Investigation on Problem Behavior of Children in Henan Province and the Applicability of Chinese and American Norms

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Abstract: **Objective** To understand the status quo of problem behavior of children in Henan Province, and to explore the applicability of the Conners Parent Symptom Questionnaire (PSQ) norm test in 3-6 years old children. **Methods** A total of 775 children aged 3-6 years old in Henan Province were selected to measure their problem behavior by using PSQ. The difference and consistency of the detection rate of Chinese and American norms were analyzed, and the difference between the average score of problem behavior of children in Henan Province and the average score of each factor of the two norms was studied. **Results** (1) The impulsive-hyperactivity index of boys was significantly higher than that of girls; Children's learning problems show a significant age difference, and the older the children, the higher the score of learning problems; Non-only children show more impulsive-hyperactivity, hyperactivity problems than only children. (2) There are significant differences between the Chinese norm and the American norm in the detection rates of learning problems, impulsive-hyperactivity, anxiety and hyperactivity index. (3) The PSQ scores of children in Henan Province were significantly different from most factors of Chinese and American norm PSQ. **Conclusion** There are differences in the problem behavior of young children in Henan Province in terms of gender, age, and whether they are only children. The consistency of Chinese and American PSQ norms is poor, and they are no longer applicable to young children in contemporary Henan Province.

Keywords*:* Behavior Problems; Children Aged 3-6 Years; The Conners Parent Symptom Questionnaire; Norm

1. Introduction

Early childhood (3-7 years old) is a period of rapid physical and mental development, when children begin to move from home to school, and the rapid physical and mental changes and the increasing complexity of the external environment are likely to cause problematic behaviors in young children.[1]Problematic behaviors of young children refer to behaviors that are detrimental to their own development, cause trouble to others, and violate social and moral norms due to physiological, familial, and social influences. Problem behaviors occur at all ages. Compared with school-age children, young children have a vague sense of self and weak self-control over their behaviors, so their externalized behaviors, such as anxiety and hyperactivity, are easily viewed by parents as "the child is still young". Some studies have shown that problematic behaviors of young children are stable across time and are accurate predictors of future maladaptive behaviors.[2]

The scales commonly used to measure problematic behaviors of young children in China are Conners Parent Symptom Questionnaire (PSQ), Child Behavior Checklist(CBCL), Children's Strengths and Difficulties Questionnaire(SDQ), Rutter Child Behavior Questionnaire, among which Conners Parent Symptom Questionnaire has moderate number of questions, simple and easy-to-understand content, and its reliability and validity have been recognized by a consensus after being widely used. This questionnaire for parents with Conners symptom norms in addition to the 1978 U.S. norms, China's only Linyan Su et al. in 2001,[3]Juan Fan et al. in 2005,[4] the development of China's urban norms, and Ruixiang Liu et al. in 2012, the development of the norms of Kunming City,[5] in recent years there has been no researcher to develop the Chinese norms. As time has passed, the 1978 U.S. norms and the norms developed by our scholars in the past may not be applicable to our young children today, and the results may

not be accurate when using the previous norms.

To accurately measure problem behaviors in young children, it is particularly important to clarify the appropriateness of the norms for young children. In recent years, studies on problem behavior are still widely using the 1978 U.S. norm and the 2005 Chinese urban norm, such as those by Hui Wang.[6]However, few studies have explored the applicability of the two norms to today's young children. Only Ru Guo et al. compared the two norms by investigating the problematic behaviors of 3-5 year olds in Changsha City in 2011,[7]but did not explore the applicability of the two norms to young children in Changsha City. Therefore, the purpose of this study was twofold: first, to analyze the current status of problem behavior of 775 3-6 year olds in Henan Province; second, to analyze the differences between the mean scores of problem behavior of young children in Henan Province and the mean scores of the two norms by comparing the differences and consistency of the results of the U.S. normative model of 1978 and the Chinese urban normative model of 2005, in order to explore whether the two norms are applicable to the young children of Henan Province, and to provide some references to the relevant research on problem behavior of young children in China.

2. Materials and Methods

2.1 Sample

Using convenience sampling method, a questionnaire survey was conducted on 792 children aged 3-6 years old in 13 kindergartens in Henan Province in January 2022, with 775 valid questionnaires and an effective rate of 97.85%. Among them, 420 (54.19%) were boys and 355 (45.81%) were girls.

2.2 Measures

The Conners Child Behavior Questionnaire (revised 1978), developed and revised by Conners et al. was used to measure problem behaviors in young children.[8][9]The questionnaire consisted of 48 entries on 6 factors: conduct and behavior, learning problems, psychosomatic disorders, impulsivity-hyperactivity, anxiety, and hyperactivity index. The questionnaire is completed by either the father or the mother and is scored on a four-point scale from 0-3. The scale has been widely used and its reliability and validity have been extensively tested. The mean Cronbach α coefficient for this questionnaire in this study was 0.7.

2.3 Data analysis

EXCEL 2019 and SPSS 26.0 were used for the initial organization of the questionnaire data, and SPSSSAU was used for the in-depth analysis of the data using frequency analysis, t-test, ANOVA, chi-square test, and Kappa consistency test for data analysis.

3. Results

3.1 Early childhood PSQ scores by factor in Henan Province

The independent samples t-test was used to analyze the gender differences in each factor of toddlers' problematic behaviors, the differences in whether they were born alone or not, and ANOVA was used to study the age differences in toddlers' problematic behaviors. From Table 1, it can be seen that toddlers' impulsivity-hyperactivity, and hyperactivity index showed significant gender differences ($p<0.01$), and the mean values of boys were all significantly higher than the mean values of girls. There were no significant gender differences in character behavior and learning problems. Young children's learning problems showed a significant age difference ($p<0.01$) and the older the children, the higher the learning problem scores. An LSD post hoc test on this dimension showed that the learning problem scores of 5-6 year olds differed significantly from those of 3-4 and 4-5 year olds ($p<0.01$), and the results of the comparison of the mean scores of the age groups of young children's learning problems were as follows: 5-6 (0.75) > 3-4 (0.60); 5-6 (0.75) > 4-5 (0.65).It can be seen that the learning problems of 3-4 and 4-5 year olds are significantly milder compared to 5-6 year olds. The impulsivity-hyperactivity, hyperactivity index showed significant difference ($p<0.01$) between lone and non-lone toddlers, and the impulsivity-hyperactivity, hyperactivity index of non-lone toddlers was more significant than that of lone toddlers.

Table 1 Differences in PSQ scores by factor for young children in Henan Province (M±SD)

Groups	Number of participants	Character behavior	Learning problems	Mindfulness disorder	Impulsivity-hyperactivity	Anxiety	Hyperactivity index

Gender	boy	420	0.51±0.37	0.70±0.54	0.07±0.15	0.73±0.60	0.44±0.38	0.68±0.48
	girl	355	0.46±0.39	0.65±0.52	0.09±0.19	0.58±0.59	0.44±0.36	0.58±0.49
	t		1.56	1.20	-1.72	3.34	0.04	2.81
	P		0.118	0.233	0.087	0.001**	0.968	0.005**
Age	3-4①	185	0.50±0.38	0.60±0.51	0.05±0.11	0.68±0.60	0.39±0.33	0.63±0.46
	4-5②	287	0.48±0.38	0.65±0.53	0.09±0.18	0.64±0.60	0.47±0.39	0.63±0.51
	5-6③	303	0.48±0.38	0.75±0.55	0.09±0.19	0.67±0.61	0.45±0.38	0.64±0.48
	F		0.15	5.40	2.93	0.32	2.95	0.06
	P		0.859	0.005**	0.054	0.73	0.053	0.94
	LSD		—	③ > ①* ③ > ②**	—	—	—	—
Only child or not	Yes	289	0.51±0.39	0.72±0.57	0.08±0.18	0.75±0.64	0.47±0.38	0.69±0.51
	No	486	0.47±0.38	0.65±0.51	0.08±0.17	0.61±0.57	0.43±0.37	0.60±0.47
	t		1.54	1.65	0.53	3.16	1.31	2.33
	P		0.125	0.098	0.597	0.002**	0.191	0.020*

* P<0.05 ** P<0.01 ***P<0.001

3.2 Comparison of Abnormal Detection Rates of Various Factors in Chinese and U.S. Normative PSQs

The Chinese and American norms were applied to measure the problematic behaviors of young children in Henan Province respectively, and paired chi-square tests were conducted to examine the abnormal detection rates of each factor of the two norms. According to Table 2, it can be seen that there is a significant difference in the detection rates of learning problems, impulsivity-hyperactivity, anxiety, and hyperactivity indices of young children in Henan Province between the Chinese urban norms and the American norms (p<0.01).The detection rates of impulsivity-hyperactivity, anxiety, and hyperactivity index abnormality for young children in Henan Province were significantly higher than those of the U.S. norm (p<0.01), the detection rates of learning problems for boys were significantly lower than those of the U.S. norm (p<0.01), and those for girls were significantly higher than those of the U.S. norm (p<0.01), and the detection rates of psychosomatic disorders for boys were significantly lower than those of the U.S. norm (p<0.01), and those for girls were not significantly different from the two norms (p>0.05). lower than that of the U.S. norm (p<0.01), and the detection rate of psychiatric disorders in girls did not show significant differences between the two norms (p>0.05). Therefore, there was a significant difference between the Chinese urban normative model and the US normative model in the overall detection rate of PSQ factors in young children in Henan Province.

In order to determine the consistency of the results of the Chinese urban norm and the American norm on the problematic behaviors of young children in Henan Province, a Kappa consistency test was further conducted on the abnormal detection rates of each factor of the two norms (Kappa < 0.4 indicates poor consistency, 0.4 ≤ Kappa < 0.75 indicates moderate consistency, and Kappa ≥ 0.75 indicates strong consistency [10]), and it can be seen according to Table 2 that the overall consistency of the two norms was poor, and the consistency of the detection rates of boys' conduct behavior, hyperactivity index, and girls' psychotic disorders was better (Kappa ≥ 0.75). norms have poor overall consistency, good consistency (Kappa ≥ 0.75) for boys' conduct behavior, hyperactivity index and girls' mental disorder detection rate, and poor consistency (Kappa < 0.4) for boys' impulsivity-hyperactivity, anxiety and girls' impulsivity-hyperactivity, anxiety, and hyperactivity index.

Table 2 Comparison of abnormal detection rates of each factor of PSQ under different norms in young children in Henan Province [n (%)]

Groups	Number of participants	Factor	China's urban norm	American Normals	P	Kappa
Boys	420	Character behavior	17(4.05)	12(2.86)	0.063	0.822
		Learning problems	22(5.24)	79(18.81)	0.000***	0.385

		Mindfulness disorder	5(1.19)	22(5.24)	0.000***	0.358
		Impulsivity-hyperactivity	34(8.10)	6(1.43)	0.000***	0.283
		Anxiety	28(6.67)	0(0)	0.000***	0
		Hyperactivity index	27(6.43)	17(4.05)	0.002**	0.761
Girls	355	Character behavior	44(12.39)	21(5.92)	0.000***	0.615
		Learning problems	34(9.58)	11(3.10)	0.000***	0.464
		Mindfulness disorder	14(3.94)	14(3.94)	1	1
		Impulsivity-hyperactivity	37(10.42)	3(0.85)	0.000***	0.137
		Anxiety	17(4.79)	2(0.56)	0.000***	0.202
		Hyperactivity index	40(11.27)	6(1.69)	0.000***	0.238

* P<0.05 ** P<0.01 ***P<0.001

3.3 Comparison of PSQ Scores of Young Children in Henan Province with Chinese and American Norms

A one-sample t-test was used to compare the differences between the PSQ scores of young children in Henan Province and the Chinese and U.S. norms, and it can be seen from Table 3 that the PSQ scores of young children in Henan Province differed significantly from the majority of factors of the PSQ of the Chinese and U.S. norms. Compared with the Chinese urban normative model, preschool boys in Henan Province scored significantly higher than the normative model in learning problems ($p<0.05$), impulsivity-hyperactivity ($p<0.01$), and hyperactivity index ($p<0.01$), and significantly lower than the normative model in mental and psychiatric disorders ($p<0.01$); and girls scored significantly lower than the normative model in character and behavior ($p<0.01$), learning problems ($p<0.01$), impulsivity-hyperactivity ($p<0.01$), anxiety ($p<0.05$), and hyperactivity index ($p<0.01$) scores were significantly higher than the Chinese urban norm. Compared with the U.S. norm, preschool boys in Henan Province had significantly higher scores on learning problems ($p<0.01$) and significantly lower scores on impulsivity-hyperactivity ($p<0.01$) and anxiety ($p<0.01$) than the norm; and girls had significantly lower scores on impulsivity-hyperactivity ($p<0.01$), anxiety ($p<0.01$), and hyperactivity index ($p<0.01$) than the U.S. norm.

Table 3 Comparison of PSQ scores of young children in Henan Province with Chinese and American norms (M±SD)

Groups	Number of participants	Factor	Sample of Henan	China's urban norm	American Normals	$p_{\text{China's urban norm}}$	$p_{\text{American Normals}}$
Boys	420	Character behavior	0.51±0.37	0.48±0.36	0.53±0.39	0.132	0.204
		Learning problems	0.70±0.54	0.64±0.53	0.50±0.33	0.027*	0.000**
		Mindfulness disorder	0.07±0.15	0.15±0.24	0.07±0.15	0.000***	0.949
		Impulsivity-hyperactivity	0.73±0.60	0.58±0.56	1.01±0.65	0.000***	0.000**
		Anxiety	0.44±0.38	0.43±0.37	0.60±0.61	0.455	0.000**
		Hyperactivity index	0.68±0.48	0.55±0.43	0.72±0.40	0.000***	0.081
Girls	355	Character behavior	0.46±0.39	0.39±0.27	0.49±0.35	0.000***	0.219
		Learning problems	0.65±0.52	0.49±0.42	0.62±0.57	0.000***	0.239
		Mindfulness disorder	0.09±0.19	0.11±0.20	0.10±0.17	0.07	0.398
		Impulsivity-hyperactivity	0.58±0.59	0.47±0.44	1.15±0.77	0.000***	0.000**
		Anxiety	0.44±0.36	0.40±0.35	0.51±0.59	0.025*	0.000**
		Hyperactivity index	0.58±0.49	0.45±0.35	0.78±0.56	0.000***	0.000**

* P<0.05 ** P<0.01 ***P<0.001

4. Discussion

4.1 Basic Characteristics of Early Childhood PSQ Scores by Factor in Henan Province

It was found that boys had significantly higher scores on the impulsivity-hyperactivity and hyperactivity indices than girls. This is consistent with the behavioral characteristics of most 3-6 year old boys who are active and girls who are relatively quiet, and is consistent with social perceptions. However, the fact remains that existing research is still controversial as to whether there are gender differences in young children's problem behaviors.[11]This is related to the characteristics of the samples in different regions, and may also result from the different scales used in different studies, which differ in the types of specific problem behaviors addressed in the different scales.

It was found that there was a significant age difference in the learning problem scores of young children, with 5-6 year olds having significantly higher learning problem scores than 4-5 year olds and 3-4 year olds. The reason behind this is related to the transition of 5-6 year olds to elementary school in their daily learning life. On the one hand, in order to realize the "bridging of young children and primary school", teachers of kindergarten children often guide children to make the transition to elementary school in all aspects of their day-to-day life. However, due to the big difference between elementary school and kindergarten in terms of learning styles and activities, it is inevitable that 5-6 year old children will show discomfort in their learning, whereas the daily activity styles of 4-5 year old children and 3-4 year old children have not yet begun to change to primary school. daily activity styles have not yet begun to change to elementary school and do not show any discomfort during the transition period, so the learning problem scores of 5-6 year olds are significantly higher than those of 4-5 year olds and 3-4 year olds. On the other hand, in recent years, some businesses have seized on the educational anxiety of parents to publicize the necessity of attending "bridging classes" by means of popularizing the concept of "bridging between the early childhood and the primary school", but the essence of this is to "hype up" the education market and make profits by means of "bridging between the early childhood and the primary school". However, the essence of the program is to use the "bridging of early childhood and elementary school" to "heat up" the education market so as to make profits, and does not really help young children to gradually transition to elementary school in terms of their learning styles. Therefore, when the so-called "Kindergarten Bridging Classes" emerged in large numbers, under the coercion of the education market, the education anxiety of some parents intensified, and they chose to transfer their young children directly to the "Kindergarten Bridging Classes" after they finished their secondary classes. However, in fact, some of the "Kindergarten-Primary Bridging Classes" only teach the content of elementary school in advance, failing to help children gradually change their learning styles, but only advancing the children's inability to adapt to the life of the elementary school, which exacerbates the apparent "learning difficulties" of the 5-6 year-old children.

It was found that non-only toddlers showed more impulsivity-hyperactivity and hyperactivity problems compared to only toddlers. This is consistent with the findings of Rong Xiang and Wanpeng Lei.[12]This may be due to the fact that non-only toddlers have impulsive behaviors such as scrambling, pushing and shoving among children when they are with their siblings due to unfair treatment of children by their parents or occasional problems of unequal distribution of toys, food, etc., so non-only toddlers have impulsive-hyperactivity, and hyperactivity problems that are worse than those of only toddlers.

4.2 Comparison of Abnormal Detection Rates of Various Factors in Chinese and American PSQ Norms

It was found that there was a significant difference between the Chinese urban norm and the U.S. norm in the abnormal detection rate of each factor of problematic behavior of young children in Henan Province, and the consistency of the assessment results of the two norms was poor. The Chinese urban normative model had significantly higher abnormal detection rates than the U.S. normative model for conduct behavior, impulsivity-hyperactivity, anxiety, and hyperactivity indices of 3-6 year olds in Henan Province, and significantly lower detection rates than the U.S. normative model for learning problems of boys and higher detection rates than the U.S. normative model for learning problems of girls in Henan Province. This is consistent with the results of Ru Guo's study.[13]

This is due to the influence of national cultural differences and differences in social environments, and the differences in the scores of the norms developed by different countries. The United States advocates freedom, parents have less control over their young

children, young children are more likely to show their emotions and behave more outwardly, therefore, the externalizing behavior scores of the United States norm are higher; China's culture emphasizes more on modesty and subtlety, and its people are relatively introverted, and due to the influence of this culture, young children's behaviors are not outwardly obvious, therefore, the externalizing behavior scores of the Chinese urban norm are lower. Correspondingly, because young children in China are more introverted than those in the United States, the psychotic disorder formulation scores of the Chinese urban normative model were higher than those of the American normative model, and therefore the detection rate of psychotic disorder in preschool boys in Henan Province was significantly lower in the Chinese urban normative model than in the American normative model.

4.3 Comparison of PSQ factor scores of young children in Henan Province with Chinese and American norms

The study found that, compared with the Chinese urban norms developed in 2005, today's Henan Province boys aged 3-6 years have significantly higher scores on learning problems, impulsivity-hyperactivity, and hyperactivity indexes, and significantly lower scores on mental and psychiatric disorders than the norms; and girls' scores on conduct and behavior, learning problems, impulsivity-hyperactivity, anxiety, and hyperactivity indexes are significantly higher than the norms. This is related to the development of all aspects of our society, with data from the National Bureau of Statistics indicating that the gross national income, gross domestic product, and consumption level in 2020 will be approximately six times that of 2005.[14]This is a good indication that compared to 2005, today's socio-economic and cultural eras are developing rapidly and the social environment has changed dramatically. Bronfenbrenner's ecosystem theory refers to the changing environment in which people live and interact with as a behavioral system, and argues that individual development is nested within these interacting environmental systems. As reform and opening up continue, society has become more inclusive, and children are no longer required to be stereotypical, for example, girls are no longer required to be "quiet and sensible" and boys are no longer required to be "upright", and early childhood development has become more free and liberating. The development of young children has become more free and liberated, and girls can develop in the direction of being lively and cheerful, while boys can also be quiet and introverted. The physical and mental developmental characteristics of young children have changed considerably with the social environment, so there are differences between the Chinese urban norms established in 2005 and the behavioral expressions of young children in Henan Province today.

Compared with the U.S. norm developed in 1978, the learning problem scores of 3-6 year olds in Henan Province were significantly higher than the U.S. norm, and the impulsivity-hyperactivity and anxiety scores of boys were significantly lower than the U.S. norm; the impulsivity-hyperactivity, anxiety, and hyperactivity index scores of girls were significantly lower than the U.S. norm. This may be related to the social environment when the U.S. normative model was developed; when the original authors developed the normative model, the U.S. society had a high crime rate,[4] and young children were affected to a certain extent, and young children in the U.S. were more free, with fewer parental constraints, and therefore the scores of normative impulsivity-hyperactivity, anxiety, and hyperactivity indices were developed to be higher.

5. Conclusion and prospects

This study found that the behavior of young children has different characteristics at all ages, and there are significant differences in the behavioral problems of boys and girls, and whether or not they are the only child, and that the 1978 U.S. norms of the Conners Children's Problem Behavior Questionnaire and the 2005 Chinese urban norms are no longer applicable to today's young children in Henan Province. The problematic behavior of young children has been widely concerned in existing studies, and the results may be affected if the norms of the referenced scales have poor relevance. Therefore, it is recommended that scholars in the field of preschool education and pediatrics, taking into account China's national conditions and the characteristics of young children in China, collect a wide range of samples of young children from various provinces, cities and regions, taking into account urban and rural areas, the age and gender of young children, and develop a new Chinese normative scale, which will provide a more accurate basis for measuring problematic behaviors of young children in China.

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