal, 2008). In fact, the survival chances of infants depend upon the communication within the group, particularly upon the transmission of emotions and intentions (Decety, Norman, Berntson & Cacioppo, 2012). De Waal (2008) also stresses the importance of empathy for interactions and cooperation with other human beings.

Additionally, empathy evokes prosocial behavior (as already mentioned above), and, as a consequence, the group is profiting because the mutual helping brings a survival advantage for the group as well as for the individual groupmembers (Decety et al., 2012).

Emotional egocentricity vs. cognitive egocentricity

A concept that is derived from empathy is emotional egocentricity or the emotional egocentricity bias (EEB), which means the tendency to project one's own emotions onto others when we perceive and judge other people's emotional states (Hoffmann, Singer & Steinbeis, 2015; Silani, Lamm, Ruff & Singer, 2013). Overcoming this egocentricity and, therefore, distinguishing between one's own and others emotions is a crucial part in empathy. The very first time that egocentricity was mentioned was when Piaget performed his famous *three mountain task* where children had to judge others' visual perspectives (Piaget & Inhelder, 1956). But, as Piaget's study, previous studies mostly focused on cognitive egocentricity and not on an emotional

egocentricity bias. Cognitive egocentricity refers to the theory of mind (ToM) concept. ToM is acquired by children as young as three years of age and is distinguished by attributing beliefs and desires correctly (Apperly, Warren, Andrews, Grant & Todd, 2011; Dunn et al., 1991; Sommerville, Bernstein & Meltzoff, 2013). In other words, cognitive egocentricity means being biased by one's own cognitive perspective when trying to take on another person's perspective (Birch & Bloom, 2007; Surtees & Apperly, 2013).

Of course, ToM is a construct that is developing over time and, therefore, grows over the years, which means that five-year-old children may already be less egocentric than three-year-old children. This can, for example, be seen when children do not interrupt conversations any more (Apperly et al., 2011). Inhibitory control, which is a central component in the cognitive skill that is called executive functioning, plays a crucial role in this developmental process (Apperly et al., 2011; Carlson & Moses, 2001). Inhibitory control involves the monitoring of thought and action and, therefore, it is clear that children younger than three years have not developed a ToM yet (Carlson & Moses, 2001; Royzman, Cassidy & Baron, 2003). However, this does not mean that adults do not act egocentric at all. The situations, in which they show egocentrism, might be different to those of children but, nevertheless, adults still have a bias (Thomas & Jacobi, 2012).

Current research about the emotional egocentricity bias shows localizations in the brain and what happens in the brain when the egocentricity bias is active. Especially children have a stronger egocentricity bias, which has been explained by neuronal differences between adults and children. Structures, which are involved in overcoming the EEB like the right supramarginal gyrus (rSMG), are not as evolved as in adulthood and there is a reduced functional connectivity with the dorsolateral prefrontal cortex (DLPFC) (Silani et al., 2013; Steinbeis, Bernhardt & Singer, 2015).

Additionally, there are differences between adults and children in conflict processing which mediate children's increased emotional egocentricity. Conflicts mostly occur in sibling relationships, when siblings play with each other and do not share the same opinion. Downey and Condon (2004) explain that children with siblings are more often exposed to conflict and, therefore, learn how to deal with it. Hoffmann et al. (2015) claim that the frequency of conflicts between siblings is crucial because the more conflicts there are the less empathy exists. Dunn (2005) states

that especially in warm relationships siblings influence each other and that could be the reason why Hoffmann et al. (2015) argue that conflict processing is even better in warm sibling relationships. Conflict processing, therefore, is also crucial in overcoming the EEB.

Sibling relationships

The sibling relationship contributes immensely to the development of a child, especially to the development of the child's personality. Of course, young children also imitate their parents but siblings are still important when it comes to cognitive development as the sibling relationship belongs to the primary relationships in the human development. On the one hand, because siblings spend more time with each other than with their parents, and, on the other hand, because a sibling relationship lasts in best cases the longest, namely from the birth of one sibling until the death of the other sibling (Hackenberg, 2008).

Concerning different kinds of sibling relationships, there are, besides the classical relationship, where siblings have the same parents and are living in the same household, relationships between half-siblings, step-siblings, foster-siblings and adopted siblings. Even though the birth rate decreased, 80% of children are growing up with one or more siblings (Hackenberg, 2008).

Some features that make up a sibling relationship are the identification, conflict, rivalry and loyalty with the sibling. Concerning identification, same-sex- and opposite-sex siblings differ in their characteristics. One part of the characteristics is genetically conditioned, the other part is influenced by the environment. So again, we have the nature-nurture problematic (Mähler, 1992).

Of course, parents support identity formation and difference of their children, but siblings also have a great influence when it comes to the formation of identity. That means that relationships and interactions are an important part for the process of identification. Older siblings are sometimes comparing themselves to younger siblings (Hackenberg, 2008). But especially older siblings teach their younger siblings how to do things and act as role models. Although peers become more and more important during kindergarten, siblings are still the number one imitated in early

childhood (Azmitia & Hesser, 1993). Mostly the older sibling takes care of the younger one and this, in turn, helps with perspective taking as well (Howe & Ross, 1990). The nearer the siblings are, so the closer the sibling relationship, the greater is the intensity of identification (Hackenberg, 2008).

Bank and Kahn (1990) created a pattern of identification of sibling relationships, which is divided into three groups: close identifications, part-identifications and distant identifications. The close identifications are formed by similarity of the siblings. The part-identifications are constituted by similarity only in some part and in distant identifications the siblings show less similarity. Part-identifications are the ones that occur most often.

Concerning conflict and rivalry, these occur mostly between age-near and same-sex siblings. The reason for conflict is often the wish for the parents' attention. It is important to solve conflicts in sibling relationships in order to learn how to solve conflicts with other people (Lüscher, 1997).

Besides conflict and rivalry, there normally is also loyalty, trust and love in a sibling relationship (and, of course, many other positive concepts) (Rufo, 2004). A balance between rivalry and loyalty would be the best case scenario (Lüscher, 1997). The parents are, in turn, again role models, that means the more loyal they are, the more loyal the children are (Bank & Kahn, 1990).

Some studies also investigated siblings and their effects on empathy and theory of mind. The results of these studies state that early peer interactions lead to higher empathic skills which remain until adulthood but the quality of the relationship between siblings is important because only warm sibling relationships influence children's empathic skills in a positive way (Howe, Aquan-Assee, Bukowski, Lehoux & Rinaldi, 2001; Lam, Solmeyer & McHale, 2012). Siblings in warm relationships are often described as playing with each other, sharing secrets and feelings and having prosocial exchanges. Even a little conflict between the siblings can help to develop a warm relationship. (Howe et al., 2001).

The quality of the sibling relationship is influenced by the temperament of the siblings and, therefore, difficult temperament and negative mood contributes to a lower relationship quality. Another contributor to a lower sibling relationship quality may be a conflicted marital relationship of the parents. If parents fight a lot, children project that anger onto their siblings. Similarly, depressed parents can affect the

sibling relationship in a negative way, as children do not learn how to regulate emotions and again, direct their negative emotions onto their siblings (Brody, 1998). This, however, depends on the quality of the parent-child relationship because mostly hostile parent-child relationships have a negative impact on the sibling relationship (Brody, 1998; Dunn, 2005).

A higher number of older siblings correlates positively with higher scores on theory of mind tasks (Ruffman, Naito, Perner & Parkin, 1998; McAlister & Peterson, 2007; Kennedy, Lagattuta & Sayfan, 2014) and Ruffman et al. (1998) claim that only children with older siblings benefit from early sibling interactions in order to develop a theory of mind. The same goes for empathy (Tucker, Updegraff, McHale & Crouter, 1999). Peterson (2000), however, refutes this claim and states that younger siblings do have an influence on ToM development as well, except for very young infants.

Existing paradigms

Concerning the paradigms on how the EEB can be tested, the state-of-the-art shows that there are three different approaches to do so: the **ETOP** (Emotional Touch Paradigm; Silani et al., 2013), where healthy adults had to touch pleasant and unpleasant stimuli that were congruent or incongruent to the stimuli a second person touched and, consequently, rate their own and the other person's emotion. The **EMOP** (Emotional Monetary Game Paradigm; Steinbeis et al., 2015) also called REAP (monetary reward and punishment paradigm), where 7- to 13-year-olds played a game with another person that included a reaction time task. If they were faster than the other person they obtained money, if they were slower than the other person they lost money. After each block they had to rate how the other person felt. And finally, the **ETAP** (Taste Paradigm; Hoffmann et al., 2015), where 7- to 12-year-olds and 20- to 30-year-olds had to taste pleasant and unpleasant stimuli that were congruent or incongruent to the stimuli a second person tasted and, consequently, rate their own and the other person's emotion. So all three paradigms try to induce pleasant or unpleasant emotions that are congruent or incongruent to another person's emotions. The common aim is to test the ability to make an accurate judgment of another person's emotions by empathizing with this person and therefore

overcoming one's own emotional state.

However, none of these paradigms are suitable for children under seven years. Considering these findings, one can see that the studies focus mostly on developmental differences and theory of mind but there are only few studies about individual differences, especially about children with and without siblings concerning empathy. There are some limitations and problems and further investigation needs to be done in order to find out more about the EEB in children.

2. Research questions and aims

Given the current state of research, I came to the research question: **“Can children who have siblings distinguish better between their own emotions and those of others and are, as a consequence, more empathic?”**

The aims of this study were, first of all, to develop a new paradigm to investigate the EEB for the first time in very young children at the age of kindergarten. Secondly, to investigate individual differences concerning the ability to distinguish one's own from others emotions and thirdly, to see whether the experience of having siblings has an impact on empathy skills like the EEB.

As music is bound to emotions or, in other words, as music is a stimulus that induces strong emotional reactions even in children (Johnsen, Tranel, Lutgendorf & Adolphs, 2009; Kozma, 2010), we decided for our paradigm to use music to induce an emotional experiences. To test the EEB, we then combined happy or sad music with short video sequences of children expressing congruent or incongruent emotions (explained in more detail below under section 3.1.).

Generally, a negative bias in ratings was expected when the participant heard the sad song and watched the video with the positive emotions, in comparison to when the participant heard the funny song and watched the video with the positive emotions. Also a positive bias in ratings was expected when the participant heard the funny song and watched the video with the negative emotions, in comparison to when the participant heard the sad song and watched the video with the negative emotions (similar to findings from Steinbeis et al., 2015).

According to the hypotheses, a lower negative and positive bias in children

with siblings was expected in comparison to only children. Besides, it was assumed that sibling relationship quality would act as a moderating variable. Furthermore a negative correlation between the number of siblings and the emotional egocentricity bias was expected.

Due to that, I formulated three hypotheses:

H1: If children have siblings they are better in distinguishing between their own emotions and those of others and therefore exhibit a lower bias in emotional egocentricity (according to similar findings from Azmitia and Hesser (1993) mentioned above).

H2: The more siblings they have, the lower the bias (according to similar findings from Ruffman et al. (1998), Mc Alister and Peterson (2007) and Kennedy et al. (2014) mentioned above).

H3: The warmer the sibling relationship, the lower the bias (according to findings from Howe et al. (2001) and Lam et al. (2012) mentioned above).

3. Method

Under this section, the design of the study, the participants, the materials used and the procedure will be explained.

3.1. Design

Since I assumed that the first years of early sibling interactions have the highest impact on empathy skills, I decided to test children with and without siblings at the age of kindergarten. Using a novel paradigm called EMUP, which is short for Emotional Music Paradigm, I tried to induce happy or sad emotions by the according music. While listening to the music, the children were supposed to rate emotions displayed in videos by same-age children.

In the congruent condition the participants either heard a funny song and, at the same time, watched a video where children showed positive emotions (CH = Congruent Happy) or they heard a sad song and, at the same time, watched a video where children showed negative emotions (CS = Congruent Sad). In the incongruent condition the participants either heard a funny song and, at the same time, watched a video where children showed negative emotions (IS = Incongruent Sad) or they heard a sad song and, at the same time, watched a video where children showed positive emotions (IH = Incongruent Happy). Then they were asked to rate how the person in the video was feeling on a Smiley-Scale from 3 to -3 (3 being the happiest looking smiley and -3 being the saddest looking smiley).

The EEB was then calculated with subtracting the congruent- from the incongruent condition (see Figure 1).

Additionally, the Sibling Relationship Questionnaire (SRQ) designed by Furman (1985) was translated into German and then given to the parents in order to find out about the moderator variable: quality of the relationship between siblings, because a low-quality relationship could alter the results, and the confounding variables: step siblings (because step siblings often do not see each other as often as actual siblings do) and very much older siblings (because if there are many years in between the two siblings they might not have that much contact, or do not share the same interests and therefore, do not influence each other's empathic skills). In addition to the questions concerning the relationship between the siblings, parents had to fill out the age and gender of the siblings and if they shared the same place of residence.

3.2. Participants

40 kindergarten-children between an age range of 3,0 and 5,9 years participated in the study ($M = 4,27$ $SD = 0,751$, 14 boys). Out of the 40 children, 15 (37,5%) had no siblings, 21 (52,2%) had one sibling and 4 (10%) had two siblings. Separated by age, 20 (50%) had older siblings and 5 (12,5%) had younger siblings. There were no children with same-age siblings and no children with younger, as well as older siblings. Based on gender, there were 10 children who had same-sex siblings, 15 children who had opposite-sex siblings and no one who had both, same- and

opposite-sex siblings. According to the teachers report and to my personal impression, most of the children were developing normally. One child was diagnosed with ADHD (attention deficit hyperactivity disorder), which did, however, not influence the results of the study.

They were recruited directly in the kindergarten in Vorchdorf, a village in Upper Austria (approximately 8000 inhabitants). In one kindergarten group it was possible to introduce the research topic and the procedure of the study to the parents personally. In all other groups recruitment letters with the necessary information and additional forms were sent through the kindergarten to the parents.

The children were predominantly Austrian, except for one German, one Turk, one Bosnian, one Serb, one Austrian-German, one Austrian-Czech, one Austrian-Romanian and one Turk-Bulgarian, with the majority coming from working- and middle-class families. However, the wide ranges of parental education and family income levels indicated that the sample was diverse in socioeconomic status. It was important to assess the socioeconomic status as previous studies show that it influences children's cognitive- and socioemotional development, amongst other things (Bradley & Corwyn, 2002).

All parents provided informed signed consent (see Appendix B) and those parents with more than one child supplied information about the sibling relationship with filling out the SRQ (Furman, 1985) (see Appendix E).

All children were eligible, as long as they were able to understand the German instructions and gave verbal informed assent.

3.3. Material

For the study, the EMUP and the SRQ (Furman, 1985) were used to collect the necessary data.

3.3.1. EMUP

Given that the three existing paradigms measuring emotional egocentricity are not suitable for testing such young children, my colleague, Arabella Brunner, and I invented a new paradigm, which is feasible for children of this age group. In line with

the existing paradigms, we called it *EMUP*, as already mentioned above under section 3.1. (see also Figure 1). While earlier approaches tried to induce emotions by touch, taste and monetary reward, this paradigm tried to induce emotions by music. Therefore, we created these videos that were combined with music. For the videos we used scenes and music from children's movies.

The experimental setup looked at the two factors: valence (happy or sad stimulation through the according music) and congruence (congruent and incongruent stimulation of the participant and the child in the video).














Self	Other	Rating	Calculation EEB	
		 (3)  (2)  (1)  (0)  (-1)  (-2)  (-3)	<div>   </div> <div>   </div>	
			Incongruent	Negative Bias
			Congruent	
			Incongruent	Positive Bias
			Congruent	

Figure 1. Emotional music paradigm (EMUP)

3.3.2. SRQ

Additionally, the Sibling Relationship Questionnaire (SRQ) (Furman, 1985) was obtained by the author himself and as only an English version existed I translated the questionnaire into German. Only then it was distributed to those parents with more than one child in order to find out if a warm relationship between the participants and their siblings had an influence on the EEB.

Two versions of the SRQ (Furman, 1985) exist. First, there is the standard 48-item version which is used when scale scores are desired. Then there is a shorter 39-item brief version which can be used if one is only interested in deriving factor

scores. Parallel versions exist for parents and children. For this study the standard version for parents only was used since young children between 3 and 6 years old might not be aware of their relationship qualities yet and because there was the impression that the children were too young to answer 48 questions (as it was already hard for them to concentrate throughout the twenty videos of the EMUP).

The scale names for the standard version go as follows:

Prosocial Behavior (e.g. "Some siblings do nice things for each other a lot, while other siblings do nice things for each other a little. How much do both you and this sibling do nice things for each other?")

Maternal Partiality (e.g. "Who usually gets treated better by your mother, you or this sibling?")

Nurturance of Sibling (e.g. "How much do you show this sibling how to do things he or she doesn't know how to do?")

Nurturance by Sibling (e.g. "How much does this sibling show you how to do things you don't know how to do?")

Dominance of Sibling (e.g. "How much do you tell this sibling what to do?")

Dominance by Sibling (e.g. "How much does this sibling tell you what to do?")

Paternal Partiality (e.g. "Who usually gets treated better by your father, you or this sibling?")

Affection (e.g. "Some siblings care about each other a lot while other siblings don't care about each other that much. How much do you and this sibling care about each other?")

Companionship (e.g. "How much do you and this sibling go places and do things together?")

Antagonism (e.g. "How much do you and this sibling insult and call each other names?")

Similarity (e.g. "How much do you and this sibling like the same things?")

Intimacy (e.g. "How much do you and this sibling tell each other everything?")

Competition (e.g. "Some siblings try to out-do or beat each other at things a lot, while other siblings try to out-do each other a little. How much do you and this sibling try to out-do each other at things?")

Admiration of Sibling (e.g. "How much do you admire and respect this sibling?")

Admiration by Sibling (e.g. "How much does this sibling admire and respect you?")

Quarreling (e.g. “How much do you and this sibling disagree and quarrel with each other?”)

The four factors that can be scored are: *Warmth/Closeness*, which consists of the average of the scale scores for intimacy prosocial behavior, companionship, similarity, admiration by sibling, admiration of sibling, and affection. *Relative Status/Power*, which consists of nurturance of sibling and dominance of sibling, minus the scale scores of nurturance by sibling and dominance by sibling. *Conflict scores*, which consist of the average of the quarreling, antagonism, and competition. And finally, the *Rivalry score*, which consists of the average of maternal and paternal partiality.

These four factor scores were used to determine if the siblings had a warm relationship or if there was much conflict between them.

3.4. Procedure

In the trial phase, at the beginning of September 2015, ten participants were tested with the EMUP in order to find out if the paradigm worked accordingly, in other words, if the music really evoked the happy or sad emotion and if the participant were able to rate the videos correctly.

The actual data collection started on September 15th, 2015 and ended after six settings once a week, on October 21st, 2015.

Each child was tested individually at the kindergarten, in a separate room by me, a female experimenter, during kindergarten hours between 8 a.m. and 3 p.m. Using the EMUP, each participant went through ten congruent and ten incongruent conditions, with each video lasting for approximately twenty-five seconds. The expenditure of time was therefore, approximately fifteen minutes per participant, considering that the instructions also took about five minutes. Before the actual test started, the participants were shown the smiley scale and asked if they knew what these smileys were and which one was the happiest and the saddest smiley, in order to make sure that the children really understood the different emotions and were able to match the smileys to the emotions in the videos.

Instantly after watching one video on a laptop that was brought by the experimenter, the participants were asked to rate the emotion of the person in the

video, through pointing on one of the seven smileys that were placed in front of the participant on a sheet of paper (see Appendix C). The experimenter then ticked the according smiley on her scoring sheet (see Appendix D). After each rating, the children were praised in order to encourage them to keep on doing a good job.

The order of the videos was as follows: CH-IS-IH-CS, or the other way round: CS-IH-IS-CH in order to randomize it and to make sure that the order did not influence the results. After the first five congruent and five incongruent videos, the participants watched the remaining corresponding five congruent and five incongruent videos with the different music. This sequence ensured that the same videos (which were only distinguished by the different music) were as far away from each other as possible and the children were less able to recognize the video again. If they still identified the same video with the different music the experimenter encouraged the participants to keep on going, pretended she did not remember this video and asked the participants again for their answer.

The children were also asked how old they were and if they had siblings and if so, how many. This was confirmed by the kindergarten educator and by the parents, who filled out the SRQ.

3.5. Manner of evaluation

This section shortly explains how the overall scores of the EMUP and the SRQ were obtained and evaluated and how the data was analyzed.

3.5.1. EMUP

First of all, four scores for each category (CH, IH, CS, IS) were calculated with summing up the points obtained by the rating of each video, and dividing the sum by five, in other words, the average was calculated. Out of these four scores two EEB's - one EEB for the happy conditions (EEB_H) and one EEB for the sad conditions (EEB_S) - were calculated with multiplying the sad conditions (CS and IS) with -1 and then subtracting the incongruent from the congruent condition (CH – IH; CS – IS). This made it possible, on the one hand, to see if the congruent conditions were rated more extreme than the incongruent conditions and, on the other hand, if the

bias was bigger for certain groups of participants than for others. Finally a total EEB (EEB_total) was calculated with adding the EEB_H to the EEB_S and dividing it by 2, to get the average, so one general score for a better overview.

3.5.2. SRQ

The SRQ is scored from 1 “hardly at all” to 5 “extremely much”, so 5 meant the highest point that could be obtained. The derivation of the four factor scores Warmth/Closeness, Relative Status, Conflict and Rivalry is not straightforward because the structure is not simple. However, the factor scores are derived on the basis of primary loadings.

3.5.3. Data analysis

The IBM SPSS Statistics software, version 20.0 was used to analyze the data. T-tests for independent samples and Analyses of variance (ANOVA) were performed to compare the two groups: children with siblings and only children, in order to find out about their different ratings and, as a result, the different EEB's. The preconditions for the t-test, which are: independent samples, random sample from the same population, interval scale level ratings, normal distribution of the data and homogeneity of variance, were checked before using the t-test. The same was done for the preconditions for the ANOVA, which are: homoscedasticity and normal distribution of the residuals. Pearson correlations were performed to see if the number of siblings and the sibling relationship quality had an influence on the bias. The preconditions were also checked before using the Pearson correlation, which are: interval scale level ratings, normal distribution of the variables and linear correlation of the variables.

4. Results

First of all, the EMUP-paradigm itself was analyzed to check if the four conditions worked as they were expected to, namely that the congruent conditions were rated more intensely than the incongruent conditions. Fortunately, this was the case, as can be seen in figure 2. Furthermore, figure 2 shows that the happy conditions, both the congruent and the incongruent, were rated more extreme than the sad conditions. These rating resulted in an EEB, which can be seen in figure 3.

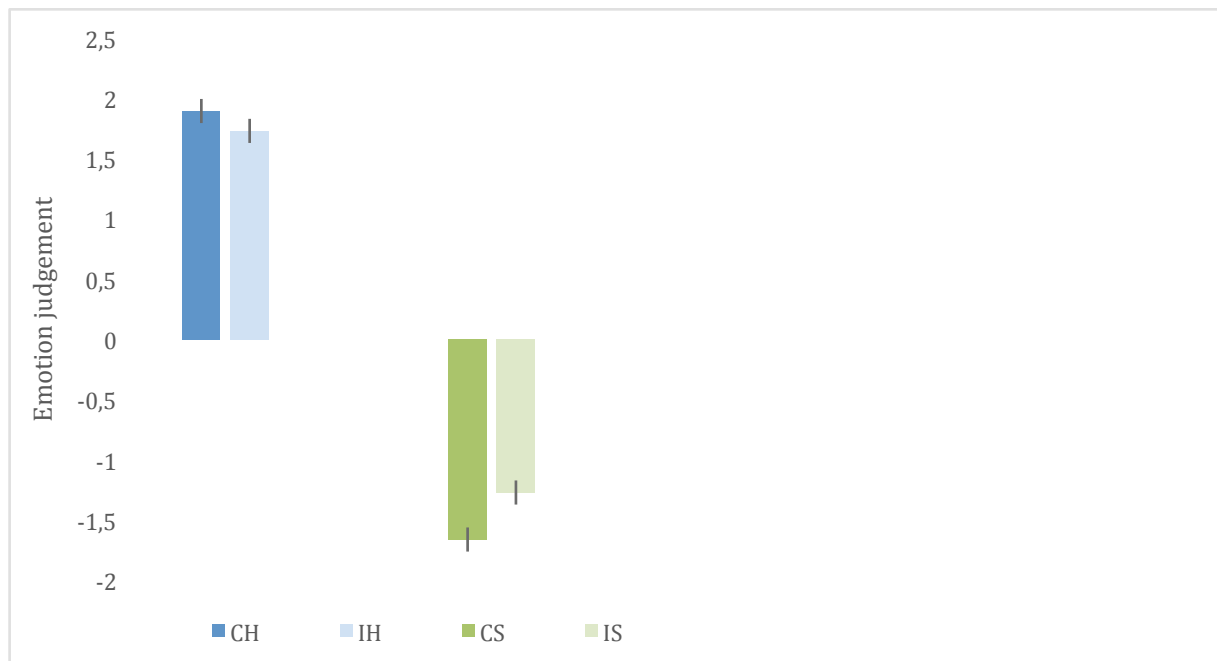


Figure 2. Four condition ratings (mean + standard errors) for the whole sample.



Figure 3. EEB_total (mean + standard error) for the whole sample

After that, an independent samples t-test and an analysis of variance (ANOVA) were performed to test the first hypothesis and to detect any group differences concerning the EEB. The t-test showed no significant differences in the scores for the EEB_total ($M = 0.43$, $SD = 0.88$) and the EEB_S ($M = 0.40$, $SD = 1.35$) for children with siblings ($N=25$) and the EEB_total ($M = 0.02$, $SD = 0.68$) and the EEB_S ($M = 0.37$, $SD = 0.84$) for only children ($N=15$); EEB_total: $t(38) = -1.55$, $p = .129$; EEB_S: $t(38) = -0.07$, $p = .946$. These results suggest that the total EEB and the EEB for the sad conditions do not differ significantly for children with siblings and only children. But there was a significant difference in the EEB_H for children with siblings ($M = 0.46$, $SD = 0.97$) and the EEB_H for only children ($M = -0.33$, $SD = 0.74$); $t(38) = -2.74$, $p = .009$. Specifically, this means that in the happy condition, children with siblings are worse in distinguishing between their own emotions and those of others and therefore exhibit a higher bias in emotional egocentricity. Figure 4 displays these results.

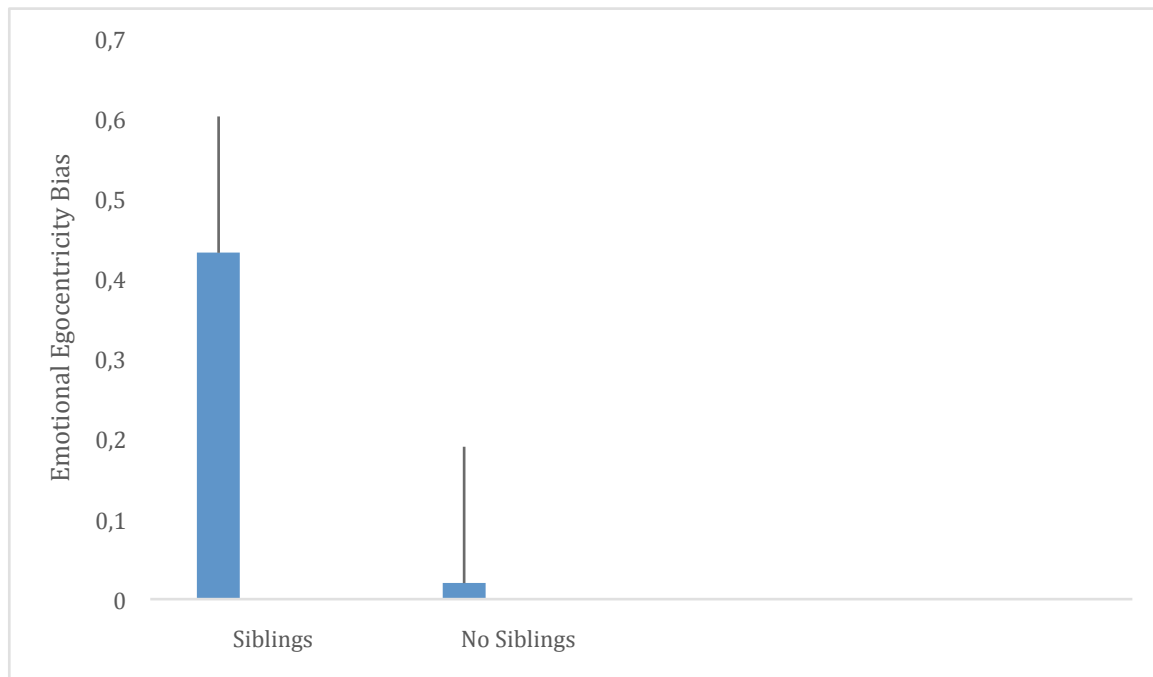


Figure 4. EEB_total, comparison of the two groups

The ANOVA showed the same results namely that no significant differences between children with siblings and only children were found for the total EEB [$F(1,38) = 2.411$, $p = .129$, $\eta_p^2 = .060$] and also not for the EEB for the sad videos [$F(1,38) = 0.005$, $p = .946$, $\eta_p^2 = .000$]. However, a significant difference was found for the EEB that was calculated only for the happy videos [$F(1,38) = 7.502$, $p = .009$, $\eta_p^2 = .165$].

Figure 5 shows a comparison of the two groups' emotion judgments for the four conditions. It can be seen that children with siblings and only children rated the sad videos nearly the same but for the happy condition, children without siblings rated the incongruent version of the video higher than the congruent version, which was not the case for children with siblings and, therefore, a significant EEB appeared only for the happy condition.

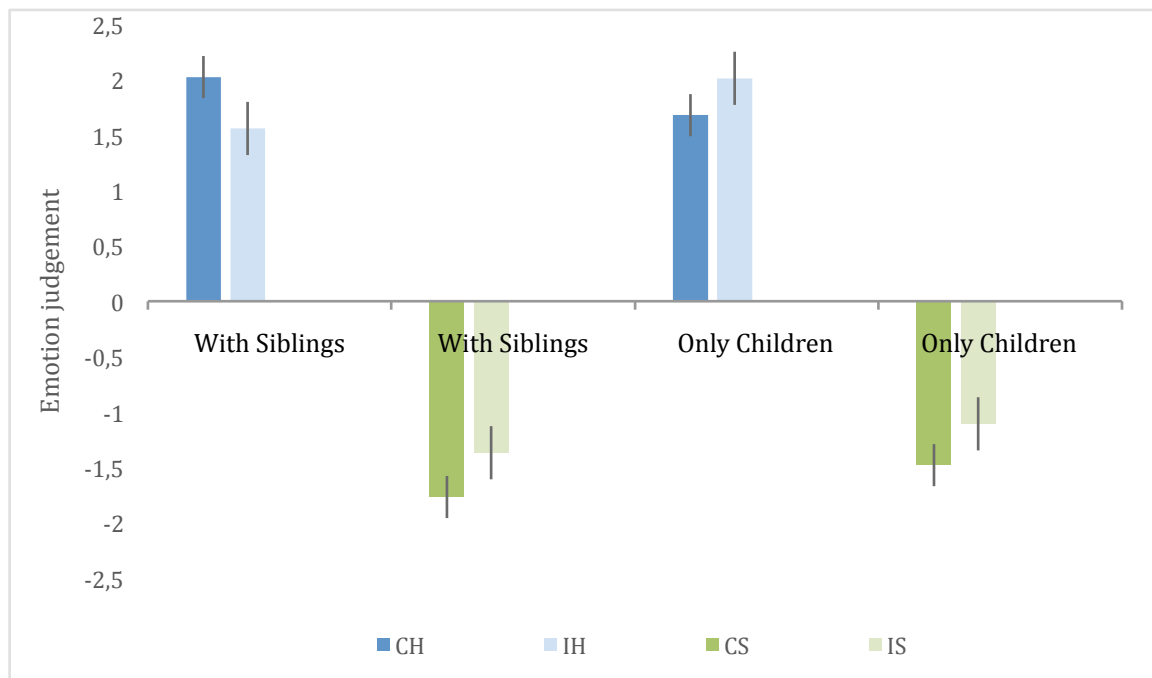


Figure 5. Four condition ratings (mean + standard error), comparison of the two groups

The same was done excluding younger siblings, as siblings from kindergarten children are mostly very young or even babies and, therefore, might not have any impact on the child. Again the t-test showed no significant differences in the scores for the EEB_total (M = 0.36, SD = 0.96) and the EEB_S (M = 0.19, SD = 1.55) for children with siblings (N=15) and the EEB_total (M = 0.02, SD = 0.68) and the EEB_S (M = 0.37, SD = 0.84) for only children (N=15);

EEB_total: $t(28) = -1.12$, $p = .271$; EEB_S: $t(28) = 0.41$, $p = .686$. These results suggest again that the total EEB and the EEB for the sad conditions do not differ significantly for children with older siblings and only children. But once again there was a significant difference in the EEB_H for children with siblings (M = 0.53, SD = 0.66) and the EEB_H for only children (M = -0.33, SD = 0.74); $t(28) = -3.38$, $p = .002$. This means that, again, children with older siblings are worse in distinguishing between their own emotions and those of others and therefore exhibit a higher bias in emotional egocentricity in the happy condition.

The ANOVA showed the same. There were no significant differences for the two groups children with older siblings and only children for the EEB_total [$F(1,28) = 1.259$, $p = .271$, $\eta_p^2 = .043$] and the EEB_S [$F(1,28) = 0.167$, $p = .686$, $\eta_p^2 = .006$]

were found. However, significant differences between the two groups could be found for the happy conditions [$F(1,28) = 11.441$, $p = .002$, $\eta_p^2 = .290$]

Concerning the second hypothesis, a Pearson correlation was done to find out if the number of siblings influences the EEB (N=40). No significant results were detected, neither for the total EEB ($r = -.054$, $p = .748$), nor for the EEB_S ($r = -.257$, $p = .120$) and the EEB_H ($r = .208$, $p = .209$). This results suggest that a higher number of siblings does not influence the ratings and, as a consequence, the EEB at all.

Again, the same was done excluding younger siblings (N=30). No significant results were found for the total EEB ($r = .017$, $p = .928$) and for the EEB_S ($r = -.259$, $p = .167$). However, significant results were found for the EEB_H ($r = .425$, $p = .019$). This means that looking only at older siblings, the more older siblings the child has, the higher is the EEB.

Another Pearson correlation was performed to test the third hypothesis and to see if a warmer sibling relationship minimizes the bias. As six participants' parents did not return the questionnaire, the sample had to be reduced to N=19, only for testing this hypothesis. No significant results were found for the total EEB for all four factors: warmth/closeness ($r = .111$, $p = .650$), status/power ($r = .394$, $p = .095$), conflict ($r = -.422$, $p = .072$), rivalry ($r = .142$, $p = .561$). Nor for the EEB_S for all four factors: warmth/closeness ($r = .194$, $p = .426$), status/power ($r = .280$, $p = .245$), conflict ($r = -.336$, $p = .160$), rivalry ($r = .088$, $p = .721$). Nor for the EEB_H for all four factors: warmth/closeness ($r = -.114$, $p = .641$), status/power ($r = .380$, $p = .109$), conflict ($r = -.339$, $p = .156$), rivalry ($r = .164$, $p = .503$). These results suggest that the relationship quality of the siblings does not influence the ratings in any way.

Again the same was done for excluding younger siblings (N=14). No significant results were found for the total EEB for the factors: warmth/closeness ($r = .128$, $p = .663$), conflict ($r = -.448$, $p = .108$) and rivalry ($r = .084$, $p = .775$). But for the factor status/power a significant correlation was detected ($r = .538$, $p = .047$). This means that the more status or power the child has over the sibling, the higher is the EEB. For the EEB_S the results were again not significant for all four factors: warmth/closeness ($r = .184$, $p = .528$), status/power ($r = .393$, $p = .164$), conflict ($r = -.360$, $p = .206$), rivalry ($r = .152$, $p = .603$). No significant results were found for the EEB_H for the factors: warmth/closeness ($r = -.064$, $p = .828$), conflict ($r = -.454$, $p =$

.103) and rivalry ($r = -.116$, $p = .694$). But for the factor status/power ($r = .638$, $p = .014$), a significant correlation could be detected. This result also suggests that the more status or power the child has over the sibling, the higher is the EEB in the happy condition.

Independent sample t-tests and ANOVA's to detect any gender differences were also performed with all three EEB's and there was only one significant difference between girls and boys. In the happy video condition a significant difference between girls with siblings ($M = 0.61$, $SD = 1.05$) and girls without siblings could be detected ($M = -0.26$, $SD = 0.77$); $t(24) = -2.27$, $p = .032$. The ANOVA showed the same results: $F(1,24) = 0.157$, $p = .032$, $\eta_p^2 = .177$. These results suggest that girls with siblings have a higher EEB in the happy condition than girls without siblings. For boys with siblings ($M = 0.20$, $SD = 0.79$) and boys without siblings ($M = -0.48$, $SD = 0.76$) the results for the EEB_H (as well as for the other EEB's) was not significant: $t(12) = -1.57$, $p = .143$. The ANOVA showed the same results: $F(1,12) = 2.461$, $p = .143$, $\eta_p^2 = .170$.

5. Discussion

Using a novel paradigm that tried to induce positive and negative emotions through music, while watching video sequences of similar aged children, made it possible to investigate the EEB for the first time in very young children at the age of kindergarten, and to answer the question if children with siblings are better in distinguishing between their own emotions and those of others and are, as a consequence, more empathic than children without siblings. Previous studies were not able to answer these questions as they used different paradigms like the ETOP (Silani et al., 2013), the EMOP (Steinbeis et al., 2015) or the ETAP (Hoffmann et al., 2015), which were not suitable for children of such a young age. Therefore, the aims of this study were to investigate individual differences concerning the ability to distinguish one's own from others emotions and to see whether the experience of having siblings, as well as the quality of the sibling relationship have an impact on empathy skills like the EEB.

With this new paradigm, called EMUP, it was possible to detect an EEB in very young children and to quantify the degree to which children at the age of kindergarten exert it. However, contrary to the first hypothesis, the EEB was larger for children with siblings but this was only significant for the condition where positive emotions were induced. It was difficult to find explanations for the result that children with siblings have a higher EEB. Only one article by Downey and Condrón (2004) stated that having fewer siblings has more advantages for the children's social skills than having many siblings as a higher number of siblings might distract the child from learning something specific, but this does not necessarily apply for other concepts like emotional egocentricity. One explanation for this result could also be that there were only 15 subjects without siblings but 25 subjects with siblings. So if the number of subjects without siblings was adjusted to the subjects with siblings, the result might already look different. However, there are quite a lot of explanations for the fact that only the happy conditions showed significant results. Concerning the cognitive egocentricity, for example, children pass tasks involving a positive desire more easily than tasks involving a negative desire (Apperly et al., 2011). Maybe this could be an indicator why often only the happy videos show a significant result, as happy emotions and positive desires may resemble each other, as well as sad emotions and negative desires. Also faces expressing negative emotion guide attention to themselves easier than, for example, faces expressing positive emotions. Tasks involving emotional expressions can, therefore, be interrupted more easily during the processing of a face expressing negative emotion (Fenske & Eastwood, 2003). For this study, this could mean, that the participants might have been disrupted in their performance when watching the sad videos and, therefore, only the EEB for the happy videos was significant.

Concerning the second hypothesis, the results were again, not in line with my predictions as there was one correlation that indicated that a higher number of older siblings results in a higher EEB, which did, however, not hold for the total sample that included younger siblings as well. However, if you look closer at the numbers of siblings, it only ranges from one to two, so it is questionable if this result is actually meaningful.

Additionally, a positive correlation between the sibling relationship quality and the EEB was found, but only for the factor relative status/power. This means that the

more status a child has in the sibling relationship or the more power the child has over the sibling, the higher is the EEB. At first glance, this might seem a little confusing, as power over someone could be associated with conflict. However, if you think about it in another way it might make sense after all: to have power over somebody or a certain status in a relationship might also indicate that you do not have to read the other person's mind and, therefore, the EEB is higher.

Considering gender differences, only girls, but not boys, with siblings showed a higher EEB than girls without siblings. One explanation for this result could be that girls are more empathic than boys (Rose & Rudolph, 2006). Gender differences might have occurred because of gender socialization. This means that girls are very early on confronted with the expression of emotions, which boys are mostly not (Lam et al., 2012).

The fact that only children rated the IH condition more intense than the CH condition is interesting and open for interpretation.

5.1. Limitations of the study

In light of these results some limitations that the study could not control should always be considered. For example, that some children might be better at distinguishing emotions because they watch more TV.

Different results for the same videos might have occurred due to different testing times, as testing did not only take place in the morning but some children were also testing in the afternoon and the later the tests took place the less attention some children had.

In general, twenty videos are quite a lot for children that young and some children were not able to concentrate throughout the whole testing situation. The problem of reducing the videos, however, is that the less videos the less data and the less significant results.

Although, the problem of different personalities with different attention spans is always there and hard to control. And, of course, gender differences might lead to different results.

Additionally, the ratings might depend on how well the children are already integrated into kindergarten as the very young 3-year-olds are not as long in

kindergarten as, for example, the 5-year-olds and, therefore, the younger ones might be more nervous because the whole situation is new for them.

But not only the integration into kindergarten could be a problem but also the setting in kindergarten in general as there is always the possibility that the results would have been different if the children were tested at home, where they feel more comfortable.

Furthermore, the verbal ability of the children might also play an important role, as one 3-year-old girl was not able to distinguish between the very, very sad smiley (-3) and the little bit sad smiley (-1). Therefore, it might be worth a try to exclude the very young children and only test those who seem confident in verbal expressions. For this study it was not possible to split the data into age groups as the sample size would have been too small to interpret for 3-year-olds, 4-year-olds and 5-year-olds separately.

So one can see that further investigations need to be carried out in order to see if the results change for different samples.

5.2. Conclusion

Through the usage of the newly developed paradigm, the EMUP, where kindergarten children between 3 and 5 years old, watched videos while listening to music, which induced positive or negative emotions, this study was able to detect an EEB in very young children, which was in line with previous findings of different studies only in a different modality. The present results suggest that there is a difference in children with and without siblings concerning the EEB and even further investigation needs to be carried out in order to find out more about this topic. Understanding the concept of emotional egocentricity is of great importance and more and more studies about this topic are made in order to increase the awareness about the existence of such a bias. The knowledge about this EEB can help to view certain actions of children in a different way and maybe also aid in developing programs that help children with a high EEB to learn how to deal with different emotions and overcome the EEB.

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8. List of abbreviations

CH	Congruent Happy
CS	Congruent Sad
DLPFC	Dorsolateral prefrontal cortex
EEB	Emotional Egocentricity Bias
EEB_H	Emotional Egocentricity Bias for the happy conditions
EEB_S	Emotional Egocentricity Bias for the sad conditions
EEB_total	Overall Emotional Egocentricity Bias
EMUP	Emotional Music Paradigm
IH	Incongruent Happy

IS	Incongruent Sad
rSMG	Right supramarginal gyrus
SRQ	Sibling Relationship Questionnaire
ToM	Theory of Mind

9. Appendix

A. Zusammenfassung

Die Studie erforschte Unterschiede zwischen Kindern mit und ohne Geschwister (3 - 5 Jahre alt, $n = 40$) in der Unterscheidung zwischen sich selbst und anderen während Empathie. Mit Hilfe eines neuen Paradigmas, das versuchte durch Musik positive und negative Emotionen zu induzieren, wurde der Emotional Egocentricity Bias (EEB) untersucht, ein Konzept, das von Empathie abgeleitet wird. Die Ergebnisse bestätigten die Existenz eines EEB bei Kindergartenkindern. Im Gegensatz zu meiner Hypothese war der EEB jedoch größer bei Kindern mit Geschwistern was aber ausschließlich in der Bedingung in der positive Emotionen induziert wurden signifikant war. Es zeigte sich eine positive Korrelation zwischen der Anzahl der älteren Geschwister und dem EEB, was jedoch nicht für die gesamte Stichprobe, die jüngere Geschwister mit einschloss, gültig war. Zusätzlich zeigte sich eine positive Korrelation zwischen der Geschwisterbeziehungsqualität und dem EEB, jedoch nur für den Faktor relativer Status/Macht. Das bedeutet, je höher der Status des Kindes bzw. je höher die Macht des Kindes über das Geschwisterchen, desto höher ist der EEB. Schließlich wurden noch Geschlechtsunterschiede erforscht, die zeigten, dass nur Mädchen, aber nicht Jungen, mit Geschwistern einen höheren EEB als Mädchen ohne Geschwister zeigen.

Schlagworte: Geschwister, Kinder, Egocentricity Bias, Egocentric Bias, Emotional Egocentricity Bias, Empathie.

B. Consent form

Sehr geehrte Damen und Herren,

im Rahmen der Diplomarbeit an der Fakultät für Psychologie der Universität Wien führen wir eine Untersuchung zum Thema **Empathie** bei Kindern zwischen 3 und 6 Jahren durch. Wir versuchen Emotionen durch Musik zu induzieren. Das heißt, dass die Kinder entweder einen fröhlichen oder einen traurigen Song hören und gleichzeitig ein Video sehen in dem Personen positive oder negative Emotionen zeigen. Danach werden die Kinder gebeten, auf einer Smiley-Skala von 1 bis 7 (1= der traurigste Smiley, 7= der fröhlichste Smiley) anzugeben, wie sich die Person im Video fühlt.

Jedes Kind wird 20 Videos bearbeiten, wobei jedes Video für 25 Sekunden abgespielt wird. Der **Zeitaufwand** dafür beträgt also etwa **15 Minuten**.

Falls Sie einverstanden sind, Ihr Kind teilnehmen zu lassen, leisten Sie und ihr Kind damit einen wesentlichen Beitrag zu unserer wissenschaftlichen Forschung! Alle Daten und Angaben sind anonym und werden streng vertraulich behandelt, sowie selbstverständlich nicht an Dritte weitergegeben. Sie dienen lediglich dazu, unsere Forschungsfragestellung zu beantworten.

Jene Eltern, die mehr als ein Kind haben, würden wir auch bitten den beiliegenden **Fragebogen zur Geschwisterbeziehungsqualität** bis **25.9.2015** auszufüllen und Ihrer gruppenführenden Pädagogin abzugeben.

Herzlichen Dank für Ihre Unterstützung!

Carina Waldl und Arabella Brunner
Psychologiestudentinnen der Universität Wien.

Sollten Sie Fragen zu dieser Untersuchung haben, wenden Sie sich bitte an: waldlcarina@gmx.at

✂ -----

Ich erkläre mich einverstanden, dass mein Kind(Name des Kindes) an der Untersuchung teilnimmt.

.....
(Unterschrift des Erziehungsberechtigten)

Bitte ausfüllen/ankreuzen:

Nationalität:

Vater:

Mutter:

höchste abgeschlossene Ausbildung:

Vater:

- ☐ Pflichtschule
- ☐ Lehre
- ☐ Meisterprüfung
- ☐ Fachschule
- ☐ Matura
- ☐ Universitätsabschluss/FH
- ☐ Sonstiges

Mutter:

- ☐ Pflichtschule
- ☐ Lehre
- ☐ Meisterprüfung
- ☐ Fachschule
- ☐ Matura
- ☐ Universitätsabschluss/FH
- ☐ Sonstiges

Berufsstand:

Vater:

- ☐ in Ausbildung
- ☐ Hausmann
- ☐ Angestellt
- ☐ Selbstständig
- ☐ Arbeitslos
- ☐ Pension

Mutter:

- ☐ in Ausbildung
- ☐ Hausfrau
- ☐ Angestellt
- ☐ Selbstständig
- ☐ Arbeitslos
- ☐ Pension
- ☐ in Karenz

monatliches Netto-Einkommen:

Vater:

- ☐ 0-500 €
- ☐ 501-1000 €
- ☐ 1001-1500 €
- ☐ 1501-2000 €
- ☐ 2001-3000 €
- ☐ mehr als 3000 €

Mutter:

- ☐ 0-500 €
- ☐ 501-1000 €
- ☐ 1001-1500 €
- ☐ 1501-2000 €
- ☐ 2001-3000 €
- ☐ mehr als 3000 €

C. Smiley sheet



D. Scoring sheet

Name:

Gender:

Age:

Nr. + age of (step)siblings:

CH

1. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

2. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

3. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |


4. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

5. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |


IH

11. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

12. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

13. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

14. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

15. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

CS

6. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |





7. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

8. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

9. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

10. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

IS

16. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

17. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

18. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

19. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

20. |  (7)  (6)  (5)  (4)  (3)  (2)  (1) |

E. Geschwisterbeziehungsfragebogen

Dieser Fragebogen wurde ausgefüllt von Mutter/Vater (Zutreffendes bitte einkreisen)

Unbeschriebene Linien beziehen sich auf _____ (Name des Kindes)

Die Phrase "das Geschwisterchen" bezieht sich auf: (Bitte ausfüllen: Geschlecht und Alter der Geschwister + Angabe ob das Geschwisterchen im selben Wohnsitz, wie das Kind wohnt)

	Geschlecht (m/w)	Alter (in Jahren und Monaten)	wohnt im selben Wohnsitz: Ja/Nein
Geschwisterchen 1			
Geschwisterchen 2			
Geschwisterchen 3			
Geschwisterchen 4			
Geschwisterchen 5			

Falls mehrere Geschwister vorhanden sind, die Fragen bitte immer auf das Geschwisterchen beziehen, mit dem das Kind am meisten Kontakt hat!

1. Einige Geschwister tun viele nette Dinge füreinander, während andere Geschwister nur wenig nette Dinge füreinander tun. Wie oft tun beide _____ und das Geschwisterchen nette Dinge füreinander?	<input type="checkbox"/> kaum bis nie <input type="checkbox"/> selten <input type="checkbox"/> manchmal <input type="checkbox"/> oft <input type="checkbox"/> SEHR OFT
2. Wer wird besser von der Mutter behandelt, _____ oder das Geschwisterchen?	<input type="checkbox"/> Das Geschwisterchen wird beinahe immer besser behandelt <input type="checkbox"/> Das Geschwisterchen wird oft besser behandelt <input type="checkbox"/> Die Kinder werden gleich gut behandelt <input type="checkbox"/> _____ wird oft besser behandelt <input type="checkbox"/> _____ wird beinahe immer besser behandelt
3. Wie oft zeigt _____ dem Geschwisterchen wie man Dinge macht, die er oder sie nicht kann?	<input type="checkbox"/> kaum bis nie <input type="checkbox"/> selten <input type="checkbox"/> manchmal <input type="checkbox"/> oft <input type="checkbox"/> SEHR OFT
4. Wie oft zeigt das Geschwisterchen _____ wie man Dinge macht, die er oder sie nicht kann?	<input type="checkbox"/> kaum bis nie <input type="checkbox"/> selten <input type="checkbox"/> manchmal <input type="checkbox"/> oft <input type="checkbox"/> SEHR OFT

5. Wie oft befiehlt _____ dem Geschwisterchen was es machen soll?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT
6. Wie oft befiehlt das Geschwisterchen _____ was er/sie machen soll?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT
7. Wer wird besser vom Vater behandelt, _____ oder das Geschwisterchen?	<input type="checkbox"/>]Das Geschwisterchen wird beinahe immer besser behandelt <input type="checkbox"/>]Das Geschwisterchen wird oft besser behandelt <input type="checkbox"/>]Die Kinder werden gleich gut behandelt <input type="checkbox"/>]_____ wird oft besser behandelt <input type="checkbox"/>]_____ wird beinahe immer besser behandelt
8. Einige Geschwister empfinden viel Zuneigung füreinander, während andere Geschwister weniger Zuneigung füreinander empfinden. Wie viel Zuneigung empfinden _____ und das Geschwisterchen füreinander?	<input type="checkbox"/>]wenig bis keine <input type="checkbox"/>]nicht sehr viel <input type="checkbox"/>]ein wenig <input type="checkbox"/>]Viel <input type="checkbox"/>]SEHR VIEL
9. Wie oft machen _____ und das Geschwisterchen Dinge gemeinsam?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT
10. Wie oft beleidigen und beschimpfen sich _____ und das Geschwisterchen?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT
11. Wie sehr mögen _____ und das Geschwisterchen dieselben Dinge?	<input type="checkbox"/>]kaum bis gar nicht <input type="checkbox"/>]nicht sehr <input type="checkbox"/>]ein wenig <input type="checkbox"/>]gern <input type="checkbox"/>]SEHR GERN
12. Wie oft erzählen sich _____ und das Geschwisterchen etwas?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]nicht sehr oft <input type="checkbox"/>]ein wenig <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT

13. Einige Geschwister versuchen sich oft zu überbieten oder in gewissen Dingen zu besiegen, während andere Geschwister, dies nur selten tun. Wie oft versuchen _____ und das Geschwisterchen sich zu überbieten?	<input type="checkbox"/> kaum bis nie <input type="checkbox"/> selten <input type="checkbox"/> manchmal <input type="checkbox"/> oft <input type="checkbox"/> SEHR OFT
14. Wie sehr bewundert und respektiert _____ das Geschwisterchen?	<input type="checkbox"/> kaum bis gar nicht <input type="checkbox"/> nicht sehr <input type="checkbox"/> ein wenig <input type="checkbox"/> oft <input type="checkbox"/> SEHR OFT
15. Wie sehr bewundert und respektiert das Geschwisterchen _____ ?	<input type="checkbox"/> kaum bis gar nicht <input type="checkbox"/> nicht sehr <input type="checkbox"/> ein wenig <input type="checkbox"/> oft <input type="checkbox"/> SEHR OFT
16. Wie oft sind _____ und das Geschwisterchen verschiedener Meinung und streiten sich?	<input type="checkbox"/> kaum bis nie <input type="checkbox"/> selten <input type="checkbox"/> manchmal <input type="checkbox"/> oft <input type="checkbox"/> SEHR OFT
17. Einige Geschwister kooperieren viel, während andere Geschwister dies nur selten tun. Wie oft kooperieren _____ und das Geschwisterchen miteinander?	<input type="checkbox"/> kaum bis nie <input type="checkbox"/> nicht sehr oft <input type="checkbox"/> ein wenig <input type="checkbox"/> oft <input type="checkbox"/> SEHR OFT
18. Wer bekommt mehr Aufmerksamkeit von der Mutter, _____ oder das Geschwisterchen?	<input type="checkbox"/> Das Geschwisterchen bekommt beinahe immer mehr Aufmerksamkeit <input type="checkbox"/> Das Geschwisterchen bekommt oft mehr Aufmerksamkeit <input type="checkbox"/> Die Kinder bekommen gleich viel Aufmerksamkeit <input type="checkbox"/> _____ bekommt oft mehr Aufmerksamkeit <input type="checkbox"/> _____ bekommt beinahe immer mehr Aufmerksamkeit
19. Wie oft hilft _____ dem Geschwisterchen mit Dingen, die es nicht alleine machen kann?	<input type="checkbox"/> kaum bis nie <input type="checkbox"/> selten <input type="checkbox"/> manchmal <input type="checkbox"/> oft <input type="checkbox"/> SEHR OFT
20. Wie oft hilft das Geschwisterchen _____ mit Dingen, die er/sie nicht alleine machen kann?	<input type="checkbox"/> kaum bis nie <input type="checkbox"/> selten <input type="checkbox"/> manchmal <input type="checkbox"/> oft <input type="checkbox"/> SEHR OFT

21. Wie oft bringt _____ das Geschwisterchen dazu Dinge zu tun?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT
22. Wie oft bringt das Geschwisterchen _____ dazu Dinge zu tun?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT
23. Wer bekommt mehr Aufmerksamkeit vom Vater, _____ oder das Geschwisterchen?	<input type="checkbox"/>]Das Geschwisterchen bekommt beinahe immer mehr Aufmerksamkeit <input type="checkbox"/>]Das Geschwisterchen bekommt oft mehr Aufmerksamkeit <input type="checkbox"/>]Die Kinder bekommen gleich viel Aufmerksamkeit <input type="checkbox"/>]_____ bekommt oft mehr Aufmerksamkeit <input type="checkbox"/>]_____ bekommt beinahe immer mehr Aufmerksamkeit
24. Wie sehr lieben sich _____ und das Geschwisterchen?	<input type="checkbox"/>]wenig bis gar nicht <input type="checkbox"/>]nicht sehr <input type="checkbox"/>]ein wenig <input type="checkbox"/>]viel <input type="checkbox"/>]SEHR VIEL
25. Einige Geschwister spielen und haben sehr oft Spaß miteinander, während andere Geschwister nur wenig miteinander spielen und Spaß haben. Wie oft spielen _____ und das Geschwisterchen und haben miteinander Spaß?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT
26. Wie oft sind _____ und das Geschwisterchen gemein zueinander?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT
27. Wie viel haben _____ und das Geschwisterchen gemeinsam?	<input type="checkbox"/>]wenig bis gar nichts <input type="checkbox"/>]nicht sehr viel <input type="checkbox"/>]ein wenig <input type="checkbox"/>]viel <input type="checkbox"/>]SEHR VIEL
28. Wie oft teilen _____ und das Geschwisterchen Geheimnisse und private Gefühle?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT

29. Wie oft konkurrieren _____ und das Geschwisterchen gegeneinander?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT
30. Wie sehr sieht _____ zu dem Geschwisterchen auf und ist stolz auf das Geschwisterchen?	<input type="checkbox"/>]kaum bis gar nicht <input type="checkbox"/>]nicht sehr <input type="checkbox"/>]ein wenig <input type="checkbox"/>]viel <input type="checkbox"/>]SEHR VIEL
31. Wie sehr sieht das Geschwisterchen zu _____ auf und ist stolz auf ihn/sie?	<input type="checkbox"/>]kaum bis gar nicht <input type="checkbox"/>]nicht sehr <input type="checkbox"/>]ein wenig <input type="checkbox"/>]viel <input type="checkbox"/>]SEHR VIEL
32. Wie oft sind _____ und das Geschwisterchen böse aufeinander und streiten sich?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT
33. Wie viel teilen sich _____ und das Geschwisterchen?	<input type="checkbox"/>]kaum bis gar nichts <input type="checkbox"/>]nicht sehr viel <input type="checkbox"/>]ein wenig <input type="checkbox"/>]viel <input type="checkbox"/>]SEHR VIEL
34. Wen bevorzugt die Mutter für gewöhnlich, _____ oder das Geschwisterchen?	<input type="checkbox"/>]Das Geschwisterchen wird beinahe immer bevorzugt <input type="checkbox"/>]Das Geschwisterchen wird oft bevorzugt <input type="checkbox"/>]Keines der Kinder wird bevorzugt <input type="checkbox"/>]_____ wird oft bevorzugt <input type="checkbox"/>]_____ wird beinahe immer bevorzugt
35. Wie oft lehrt _____ dem Geschwisterchen Dinge, die es vorher nicht weiß?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT
36. Wie oft lehrt das Geschwisterchen _____ Dinge, die er/sie vorher nicht weiß?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT

37. Wie oft kommandiert _____ das Geschwisterchen herum?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT
38. Wie oft kommandiert das Geschwisterchen _____ herum?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT
39. Wen bevorzugt der Vater für gewöhnlich, _____ oder das Geschwisterchen?	<input type="checkbox"/>]Das Geschwisterchen wird beinahe immer bevorzugt <input type="checkbox"/>]Das Geschwisterchen wird oft bevorzugt <input type="checkbox"/>]Keines der Kinder wird bevorzugt <input type="checkbox"/>]_____ wird oft bevorzugt <input type="checkbox"/>]_____ wird beinahe immer bevorzugt
40. Wie sehr ist ein Gefühl der Zuneigung zwischen _____ und dem Geschwisterchen da?	<input type="checkbox"/>]kaum bis gar nicht <input type="checkbox"/>]nicht sehr <input type="checkbox"/>]ein wenig <input type="checkbox"/>]viel <input type="checkbox"/>]SEHR VIEL
41. Einige Kinder verbringen viel Zeit mit ihren Geschwistern, während andere nicht so viel Zeit miteinander verbringen. Wie viel Freizeit verbringen _____ und das Geschwisterchen miteinander?	<input type="checkbox"/>]kaum bis gar keine <input type="checkbox"/>]nicht sehr viel <input type="checkbox"/>]ein wenig <input type="checkbox"/>]viel <input type="checkbox"/>]SEHR VIEL
42. Wie oft nerven und ärgern sich _____ und das Geschwisterchen auf gemeine Art und Weise?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT
43. Wie ähnlich sind sich _____ und das Geschwisterchen?	<input type="checkbox"/>]kaum bis gar nicht <input type="checkbox"/>]nicht sehr <input type="checkbox"/>]ein wenig <input type="checkbox"/>]viel <input type="checkbox"/>]SEHR VIEL
44. Wie oft erzählen sich _____ und das Geschwisterchen Dinge, von denen sie nicht wollen, dass Andere davon wissen?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT

45. Wie oft versuchen _____ und das Geschwisterchen etwas besser als der jeweils andere zu machen?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT
46. Wie sehr hält _____ große Stücke von dem Geschwisterchen?	<input type="checkbox"/>]kaum bis gar nicht <input type="checkbox"/>]nicht sehr <input type="checkbox"/>]ein wenig <input type="checkbox"/>]viel <input type="checkbox"/>]SEHR VIEL
47. Wie sehr hält das Geschwisterchen große Stücke von _____?	<input type="checkbox"/>]kaum bis gar nicht <input type="checkbox"/>]nicht sehr <input type="checkbox"/>]ein wenig <input type="checkbox"/>]viel <input type="checkbox"/>]SEHR VIEL
48. Wie oft setzen sich _____ und das Geschwisterchen auseinander?	<input type="checkbox"/>]kaum bis nie <input type="checkbox"/>]selten <input type="checkbox"/>]manchmal <input type="checkbox"/>]oft <input type="checkbox"/>]SEHR OFT

Furman, W. & Buhrmester, D. (1985). Children's perceptions of the qualities of sibling relationships. *Child Development*, 56, 448-461.