THE SECOND VERSION OF THE MOVEMENT ASSESSMENT BATTERY FOR CHILDREN: A COMPARATIVE STUDY IN 7–10 YEAR OLD CHILDREN FROM THE CZECH REPUBLIC AND THE UNITED KINGDOM

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BACKGROUND: The Movement Assessment Battery for Children (MABC) is one of the most frequently used instruments for motor assessment in children. The norms for motor performance in the tests of the revised second version of the battery (MABC-2) were established from the study with the representative sample of the United Kingdom (UK) population of children. Assessment of motor function development derived from results of the motor tests in children can be affected by some social and cultural factors.

OBJECTIVE: The aim of the study was to evaluate the suitability of the original norms of the MABC-2 for use in the Czech Republic.

METHODS: The results of the MABC-2 in the representative sample of Czech children aged 7–10 years (n = 487) were compared to test performance of the UK normative sample of children (n = 333) published in the MABC-2 Examiner's Manual using the Cohen's effect size and the z-test.

RESULTS: Non-significant differences were found in gross motor coordination performance between Czech and UK samples. The Czech girls achieved significantly higher scores in the manual dexterity as compared to the UK sample. Most age groups of the Czech sample showed a significantly higher performance in the balance tests of the MABC-2 than the UK sample.

CONCLUSIONS: The study suggested that the original norms of the MABC-2 can be valid for motor assessment only in the 7–8 year old Czech boys. Some adjustments of the UK norms for the manual dexterity and balance tests are needed to use this test battery in clinical, psychological and educational practice in the Czech Republic.

Keywords: Motor development, gross motor coordination, manual dexterity, balance, test, gender.

BACKGROUND

Motor assessment of children is carried out by pediatricians, physiotherapists, psychologists, educators, and researchers. The Movement Assessment Battery for Children (MABC) (Henderson & Sugden, 1992) has been recognized as one of the most frequently used, comprehensive and valid instruments for assessment of a child's motor proficiency including identification of motor impairments (Yoon, Scott, Hill, Levitt, & Lambert, 2006). On the basis of larger changes of the content and structure of the 1st older version of the MABC, a revised 2nd version of this test battery – the Movement Assessment Battery for Children-2 (MABC-2) was created (Henderson, Sugden, & Barnett, 2007).

The MABC-2 is intended for assessment of total motor function and identification of developmental coordination disorder (DCD) in children from 3 to 16 years of age by evaluating three motor components – fine motor coordination (manual dexterity), gross motor coordination, specifically aiming and catching, and balance.

In the study we addressed the problem of the suitability of the original United Kingdom norms of the MABC-2 tests for use in Czech population of 7–10 years old children. The various aspects of validity of the MABC-2 were argued by the authors of the battery (Henderson et al., 2007) on the other hand the lack of evidence on validity of the MABC-2 was reported (Brown & Lalor, 2009). However, the major problem for use of this battery in a different cultural environment is its cross-cultural validity. The performance norms of the MABC-2 were established from the results of a major study carried out with a representative sample of the United Kingdom (UK) population of children (Henderson et al., 2007). Performance in the motor tasks may be affected by the experience of a child with physical and movement activities. This experience may be partly influenced by cultural factors such as cultural habits and traditions, living conditions and economic background. Therefore in order to use

the MABC-2 for assessment of motor development in the population of children in different countries, the cross-cultural validity of the tool needs to be examined.

The studies on cross-cultural comparison of the first version of MABC was realized in some European countries (Ellinoudis, Kourtessis, & Kiparissis, 2008; Ruiz, Graupera, Gutiérrez, & Miyahara, 2003; Rösblad & Gard, 1998; Smits-Engelsman, Henderson, & Michels, 1998) showed the suitability of this test battery for assessment of child motor development across a variety of countries. However, these studies also suggested the possible impact of socio-cultural factors on the validity of the original norms of this battery. Therefore the aim of the study was to evaluate suitability of the MABC-2 norms for use in the Czech Republic on the basis of the comparison of the performance in the motor tests between Czech and UK children.

METHODS

Research design

The cross-cultural comparison of the MABC-2 (TABLE 1) was based on evaluation of the difference in motor performance in the Czech sample of 7–10 year old children (n = 487) and mean motor performance in the UK normative sample (n = 333) presented in the MABC-2 Examiner's manual by Henderson et al. (2007). This UK mean performance is presented by the standard score of 10 with a standard deviation of 3. We supposed that if the original norms of MABC-2 are suitable for use in the Czech Republic, the central tendency and variation of performance in the motor tests in the representative sample of Czech children should not be significantly different from these characteristics of the UK normative sample.

Participants

The Czech sample of 7–10 year old children (n = 487) was formed on the basis of a random selection of 17 primary schools from all the geographical regions of the Czech Republic. This sample involved 251 boys and 236 girls in the four age groups – 7, 8, 9 and 10 years old subjects, n = 15, 66, 73, and 97 of boys and n = 35, 58, 62, and 81 of girls. The location of the schools was also considered so that the number of children from the particular size types of municipality was balanced. The number of 85 boys and 85 girls respectively, lived in large-sized municipalities (> 90,000 inhabitants), 92 boys and 84 girls in medium-sized municipalities (5,000–90,000 inhabitants), and 74 boys and 67 girls in small-sized municipalities (< 5,000 inhabitants). The categories of municipalities were stated according to the methodology of the Czech Statistical Office.

All the schools selected provided education according to the Framework Educational Programme for Elementary Education established by the Czech Ministry of Education. Children with physical and other neurological disabilities were excluded.

Procedures

Before testing of the Czech sample by the MABC-2, pilot verification of tests in 7–10 year old children (n = 25) was completed. On the basis of the verification, the formulation of verbal instructions to children was specified.

Ten trained examiners (master or Ph.D. graduated individuals in the field of physical education, kinesiology or adapted physical education) collected data. Before testing, all the examiners had been trained in the use of the MABC-2 in two theoretical lessons and three practical lessons. During the last lesson, examiners' competence in administration of the tests and re-

TABLE 1
Content of the MABC-2 for 7–10 year old children

Tests within the particular motor components	Label for the tests
Fine motor coordination (manual dexterity)	
Placing pegs (time – seconds; averaged over hands)	MD 1
Threading lace (time – seconds)	MD 2
Drawing trail (number of errors)	MD 3
Gross motor coordination (aiming & catching)	
Catching with two hands (number of catches)	AC 1
Throwing beanbag onto mat (number of hits)	AC 2
Balance (static & dynamic)	
One-board balance (time – seconds; averaged over legs)	Bal. 1
Walking heel-to-toe forwards (number of steps)	Bal. 2
Hopping on mats (number of jumps)	Bal. 3

cording data was checked by a person qualified for use of the MABC-2.

The children were tested in school settings during the morning hours. The children of each class performed the individual tests by circulating from one station to another in random order.

This study had been approved by the institutional review board of the university before submitting it to the Czech Science Foundation for grant support. Approval of the research by the Scientific Panel for Psychology and Pedagogy of the Czech Science Foundation followed. The study was conducted in accordance with the Declaration of Helsinki. The motor assessment was completed in the schools after receiving the informed consent of parents of the children and the school principals.

Scoring of the MABC-2

Scoring of performance was completed according to the MABC-2 Examiner's manual (Henderson et al., 2007):

a) Age adjusted item standard scores were determined by conversion of the raw scores achieved in each motor test.
b) The component score for each of the three motor components was determined by conversion of the sum of the standard scores of the relevant tests to the component standard score, and its percentile equivalent.
c) The total test score (TTS) as a definite indicator of the level of motor function was calculated as a sum of the standard scores achieved in all eight tests. Then the TTS was converted to the total test standard score and its percentile equivalent.

All the above mentioned conversions of scores to the standard scores are based on a distribution of the values onto a 19 point scale with a mean of 10 and a standard deviation of 3. The conversions to the standard scaled scores were constructed on the basis of normalising the distribution of raw scores of each test for each age group achieved in the UK normative sample (Henderson et al., 2007).

Data analysis

A comparison of the test performance between the Czech and UK samples was based on testing of the practical and statistical significance of the difference of the mean standard score equivalent of performance in each test, each component and TTS for each age and gender group of the Czech sample and the UK normative mean of standard score of 10.

To evaluate the practical significance of difference, Cohen's effect size coefficient d with a pooled SD was used. The value $d < .50$ was interpreted as a small effect of a factor, which causes a difference, $d = .50–.80$ as a medium effect, and $d > .80$ as a large effect (Cohen, 1988). If the finding $d \geq .50$ occured, a test of the statistical significance of the difference of sample means using the two tailed z-test ($p > 0.05$) followed. Thus, the principle of meaningfulness of testing statistical significance only after judging a difference as practically significant was used (APA, 2000). The difference was considered significant if the practical difference $d \geq .50$ was confirmed to be statistically significant. Determination of the bottom limit of the coefficient $d = .50$ for following use of the statistical significance proceeded from two issues:

1. from the clinical meaning of medium and large effect size $d = .50–.80$ and $d > .80$, respectively (Cohen, 1988);
2. from the correspondence of $d = .50$ to the 69th percentile (above or under a level of two third of all subjects) in the meaning that the average person in the experimental group would score higher or lower than 69% of a control group (Coe, 2002). For statistical analysis we used Statistica 9 statistical software (StatSoft, Inc., Tulsa, OK, USA).

RESULTS

Of the three manual dexterity tests, mean performance in the Drawing trail test (MD3) was only shown to be significantly higher ($p < 0.05$) in the Czech sample in comparison to the UK mean performance, with the exception of 9 year old children of both genders and 10 year old boys (TABLE 2, TABLE 3). The component score for manual dexterity was higher with statistical significance in Czech 7, 8 and 10 year old girls when compared to the UK mean performance (Fig. 1).

Neither the mean standard scores in the aiming and catching tests (AC 1, AC 2) nor the mean component score for gross motor coordination achieved in the Czech sample were significantly different ($p < 0.05$) across the age and gender groups in comparison to the UK mean performance (TABLE 2, TABLE 3, Fig. 2).

In most age groups of Czech children significantly higher mean standard scores in the balance tests were found in comparison to the UK mean performance ($p < 0.05$) (TABLE 2, TABLE 3). These differences were reflected in the significantly higher component score for balance in all age groups of girls, and 9 and 10 year old boys ($p < 0.05$) (Fig. 3). In comparison to the UK mean TTS, the mean standard score for TTS was significantly higher ($p < 0.05$) in all age groups of Czech girls, and 9 and 10 year old boys (Fig. 4).

DISCUSSION

Performance in the manual dexterity component in MABC-2 was significantly higher ($p < 0.05$) in the 7–8 and 10 year old Czech girls in comparison to the means of the UK sample but not in the boys. The tendency of the girls to demonstrate a higher level of manual dexterity than the boys was reported in the previous studies using the first version of the MABC (Ruiz et al., 2003; Miyahara et al., 1998). This tendency, although in a small range, was observed in the Czech 7 and 8 year old children only when a medium size of gender effect ($d = 0.52$ and $d = 0.57$) on the manual dexterity score was found.

The significantly higher manual dexterity score in the Czech 7, 8 and 10 year old girls was accounted for by significantly higher performance in the Drawing trail test only because performance in the Placing pegs test and Threading lace test were not significantly different from the UK means. Both the Czech girls and boys performed the Drawing trail test perfectly – 91% girls and 87% boys did with the raw score "0 error". The difference of the performance "no error" and "one error" presents a large difference when converted to the standard score according to UK normative distribution – the difference of standard scores 12 and 10, 12 and 6, and 11 and 6 in the 7, 8 and 9–10 year old children, respectively. Therefore it seems that the task

TABLE 2
Results of the MABC-2 in the 7–8 year old Czech children; significance of differences as compared to the UK normative mean of standard score of 10

Test	Raw score (M ± SD)	Standard score	*d*	z-value (z-test)	Raw score	Standard score	*d*	z-value (z-test)
	7 year old boys				**7 year old girls**			
MD 1 – preferred hand (s)	31.5 ± 3.8				30.8 ± 4.5			
MD 1 – non-preferred hand (s)	36.4 ± 5.0	9.7 ± 2.0[1]	0.15		34.7 ± 4.5	10.3 ± 2.0[1]	0.15	
MD 2 (s)	32.7 ± 7.3	8.9 ± 2.9	0.38		29.6 ± 6.1	10.0 ± 3.0	0	
MD 3 (number of errors)	0.2 ± 0.5	11.3 ± 1.8	0.72[b]	2.870*	0.1 ± 0.4	11.7 ± 0.9	1.89[a]	11.794*
AC 1 (number of catches)	5.7 ± 2.6	9.8 ± 3.0	0.07		4.9 ± 3.0	9.2 ± 3.1	0.26	
AC 2 (number of hits)	6.1 ± 1.7	9.7 ± 2.4	0.13		6.2 ± 1.9	10.0 ± 2.8	0	
Bal. 1 – best leg (s)	20.5 ± 9.8				22.9 ± 9.0			
Bal. 1 – other leg (s)	20.5 ± 9.9	12.1 ± 3.0[2]	0.70[b]	2.658*	18.9 ± 8.9	12.5 ± 2.4[2]	1.04[a]	5.983*
Bal. 2 (number of steps)	14.2 ± 1.9	10.8 ± 2.6	0.31		14.9 ± 5.0	11.8 ± 1.0	1.80[a]	10.667*
Bal. 3 – best leg (number of jumps)	4.4 ± 1.3				4.8 ± 0.7			
Bal. 3 – other leg (number of jumps)	3.9 ± 1.8	9.9 ± 3.4[2]	0.03		4.5 ± 1.1	10.9 ± 2.3[2]	0.39	
	8 year old boys				**8 year old girls**			
MD 1 – preferred hand (s)	29.4 ± 4.1				27.3 ± 3.7			
MD 1 – non-preferred hand (s)	31.5 ± 5.8	8.9 ± 2.4[1]	0.46		30.9 ± 4.6	9.9 ± 4.7[1]	0.02	
MD 2 (s)	27.8 ± 4.9	9.3 ± 2.5	0.28		25.5 ± 5.2	10.4 ± 2.5	0.16	
MD 3 (number of errors)	0.2 ± 0.5	11.1 ± 2.2	0.50[b]	4.202*	0.2 ± 0.5	11.3 ± 2.0	0.65[b]	5.025*
AC 1 (number of catches)	7.1 ± 2.4	9.8 ± 3.2	0.06		6.6 ± 2.6	9.3 ± 3.0	0.23	
AC 2 (number of hits)	6.8 ± 2.0	9.9 ± 3.5	0.03		6.2 ± 1.7	8.7 ± 3.1	0.42	
Bal. 1 – best leg (s)	20.5 ± 9.8				22.9 ± 9.0			
Bal. 1 – other leg (s)	20.5 ± 9.9	11.3 ± 2.4[2]	0.54[b]	4.487*	18.9 ± 8.9	12.3 ± 2.1[2]	1.10[a]	8.567*
Bal. 2 (number of steps)	14.2 ± 1.9	10.0 ± 2.6	0		14.9 ± 5.0	10.5 ± 1.8	0.27	
Bal. 3 – best leg (number of jumps)	4.4 ± 1.3				4.8 ± 0.7			
Bal. 3 – other leg (number of jumps)	3.9 ± 1.8	11.0 ± 2.3[2]	0.43		4.5 ± 1.1	11.6 ± 1.3[2]	1.23[a]	9.734*

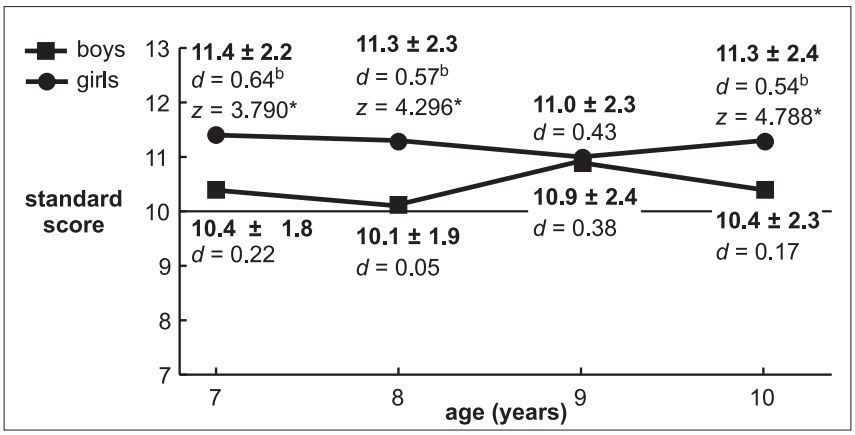
Legend: M – mean, SD – standard deviation, *d* – Cohen's effect size coefficient, [1] – the standard score determined as the mean of two standard scores for performance done with preferred and non-preferred hand, [2] – the standard score determined as the mean of two standard scores for performance done with right and left leg, [a] – large effect size, [b] – medium effect size, * $p < 0.05$

TABLE 3
Results of the MABC-2 in the 9–10 year old Czech children; significance of differences as compared to the UK normative mean of standard score of 10

Test	Raw score (M ± SD)	Standard score	*d*	z-value (z-test)	Raw score	Standard score	*d*	z-value (z-test)
	9 year old boys				**9 year old girls**			
MD 1 – preferred hand (s)	26.2 ± 3.5				26.5 ± 3.6			
MD 1 – non-preferred hand (s)	29.7 ± 3.5	10.1 ± 2.3[1]	0.04		29.7 ± 4.1	10.0 ± 2.3[1]	0	
MD 2 (s)	22.8 ± 4.3	10.5 ± 2.6	0.19		22.3 ± 3.6	10.8 ± 2.3	0.35	
MD 3 (number of errors)	0.2 ± 0.7	10.3 ± 2.0	0.15		0.1 ± 0.4	10.4 ± 1.9	0.21	
AC 1 (number of catches)	6.9 ± 3.0	11.1 ± 2.7	0.41		5.7 ± 3.1	9.9 ± 2.5	0.04	
AC 2 (number of hits)	7.1 ± 2.3	9.8 ± 3.3	0.06		6.5 ± 2.1	8.9 ± 3.0	0.37	
Bal. 1 – best leg (s)	24.1 ± 9.2				26.2 ± 6.8			
Bal. 1 – other leg (s)	20.6 ± 9.7	11.3 ± 2.5[2]	0.52[b]	4.316*	24.7 ± 8.7	11.9 ± 1.7[2]	1.12[a]	8.551*
Bal. 2 (number of steps)	14.3 ± 2.4	10.2 ± 2.6	0.08		14.7 ± 1.6	10.7 ± 1.7	0.41	
Bal. 3 – best leg (number of jumps)	4.9 ± 0.4				5.0 ± 0.1			
Bal. 3 – other leg (number of jumps)	4.8 ± 0.7	11.4 ± 2.0[2]	0.70[b]	5.969*	5.0 ± 0.2	11.8 ± 0.9[2]	2.00[a]	14.945*
	10 year old boys				**10 year old girls**			
MD 1 – preferred hand (s)	25.9 ± 4.6				25.2 ± 3.7			
MD 1 – non-preferred hand (s)	30.1 ± 6.3	9.7 ± 2.8[1]	0.11		29.1 ± 5.1	10.1 ± 2.6[1]	0.04	
MD 2 (s)	23.3 ± 5.6	9.8 ± 2.7	0.07		22.1 ± 7.6	10.8 ± 2.9	0.28	
MD 3 (number of errors)	0.2 ± 0.5	10.5 ± 1.9	0.26		0.1 ± 0.3	10.8 ± 1.4	0.57[b]	5.395*
AC 1 (number of catches)	7.9 ± 2.3	11.0 ± 2.8	0.36		7.1 ± 2.6	10.1 ± 2.6	0.04	
AC 2 (number of hits)	7.7 ± 1.9	10.4 ± 2.9	0.14		7.1 ± 2.0	9.2 ± 3.4	0.24	
Bal. 1 – best leg (s)	26.8 ± 6.5				27.6 ± 5.7			
Bal. 1 – other leg (s)	22.4 ± 9.8	11.7 ± 2.2[2]	0.77[b]	7.552*	25.2 ± 8.2	12.1 ± 1.8[2]	1.17[a]	10.512*
Bal. 2 (number of steps)	14.7 ± 1.5	10.8 ± 1.4	0.57[b]	5.835*	15.0 ± 0.2	10.9 ± 0.9	1.00[a]	9.164*
Bal. 3 – best leg (number of jumps)	5.0 ± 0.1				5.0 ± 0.2			
Bal. 3 – other leg (number of jumps)	4.9 ± 0.6	11.6 ± 1.4[2]	1.14[a]	10.772*	4.8 ± 0.8	11.5 ± 1.6[2]	0.94[a]	8.293*

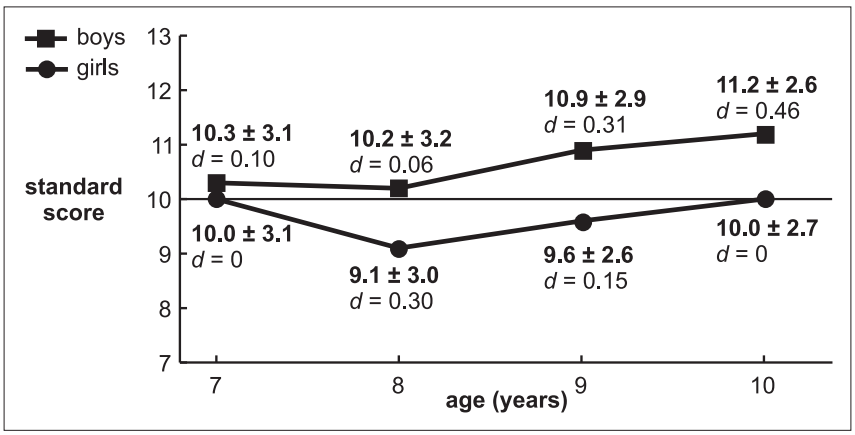
Legend: M – mean, SD – standard deviation, *d* – Cohen's effect size coefficient, [1] – the standard score determined as the mean of two standard scores for performance done with preferred and non-preferred hand, [2] – the standard score determined as the mean of two standard scores for performance done with right and left leg, [a] – large effect size, [b] – medium effect size, * $p < .05$

Fig. 1
The component standard scores for fine motor coordination (manual dexterity) (M ± SD) in the Czech children; the significance of differences as compared to the UK mean of standard score of 10



Legend: *d* – Cohen's effect size coefficient, [b] – medium effect size, *z* – z-value within the z-test, *$p < 0.05$

Fig. 2
The component standard scores of gross motor coordination (aiming & catching) (M ± SD) in the Czech children; the significance of differences as compared to the UK mean of standard score of 10



Legend (Fig. 2–4): *d* – Cohen's effect size coefficient, [a] – large effect size, [b] – medium effect size, *z* – z-value within the z-test, **p* < 0.05

Fig. 3
The component standard scores of balance (M ± SD) in the Czech children; the significance of differences as compared to the UK mean of standard score of 10

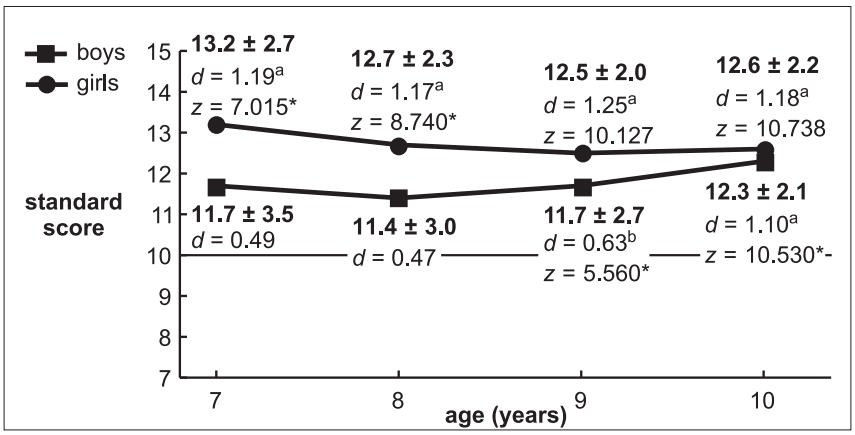
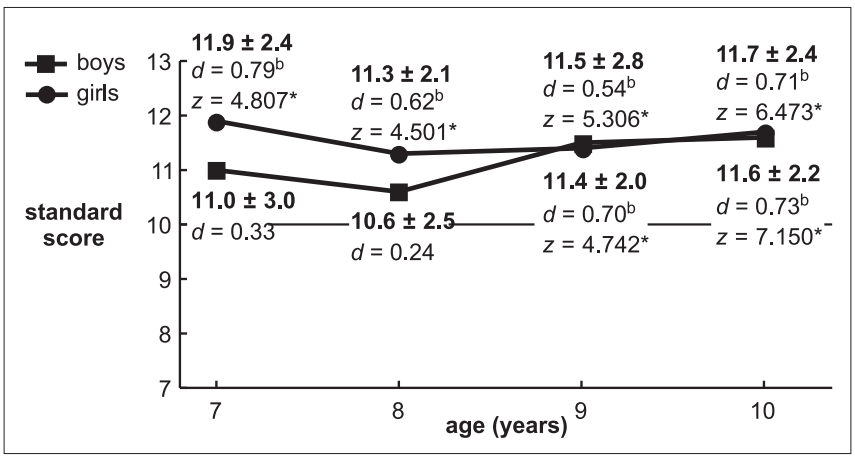


Fig. 4
The total standard scores (M ± SD) in the MABC-2 achieved in the Czech children; the significance of differences as compared to the UK mean of standard score of 10



of drawing trail may suffer from insufficient discrimination validity, specifically for the Czech children. This suggestion could explain the significant differences in performance of the sample from the UK norms.

Testing of gross motor coordination with the MABC-2 was shown to be fully valid for the Czech sample when performance in the Catching with two hands test and the Throwing a beanbag onto a mat test, and the gross motor coordination score in the all age and gender groups of Czech children were very close to the UK means.

Of all three components, performance in the balance in the Czech sample was shown to have the largest differences in relation to the UK means. Of eight comparisons of the Czech age and gender groups, six groups achieved a significantly higher level of balance. These differences can be accounted for mainly by significantly higher performance in the one board balance test and the hopping on mats test. However, explanation of these differences from the UK norms is very difficult and possible reasons are discussed below.

Balance ability assessed with the MABC-2 seemed not to be affected by gender. However, the higher, although not significantly, the item scores and component scores of balance in the girls, with the exception of the Hopping on mats test in 10 years old children, corresponded to the tendency of better balance abilities in the 8–12 years old girls in comparison to the boys of the same age (Smith, Ulmer, & Wong, 2012).

The total test score (TTS) in MABC-2 is used as a definite indicator of motor function in a child. The results of the study suggested that the significantly higher TTS in the all age groups of girls and the 9–10 year old boys as compared to the UK mean was associated with higher performance in the manual dexterity and balance components. The construction of the MABC-2 was based on the theoretical assumption that all three components of the motor function involved are essential for human movement activities and are interlinked with each other (Henderson et al., 2007). Thus, the contribution of each of the three components to the calculation of TTS is equal. In spite of this, the factor analysis on the performance in the 1st version of MABC done with 9–10 years old children showed that TTS had higher loading on the factors related to static and dynamic balance (33.7%) and manual dexterity (26.2%) while only 17.3% on the factor of gross motor coordination (Ellinoudis, Kourtessis, Kiparissis, Kampas, & Mavromatis, 2008). This finding of the larger contribution of the latent factors of balance to the TTS could partly explain why the Czech 9 year old boys and girls achieved significantly higher TTS, in comparison to the UK mean, but significantly higher performance in the two balance tests (Bal. 1 and Bal. 3) only, i.e. with no significant difference in the manual dexterity and aiming and catching skills. Similarly, for the other age groups of Czech girls and 10 year old boys, significantly higher performance in two or three balance tests and one manual dexterity test (Drawing trail) were enough to result in a significantly higher TTS.

Cross-cultural validity of the MABC-2 can be also indicated by the degree of agreement of the proportion of children with the total impairment score. The percentile equivalent of TTS ≤ 5th percentile denotes having a significant movement difficulty and thus the positive criterion A for diagnosis of developmental coordination disorder in a subject according to the DSM IV-TR (APA, 2000). Further, the percentile equivalent of TTS between 5th and 15th percentile suggests the child's risk of having a movement difficulty (Henderson et al., 2007). The TTS at the level of ≤ 5th percentile and between the 5th and 15th percentile was achieved by 0.6% and 4.7% of the Czech children, respectively. Thus, a theoretically expected incidence of 5% of children falling into the zone of motor difficulty was shifted up to the zone of risk of having a movement difficulty.

The reasons for shifting up of mean results in the MABC-2 in the Czech sample, with the exception of 7–8 year old boys, in comparison to the UK norms may consist in not only possible cross-cultural differences but also in a degree of the structural comparability of the Czech sample and the UK normative sample. The UK sample was selected on the basis of a stratified sampling plan to ensure representative proportions of children in relation to geographical region, gender, age, race/ethnicity and parental educational level (Henderson et al., 2007). Within the Czech sample, the number of children was not strictly stratified by the size of municipality, age and gender. However, a random selection of schools and classes in each region was used while balanced proportions of children from the point of view of the gender, age and size of municipality were checked. The percentage of boys and girls from the three size categories of municipality was 33.9%, 36.7% and 29.5%, and 36.0%, 35.6% and 28.4%, respectively. At the same time, the proportions of the boys and girls in the individual size categories of municipality ranged from 0% to 10.4%. With the exception of age of 7 years, the proportions of boys and girls in the individual age groups were also balanced with a difference of not higher than 8%.

The validity of the results achieved in the study has been supported by the fact that the Czech sample was 46.2% larger in comparison with the UK sample (n = 487 vs. 333). Because the total size of the population of Czech children is several times smaller than the population of UK children, the portion of Czech sample selected for the study in relation to all Czech population of the same age was many times higher than the proportion of the UK sample.

The higher performance found in the some tests and TTS in the Czech sample in comparison with the UK sample should be partly explained by the lower heterogeneity of the Czech sample from the point of view of education received. Firstly, the sample was recruited from the state primary schools which provide education according to the unified national curriculum. Secondly, these schools are attended by children without more severe specific learning disabilities, cognitive and sensoric impairments or other health impairments while children with these disabilities are usually classified for special schools. In addition, the racial and ethnic diversity in the population in the Czech Republic is markedly lower than in the UK where 12.4% of non-white population was reported (Henderson et al., 2007).

CONCLUSION

The study revealed that the norms of the MABC-2 could be valid for motor assessment only in the Czech 7–8 year old boys. The findings of significantly higher scores in the manual dexterity and balance tests in the Czech children suggested the need for adjustment of the standards, especially for the Drawing trail test and all balance tests before use of the test battery in the Czech Republic.

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DRUHÁ VERZE TESTOVÉ BATERIE PRO HODNOCENÍ MOTORIKY DĚTÍ MABC-2: SROVNÁVACÍ STUDIE U 7–10LETÝCH DĚTÍ Z ČESKÉ REPUBLIKY A VELKÉ BRITÁNIE

(Souhrn anglického textu)

VÝCHODISKA: The Movement Assessment Battery for Children (MABC) je jedna z nejčastěji užívaných metod pro hodnocení motoriky dětí. Normy druhé verze této testové baterie – MABC-2 byly vytvořeny na základě šetření u reprezentativního souboru dětí Velké Británie. Hodnocení vývoje motorických funkcí dětí podle výsledků motorických testů může být ovlivněno sociálními a kulturními faktory.

CÍLE: Cílem studie bylo prozkoumat vhodnost původních norem MABC-2 pro její užití v populaci českých dětí.

METODIKA: Výsledky MABC-2 u reprezentativního souboru českých dětí ve věku 7–10 let (n = 487) se srovnávaly s testovými výsledky zjištěnými u normativního souboru britských dětí (n = 333) publikovanými v manuálu MABC-2. Pro tuto komparaci byl použit Cohenův koeficient velikosti účinku a z-test.

VÝSLEDKY: Mezi českým a britským souborem dětí nebyly zjištěny významné rozdíly v úrovni hrubé motoriky. České dívky dosáhly významně vyšší skóre v manuálních dovednostech ve srovnání s britskými dívkami. U většiny věkových skupin českých dětí byl zjištěn významně vyšší výkon v testech rovnováhy ve srovnání s britskými dětmi stejného věku.

ZÁVĚRY: Studie ukázala, že původní normy MABC-2 mohou být platné pro hodnocení motoriky pouze u 7–8letých českých chlapců. Před užitím této baterie v klinické, psychologické a pedagogické praxi v České republice je nutné provést úpravy norem pro některé testy manuálních dovedností a rovnováhy.

Klíčová slova: motorický vývoj, hrubá motorika, manuální dovednost, rovnováha, test, pohlaví.

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