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A STUDY OF THE INFLUENCE OF SOCIOHISTORICAL CONDITIONS ON CHILD DEVELOPMENT (COMPARATIVE INVESTIGATION, 1929 AND 1966)

In the late 1920s, primarily in connection with L. S. Vygotsky's theory concerning the social and historical antecedents of the development of the mind, there was great interest in comparing the development of children reared in different social and cultural environments. One such study was A. R. Luria's Speech and intellect of rural, urban, and orphan children (Moscow, 1930). Zaporozhets, and then Luria, made trips to Central Asia as a part of this research effort. Although cross-cultural studies of human development enjoy some popularity in Western European and American psychology, this is one of the rare published accounts of such work from the USSR.

In 1929, associates of the Institute of School Methods made two expeditions – into mountainous Altai and Northern Baikal – on commission from the People's Commissariat of Education. The purpose of the expeditions was to study the influence of specific living conditions in these remote regions on child development. The investigations were carried out under the general direction of the senior Soviet psychologist A. M. Shubert, and followed a comprehensive program, using a variety of

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methods. The results were published in 1930. (1) The investigators accumulated and analyzed a mass of scientific material on many levels that gave a picture of the living conditions of Oirat (Altai) and Tungus (Evenok) children and of the distinctive features of their physical and mental development.

These scientifically sound data made it possible to organize and carry out an analogous investigation in our time. The repeat investigation, carried out in the same place, with the same program, and using the same methods, yielded comparable data, on the basis of which it was possible to show, through specific examples, how the children's environment and the children themselves had changed over the years.

This deferred, comparative, fact-finding study (or "panel investigation," as it is called for short) was organized in the summer of 1966 by associates of the USSR Academy of Pedagogical Sciences, Moscow State University, and of the Ulan-Ude Pedagogical Institute, under my general direction. The objective of the investigators was to attempt (by a comparison of data from the two years — 1929 and 1966):

(1) to explore the influence of social conditions on child development on the basis of specific data;

(2) to determine the correlations, if not cause-and-effect relations, between individual social conditions and mental characteristics;

(3) to determine the social factors that have a decisive influence on the formation of a child's mental outlook.

The investigators clearly understood the considerable difficulties involved in resolving these questions. Almost forty years had passed since the last investigation. Some fundamental changes have taken place in life in general; and a multitude of new factors influencing a child's development have come into being, such as universal seven-year education, the radio, movies, libraries, clubs, and a host of other opportunities now part of the everyday life of the modern collective farm village. The family has undergone a fundamental change — first and foremost, in the educational and cultural level of the parents. It is obvious that all these factors have influenced, in one way or another, the development of a child's outlook, his knowledge,

interests, and intellectual needs. To single out any one individual factor would appear to be almost impossible. Moreover, there were other difficulties: the working materials used in the 1929 expeditions, the detailed programs for observation, the questionnaires and enquiries, and the various methods — for example, the testing methods — were no longer in all respects satisfactory for our purposes.

Nevertheless, to be able to demonstrate, on the basis of concrete data, the influence of material living conditions on consciousness; to illustrate the tremendous plasticity of the human mind and its enormous potential, independent of race or nationality; to attempt to probe into the specific changes that have taken place in the intellectual world of children during the Soviet era; and to determine the basic social factors underlying these changes — such endeavors all touch upon problems of such fundamental philosophical, psychological, and pedagogical significance that we felt it to be a matter of extreme importance to take at least the first steps toward an attempt at their concrete resolution, however crude an initial effort it might be.

The 1966 panel was expanded so that it not only covered, but went beyond, the 1929 panel. To obtain data that might be compared, we employed a series of questionnaires and enquiries that focused on the living conditions and development of the contemporary child and that have already been used elsewhere in the central regions of the Soviet Union (a family chart compiled at the Philosophical Institute of the Moscow State University and employed in the Moscow and Ryazan regions; the questionnaire entitled "The School Child of 1966," compiled by the Institute for the Theory and History of Pedagogy of the USSR Academy of Pedagogical Sciences and employed at the Novo Pavlovsk Stavropolsk district field station; and, finally, an enquiry on ideals compiled by A. I. Lyublinskaya (MATI) and employed in Moscow and Leningrad).

By including in the investigation a number of questions touching on contemporary problems, we were able to shed light on some qualitatively new aspects of life in mountainous Altai and Northern Baikal in our time and to lay the groundwork for future comparative studies.

The present report gives only certain results of these comparative investigations. It will acquaint the reader with the main results of the expedition of R. G. Gurova and I. M. Shlepnikov into mountainous Altai.

1. General Description of the Region under Investigation

Since the first expedition in 1929, profound changes have taken place in mountainous Altai in industry, agriculture, education, culture, and health. Although we are not able to go into these questions in any detail here, they do deserve at least a cursory survey inasmuch as they represent the broad social context of the child's environment and exert a definite influence on his development.

Some idea of the changes that have taken place in the area can be gained merely from the road leading to the expedition's destination. In 1929, in order to get to Fifth Chulushman (today the village of Balykcha), A. P. Golubeva and A. V. Zaporozhets had to travel for seven days by train (5,000 km), and then almost two days (100 km) by horse to the city of Biysk. They then continued another three days by horse from Biysk to Ulala (75 km) (now Gorno-Altaysk) and from Ulala to Kebezeni (75 km). They traveled on horseback from Kebezeni to Artybasha (18 km), across Teletskoe Lake on the timber-bearing steamer (one day), and finally the last 10 km by foot. The entire journey took about 12 days. [In 1966] we flew to Gorno-Altaysk by airplane, and drove from there to Kebezeni by car. We then took a tourist bus to Artybasha and crossed Teletskoe Lake on a comfortable, diesel-powered ship. Only the last 10 km were traveled by foot, but that was only because the scenery there is so beautiful (we could have reached the place on farm vehicles that just at that time happened to be hauling produce and various articles delivered to the collective farm by barge). Our entire journey took two days.

Industry and agriculture in the district have undergone changes as fundamental as those in transportation. The semidomestic manufacture of butter and cheese and the home workshops have been replaced by modern factories producing leather, butter, and cheese. New branches of industry have been devel-

oped, such as the timber and woodworking industries, production of building material, and light industry. Intensive prospecting and extraction of useful minerals are under way.

In place of the 22,000 small peasant holdings, on which, in 1929, the wooden plow was still in use and harrowing was done with beech branches, there are today in the district 45 collective farms and 15 state farms equipped with the most up-to-date farm equipment. Besides the traditional forms of agriculture — livestock and wild stag raising, and hunting — field crops have now acquired much more importance. Vegetable growing, cultivation of medicinal herbs and pharmaceutical plants, and silver-fox breeding have been introduced and developed.

The nutrition of the population has improved considerably. In 1929, it amounted to a small quantity of meat, very large quantities of tea with tolkan (fine, hand-ground barley meal), and some dairy products (principally syrchiki — extremely hard, charcoal-smoked, cheese cakes). Only a few people ate butter; sugar was a rarity; and groats, vegetables, and berries were totally absent from the diet.

Fat and vitamin deficiencies in the diet were responsible for gastric ailments in many of the children, who were pale and almost all anemic. In the majority, the glands were palpable. Children's infectious diseases were common.

Inadequate nutrition, the lack of sanitation and hygienic measures, and poor medical service gave rise to high infant mortality. Of the 53 families studied in 1929, 16 children had died in one, 11 in another, 10 in a third, 8 in 2, 6 in 5, and 5 in 9 families.

Now, in addition to national dishes, the Altais eat sugar, vegetables (potatoes, cucumbers, tomatoes, cabbage), bread, various cereals, berries, and fruits (fresh, dried, canned). The improved nutrition plus achievements in public health, sanitation, and hygiene have drastically reduced infant mortality and infectious diseases and have provided a solid groundwork for the healthy physical development of Altai children.

But the changes that have taken place in the general cultural and educational level of the population are especially striking. According to the data of the first expedition, only 23% of the

entire population were literate, and of these only 11% were Altais. There were 133 schools in the district, predominantly primary (62 Russian, 49 Altai, and 22 mixed). The Altai children generally studied two to three years, and, after having mastered the elementary skills of reading, writing, and arithmetic, left school. The teachers had, in the main, only rudimentary training. The only secondary educational institution, the Pedagogical Institute, was in Ulala.

There are now 263 schools with 39,700 pupils. Almost all Altai children finish the seventh grade (we found this to be true even in such a remote village as Balykcha, which is situated far back in the mountains). The 78 boarding schools instruct 4,500 children, of whom 2,500 are under full state subsidy. The 14 schools for working and farm youth have 1,800 pupils, or almost as many as attended all the schools in the district in 1929. In 1966 there were 2,433 teachers in the district, of whom 1,059 had partial or complete higher pedagogical training and 1,286 had secondary specialized education. At Gorno-Altaysk there are a pedagogical institute, three technical institutes (medical, cooperative, veterinary), and an education college. There are 29 scientific candidates, including 7 Altais, in the district.

Whereas in 1929 there were 16 libraries, with a total of 8,500 books, there are now 119 libraries, with a total of 870,000 books. In place of the 69 reading rooms, there are now 208 clubs and culture palaces, plus a theater and many movie houses.

So much for a brief orientation on the general changes in the life of the district. Now let us turn directly to the material of the investigation.

In 1929 the expedition made its investigations in the villages of Fifth Chulushman, Ak-Koryma, and Ongudai. The two former villages of Fifth Chulushman and Ak-Koryma have now merged into one – Balykcha (Lenin Collective farm) – and the village of Ongudai has become a large residential seat. We undertook our repeat investigation in these same places.

2. The Family and the Daily Life of the Altai Child

In 1929, 53 families and 86 Altai children were studied. In 1966 we somewhat broadened the investigation to include 106 families and 193 children. The average number of children in Altai families was greater than in 1929 (3.8 instead of 3). Whereas in 1929 the maximum number of children in the families studied was six, in 1966 it was nine. In all probability this is the result of improved living conditions and the consequent reduction in infant mortality. Altai families generally have many children — seven or eight children in one family is not unusual. The Altais are very fond of children; and, besides, the state gives good subsidies to large families. Many Altai children are fully subsidized by the state from the cradle to the tenth grade of secondary school. It is interesting that public opinion does not condemn unmarried mothers with a large number of children: on the contrary, to have many children is considered a great honor, regardless of the circumstances.

Today, as in the twenties, large families live harmoniously. Children are not punished. In spite of the fact that the children give unquestioning obedience to their parents, the children never misbehave, and rarely cry or scream.

But other types of Altai family have now also appeared. In one of these, in which the father and mother were teachers with a higher education, we learned of the presence of a child (aged 2) in the first few minutes after we entered the house. The immaculately dressed, well-developed little girl reminded us very much of only children in Moscow families. She was the first and only child in the family, the first grandchild of the grandmother, very capricious, spoiled, egotistic, and whiny. But such families were very few in number.

In most instances the children grow up in a large family and from the earliest age are taught the most varied types of work: tending cattle, shopping, gardening, laying in fodder, cooking food, carrying water, cutting wood, looking after smaller children, etc. In general, almost all the household work is done by the eldest children. A typical example: our interpreter in the

village of Balykcha (a boarding-school teacher) assisted us all day long for a whole week and was quite unworried about her home, where she had five children, including a 2-year-old daughter.

Children get along well with each other; the eldest are considerate of the younger; and the commonest and most touching sight in the village is a tot on the shoulders of an older brother or sister. As in former times, the children share something nice or interesting without prompting. This is obviously the influence of the general traditions of Altai families, who selflessly help one another, often adopt children, share generously with all if a deer or bear is caught, and never accept money for assistance. Reciprocal generosity and deep respect for elders — traditions inherited from the remote past — provide fertile grounds for humanistic and collectivist attitudes to flourish and facilitate the problems of child-rearing for adults. Special work with parents on the part of teachers is probably necessary to reinforce or revive these traditions.

Radical transformations have taken place in everyday living habits. In 1929 the vast majority of Altai families lived in conical huts [aily] built of poles. A campfire burned continually, summer and winter, in the middle of the hut. There were no windows. Light entered through a hole made in the top to let out smoke. Meals were prepared on the fire while members of the family warmed themselves around it. The parents slept on a bed, and the children on the floor around the fire.

Today, all Altais live in good-quality homes, usually consisting of two rooms and a hallway. The conical huts are still preserved and are used as kitchens. Hence the houses are very clean inside, there are no flies, and they are cool in summer. The furnishings of the houses differ little from furnishings in villages in the central regions of the country: the same tables, beds, divans, wardrobes, sewing machines, chairs, stools, benches, shelves, and racks for books.

There have also been radical changes in the personal hygiene of children. The investigators of the first expedition noted that the children never washed (they rarely even rinsed their hands

and faces, and only in school), and did not swim in the rivers. Of the 53 families investigated, only 12 had been to the baths at any time; the others had not washed from the day of their birth. The children's clothing was soiled. Clothing was put on as soon as it was sewn and worn until it fell off. It was not unusual to see a child in a dress or shirt of which only shreds remained. We of course saw nothing remotely similar on our visit. The children, especially the older ones, were well dressed European-style, in clean suits and dresses. All schoolchildren wore uniforms. Tots were, of course, more untidy in their dress and ran barefoot until the onset of cold weather (as a result, almost all had chronic head colds). All houses had baths, in which the entire family bathed once a week. Laundering was a continuous activity, as there were many children in the families. The boys enjoyed bathing in the clear water of the Chulushman and Ursul rivers.

For us, the transformations in the cultural patterns of the family were especially interesting. These transformations were visible even in superficial aspects, such as the presence of pictures, clocks, radios, musical instruments, and books in the houses. Of the 52 families investigated in Balykcha, 18 had libraries, 42 subscribed to two or more newspapers, and 25 subscribed to magazines (these figures were from the post office). Thus, for example, the collective farm worker R. L. Yakovlev and the award-winning herdsman S. P. Askyshev each subscribed to seven newspapers and magazines, and the teacher A. N. Kachakov to ten. Only eight families in the village subscribed to no newspaper.

The collective farm workers read a lot. A study of the reader cards in the library showed that some (for example, shepherds P. Sabulov and V. Typaev) read over 40 books in one year.

The educational level of parents has also undergone radical changes. Of the 52 families in Balykcha, 17 parents had had a primary education, and 15 had completed five to seven grades; in 3 families the parents had reached the seventh to ninth grades; in 1, a secondary education; in 7, secondary specialized

education; and in 5, a higher education. (2) The educational level of parents was even higher in Ongudai.

In Balykcha 5 of the 52 families studied had religious parents (mainly the old women); in 2, icons were found hanging on the walls; and in 8 families, the children crossed themselves. In Ongudai there were icons in only 2 of the 52 families. The Altais are generally not very religious. Balykcha was somewhat of an exception: before the revolution there was a monastery there, and the religious influence was relatively greater than in other places.

All visual entertainments are immensely popular among the Altais: theatrical performances (sometimes the theater from Gorno-Altaysk comes to town), movies, and concerts. Everyone attends. Films are attended every time they are presented (in Balykcha there are a permanent movie theater and several portable projectors for the shepherds and hunters; in Ongudai there is a large modern movie theater). Unfortunately, the school makes poor use of the educational possibilities of the theater and movies. Discussions of films and plays are rare.

Moreover, teachers almost never recommend radio programs to parents or children. In the home, the radio is almost always turned on, but it is not listened to attentively. None of the people we questioned was able to say at once what program was being aired at the given time. In order to exploit to the fullest the educational and instructional possibilities of radio and film (and for remote areas they are especially important), special instruction of both children and parents is most likely required.

3. School

In 1929 the age of children attending primary school varied from 8 to 15 years; some pupils were even 18-19 years old. This was due to the fact that the children sometimes attended the same class for several years, and some even entered school for the first time at the age of 11 or 12. There were almost 50% fewer girls in school than boys, and they more frequently quit school without finishing it since they did the household chores.

The large Altai school had two grades; the third and fourth grades were only just beginning. Altai children began school in late autumn and finished in early spring (as they were obliged to tend the lambs and calves). It is not surprising that advancement to a higher grade was difficult.

The general school atmosphere and the methods and system of instruction were not able to hold the children in school or to retain their interest. Teachers (in the majority of cases Altais with a rudimentary education, who themselves had never been to a city or seen a train) gave boring, uninteresting lessons in gloomy, uncomfortable schoolrooms without any attempt to understand or put to practical use the interests and enquiries of the children.

Altai children, unaccustomed to abstract theoretical activity, quickly tired. Their industry and attention soon waned, and the required intellectual effort was irritating. Consequently, truancy was common, especially as the parents did not object to it and did not compel the children to learn.

The cultural influence of the school on the population was slight. The school was even unable to inculcate sanitary and hygienic habits into the children firmly enough to withstand the home environment.

During the second, repeat investigation, we observed the performance of two schools — the eight-year school in Balykcha (with boarding facilities) and the ten-year school in Ongudai (also with boarding facilities).

Seven hundred and fifty-six pupils attend the four-story, ten-year school at Ongudai, but of these only 121 are Altais. A more typical Altai school was the Chulushman eight-year school in Balykcha, which we shall describe in more detail.

The school building in Balykcha was quite large, dry, and light. There were 16 teachers and instructors, 5 of whom had a partial or complete higher education; 7, secondary specialized education; and 4, secondary education. (3) Five belonged to the Communist Party, and eight were Komsomol members. They were lively people, interested in international affairs, in the life of the country, in science, literature, and art.

There were 237 children of school age in the village. All attended school. All Altai children finish the eighth grade (only eight pupils had failed to finish school in the past three years). The passing rate in the school was 94% (in Ongudai it was 93%). Most of the failures were in the primary school, most likely because of difficulties in mastering Russian.

Considerable extracurricular activity is carried out in the school. There are various circles for practical activities, dramatic, choral, and recitation groups, and acrobatic and sports clubs. Political instruction is given once a week in all classes from the fifth grade onward. The Pioneer Brigade has 186 members, and 14 pupils belong to the Komsomol. The progressive collective farm members meet at Pioneer outings in the mountains, the forest, and around the campfire; holidays are observed; and intimate conversations about life take place. We attended a few classroom sessions of the older pupils, and were struck by the attention with which they listened, their animation, and their multitude of questions.

The mass cultural work in the school is organized in an interesting fashion. Altai children are extremely fond of art and are attracted to it. The teachers arrange weekly evenings of recreation, which in the fifth through eighth grades the children arrange themselves, while in the primary classes the teachers assist them. The younger children and the adult population always attend the evening programs of the older pupils. The best works are selected for concerts the school gives in the club for the collective farm workers. These concerts are enormously popular. Holidays are especially lively: the First of May, November 7th, Soviet Army Day, and the New Year, with a tree, a carnival, and presents for the children.

To broaden the outlook of the children, the school organizes excursions and trips to nearby cities (Gorno-Altaysk and Biysk) from the third grade upward. Work training — for example, self-sufficiency in school and on the school grounds, volunteer humanitarian and social work, and help on the collective farm — is widely employed in the school. A large garden, which is already productive, was laid out with the pupils' efforts.

We have purposely dwelt on school life in Balykcha (which differs little from school life elsewhere in our country) in so much detail only because all these points, in both upbringing and education, are completely new factors in the development of Altai children. These factors were nonexistent in 1929, but now they certainly have a considerable influence on the formation of the child's personality and on his intellectual development.

In acquainting the reader with the family and school of Altai children we purposely employed mainly the data obtained in Balykcha. This is because in Ongudai it is no longer possible to make any sort of pure comparison. In this large district seat, with its straight streets and stone houses, four-story school and movie theater, live 4,061 persons. Most of them are Russian. The influence of Russians is so great that it cannot be isolated from the influence of general social changes. There are hardly any pure Altai families left; most of the families are mixed. For this reason, Balykcha, in which only 3 of the 207 families are Russian, was more suitable for our purposes. We shall continue with our analysis of the level of child development, relying principally on data from our investigation of Balykcha children.

4. Level of Development and Psychological Characteristics of Altai Children

The data presented by A. V. Zaporozhets in his paper on the intellectual development and psychological characteristics of Oirat children were obtained chiefly with the Binet-Simon tests, from observations and conversations with the children, and through the use of other tests (Rossolimo and others). To obtain comparable data we were also obliged to use these methods, although the serious shortcomings of these testing procedures are generally recognized. It should be pointed out that the principal fault of these tests (as became clear during their use in the twenties) as a basis for individual diagnosis and certain organizational decisions (transfer to remedial schools) was

irrelevant in our case, since our purpose was quite different: namely, to determine how the children's answers to the same questions had changed, what transformations their thought processes had undergone, and how their general development had been altered under the influence of social change.

It should be noted that Zaporozhets was extremely cautious in his conclusions. He repeatedly stressed that the chief objective in the use of tests (not the ultimate purpose) was to determine "intellectual age," and that its methodological objective was to ascertain the suitability of tests compiled in Western countries for the study of the mental characteristics of children living under very specific conditions remote from Western European ways. The author advanced the hypothesis that these tests were not suited for the given purpose, and the results of his observations demonstrated that this hypothesis was in general correct.

It should also be noted that Zaporozhets' paper contains a relatively small amount of comparative data and almost no data from interviews or conversations with the children — in contrast, for example, to an analogous paper of I. Bulanova on Tungus children. Nevertheless, the paper does contain at least some data on the mental development of these children, and we attempted to make a comparative analysis with reference to these data.

In 1929, 52 children were tested. We considerably increased the number of children in our study so that more reliable data could be obtained. In Balykcha we studied 93 children (20% of all the children); in Ongudai we investigated 100. Of these, 50 were 3-6 years old (25 boys and 25 girls), 91 were 7-10 (45 boys and 46 girls), and 52 were 11-17 (26 boys and 26 girls). The larger number of children investigated was also due partly to the fact that the members of the first expedition did not study preschool children (the youngest of the group studied was eight years old). We, on the contrary, administered the tests to all the age groups for which they were designed (from 3 to 17 years old).

The vast majority of the children studied in 1929 had had only

one or two grades of schooling. All of our children were attending school, and many of them were boarding at school. Approximately half of the preschool children we studied attended kindergarten.

In 1929 the investigators spent from one and a half to four hours questioning each child, because of the negative attitude of most of the children and their reluctance to answer. Our encounters with the children proceeded with ease. Only tots aged three to four presented some difficulty, since as a rule they did not know Russian and were very shy. We got almost no refusals from school-age children (from three, one of whom was ill). None of the children ran off during the questioning, as occurred in 1929. On the contrary, many of the children carried out the assigned tasks with evident pleasure and interest. The interviews with secondary-school children usually took 30-40 minutes. The test required a somewhat longer time for the younger schoolchildren (50-60 minutes). We made use of an interpreter for children up to the age of ten. From the third and fourth grades upward, the children were already able to converse fluently in Russian. Of course, the fact that Russian was not their native language must always be taken into account (which we did). But even the children over ten years old could reply in Altai if they wished (the interpreter was always present).

What were the general results of this investigation? Although they admitted many reservations, the investigators of 1929 produced considerable numerical data on the general level of development of Altai children. The Altai child was markedly retarded in his performance on the Binet-Simon tests (arithmetic mean I.Q., 66.9), and this retardation increased with age (the I.Q. was 69.15 for those 8-12 years old and 64.8 for those 12-16 years old). The investigators, very plausibly, attributed this to the absence of school influence among the older children and hence to their inability to answer questions designed for children who had been under instruction for several years (as has already been pointed out, the children attended school for only two to three years at that time). This hypothesis sounds

even more convincing when we note that children who had completed the first school level in 1929 had an I.Q. of 80-90. In our investigation the arithmetic mean I.Q. was 95.1 (for all 193 children).

Let us examine more closely the data we obtained with the Binet-Simon tests in Balykcha. The arithmetic mean I.Q. for 93 children (aged 3-17) was 96. We now no longer note a decrease with age. On the contrary, the I.Q. rises somewhat: from 92 for ages 3-6, to 97 for ages 7-14, and, finally, to 98.7 for ages 14-17. This rise can reasonably be attributed to the influence of schooling, the mastery of knowledge and intellectual skills, and a broader familiarity with world literature, art, and science.

Of course, these figures have no absolute significance. But their comparative value cannot be disputed. If formerly Altai children were on the average four years behind in development compared with children of the same age in Europe, they no longer are. Moreover, in each age group we encountered children who were advanced for their age: 9 of the 93 children investigated in Balykcha, including 7 of 22 in the group aged 3-7 who had an I.Q. of 133; 5 of the 60 in the 7-14 age group (I.Q.s 109-114); and 3 of the 11 in the 15-17 age group (I.Q.s 106-110). In Ongudai the number was even higher: 16 of 100 were advanced for their age.

However, it is clear that a qualitative, rather than a quantitative, analysis of the development of the Altai child is of main interest here.

It should be noted that certain traits in the development of the Altai child that Zaporozhets noted in 1929 have been preserved to the present day, the strong features of the psychology of the Altai child having come into their full flowering and the weak ones having been considerably blunted.

In visual memory, reconstructive imagination, keenness of observation, and practical actions, Altai children are far superior to a control group of Moscow children (tested on various specific tasks). Thus, 15 Altai and Russian children, aged ten, were exposed for ten seconds to two figures that they had to reproduce from memory. Fourteen of the 15 Altai children

were able to cope with the problem quite easily, whereas of the 15 Moscow children, only 3 were able to do so, and then with difficulty.

The Altai children performed just as brilliantly in a test involving the visualization of mirror images (a sheet of paper was folded in four, cuts were made at the folds, and the children were to draw how the cuts would look if the paper were unfolded). Only three of ten 15-year-old Altai children were unable to perform this test.

The Altai child loves to draw, and does so well without instruction. Altai children, including the youngest, are very observant and resourceful. For example, 7-year-olds were instructed to tell the difference between a butterfly and a fly, an egg and a stone, etc. Besides the usual answers of the type "A butterfly is large, and a fly is small," the children also stated that "Butterflies and flies have different stomachs," that "A fly's wings are translucent, while a butterfly's are velvety and multicolored," that they have "different fur," "different antennae," or "different eyes." In stating the difference between a stone and an egg, the children said, "An egg is easily beaten, while a stone is not," "An egg comes from a chicken, and a stone rolls down from the mountain," "An egg is soft and tasty, while a stone is hard," or "An egg is white on the outside while stones have many colors."

Altai children also exhibit keen observational abilities, vivid imagination, and enthusiasm in describing pictures. It should be noted that in 1929 some pictures were simply unintelligible to the children because of the very particular conditions of their life and unique factors in their personal experience. Thus, the picture "Uznik" ["The Prisoner"] evoked the completely inadequate response: "This is a big Russian man. He is in his house looking out the window." For a child living in a dark, smoke-filled hut without windows, a prison cell seemed comfortable and cozy.

The stories of contemporary children about pictures correctly reflect the content of the pictures, are often imaginative and emotional, include concrete details and actions, and are

pervaded with a definite mood. For example, this is how Misha Chesnokov (Balykcha, age 12) described the picture "Uznik": "These people have been put in prison. They are sitting on the beds. They are surrounded by cold stones. The window has bars on it. They are thinking something very sad. They do not feel like talking." Or another example of a story describing this picture: "Two prisoners of war are sitting in a prison cell. They are not speaking. They are sad about something. Only a weak light can get through the bars. It is gloomy and dark there. Only a piece of the sky is visible. The brown walls are dreadful " (Ongudai, Sasha Simonov, age 12).

As is evident, the children not only describe what is immediately portrayed but also give play to their imagination. In some stories direct speech is used. These stories are vivid and emotional. Volodya Konrakov (Balykcha, age 12) made up the following story for the picture "Grandfather and Grandson": "The grandfather is saying to the little boy: 'Mama went to work. There, there, my child.' He is teasing, but the boy listens and believes. Then the boy begins to laugh and shows something to his grandfather with his hand."

The picture "The Fox" he described as follows: "It was cold in summer. Rain clouds covered the sun. The fox went to look for something to eat. He sought and sought but found nothing. Then he stood up under a bush and cried: 'Bow-wow. I want to eat!' But he doesn't see that underneath there are big, tasty mushrooms."

Here is an example of a story of quite another type: "The old man was telling his grandson an evening tale. The grandson listened very attentively. After the story came questions from the boy which the grandfather answered very eagerly. Thus, question by question the grandson made up a little tale. The grandfather was very pleased with him" (Ongudai, Sveta Sadonova, 12 years old).

Visual memory, keen observational powers, and good imagination are qualities Altais have probably developed as a result of their unique habitat. Hunting, shepherding, and work as guides require a high level of development of these qualities.

It is necessary to be able to remember the way by referring to the most insignificant signs, to track an animal by its footprints; and when large herds of sheep are tended, each must be known and remembered by sight (since the Altais were not able to count). These needs undoubtedly stimulated the development of the appropriate mental qualities. Since the 10-year-old Altai of today as a rule does not have any appreciable experience in these activities but nevertheless still has splendidly developed observational powers, visual memory, and reconstructive imagination, the conclusion is suggested that some sort of predisposition to the development of these qualities is transmitted by heredity.

In the 1929 investigation it was pointed out that the children encountered the most difficulties in performing arithmetic tasks. Small children (6-year-olds) are even today somewhat behind in arithmetic. They have a poor knowledge of money. This is attributable to lack of experience: parents do not give their children money and do not send them to do the shopping. But as the results of school instruction show, Altai children are not behind Russian children in arithmetic.

Comparative data on the vocabulary of 12-year-olds are of interest. In 1929 Zaporozhets noted that in performing the task "give as many words as possible in three minutes" most of the Altai children encountered considerable difficulties. Not one was able to give the required 60 words; constant cues, repetitions, and instructions (up to six to seven times) were required. The words given by the children were, as a rule, merely a list of objects within their field of vision.

Today's Altai children have no such difficulties. The changes in vocabulary were very considerable. Almost all the children gave 50 to 70 words, and the type of words given was very enlightening: the children not only went beyond their immediate surroundings but also ventured with ease into areas beyond their own immediate personal experience. Here, for example, are the words enumerated by Volodya Kynyrov (age 12, Balykcha): Africa, miner, motorcycle, automobile, train, white light, gun, chessplayer, soldier, sailor, dictionary, cosmonaut," etc.

Misha Kekonov (Balykcha) gave the following list: "Mars, Venus, apple, grape, pear, natural phenomena, tractor, airplane, helicopter, train, boat, bamboo, palm, shark, dolphin," etc. Sveta Sadonova (age 12, Ongudai) named: "washing machine, curtains, cupboard, oxygen, nitrogen, professor," etc. Ugryumova Galya (age 12, Ongudai) gave: "cosmos, rocket, planet, sputnik, banana, pineapple, jungle," etc.

As in 1929, the children experienced marked difficulties in tests involving logical operations. Now, as then, they were able to solve visual, objective, practical tasks with much more ease and success. But it must be borne in mind that in the Altai language there are not many words for abstract concepts. For example, there is no word for "justice." The Altais speak of a "just man" (the word has only the adjectival form), so that, naturally, in answering the question "What is justice?" Altai youths usually began their answer with the words: "A just man is...." The characteristics of the language probably leave a definite mark on the thought processes of the child. That is why it was quite easy to detect the relation between the level of mastery of the Russian language and the level of development of thought, especially in answers to abstract, logical questions.

Even 10-year-olds had difficulty mastering certain concepts. A typical error, also noted previously, was encountered, namely, definition by action, e.g., "knife – to cut," "chair – to sit," "horse – to ride." But whereas Zaporozhets noted this tendency equally in all age groups, we did not find it among the older children, who as a rule immediately gave a generic definition. It is interesting that 10-year-olds, for whom this test was designed, exhibited signs of transition to logically correct definitions. For example, Kolya Myrchikov (age 9, Balykcha) gave these definitions: "Horse – to ride, an animal. Chair – to sit, a piece of furniture. Fork – you eat with it. A utensil." But much more often definitions of the following type were given: "Fork – you stick a potato with it to see if it is cooked" (spoons are usually used to eat with in Altai). We also obtained completely correct answers, such as: "Horse – livestock, animal; chair – a thing, a piece of furniture, not an animal;

fork — an iron utensil" (Trifon Shakhin, age 9, Balykcha).

In his report, Zaporozhets noted that Altai children had a tendency to translate a theoretical question into a concrete one. For example, to the question: "What should you do if you break something not belonging to you?", the children responded with the questions: "Whose thing?" "What thing?" and if they were prompted accordingly, they would then answer the specific question.

We did not encounter such examples. The answers were quite definite: "I would excuse myself," "I would tell my parents," "I would certainly say I was sorry," "I would replace it with my own or something similar," "I would pay for it," etc.

In the 1929 investigation, Altai children were insensitive to logical and verbal contradictions. The 1966 data indicate the necessity for making certain distinctions here. We also observed a certain insensitivity to the structure of the Russian language. Some children had difficulty in mastering tasks involving the reconstruction of sentences ("Rearrange the words so that the sentence is correct"). They did not sense the error in the structure of sentences such as "The dog good bravely protects master" [Zashchishchaet khozyaina sobaka khoroshaya khrabro]. This insensitivity was most usually attributable to inadequate mastery of the Russian language.

But logical incongruities in most cases evoked a very distinct emotion, such as surprise, and sometimes laughter. Thus, after hearing a sentence containing a logical inconsistency ("The body of the poor girl, cut up into 18 pieces, was found in the forest. They say she committed suicide.") Lenya Molchaev (age 11) broke into laughter, shook his head, and said, with a sly look in his eyes: "That can't be; the girl wouldn't cut herself into 18 pieces."

These problems were generally solved willingly and with animation, and evoked considerable interest in the children; if they were not able to define the error clearly, they listened and reflected with pleasure on the problem. Hence, we were surprised to read that the members of the first expedition experienced great difficulties in carrying out these tests.

Altai children still live in an environment distinct from city life. Some tasks that are familiar in content to the urban child are very difficult for Altai children. Consequently, we decided to modify certain tests that were remote from the Altai child's experience. Thus, the children were asked to compose a simple sentence out of three words: "city — river — money." These concepts are unfamiliar to the Altai child, living in Balykcha, deep in the mountains, and never having seen a city. So we substituted the words: "mountain — bear — river." As a result, whereas the first test was hardly ever mastered in Balykcha (with rare exceptions), almost all the children could cope with the second.

In this context, it is interesting to point out that in Ongudai it was not necessary to make this substitution. In most cases the children coped successfully with the task, displaying resourcefulness and ingenuity — for example: "They paid money for the ticket, but went to the city by river" (Ongudai, Sasha Simonov, age 12). "The girl lost her money in the river behind the city" (Ongudai, Sveta Sadonova, age 12).

During our expedition, we time and time again came across evidence confirming the importance of knowing the specific conditions of life of children and the peculiarities of their native language. Thus we were for a long time astonished to note that in spite of an overall normal development, 5-year-olds continually confused green and blue. The color-identification test is one of the easiest, and for a long time we were unable to understand this phenomenon. Whereas other colors were identified quickly, correctly, and quite confidently, green and blue invariably produced confusion. The reason for this finally became clear after we discovered in a conversation with a teacher that in the Altai language the word "blue" is used for grass and leaves on tress, and that although a word for "green" does exist, it is used in literary language, not in everyday speech. This fact, as well as the fact that several abstract concepts are lacking in Altai, demonstrated once again how important it is for an investigator to know the native language if he wants to study other peoples.

The 1929 investigators noted that an underdeveloped voluntary attention was a characteristic trait of the Altai child. Any prolonged activity gave the children difficulty if it was not stimulated and reinforced from without by additional instructions, reminders, or a change of stimuli. This was evident in many tasks that demanded prolonged, independent, personal effort (for example, enumeration of a list of words, repetition of a philosophical argument, etc.). Our observations showed an underdeveloped voluntary attention only in preschool children. Schoolchildren were already able to concentrate their attention on the execution of those tasks assigned to them.

* * *

To summarize, it can be stated that changes in the social and cultural conditions of life of Altai children have been the decisive factors that have radically transformed their intellectual world. The circumstance that the level of development was, on the whole, lower in preschool children than in school-age children indicates that the Altai family is, as a rule, still unable to provide for the development required by its children, and that the school is the chief factor in ensuring normal child development. At the same time, children from families enjoying a high educational and cultural level exhibited the highest level of development. In this respect Balykcha is an excellent place for a natural experiment to ascertain the role of the family in child development. All social and cultural factors influencing the child, such as school, libraries, clubs, movies, radio, and even the adult surroundings, are the same for all children in Balykcha. Communication with other parts of the country is obstructed there, and visitors are rare. Hence, the only important social factor that varies from child to child is the family. Its role in child development proved to be quite considerable. It is no accident that all signs of advanced development were exhibited by children from families in which the parents had had an intermediate or higher education. There were, naturally, isolated exceptions that, in our opinion, were

attributable to the natural gifts of individual children. But these exceptions only proved the rule.

Today's Altai child is much nearer to the contemporary Russian child of the same age in his development and intellectual outlook than to the Altai child of the twenties. And herein lie the great service and merit of Soviet power, which has ensured a free and cultured life to all the nationalities of our country.

Notes

1) See the journal Pedagogiya, 1930, No. 2.

2) In determining the education of parents in families in which the father and mother have had different levels of education, the higher educational level is noted.

3) The educational level of teachers in Ongudai was higher: 31 of 50 teachers had either a complete or incomplete higher education, and 15 had an intermediate special pedagogical education.

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