

RELATIONSHIP BETWEEN CHILDREN'S SUCCESSFULNESS IN PRE-SWIMMING EDUCATION, THEIR TEMPERAMENT CHARACTERISTICS AND STIMULATION TO PHYSICAL ACTIVITIES

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The main aim of this inquiry was to review and evaluate possibilities of relations of preschool children's successfulness in a pre-swimming course to some outer and inner factors. We concentrated on a level of stimulation to physical activities from family and school and on temperament characteristics of monitored children. Our sample consisted of 83 children (non-swimmers) attending kindergartens. Complete results were obtained from 58 of them (30 girls and 28 boys). The mean age of the sample was 5.87 years. A degree of successfulness of a child in the pre-swimming education course, concentrated on teaching swimming fundamentals, was evaluated by a standardized 5 item set of tests (Řehoř, 1969). The sample was divided into three groups according to a total achieved test score as follows: U1 - very successful, U2 - successful, and U3 - unsuccessful. Temperament characteristics (temperament type and character dimensions) were assessed by the Eysenck questionnaire (Eysenck & Eysenck, 1994). The ESPA questionnaire (Renson & Vanreusel, 1990) was used to evaluate environmental stimulation to physical activities. A relationship between children's successfulness in pre-swimming education, their temperament type and character dimensions was evaluated by analysis of variance or the Kruskal-Wallis test, respectively. The Mann-Whitney test was used to evaluate associations between stimulation to physical activities and successfulness in the pre-swimming education course. When comparing stimulation to physical activities between groups with different levels of successfulness in pre-swimming education (between groups U1 and U3 or U2 and U3, respectively), a significant difference was found ($p < 0.01$) in one of the stimuli of social participation. A comparison between the U1, U2, and U3 groups confirmed a statistically significant difference in the dimension of extroversion between the U1 and U3 groups ($p < 0.01$) and also between the U1 and U2 groups ($p < 0.05$). The worst group in the tests of the swimming successfulness (U3) significantly differs from the U1 group also in the occurrence of temperament types ($p < 0.05$). Within the assessed sample, a statistically significant dependence was found between the successfulness of a child in the pre-swimming education and temperament type ($p < 0.05$).

Keywords: Preschool age, pre-swimming education, temperament, stimulation to physical activities.

INTRODUCTION

Teaching swimming fundamentals to preschool children serves many specific functions. In addition to the well-known positive health outcome, swimming also ensures motor stimulation and physical self-realization of a child, contributes to the development of physical abilities and enhances a child's knowledge about new physical skills performed in an atypical environment. It also helps develop basic hygienic routines, leads to the hardiness of a child's organism and contributes to the advancement of some positive psychological attributes (such as will, self-confidence, and overcoming uneasiness) through its requirements of the adaptability of the organism to the new environment, and is involved in the development of mental resistance. Also the enjoyment of movements in the aquatic environment plays an

important role (Hochová & Čechovská, 1989; Srdečný & Srdečná, 1990; etc.).

Despite the positives mentioned above, only some authors deal with factors of child's successfulness in pre-swimming education concentrated on teaching swimming fundamentals. That is why we target at least some of the factors in our partial inquiry: stimulation to physical activity from family members and temperament characteristics - dimensions of character and temperament type.

Stimulation to physical activity within the family

Family is the first social group from which a child receives plenty of integrating and differentiating processes. The more consistent and immediate emotional attitudes in a family, the stronger influence on the de-

velopment of a child's personality can be found when observing familial environments. Many experts agree that familial education is a determinant of an individual's way of life and management of leisure time in future (e. g. Snyder & Purdy, 1982; Kučera, 1990; Matějček & Dytrych, 1994; etc.). Families where parents pursue physical activities together with their children, are typical in their active attitudes to exploitation of leisure time. Relationships in such families are more proximate, typically with lots of mutual understanding, cooperation and confidence in the abilities of a child. These relationships consequently flow into the growing self-confidence of a child and favor a gradual development of his/her social adaptability. A parent as a role model presents a nonviolent stimulation; the child is challenged to mime the adult ("adult play"), which is found to be motivating for youngsters (Matějček & Langmeier, 1981; etc.).

When orientating interests to physical activities, it is not possible to rely on a natural child's longing for movement. It is necessary to stimulate this need actively in the family environment.

Results of foreign research focused on the tracking of relations between the sports engagement of parents and children confirmed positive relationships between sports activity of parents and their children. Studies of Greenhofer and Lewko (1978), Freedson and Everson (1991), Bartík (1995) and others registered the significant influence of parents on children's attitudes towards physical activities and also a certain conjunction with one of the parent's sex or education. Kučera (1990) talks about adequacy of physical activity in children, which is set by genetic predispositions, living conditions and environments, nutrition, history of early ontogenetic phases, the type of a child in relation to certain types of physical activity; etc.

Temperament characteristics and physical activity

The environment of a child's growth and educational impingement on him or her has often crucial influence upon the configuration of his or her personality (Brierley, 1996; Čáp, 1996; Matějček, 2003; Špaňhelová, 2004; etc.). The more frequent stimuli to learn miscellaneous physical activities and the more positive experience with these activities, the easier it is to learn to cope with the stress caused by an unknown environment (Klusová, 2006; Řehulková et al., 1995; etc.). When directing a child to physical activities, Bouchalová (1987) remarks not only on another possibility of the development of his or her psychomotor fund, but also the development of the social component of a child's personality. He or she acquires the ability to adopt a role in a group, so it can be facilitating for other social roles in an individual's future life.

Many authors (e. g. Godin & Shepard, 1986; Řehulková, Fraňková, & Osecká, 1995; Slepíčková, 2001; etc.)

have dealt with problems of relationships between physical activity and some aspects of human personality. In particular, e. g. Semiginovský (1988), Motyčka (1991), Zapletalová (2003) and others have dealt with attributes of temperament in relation to sports activity in children, youth and adults.

PROBLEM QUESTIONS

The main aim of this inquiry was to review and evaluate possibilities of relations of preschool children's successfulness in a pre-swimming course to some outer and inner factors. We concentrated on a level of stimulation to physical activities from family and on temperament characteristics of the monitored children.

Based on a literature review and our main aim, we determined these problem questions:

1. Will any relationship be found between factors of stimulation to physical activities and children's successfulness in pre-swimming education?
2. Will children with different successfulness in pre-swimming education differ also in dimensions of their character?
3. Will any relationship be found between successfulness in pre-swimming education and temperament type?

METHODS

The sample consisted of 83 children (non-swimmers) attending kindergartens. Complete results were obtained from 58 of them (30 girls and 28 boys). The mean age of the sample was 5.87 years.

The degree of successfulness of a child in a pre-swimming education course, concentrated on teaching swimming fundamentals, was evaluated by a standardized 5 item set of tests (Řehoř, 1969). This set consists of five partial tests: T1 - repeated expirations to water, T2 - streamlining on one's back, T3 - streamlining on the abdomen, T4 - jumping into the water, T5 - immersion under the surface. The evaluation of the test scores was executed by three independent qualified raters who used a 4 point ordinal scale (1 point = the best, 4 points = the worst). The quality of their ratings was evaluated via a concordance rate between their measures by Wilcoxon ordinal test (Kovář & Blahuš, 1989). The tests were realized in the first, third, fifth, seventh, and ninth lesson, always close to its end. The children were challenged to do the item demonstrated by their teacher. If the children were not able to do the item even with help, they were neither forced nor reasoned with to do so. In the case of the thirty-percent or greater absence of a child, his or her results were not included into our analyses, although he or she also took part in these tests for pedagogical

and psychological reasons. The sample was divided into three groups according to the total achieved test score as follows: U1 group (very successful) – achieved mean 1.00–1.99 points, U2 group (successful) – achieved mean 2.00–2.99 points, and the U3 group (unsuccessful) – achieved mean 3.00–3.99 points.

For the investigating of temperament characteristics (dimensions of character and temperament type), the Eysenck questionnaire B – J. E. P. I. (1994) was used. Score frequencies of the P dimension (psychoticism), the N dimension (neuroticism), and the E dimension (extraversion – introversion) of the sample as well as the score frequency of the monitored dimensions and temperament types in groups divided according to their successfulness in pre-swimming education was evaluated in percentages. We used values from the questionnaire also for a determination of the complementary temperament typology of the children (phlegmatic, sanguine, choleric, and melancholic). The results were processed according to Vilimová's method (1993). Pearson's coefficient of rank correlation was used to point out the possible interdependence of single dimensions and the successfulness of children in pre-swimming education. Assumed differences in the dimensions between groups with different successfulness in pre-swimming education were evaluated by the Mann-Whitney test. A relationship between the successfulness of children in pre-swimming education and temperament type was also evaluated by the analysis of variance or the Kruskal-Wallis test.

For the evaluation of environmental stimulation to physical activities, we used the English version of the "Environmental stimulus for physical activity" questionnaire by Renson and Vanreusel (1990). This questionnaire assesses the material, spatial and social stimulation of a child to physical activities as pursued by family and school. The authors have confirmed in their previous research that the level of physical fitness and its main components in youth differs according to the cultural and social situation of the examined persons (Renson, 1980). The questionnaire registers the following aspects to investigate differences between the stimulation levels to physical activities:

- Place and opportunities for informal physical activities and also more formal participation in sports activities in the family.
- Place and opportunities for informal physical activities and also more formal participation in sports activities in school.

A resultant score of 47 points or less means a very low level of stimulation, 48–60 points means a low level of stimulation, 61–73 points means a lower average, 74–86 points means a higher average, 87–99 points means a high level, and more than 99 points means a very high level of stimulation to physical activities. When assessing results of the ESPA questionnaire, U1,

U2, and U3 groups were evaluated by a frequency rate of incidence. An evaluation of the statistical significance of differences in results obtained by the ESPA questionnaire between the groups of children divided according to their successfulness in the pre-swimming education was pursued by the Mann-Whitney test.

RESULTS AND DISCUSSION

Successfulness in pre-swimming education and stimulation to physical activities

It is possible to note that 50 percent of children achieving high successfulness in the course of pre-swimming education (group U1) are stimulated to physical activities on an above average level (score 74 to 86). Children from the U2 and U3 groups scored less in this category (40 percent) and, on the contrary, they scored better in the group achieving a lower average level (TABLE 1).

When comparing the stimulation to physical activities between the groups with different successfulness in pre-swimming education (between the groups U1 and U3 or U2 and U3, respectively), a significant difference was found ($p < 0.01$) in some stimuli of social participation, particularly in the factor "participation in children's and sports organizations" (TABLE 2). Of the studied children, 90% in the U3 group, 40% in the U2 group, and 32.14% in the most successful U1 group, respectively, are not members of any association or organization. No children's camp, neither sports and non-sports oriented, was ever attended by 70% of the children in the U3 group (55% in the U2 group and 39.29% in the U1). These results are similar to the findings of some authors (e.g. Bouchalová, 1987; Řehulková et al., 1995; Klusová, 2006 etc.), that the participation of a child in sports or other organizations or associations probably affects a child's personality in the sense of enhancing his or her self-reliance and adaptability to various (including unpleasant) environments. A child must be able to be absent from his or her family members for some time and should be active and self-confident even without their support. Strengthening of these abilities allows a young non-swimmer to cope with the "weirdness" of movements in an aquatic environment more quickly and easily. This should be manifested by more successful managing of swimming fundamentals as a whole.

Successfulness in pre-swimming education and temperament characteristics

In the P and N dimensions, a majority of the participants were placed in the category score frequencies of 0–10 points in all the three groups: U1 – P dimension 96.43% and N dimension 96.42%, U2 – P dimension

100.00% and N dimension 100.00%, U3 – P dimension 100.00% and N dimension 100.00%. Different results can be observed in the E dimension: 60.71% of the participants from the U1 group, but only 50.00% participants from the U2 and U3 scored in the category of 15 or more points. On the other hand, only 17.85% of participants from the U1 group scored in the 0 to 10 points category, while the matching score in the U2 and U3 groups was 50%. A mutual comparison between all the three groups confirmed a statistically significant difference between the U1 and U3 groups ($p < 0.01$) and also between the U1 and U2 groups ($p < 0.05$) in the E dimension (TABLE 3).

When considering the frequency of occurrence of the temperament types, there is a much lower number of sanguine children (71.43%) in the U1 group than in the U2 (50%) or U3 (30%). On the other hand, there is lower share of phlegmatic children in the most suc-

cessful group (14.29%), compared to U2 (50%) and U3 (70%), (TABLE 4). A statistically significant difference was found between the U1 and U2 groups ($p < 0.05$) and the U1 and U3 groups ($p < 0.01$), respectively, in the phlegmatic type. A statistically significant difference was confirmed between the U1 and U3 groups ($p < 0.05$) in the sanguine type (TABLE 5). The worst group in the tests of swimming successfulness (U3) significantly differs from the U1 group also in the occurrence of the temperament types ($p < 0.05$). These results correspond to findings of relationships between temperament characteristics in some other inquiries dealing with similar problems (e. g. Vilimová, 1993; Řehulková, Fraňková, & Osecká, 1995; Suchomel, 2002; Zapletalová, 2003; etc.). In this sample, a statistically significant dependence between the successfulness of a child in pre-swimming education and temperament type was confirmed ($p < 0.05$) (TABLE 6).

TABLE 1

Score frequency points of stimulation for physical activities between groups with different successfulness in pre-swimming education U1, U2 and U3

Group U1 n = 28						
Category	Frequency	Cumul. %	%	Category	Frequency	Cumul. %
47	0	.00	.00	86	14	50.00
60	0	.00	.00	73	13	96.43
73	13	46.43	46.43	99	1	100.00
86	14	96.43	50.0	47	0	100.00
99	1	100.00	3.6	60	0	100.00
Others	0	100.00	0.0	Others	0	100.00
Group U2 n = 20						
Category	Frequency	Cumul. %	%	Category	Frequency	Cumul. %
47	0	.00	.00	73	11	55.00
60	1	5.00	5.00	86	8	95.00
73	11	60.00	55.00	60	1	100.00
86	8	100.00	40.00	47	0	100.00
99	0	100.00	0.00	99	0	100.00
Others	0	100.00	0.00	Others	0	100.00
Group U3 n = 10						
Category	Frequency	Cumul. %	%	Category	Frequency	Cumul. %
47	0	.00	.00	73	6	60.00
60	0	.00	.00	86	4	100.00
73	6	60.00	60.00	47	0	100.00
86	4	100.00	40.0	60	0	100.00
99	0	100.00	0.0	99	0	100.00
Others	0	100.00	0.0	Others	0	100.00

Legend:

Category	max. points of the questionnaire ESPA
Frequency	number of children in the category
Cumulative %	cumulative frequency %
%	% number of children in the group

TABLE 2

Significant influences in stimuli to physical activities between groups with different successfulness in pre-swimming education U1, U2 and U3

Groups	U1-U2	Sign.	U2-U3	Sign.	U1-U3	Sign.
MATERSk	-1.0075		1.6009		1.2461	
	0.3136		0.10938		0.2127	
MATERRod	-1.9364		1.1813		-0.3874	
	0.0528		0.2374		0.6984	
KDESk	1.0343		1.0796		1.7436	
	0.3009		0.2802		0.0812	
KDERod	0.7591		-0.8631		-0.4178	
	0.4477		0.3880		0.6760	
CESTA	-1.2948		1.0099		0.1163	
	0.1953		0.3125		0.9073	
KAMAR	0.1936		-2.6549		-3.0672	
	0.8464		0.0079	XX	0.0021	XX
TABOR	-1.1288		-0.8207		-1.7373	
	0.2589		0.4117		0.0823	

Legend:

Sign.	statistically significant difference
MATERSk	material play stimulus at school
MATERRod	material play stimulus in the family
KDESk	spatial play stimulus at school
KDERod	spatial play stimulus in the family
CESTA	transportation stimulus
KAMAR	social participation stimulus (organizational context of sport involvement)
TABOR	participation (in camps)
XX	statistically significant difference between groups ($p < 0.01$)

TABLE 3

Significant influences in dimension P (psychoticism), the N dimension (neuroticism), and the E dimension (extraversion-introversion) between groups U1, U2 and U3

Dim.	U1-U2	Sign.	U2-U3	Sign.	U1-U3	Sign.
P	-0.6234		0.6314		0.1356	
	0.5305		0.5277		0.8921	
E	-1.9732		-1.127		-2.6424	
	0.0484	X	0.2597		0.0082	XX
A	0.6266		0.5145		0.9038	
	0.5308		0.6068		0.3660	

Legend:

Dim.	dimension
Sign.	statistically significant difference
X	statistically significant difference $p < 0.05$
XX	statistically significant difference $p < 0.01$

TABLE 4

Score frequency of temperament types in groups U1, U2, and U3

TU1						
Category	Frequency	Cumul. %	%	Frequency	Cumul. %	%
1	4	14.29	14.29	2	20	71.43
2	20	85.71	71.43	1	4	85.71
3	0	85.71	.00	4	1	89.29
4	1	89.29	3.57	5	1	92.86
5	1	92.86	3.57	6	1	96.43
6	1	96.43	3.57	7	1	100.00
7	1	100.00	3.57	3	0	100.00
Others	0	100.00	.00	Others	0	100.00
TU2						
Category	Frequency	Cumul. %	%	Frequency	Cumul. %	%
1	10	50.00	50.00	1	10	50.00
2	10	100.00	50.00	2	10	100.00
3	0	100.00	.00	3	0	100.00
4	0	100.00	.00	4	0	100.00
5	0	100.00	.00	5	0	100.00
6	0	100.00	.00	6	0	100.00
7	0	100.00	.00	7	0	100.00
Others	0	100.00	.00	Others	0	100.00
TU3						
Category	Frequency	Cumul. %	%	Frequency	Cumul. %	%
1	7	70.00	70.00	1	7	70.00
2	3	100.00	30.00	2	3	100.00
3	0	100.00	.00	3	0	100.00
4	0	100.00	.00	4	0	100.00
5	0	100.00	.00	5	0	100.00
6	0	100.00	.00	6	0	100.00
7	0	100.00	.00	7	0	100.00
Others	0	100.00	.00	Others	0	100.00

Legend:

TU1 temperament types in the group U1

TU2 temperament types in the group U2

TU3 temperament types in the group U3

1 phlegmatic type

2 sanguine

3 choleric

4 melancholic

5 line phlegmatic-sanguine

6 line sanguine-choleric

7 crossing centre extraversion-introversion

n = 58

TABLE 5

Statistically significant differences in temperament types between groups with different successfulness in pre-swimming education U1, U2 and U3

TYPE	U1-U2	Sign.	U2-U3	Sign.	U1-U3	Sign.
1	-2.6838	X	-1.0421		-3.3347	XX
2	1.5119		1.0421		2.3007	X
3						
4	0.8541				0.6056	
5	0.8541				0.6056	
6	0.8541				0.6056	
7	0.8541				0.6056	
Others						

Legend:

Sign. statistically significant difference

X $p < 0.05$

XX $p < 0.01$

TYPE temperament types

1 phlegmatic type

2 sanguine

3 choleric

4 melancholic

5 line phlegmatic-sanguine

6 line sanguine-choleric

7 crossing centre extraversion-introversion

n = 58

TABLE 6

Relationship between childrens' successfulness in pre-swimming education and temperament type and dimension of character, n = 58

Dim.	Pears	Sign.
P	-0.0445	
E	-0.4492	
A	0.2005	
TYPE	7.5999	
(ANOVA)	0.0139	X
TYPE	13.9331	
(Krus-Wal)	0.0160	X

Legend:

Sign. statistically significant difference

Dim. dimension

P dimension P (psychoticism)

E dimension E (extraversion-introversion)

N dimension N (neuroticism)

Pears Pearson's coefficient

TYPE (ANOVA) relationship between childrens' successfulness in pre-swimming education and temperament type as evaluated by analysis of variance

TYPE (Krus-Wal) relationship between of children's success in pre-swimming education and temperament type as evaluated by the Kruskal-Walis test

CONCLUSIONS

1. Within the examined sample, the stimulation of a child to physical activities by family members influences only partially successfulness in pre-swimming education. The significant difference ($p < 0.01$) between the groups U1 and U3 in one stimulus of social participation (area of a child's participation in sports or children's organizations) refers to the possible affecting of a child's personality in the point of enhancing of his or her self-reliance and adaptability to various environments.
2. Statistically significant differences were confirmed when comparing the E dimension in all three groups of children mutually. It was also gathered that the majority of children scoring highly in the N dimension (neuroticism) were positioned in the lowest successful group. These children probably need a slower tempo and an individual adaptation of methods, in agreement with theoretical knowledge in this field. Within the examined sample, more extrovert children had a higher degree of successfulness in pre-swimming education.
3. The highest incidence of sanguine type (71.43%) and the lowest share of phlegmatic type (14.29%) was found in the U1 group, while the phlegmatic type predominates in the least successful group in pre-swimming education, when evaluating the frequency of incidence of the temperament types in each of the three groups. A statistically significant dependence was also found between the successfulness of a child in pre-swimming education and the temperament type ($p < 0.05$).

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**VZTAH MEZI ÚSPĚŠNOSTÍ DĚTÍ
V PŘEDPLAVECKÉ VÝCHOVĚ,
JEJICH TEMPERAMENTOVÝMI
CHARAKTERISTIKAMI A STIMULACÍ
K POHYBOVÝM AKTIVITÁM**
(Souhrn anglického textu)

Cílem studie bylo posoudit a zhodnotit možnost ovlivnění úspěšnosti dětí předškolního věku v kurzu předplavecké výchovy některými vnějšími a vnitřními faktory. Zaměřili jsme se na úroveň environmentální stimulace k pohybovým aktivitám ze strany rodiny a školy a na rysy temperamentu sledovaných dětí. Do výzkumného souboru bylo zahrnuto 83 dětí – neplavců z mateřských škol, úplné výsledky se podařilo získat u 58 dětí (30 dívek a 28 chlapců). Průměrný věk sledovaného souboru byl 5.87 roku. Míra úspěšnosti dítěte v kurzu

předplavecké výchovy, zaměřeném na výuku základních plaveckých dovedností, byla hodnocena pomocí standardizované pětisložkové testové baterie (Řehoř, 1969). Na základě výsledků byly děti zařazeny do tří skupin: U1 – velmi úspěšní, U2 – úspěšní, U3 – neúspěšní. Rysy temperamentu byly zjištěny prostřednictvím Eysenckova dotazníku (Müllner & Senka, 1987). Pro posouzení environmentální stimulace k pohybovým aktivitám jsme užívali dotazníku ESPA (Renson & Vanreusel, 1990; Miklánková, 2005). Hodnocení souvislosti mezi stimulací k pohybovým aktivitám a úspěšností dětí v kurzu předplavecké výchovy bylo provedeno Mann-Whitney testem. Vztah mezi úspěšností probandů v předplavecké výchově a jejich typem temperamentu byl hodnocen analýzou variance, případně metodou Kruskal-Walis. Při porovnání stimulace k pohybovým aktivitám mezi skupinami s rozdílnou úspěšností v předplavecké výchově (mezi skupinami U1 a U2, U2 a U3) byl nalezen signifikantní rozdíl ($p < 0.01$) u jednoho ze stimulů sociální participace. Srovnání mezi skupinami U1, U2 a U3 potvrdilo statisticky významný rozdíl v dimenzi extravertze mezi skupinou U1 a U3 ($p < 0.01$) a mezi skupinou U1 a U2 ($p < 0.05$). Skupina U3, která dosáhla v testech plavecké úspěšnosti nejhorších výsledků, se signifikantně odlišuje od skupiny U1 také v typu temperamentu ($p < 0.05$). U sledovaného souboru byla prokázána statisticky významná závislost mezi úspěšností dítěte v předplavecké výchově a typem temperamentu ($p < 0.05$).

Klíčová slova: předškolní věk, předplavecká výchova, temperament, stimulace k pohybovým aktivitám.

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