

PLAYING WITH BODY LANGUAGE AND EMOTIONS

Understanding emotions and exploring body language with the help of “emotion objects”

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ABSTRACT

Social-emotional competence is of more than average importance for learning. Recognising and understanding emotional states of oneself, and of others, is an important part of this competence. Now that social-emotional competence is part of the core competences for primary education in the Netherlands, the question has been how schools can work on it systematically and effectively.

This paper discusses an exploration of the possibilities of using “emotion objects” as a playful educational aid for children, aged four to six, which stimulates the development of their skills to physically express emotions. Six different objects were designed, each expressing an emotion in both static appearance and dynamic movement. Two studies were designed to validate and evaluate the new aid.

Two of the six emotion objects were unambiguously recognised, and three others were recognised to some degree. Only one was found to be unclear. The emotion objects had a strong impact when introduced in class. The children moved in ways they had not moved before. It was found that the expressive movements of the objects helped to make the actual emotions, conveyed by the emotion objects, tangible and obvious. The emotion objects can be used to explore body language in physical education, and movement may be a strong means to educate emotional expressiveness.

1 INTRODUCTION

Social-emotional competence is of more than average importance for learning [Slavenburg, 1993 in Hoogenkamp, 2001]. Recognising and understanding emotional states of oneself, and of others, is an important part of this competence. Pons [2003] demonstrated a strong connection between emotion understanding and language development. Even though psychotherapy has shown that people of all ages can learn the “language of emotions”, the most eloquent are those that have learnt to speak this language at an early age.

Yet until approximately halfway of the nineties the emphasis in modern education in the Netherlands lay on academic competence, because social-emotional competence was thought to be the domain of the family. Due to changing insights from both an orthopaedic and sociological point of view, social-emotional competence is now part of the core competences for primary education [OCW, 1998]. The question has since been how schools can work on it systematically and effectively, bearing in mind that too much and too little guidance can hinder the child’s development.

This paper discusses the research and design project “Learning to talk with your body”. The goal of the project was to develop a playful educational aid for children, aged four to six, which stimulates the development of the children’s skills to physically express emotions. Recent design research has demonstrated that emotions are involved in the interaction with the material world, and that products can express and arouse a wide range of emotions [Desmet (2003)]. An aid for social-emotional development therefore should be able to do the same thing, but can children recognise emotions expressed by objects? And if they can, can

these objects be used to explore expressive body language in education? These are the main research questions explored in the current project.

The paper reports some design issues that were relevant for the development of the aid, introduces the new aid, and reports two studies that were designed to validate and evaluate the new aid. It should interest those involved research in design in general, and particularly those involved in the development of aids for social-emotional education.

2 EMOTIONAL DEVELOPMENT OF CHILDREN

A child's understanding of emotions develops as it grows up. Accuracy in identifying, distinguishing and labelling emotions improves with age [Izard et al., 1986]. Izard and his colleagues also found that this accuracy varies for the different emotions. The emotional expressions of joy, sadness and anger, for instance, are recognised sooner than fear, surprise, content and disgust.

Also Pons [2003], who measured nine components of emotion understanding, found that the youngest children, aged four to five years, averagely understood three out of the nine components, whereas the oldest, ten to eleven years old, averagely understood eight. Normally developing children aged four to six understand the basic emotions, and are becoming self-aware, which involves self-conscious emotions like pride, guilt and shame. Their emotional experience is thought and talked about, and they show socio-dramatic play to enact their experiences.

The understanding of emotion elicitors and of the meaning of emotional arousal, as well as the shaping of emotional experience and expression are processes with a strong social character. [Thompson, 1987]. Social interaction with peers and everyday conversation with parents are therefore of importance for the development of emotional skills. These social learning processes involve imitation and confirmation.

A variety of tools that were developed for social-emotional competence education are available. Some of these are picture based. Examples in the Netherlands are the PAD-Curriculum that uses emotion cards, the Vijfhoek emotion pictographs, and the "Wat is er?" system of Weerklank that uses buttons with a picture of the child's face showing a certain emotion. In addition to cards, the PAD-Curriculum also uses an object, a little turtle, to help the children envision how they can control their emotional response. Despite the pictures, some of these tools are still very formal and language oriented.

3 THE DESIGN OF SIX "EMOTION OBJECTS"

3.1 The project "Learn to talk with your body"

Given the limitation of existing aids, the goal of the current project was to develop a playful educational aid for children, aged four to six, which stimulates the development of the children's skills to physically express emotions. In this section the aid is introduced, and some of the issues encountered during the development are discussed.

The new aid consists of six objects, each expressing a distinct emotion in both static appearance and dynamic movement. The emotions expressed by the objects are the basic emotions joy, anger, sadness and fear [see Ekman & Friesen (1971)], supplemented with pleasant surprise and attraction. The set emotions was balanced in terms of pleasantness (3 positive and 3 negative) because in every day life, both the positive and the negative emotions are equally important and valuable. In addition, young children know more about positive than about negative emotions, and develop their knowledge about negative emotions at an later age [Borke, 1971 in Izard, 1986].

3.2 Design issues

The following concerns have played a role in the design of the objects. First it was taken into account that social learning, like imitation and confirmation, is a good method to learn about emotions [Bandura (1977) in Buck (1984)]. For imitation a good example is required, and confirmation is necessary because a part of body language is spontaneous and unconscious. Therefore the emotion objects have been designed to clearly exemplify the distinct emotion's expression. The teacher, and the other children, will confirm the children's translation of the object's expression to the expression of their own body.

Secondly, the design of the emotion objects is based on the action tendency, which is the tendency to behave in a particular way. It is an important feature that differentiates emotions. Anger, for example, involves the action tendency of attack, whereas sadness involves the tendency to withdraw from social activity. An object that expresses an emotion should thus behave dynamically or respond to an impulse. The design of the objects is based on this principle. The Anger object (figure 3.2 b) for instance has a great readiness to act, and responds immediately when manipulated by the child, whereas the Sadness object (figure 3.2a) is very passive and hardly responds at all.

Thirdly, the concept of imitation and confirmation also had implications for the way the children will be taught. For instance, they will be taught in a group setting, rather than individually. Because of the use of the whole body in expressing emotions and the amount of space necessary to do so, a logical place to teach children about body language at school would be in the gymnastics room. The gymnastics class will start with an exploration of the object. Then the children will be asked to imitate it. The emotion expressed and the expression itself will be discussed in the class. To take the exploration of the emotion and its expression a step further, appropriate music can be turned on to which the children can move, investigate and associate more freely.

Figure 3.1

The objects are approximately one third of the child's height (see figure 3.1). This is tall enough to arouse interest, but small enough for the children to be able to manipulate the objects. Also, the objects are abstract in order to leave room for the children's imagination, but each object has a concrete and human element to help the children project their body scheme onto the object (figures 3.2a till 3.2 f). Anger for instance seems to have two feet firmly on the ground. Because of the object's size and concrete element, it is not difficult to identify it as an emotional being.

Figures 3.2a till 3.2 f

A final consideration was that, although the objects were designed to invite the children to move expressively, special attention was paid to ensure that the objects do not evoke the emotions. They merely express it, leaving it up to the child and the teacher to decide just how far they want to explore the expressed emotion.

3.2 The emotion objects

Based on the theoretical framework and design issues, the first author designed six objects. Of each object a prototype was built that was then used for validation purposes and for an exploration of application possibilities. The textbox (textbox 3.1) below briefly describes each prototype, and the figure 3.2 a till figure 3.2 f show pictures of the prototypes and drawings of their movements.

Textbox 3.1

4 FIRST STUDY: RECOGNISING THE EXPRESSED EMOTION

The six emotion objects were designed to educate children in the skills required to physically express emotions. In order to evaluate their effectiveness, two studies were performed. The aim of the first study was to validate if four and five year olds can unambiguously recognise the expressed emotions of the six emotion objects. The second study was designed to explore if and how the emotion objects can be used to teach children about expressive body language. The validation study was reported in more detail in internal student projects by Weerdesteijn (2003) and by Hennink and Vreeswijk (2004).

4.1 RESEARCH METHOD SCENARIOS

A complication in validating emotionally expressive objects is that people (and especially children) are not always capable to correctly verbalise affective concepts. Thus, although someone may not be able to explain what emotion he or she thinks is expressed by an object, that does not necessarily mean that the person does not correctly recognize the expressed emotion. For this kind of research it is common to use emotional configurations or scenarios [see Izard, 1986].

Borke [1971] demonstrated that scenarios can be used for three and four year olds, because they can already anticipate what emotion will be felt in certain known situations. He presented the children with short stories in which the main character encountered various situations, such as a birthday party. Then the children chose from a selection of pictures the face that showed the character's likely emotional reaction.

Thus, for the current study it was decided to use a scenario approach. A scenario was read to a participant and then ask the participant to select the object that best expresses the emotion in the scenario. This multiple-choice approach was adopted because Izard [1986] found that it is better to ask children to choose between different answers than to ask them to respond spontaneously, given that the child understands the given possible answers. He also advises to keep the procedure simple, such as a choice between two options rather than five. Therefore, for each object a short scenario was written that fits the experiences of the participants. The basis of the scenarios were the 'core relational themes' developed by Lazarus [1991], which are short descriptions of what should happen to evoke particular emotions. The scenarios used for the current study are reported by Hennink and Vreeswijk [2004].

SUBJECTS

Two groups of children participated in the study. One group consisted of 24 four- and five year olds ($N = 24$). The other group consisted of 24 ten and eleven year olds ($N = 24$), which functioned as a control group. Both groups were from the same public state school in Heemstede, The Netherlands, and in both groups boys and girls were equally represented.

STIMULI

The six emotion objects shown in **Figure 2.2** were used as stimuli. The object's dynamic behaviour was demonstrated to the children by two interviewers:

Joy: The emotion object was pushed so that the object and the balls inside it moved. This made the prototype spin and move to and fro.

Pleasant Surprise: The ball on top was pushed down, causing the green part to lift. Then the ball was let go and the green part moved downwards.

Attraction: One interviewer held the purple part, and the other pulled the blue ball. Here after the interviewers carefully let the two parts come together by means of the chain.

Sadness: The head inside the emotion object was lifted up, and then let go, so that the stimulus sank down.

Anger: Two of the pinnacles were pressed down and then let go, so that they jumped back up.
Fear: The tip of the stimulus was pressed down and let go, causing the stimulus to tremble.

PROCEDURE

Each child was individually presented with two emotion objects and their expression. Then the scenario designating the emotion expressed by one of the two objects was read to the child, accompanied with the word designating that emotion. After this the child was instructed to select one of the two emotion objects that best fitted the scenario.

This sequence was repeated for all six scenarios. With each scenario two different combinations of emotion objects were presented. Each object shown was not in the next presentation. The sequence of presenting the scenarios was also varied, but each child was presented with each scenario only once. The total sequence of the scenarios and the objects was the same for the four and five year olds as for the ten and eleven year olds.

4.2 Results

The figure below shows the percentage of correct and incorrect answers for each object of the group four and five year olds.

Table 4.1

The figure indicates that the objects expressing anger and sadness are recognized best, whereas the object expressing fear is recognized worst. An object was considered valid if it was significantly ($p < .05$) more often recognised than can be expected by chance (chance level is 50%). As can be read from the figure, only the objects anger and sadness meet this requirement. In order to test for age effects, the results were compared with those of the control group. This comparison showed no significant differences between the age-groups.

4.3 Conclusions

On the basis of this study it can be concluded that the emotional expressions of the objects Anger and Sadness are unambiguously recognised by four and five year olds. Although this concerns only two of the six objects, the results also indicate that the three objects Joy, Pleasant Surprise, and Attraction are also recognized to some degree. The object Fear was found to be unclear. Age was not found to be the cause of low scores of Fear; the older children did not significantly recognize the object better than the younger children. Given these findings it is concluded that the object expressing fear is confusing, the objects expressing anger and sadness are clear, and the objects expressing joy, pleasant surprise, and attraction are to some extent clear.

4.4 Discussion

That the Joy stimulus wasn't recognised unambiguously by the four and five year olds was unexpected, because previous research [Borke, 1971, Felleman, 1983 and Guthrie, 1981 in Izard, 1986] has shown that joy, a basic emotion, is recognised at an earlier age and better than other emotions, such as anger and sadness. Because the ten and eleven year olds did, the researchers examined their observations, and found indications that suggest it was the sound of the joy object that confused the four and five year olds .

Pleasant Surprise and Attraction were also only recognised to some extent by the four and five year olds. One explanation is the difficulty of these emotions for four and five year olds. Because the control group wasn't able to recognise these objects sufficiently either, it is more probable that the expressions of these objects are not fully clear . One could argue that, for the purpose of education, it would not be a major problem if the children do not fully understand

the emotions expressed by the objects because the objects are intended to teach the children something about the emotional expression. Although that is correct, the objects still should not confuse the children's understanding of the expressed emotion.

Because the research has shown that children aged four to five can to some extent recognise emotions expressed by objects, the idea of using emotion objects to explore expressive body language in physical education has potential. Therefore all stimuli were used for the second study.

5 SECOND STUDY : EFFECT OF EMOTION OBJECTS IN GYMNASTICS CLASS

The second study was an application study, designed to explore the value of using such emotion objects to explore expressive body language in physical education. In the application study, the objects were used in a real children's gymnastics class. The idea was to approximate the actual future gymnastics class with the prototypes as closely as possible.

5.1 RESEARCH METHOD

SUBJECTS

A class of 33 kindergarten children ($N = 33$) attending a normal state school in Rotterdam, The Netherlands, participated. The children, comprising of both boys and girls, were aged between four and six. Due to the size of the class and the number of emotion objects, the class was randomly divided into three groups, one of thirteen ($N = 13$) and two of ten ($N = 10$, $N = 10$)

For the study, the three lessons were given by the children's own teacher, each lesson involving two of the six objects and lasting for approximately 45 minutes. The objects were randomly paired.

STIMULI

The six prototypes shown in [Figure 2.2](#) were used as stimuli. In addition, for each emotion a music composition was selected, to approximate the future gymnastics classes best, see [table 5.1](#):

Emotion	Music title	Performer
Sadness	Gnossiennes no. 4 van E. Satie	Reinbert de Leeuw
Anger	Block Rocking Beats	Chemical Brothers
Fear	Oh so quiet	Björk
Joy	Mockin' bird hill	Roots Syndicate
Pleasant Surprise	The grave	Don McClean
Attraction	Waiting in vain	Bob Marley

Table 5.1 Emotion object and music composition

PROCEDURE

The study took place in the children's school gymnastics room, and was thus a familiar environment for the children. Each lesson was divided into two parts, the first part involved the children sitting in a circle around the stimulus, and for the second part, the children moved throughout the entire classroom.

At the start of the lesson, the teacher introduced the researcher and an outline of the lesson. In the first part each child was given the possibility to explore and manipulate the stimulus. After each child had had his turn, the children got up and concluded the stimulus' exploration with an imitation of its movements.

In the second part, the selected music for the stimulus was played and the children could further explore the movements they had found in the first part. Then they discussed their

experiences with the teacher. This discussion led to the naming of the emotion represented by the stimulus. The music was played again and the children were again encouraged to move like the stimulus, this time with the knowledge of the expressed emotion. After this, the sequence was repeated for the second stimulus.

The whole lesson was observed by the researcher and throughout the proceedings, the researcher recorded detailed notes on the observations of the children. The researcher concluded the research with an interview with the teacher about giving a gymnastics class with the stimuli. The interviews with the teacher were recorded manually and the processed transcript was then sent to the teacher for confirmation. The researcher relied on the teacher's assessment.

All classes were videotaped to record the interactions of the children. During this time, the recording equipment and the researcher were in plain view at one end of the classroom to allow the children to become accustomed to the presence of both. The video camera remained in one place, giving an overview of the entire room.

5.2 RESULTS

To give an impression of the observations made during the three gymnastics classes, the observations of the first gymnastics lesson with the first pair of objects, Sadness and Anger, are discussed. The conclusion, section 5.3, combines the observations made by the researcher and the interviews with the teacher for all three lessons.

5.2.1 CHILDREN MOVING

While imitating Sadness the children made very weak movements, slowly moving across the floor (figure 5.1). Occasionally, they got up, only to sink back onto the floor again. For Anger the movements were sudden, quick, forceful, direct and large in extent, pushing their arms and legs into the air. The children also made movements other than those made by the stimuli, such as contorting their faces while imitating the stimuli with whole body movements. Another example was children stamping their feet with anger, which fits the expression of the emotion well, even though the anger stimulus maintains contact with the ground. When manipulating the anger stimulus, the children's movements almost immediately became large, forceful and quick, similar to those that the stimulus itself made, and only appeared to get more intense. With Sadness, the children's movements began being small, gentle and soft, like the stimulus, but then became quicker and more forceful over time.

Figure 5.1

5.2.2 MOVED CHILDREN

The observations indicated that when the children were imitating the stimuli's movements, they were exploring and experiencing the emotions expressed by the stimuli. Even before the identity of the emotion expressed by the stimuli was confirmed, the faces of the children, in particular, expressed it. After the confirmation their experience appeared to intensify.

The difference in manipulation between Anger and Sadness, as described in section 5.2.1, applies even more so when interpreting the expressiveness of the children's movements. The large, forceful and quick movements made by the children to interact with the anger stimulus were agitated and angry; the face frowned and looked menacing, similar to the interaction between two people fighting. The children responded angrily to anger.

The interaction with the sadness stimulus started out as being soft and tender, the children appeared to comfort the stimulus. However, as the stimulus continued to be sad and thus, their efforts were in vain, the children became annoyed with the stimulus' lack of response. The children initially responded with compassion to sadness, but then became agitated.

The children also experienced emotions other than that of the particular stimulus, such as the joy of moving, particularly when the children were moving in anger. Often, angry, angular movements and menacing faces gave way to lots of laughing.

5.3 CONCLUSIONS

This study was designed to explore the value of the emotion objects to explore body language in physical education. It was found that the expressive movements of the stimuli helped to make the actual emotions, conveyed by the stimuli, tangible and obvious. Playing with the objects helped the children to recognise and verbalise the expressed emotions, as well as express the emotions with their body. Furthermore, the teacher found that the children moved in ways in which she had not seen them move before and they were very curious, focused and participative during the study. This means that the emotion objects can be used to explore body language in physical education.

Although Anger, Sadness, and Joy showed remarkable positive results, the results for the other three objects were less convincing. These are the same objects that the children had trouble recognising in the validation study. Apparently, they did not perform well in class because they did not succeed in making the expressed emotion as tangible and obvious as was required. Thus, whereas Pleasant Surprise, Fear, and Attraction require more design effort, Joy, Anger and Sadness are effective in their current form.

6 General discussion

The aim of the project was to explore if the physical objects can be playful aids for social-emotional education. The second study illustrated that it is indeed possible to create objects that are effective, although they avoid formal and verbal approaches. An emotionally expressive object can serve as a focus point and at the same time allow and even encourage the child to feel free to explore his or her own emotional expressiveness. The second study clearly demonstrated that the emotion objects can have a strong impact when introduced in a class. In a feedback discussion with the teacher, she reported that even after two weeks the children remembered the lessons, and could recount a lot about the various stimuli. Some even managed to accurately draw one of the stimuli from memory.

Thus the studies indicate that the emotion objects could be a valuable tool, but before this kind of aid is used in an actual educational environment, the long-term effect of using them should be studied. In addition, various procedures should be explored (e.g. with or without music, various sequences, various ages, etcetera) to be able to formulate an optimal procedure.

An interesting finding is that the children found it more difficult to identify the expressed emotions in the first than in the second study. The main difference between these two studies was that whereas they only looked at the objects in the first study, they dynamically imitated the expressions using their faces and body in the second. This finding corresponds with the bodily feedback theory of emotion (see Lazarus [1991]), which entails the claim that one of the best means for interpreting an emotion of another person is to imitate this person's expression. This notion supports our belief that using dynamic expression may be one of the strongest means we have for the education of emotional expressiveness. Our next step will therefore be to redesign the objects and to further explore their value for teaching children.

7 References

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