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Teacher-Identified Smart Children: Low Somatic Problems and High Communication Levels

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Abstract The purpose of this study was to analyse the factors (parental characteristics, child gender, birth order, development, availability of computer at home, music preferences, time spent watching television, multiple intelligences, child behaviour checklist, preschool language scale) that affect teacher identification for smart kids in two selected institutional kindergartens having families with favourable to growth and development. The smart kids had significantly older parents, higher intelligence scores in Stanford Binet Intelligence Scale and lower somatic problems in Child Behaviour Checklist, higher language scores in Preschool Language Scale. As a result, if the teachers' evaluation is taken into consideration, smart preschoolers might have an opportunity for gifted programs and could be placed in programs that meet their needs.

Key words CBCL; Development; Kindergarten; Language; Smart kids

Introduction

Teachers identify some children as "gifted, clever, special, bright, and intelligent" and pay attention specially and, guide their families to doctors. Then, they give special attention to these children. However, this identification is subjective. Also, private training might increase intelligence. Conditions which make children smart are controversial.[1,2] The factors that make children smart remain to be investigated. Poverty, inadequate psychosocial stimulation, undernutrition and infections limit children's cognitive development.[3] However, limited number of children are defined as bright ones even in conditions which are favourable to growth and development. Also, there was no published study showing the characteristics of bright children which were defined by teachers. The purpose of this preliminary study is to analyse the differences between children identified by teacher as smart and average in parental characteristics, children's gender, birth order, development, breastfeeding duration, time spent watching television, availability of computer at home, music preferences, Teele Inventory of Multiple Intelligences, Stanford Binet Intelligence Scale, child behaviour checklist (CBCL), and Preschool Language Scale in institutional kindergartens.

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Materials and Methods

This study took place in kindergartens located in Ankara on May in 2007. To eliminate high risk factors for

development, two institutional kindergartens with high maternal education, families having less than three children and parents with official work were selected. Children identified as "gifted, talented, smart, bright, special and intelligent" by their teachers were taken as the smart group (Group I). For each smart child, one "average" child in the same kindergarten class with similar age, gender properties were chosen as the average group (Group II). Teachers were selected nearly one in 10 children as the smart kids and one in 10 children as the average children. A classroom has 18-24 children.

Selected children were invited with their mothers to hospital. Mothers of the selected children gave informed consent before investigation. All researchers were blinded about the group of children while implementing instruments and questionnaires. First of all, a questionnaire was administered to all participating families by a researcher (SB). The questionnaire had 3 parts. In the first part demographic data about the child and mother's pregnancy, delivery period, family characteristics and child care were questioned. The second part focused on nutrition and the health record of the child covering the diseases. The third had questions on television watching habits of the child and family, child's interests and development. Then, behaviour problems, intelligence areas, intelligence and language scores were measured.

Behaviors of the children were assessed by CBCL/4-18 with subscales including withdrawn, somatic complaints, anxiety/depression, social problems, thought problems, attention problems, delinquent behaviour, and introverted, aggressive behaviour problems.[4] It was filled out by the mothers and overall scores were calculated.

Clinical psychologist performed "TIMI-Teele Inventory for Multiple Intelligence". (linguistic, mathematical, visual-spatial, musical, psychomotor, intrapersonal, and interpersonal intelligence areas of the children)[5,6] and "Stanford Binet Intelligent Test".[7]

Speech therapist assessed language scores of the participating children using "Preschool Language Scale".[8,9]

Types and classifications of plays investigated in three categories. The first category was building-construction plays including legos, puzzles, dominos, flash cards and etc. and the second one was imaginary and imitative plays including baby dolls, cars, plush toys like animals, etc. and the last one was a play like chess, computer plays, playing house, etc.[10]

Children's preference of television (TV) programs investigated in three groups; programs with magic topic, kid programs and comedy programs.

Statistical analyses were done with SPSS for Windows (SPSS Inc., Chicago, IL, USA). To compare means, Student t-test was used in data with normal distribution and Mann-Whitney U test in data with skewed distribution. The difference in case distribution between the groups was analysed by using Chi-square test. The Fisher exact test was used when applicable. P values <0.05 were considered significant.

Results

The participants included 21 smart and 21 average kids. The mean ages were similar in both groups. Male children were 33.3% in the smart group, 40.0% in the average group (Table 1). Interestingly, mothers and fathers were older in the smart group than that in average ones ($p<0.05$). There were no differences in the size of household and the number of children in the families in both groups. The families have maximum two children. No significant differences were detected in the parental education levels between groups. Mothers and fathers in both groups had more than 11 years of education. Family income was above 1000 US$. All fathers and 95.2% of mothers are working for the government as officers. 14.3% of the smart group and 5.0% of the average group were born premature.

All children had been taken breast milk. No significant differences were detected in the total duration of breastfeeding period and the starting time of complementary food in groups (Table 1). Iron deficiency anaemia during infancy period was detected in 15.0% of the smart and 4.8% of average children. In the smart group 38.1% of children had a history of hospitalisation at least once since they were born, and hospitalisation rate was 19.0% in average group.

The mean birth weight, current weight and height values of children were similar in groups. No child had malnutrition. Developmental gross motor milestones including holding up the head, sitting without support, walking alone were similar in groups.

The mean numbers of TV sets were similar in groups (Table 1). 33.3% in the smart group and 47.6% in the average group had TV sets more than two. Interestingly, 19.0% of the smart and 4.8% of the average children had television in their rooms. There were no significant differences between groups in the number of televisions at home, the duration of watching TV for mothers and fathers, the starting age for TV viewing, the duration of watching TV for children and the reasons to have children watch

Table 1 Demographic and developmental characteristics of the groups, mean±SD

		Smart	Average	P
Age, months		60.6±8.6	63.8± 9.3	0.252
Male gender, n (%)		7 (33.3)	8 (38.1)	0.747
Birth order, 2nd child, n (%)		9 (42.9)	9 (42.9)	1.000
Age of mother, years		36.4 ±4.1	32.7± 2.9	0.001
Age of father, years		38.1±3.7	34.2±2.3	<0.001
Number of family members		3.43±0.51	3.38±0.50	0.760
Birth weight, kg		3.37±0.54	3.28± 0.27	0.478
Breastfeeding period, months		16.0±9.3	13.5±6.9	0.322
Complementary food intake time, months		5.45±1.42	5.38±1.12	0.857
Holding up the head, months		1.60±0.83	1.62±0.67	0.919
Sitting without support, months		5.95±1.42	6.28±0.72	0.343
Kindergarten period, years		2.27±1.29	2.36±0.88	0.800
Weight, kg		18.9±2.7	19.7±3.3	0.433
Height, cm		111±6	114±5	0.077
Television (TV) watching habits				
No of TVs at home		2.24±0.77	2.48±0.51	0.244
	n (%) 1	3 (14.3)	0 (0.0)	0.171
	2	11 (52.4)	11 (52.4)	–
	3	7 (33.3)	10 (47.6)	–
Duration of watching TV for mothers, hours		1.73±0.80	1.90±1.03	0.562
Duration of watching TV for fathers, hours		3.00±1.14	3.05±1.12	0.892
Age the child started watching TV, months		11.6±8.6	12.7±9.6	0.700
Duration of watching TV for the child, hours/day		1.45±0.65	1.62±0.76	0.448

TV. In the smart group, 28.6% of mothers stated that they turned on television when it was not being watched, however 42.9% in the average children did. Mothers let their children watch TV for the following reasons with order: to have them listen to music, to have them see different scenes, to have them eat, to have them to do housework, to keep them busy, to have them sleep (Table 2). Nearly all mothers in the groups reported that they preferred the TV kid programs mostly, then followed by magic topic and comedy programs. Interestingly, smart children watched programs with magic topic less than average children (52.4%, 85.7% respectively; p=0.019). Almost all children preferred pop music in both groups (Table 2). Computers were present at home in 76.2% of the smart group and 52.4% of the average group. Overall, 61.9% of the smart group and 47.6% of the average group played computer games. No significant differences were detected in the presence of computer at home and playing computer games between groups.

When play and toy preferences were analysed, there were no significant differences between groups (Table 2).

The mean intelligence score of the smart group was found to be significantly higher than that of the average ones (p<0.001, Table 3). The smart group displayed significantly higher expressive, receptive and total language scores (respectively, p=0.001, p<0.001 and p<0.001, Table 3). When multiple intelligence areas and CBCL were analysed, the means of introverted scores of multiple intelligence scores (p=0.058) and the total internal scores of CBCL were found to be lower in the smart group (p=0.060) which were not statistically significant. The mean somatic complaint score in CBCL was detected to be significantly lower in the smart group than that in the average ones (p=0.007, Table 3).

Discussion

The teacher-identified smart group had statistically higher mean intelligence score. This shows that the value of kindergarten teachers' ratings for smart child is high similar to previous studies for learning disabilities.[2] In our study, the similarity between groups in terms of children's birth order, maternal education level, family size, duration of breastfeeding, starting age of kindergarten, standard curricula in kindergarten, television watching duration and toy preference shows that being smart in a favourable environment for development might be partly explained by individual and innate factors. However, parents of smart children were older. We supposed that older parents might spend more time with their children, which cause more extraverted and intelligent children, however, this should be analysed in further studies.

Television affects cognitive development of children both negatively and positively.[11,12] This effect depends on the time spent watching TV and type of program being watched. No significant difference was found between the two groups for the time spent watching TV. This might be due to kindergarten education and a high level of maternal education. To attend a kindergarten might limit TV watching time at home. However, smart children preferred and watched the magic programmes less than average children. A possible explanation might be that smart/gifted children is mostly active and goal oriented, is driven to explore things, loves projects that require inquiry, demonstrates awareness of issues, such as death, war, and world hunger.[13] Previously, the mean age for becoming a TV watcher was reported to be 2.7±1.6 years in similar day-care centers in 1999.[14] However, the age which children started watching TV was younger in the present study.

Table 2 Reasons for mothers having their children watch television and television (TV), music, play and toy preferences of the gifted and average group, n (%)

	Smart		Average		
	No	**%**	**No**	**%**	**P**
Reasons to have children watch TV					
To have them listen to music	13	61.9	13	61.9	1.000
To have them see different scenes	9	42.9	11	52.4	0.537
To have them eat	5	23.8	10	47.6	0.107
To do housework	2	9.5	5	23.8	0.410
To keep them busy	4	19.0	2	9.5	0.663
To make them sleep	2	9.5	2	9.5	1.000
Television program rreference					
Kid programs	19	90.5	21	100.0	0.488
Series with magic topic	11	52.4	18	85.7	0.019
Comedy	4	19.0	5	23.8	0.707
Houses in which TV kept open although no one watched	6	28.6	9	42.9	0.334
Music preference					
Pop	16	76.2	19	90.5	0.349
Folk	1	4.8	0	0	–
Rock	1	4.8	1	4.8	–
Dance	1	4.8	0	0	–
All	2	9.5	0	0	–
Play preference					
Building-construction plays	19	90.5	19	90.5	1.000
Imaginative play	21	100.0	20	95.2	1.000
Play with their friends	11	52.4	13	61.9	0.533

Some reported characteristics of smart children include advanced language skills and inquisitiveness, sophisticated problem-solving skills, abstract thought, independent and self-directed activity, and friendships with older children developmental asynchrony, advanced humor, sensitivity, perfectionism, and emotional intensity.[13] Additionally, in the present study, the smart preschoolers had statistically lower somatic scores of CBCL. Anxiety disorders are among the most prevalent psychiatric disorders with somatic complaints in children and are associated with poorer academic performance.[15,16] Also, early identification of intellectual deficits among preschoolers ages 3 to 5 was recommended to prevent later school difficulties and severe psychopathology.[17] Although somatic complaints might be a predominant characteristic of poorer academic performance,[16,17] there was no study about the somatic complaints in smart children. Also, significant differences were detected in language scores between the smart and average groups. The vocabulary of the smart children is richer than that of their cohorts with a superiority of using words in the proper contexts.[13] In the preschool period, children ask challenging questions, discuss on different topics and ideas, and have detailed explanations. The smart kids frequently ask "what?", "how?" and "why" questions and find answers; thereby, enrich their vocabulary indirectly; they try to understand the world and their surroundings. Thus, the ability to ask questions is a powerful tool that allows children to gather information they need in order to learn about the world and solve problems in it.[13,18] As in our study, being extroverted might support this communication and, decrease anxiety and somatic complaints in smart children. A longitudinal study revealed that individual differences in executive function mediated the influence of early language deficits upon later problem

Table 3 Intelligence features of the sampling children, mean±SD

	Smart	Average	P
Intelligence score, age	79.8±7.3	67.9±7.2	<0.001
Multiple intelligence scores			
Language	4.19±1.47	3.71±1.23	0.262
Mathematics	4.10±1.55	4.00±1.52	0.841
Visual	4.67±1.32	4.81±1.25	0.720
Music	3.62±1.32	3.14±1.31	0.249
Movement	3.67±1.68	3.52±1.47	0.771
Introverted	3.19±1.78	4.14±1.35	0.058
Communication	4.24±1.51	4.14±1.24	0.824
Preschool language scale			
Receptive subscale standard score	126.8±10.2	110.3±16.6	<0.001
Expressive subscale standard score	125.7±17.3	103.9±22.2	0.001
Total language standard score	128.6±13.0	107.9±20.0	<0.001
Child behaviour checklist			
Withdraw	1.05±0.97	1.48±1.12	0.194
Somatic	0.52±0.60	1.14±0.79	0.007
Anxious/Depressed	3.24±1.73	3.67±1.89	0.446
Social problem	1.71±1.49	2.19±1.97	0.381
Thought problem	0.43±0.59	0.52±0.68	0.632
Attention problem	3.14±1.93	3.05±1.75	0.868
Delinquent behaviour	1.90±1.18	2.19±1.47	0.491
Aggressive behaviour	6.71±2.78	7.48±2.99	0.398
Internal	4.81±2.52	6.29±2.41	0.060
External	8.62±3.25	9.67±3.84	0.345
Total problem	23.4±8.57	27.1±10.1	0.200

behaviours.[19] Also, it was reported that young children with elevated rates of problem behaviours had also clear deficits in verbal ability.[20] A plausible explanation is that sophisticated problem-solving skills of smart preschoolers might decrease somatic complaints.[13]

As a result, teacher-identified smart children show themselves as being extraverted with higher communication levels. By this way, they express themselves better and have lower somatic problems.

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