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**THE INFLUENCE OF ENCOURAGEMENT AND PUNISHMENT
ON THE PSYCHOPHYSIOLOGICAL DEVELOPMENT OF
CHILDREN**

E.I. Nikolaeva (a)*, S.A. Burkova (b)
*Corresponding author

(a) The Herzen State Pedagogical University of Russia, Russia, klemtina@yandex.ru
(b) The Herzen State Pedagogical University of Russia, Russia, burkova_sa@bk.ru

Abstract

The aim of this research was to study the influence of children's notions about their parents' methods of encouragement and punishment on a child's self-esteem and their emotional responsiveness. A total of 119 children (76 girls and 43 boys) took part in the study. Their self-esteem was determined beforehand using a Russian version of the Dembo scale, and then their heart rate was recorded while the children recalled the methods of encouragement and punishment used in their family. It was ascertained that methods of punishment have an influence on self-esteem ($F=5.086$, $p<0.008$). It was also shown that there is a connection between a family's methods of encouragement and the heart rate variability as a child recalls situations of both punishment and encouragement. It is our hypothesis that a child's self-esteem evolves under the direct influence of methods of punishment, while adaptive resources are formed by exposure to methods of encouragement.

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1. Introduction

The family in its various aspects has recently been the subject of intensive research, as the environment in which the personality is formed (Walter, 2004) and as an intermediary between child and the culture to which the family belongs (Parke, 2004). Furthermore, the family has been examined from the standpoint of its attributes as a defence for the individual and also as a setting where the probability of violence is substantially higher than it is on the street (Douglas & Dutton, 2001; O'Doherty, Cockburn & Pauli, 2017). The cognitive and emotional development of the child, as a function of the style of upbringing, the particularities of the parents' personalities and the structure of the family, have been studied extensively.

2. Problem Statement

There is, however, one subject that continues to be insufficiently accessible to psychological investigation: the system of encouragement and punishment in the family. On the one hand, its presence is evident in every social unit. Found wherever there is a social setting, the "carrot and the stick", or encouragement and punishment, are traditionally used in the formation of various socially acceptable habits that, in some ways limit the freedom of the individual. On the other hand, in Russia complete control over this particular feature of the formation of a child's personality has been entrusted to the family, and the government intervenes only when there has been an egregious infringement of individual rights. The less prepared the government is to defend these rights itself, the more inclined it is to look the other way when these rights are not protected by the family. From this point of view, such studies as this one characterize not only the family, but the society as a whole.

It is for this reason that we have statistics from government agencies about various incidents of domestic violence that have led to tragedy, documented by social workers, as well as data from psychiatric services, which, taken as a whole, reflect only a part of what happens in disadvantaged families (Douglas & Dutton, 2001). These findings are the result of different methodological approaches and, all in all, attest to the social inadequacy of certain family: poverty, alcoholism, drug use and psychiatric disorders (Margolin & Gordis, 2000).

It is only with great reluctance that the typical family will seek help in this sensitive area (O'Brien, 1971), since there are no clear-cut criteria for an effective upbringing. Every participant is inclined to expect that anything they say might be used against them. Because it is impossible to receive this data without the mediation of the cognitive personality structures, thereby substantially distorting the reality, psychologists are loath to investigate this facet of family life. The data of psychotherapists, who, in the process of teaching a child social skills, obtain their information about emotionally-charged events from the participants in the events themselves, is not sufficiently conclusive, since it offers a limited sampling of the overall picture. Moreover, there are no standardized methods for gathering such data, which is filtered through the defence systems of those who come for a consultation.

Our earlier research showed that parents and children give different accounts of what transpires in a family. Moreover, the degree to which the information is distorted depends on the age of the child. Pre-schoolers are more open than their parents and talk about punishments, since they are unaware of society's attitude toward this form of treatment. Teenagers, on the contrary, downplay punishment in

relation to their parents, who, in this case, are more accurate in their descriptions of punishment. A teenager already knows society's attitude toward punishment and protects his ego from reality.

It can be assumed that a child is influenced not by the system of punishment and encouragement that is used, but rather by the way that they interpret it. From this point of view, it is sufficient to study children's conceptions and not the system itself, which is inaccessible to investigation.

A child's self-esteem, as a central part of their ego, their system of self-conception, is formed under the influence of statements made by significant adults. It can therefore be supposed that self-esteem depends considerably on methods of punishment and encouragement. At a moment of either punishment or praise, a child reacts emotionally, and that reaction has an impact not only on these situations but on any problematical situations.

A child's emotional state is revealed by particularities in the working of the autonomic nervous system, which is indicated by variations in the heart rate (Myrtek, 2004). When they are undergoing an emotional experience, in some people heart rate may increase, while in others it may, on the contrary, decrease. This reflects, on the one hand, how the person assesses the situation and its consequences and, on the other hand, how emotional states are centrally regulated in that individual (Behrens, 2008). Both of these show the person's ability to adapt to a situation. It can be supposed that, when it comes to encouragement and punishment, certain combinations of methods will promote effective adaptation to the society, while others will not. In the literature, however, there is no data regarding the influence that a child's notions about how they are punished and encouraged have on their autonomic reactions and self-esteem. As such, we set out to further investigate this very question

We proceeded from the assumption that punishment and encouragement would manifest themselves in different ways in a child's self-esteem: while punishment would be directly reflected in their feeling of self-worth, encouragement would have an indirect effect on it, through their adaptive resources. This assumption is based on data showing that methods of punishment can alter a child's self-esteem (Greenwald, Banaji, Rudman & Farnham, 2002), but, at the same time, the level of cortisol, which reflects the level of stress, does not correlate with self-esteem (Scarpa & Luscher, 2002). There is also data that shows the role that encouragement plays in increasing a child's ability to handle stress (Salmivalli, 2001).

3. Research Questions

Our study sought to determine the influence of punishment and encouragement on the self-esteem and heart rate variability of children. Specifically:

- 1) Are punishment or encouragement related the development of self-esteem? If so, is that relationship direct or indirect?
- 2) Are punishment and encouragement related to a child's autonomic emotional response? If so, is that relationship direct or indirect?

4. Purpose of the Study

The aim of our research was to study the influence that methods of encouragement and punishment have on the self-esteem and heart rate variability of children between the ages of six and eight.

5. Research Methods

A total of 119 children between the ages of six and eight (43 boys and 76 girls) participated in the study; they came from the lower grades of primary schools in St. Petersburg. We received their parents' permission to examine the children, and only those children whose parents had consented took part in the research. At the conclusion of the study, we held a meeting with the parents, at which we shared the results (without analysing the data for specific children), as well as recommendations for the successful upbringing of a child.

To describe the children's self-esteem, we used the Dembo scale, adapted for Russian-language test subjects by Rubinstein.

To evaluate a child's notions about the methods of encouragement and punishment practiced in the family, we used the Sensitivity to Punishment and Encouragement Questionnaire (Children's Version). A distinct feature of this questionnaire is that it is aimed not only at revealing a family's methods of punishment and encouragement but also at obtaining a description of a participant's feelings during an instructional episode. The children's answers to each question were grouped together, and a number was attributed to each group, which made it possible to later apply a statistical analysis to this data (Nikolaeva & Merenkova, 2017).

To analyse the heart rate variability of a child, we did an electrocardiogram and recorded the results using the Omega-M diagnostic kit, which is designed to analyse electrocardiograms in a wide range of frequencies. We assessed the average duration of an RR interval, the standard deviation in the length of RR intervals, the range, and the autonomic balance coefficient (a quotient that comes from dividing the amplitude value by the range). We also assessed the high heart rate frequencies (HF, from 0.15 to 0.40 Hz.), the low frequencies (LF, from 0.04 to 0.15), and the LF/HF ratio. The LF figure reflects the activity of the sympathetic component of the parasympathetic nervous system, the HF figure, the parasympathetic component, and the LF/HF ratio shows the relative predominance of the sympathetic component in the functioning of the autonomic nervous system (Vergunov et al., 2018).

First we determined each child's self-esteem. Then, in a separate inquiry, we made two consecutive recordings of 300 RR intervals (a fixed number, making it possible to successfully evaluate the high and low frequency waves of the heart rate). The recording was done with the subject in a sitting position and with an electrode attached to each wrist. At the same time, we asked the child questions about punishment and encouragement in such a way that one recording of 300 RR intervals was accompanied by recollections of punishment, and the other, by recollections of encouragement. Moreover, half of the children were first questioned about encouragement, and then about punishment, and the other half were questioned in the opposite order. Since a child's heart beats rather quickly, the entire examination, beginning with the applying of the electrodes and including the recording of the answers, took 8-10 minutes. The children's answers were entered into a logbook. Analysis of the children's heart rate variability was carried out separately for punishment and encouragement.

As an additional assessment of the children's condition, the Luscher Test was used both at the beginning and at the end of the experiment. Only those results in which the condition did not substantially change were used for further analysis.

All of the material used in the experiment was processed using the SPSS computer program for statistical analysis, version 15.0 (dispersive and factorial analyses).

6. Findings

The children told us about the following forms of punishment that were used on them:

- Verbal punishment was by far the most prevalent (56 percent) – parents scold their children
- The next most prevalent form of punishment was deprivation of privileges – we assigned to this category parents not allowing their children to play computer games or to eat sweets, refusing to talk to the child – leaving them alone in their room – and forbidding them to engage in their favourite activity (play football, invite friends over, etc.)
- The third most prevalent form of punishment was isolation and resentment (about 4 percent) – parents get mad at their children

It is worth noting that most of the children refused to answer, saying that they had forgotten, didn't remember, etc. In such cases, the investigator did not insist on an answer but instead asked questions about how the child felt when something went wrong.

Analysing the forms of encouragement that the children mentioned, we identified the following types:

- Verbal encouragement – the parents praise the child, saying that they are great, are so smart, that they have behaved or done something well (60 percent)
- Allowing children to spend more time engaged in their favorite pursuit (playing football, going for a walk, watching television, etc.) (16 percent)
- Tactile encouragement – when parents hug their children, kiss them and smile at them, give them a friendly pat on the shoulder (13 percent)
- Material encouragement (2 percent)

Once again, there were children who refused to answer this question (7 percent) (“I don't remember”, “I don't know”, “I've forgotten”, etc.)

When we looked closely at the children's responses to questions about how they feel when they are being punished, we were able to single out the following types of response: half of the children said that they feel bad, that it is unpleasant, and 7 percent, that they are ashamed. Some of the first-graders feel rage (1 percent) or fear (2 percent), but there are some who say that they feel good (3 percent). At the same time, a sufficient number of children (31 percent) said that they do not feel anything at all or dodged the question altogether.

The situation with punishment in such families is so painful for the child that they prefer not to verbalize what transpires. For example, when a girl was asked, “What do you think your mother feels when she punishes you?”, she opened her eyes wide and said with assurance, “I mustn't think about that!”

We noted the following types of reaction to encouragement: 76 percent of the children said that it makes them feel good, that it gives them satisfaction. As in the instance of their recollections of punishment, however, when asked about how they feel when they are being encouraged, a fair number of children (23 percent) either did not answer or said that they had forgotten.

There are also children who said that they find it unpleasant when they are being praised. In the past, we described such children as having an inverse emotional response. Adapting to the reality of their own family, they have been compelled to invert their attitude toward what happens around them. We showed that such children either receive no encouragement at all, or, if they do, there is always an element of chastisement mixed in.

An analysis of the children's self-esteem showed typical results for the age group. A handful of them had low self-esteem, but most of the children's self-esteem was high.

On the chart entitled "Distribution of Boys and Girls According to Self-Esteem – Intellect Category", it can be seen that an overwhelming majority of the girls tend to rate their intellectual capabilities as very high (85 percent). A significantly lower percentage of the girls assess their intellect as average or low (7 percent and 8 percent, respectively). At the same time, the boys are much more critical of their intellectual capabilities, as the percentage ratio bears out: 58 percent evaluate their level of intelligence as high, 26 percent as average and 16 percent as low.

There is one fact that stands out: children who are punished physically and whose parents get mad at them have a high level of self-esteem. Children with the lowest level of self-esteem are those who are yelled at or those who refused to respond to our questions. It is entirely possible that what stands behind such reactions is the parents' behaviour, which is painful for the children to think about and which also explains their low level of self-esteem.

In children of this age, there are no particular differences in heart rate variability, as was demonstrated by the results of our research. After conducting a single-factor analysis of variance, we discovered that the independent variable "gender" had no influence on the dependent variables that characterize the spectral features of the heart rate.

Neither the "form of punishment" parameter nor the children's feelings connected with the system of punishment had an influence on heart rate variability. But the encouragement parameters, which were in no way reflected in the children's self-esteem, were found to have a significant effect on heart rate variability.

Consequently, it is the system of encouragement that is reflected in heart rate variability when both punishment and encouragement are recalled.

In early childhood, both parents and child hope for understanding when they are with each other, and so being together brings mutual joy (Nikolaeva & Merenkova, 2017). The mother thinks that the child will comply with all of her wishes, and the child expects that she will resolve all of its problems. But the process of forming the personality presupposes confrontation between the child and its surroundings, above all its immediate environment, i.e. the family. This gives rise to a change in the emotional rapport with the parents, which is determined by the emotional specifics of the microenvironment in which the child grows up. It is also shaped by how the society of which this microenvironment is a part defines personal freedom, whether it tolerates it or limits it, and what methods it proposes to bring the individual in line with the society's demands (Cole, 1996). It should be noted that none of the children who were questioned said that their parents spoke to them while physically punishing them.

While the young child forms their conception of the world the way that they perceive and remember it, later on, depending on the degree to which they assimilate humanity's experience, which is embedded in linguistic ties and constructions, they begin to perceive and remember their surroundings in the way that they imagine them (Nikolaeva, 2015). This presupposes that it is possible to study emotional situations that arise during the process of encouragement and punishment by looking at children's notions, by looking at how they interpret it, although there is no doubt that this process of interpretation distorts reality (Peace & Porter, 2004).

It is for this reason that we supposed that we were working not with a real picture of parents' behaviour during a situation involving punishment or encouragement, but with children's notions about that situation. What is more, a wealth of evidence indicates that it is children's notions and not the events themselves that exert an influence on children's personality.

It seems to us that methods of punishment have a significant influence on a child's self-esteem. The statistics confirm that parents usually yell at children and swear at them. It is possible, in this case, that they convey a general negative assessment of the child's personality, which results in the pronounced effect that methods of punishment have on the child. Moreover, shouting and swearing lower the child's self-esteem (possibly because at this moment parents cast a negative light on the child's personality as a whole instead of dealing with a particular act). Where there is physical punishment, we see the highest level of self-esteem. It can be supposed that this is a psychological defence mechanism, when a child exonerates themselves in their own eyes. Furthermore, when using physical punishment, parents speak less and give less of a critique of the child's personality.

It turns out that the feelings connected with the system of punishment used in a family have practically no effect on heart rate variability. What is more, the LF/HF parameter is critical in connection with only one of the factors of the factorial analysis. The encouragement parameters were shown to be closely linked to the parameters of heart rate variability, but were not reflected in the children's self-esteem. All of this data shows that perhaps it is the system of encouragement that coordinates a person's autonomic response in an emotional situation and that provides a child with a safety cushion when they find themselves in unpleasant situations. This is an extremely important conclusion, indicating that a child might develop psychosomatic illnesses if they feel that they do not receive enough encouragement.

Factorial analysis confirms this hypothesis. Self-esteem comes about as an image that a child has of themselves, which they become aware of both during reassuring situations when they receive encouragement and emotionally-charged situations when they are being punished; moreover, anything that is said during the latter lowers it. A child's feelings when they are being encouraged constitute a separate factor, whereas a child's feelings while they are being punished are of little account in the analysis. The predominance of sympathetic regulation during encouragement is also a separate factor. It can be assumed that, at this age, negative experiences are not acknowledged but rather are somatised and manifested through activation of the sympathetic component of the autonomic nervous system. All of the changes in the cardiac rhythm form one factor, which bears witness not so much to the situation itself but to its intensity.

Our findings are in accord with the hypothesis that the methods of punishment used within a family have an influence on a child's self-esteem during the period when it is formed (between the ages

of six and eight), while the methods of encouragement have an effect on the activation of an autonomic response in emotional situations of any sort.

7. Conclusion

1. The self-esteem of children between the ages of six and eight and the attendant features of emotional situations that they undergo are, to a significant degree, determined by the child's gender.

2. The system of punishment that is used within a family is the ultimate factor in predetermining the self-esteem of a child between the ages of six and eight.

3. The system of encouragement within a family is reflected in the predominance of the sympathetic component of the autonomic nervous system in any emotional situations.

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