Original Article

Parents' Children with High School Present a High Level of Attention

Filhos de Pais com Nível de Educação Escolar Superior Apresentam um Alto Nível de Atenção

Elionilde Aquino de Menezes[4]; Valdenilson Ribeiro Ribas[3]; Renata de Melo Guerra Ribas[5]; Gilca Bezerra Alves Siebra[6]; Ketlin Helenise dos Santos Ribas[7]; Cláudia Ângela Vilela de Almeida[8]; Hugo André de Lima Martins[9]; Gutemberg Guerra Amorim[9]; Everton Botelho Sougey[2]; Raul Manhães de Castro[1].*

ABSTRACT

The attention level was measure in 20 masculine sex children with age among 9 to 12 years old of a Recife city particular school. The subjects were divided in two groups. Parents' son without high school (CONTROL, n=10) and parents' son with high school (PSHS, n=10). The evaluations were accomplished by the Digit Symbol, d2 and Digit Span Forward and Inverse tests. T-*test* was used with $p<0.05$ and expresses data in mean ± SEM. In the deployment factor, in spite of the focused (37 ± 2.04) and the sustained attention (303.2 ± 14.07) of PSHS have been found with superiors results to respective controls (33.7 ± 1.56), (284.10 ± 21.22), there was not significant statistical difference, $p=0.215$. About the attention capacity factor, the auditory attention evaluation accomplished by digit span forward, PSHS presented span of attention increased (10.5 ± 0.67), when compared to the CONTROL group (7.50 ± 0.45, $p<0.05$) and in the mental manipulation capacity evaluated by digit span inverse test, PSSL presented superior mental manipulation capacity (5 ± 0.54), when compared to the CONTROL group (3.50 ± 0.22, $p<0.05$). Thus, parents' son with high school present an attention superior capacity to parents' son without high school.

Key Words: Focused, sustained attention, mental manipulation.

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[1] Doutor em Farmacologia Experimental e Clínica da Universidade de Paris VI, Professor associado do Departamento de Nutrição, UFPE; [2] Doutor em Saúde Mental pela Universidade Estadual de Campinas, UNICAMP, Professor Adjunto, UFPE; [3] Mestre em Neuropsiquiatria, Professor da Universidade Estadual Vale do Acaraú, UVA-PE/ ISEAD; [4] Aluna da Especialização em Psicopedagogia da Universidade Estadual Vale do Acaraú, UVA-PE/ ISEAD; [5] Especialista em Gestão da Qualidade e Vigilância Sanitária em Alimentos, Universidade Federal Rural do Semi-Árido (UFERSA/ EQUALIS); [6] Doutoranda em Neuropsiquiatria e Ciências do Comportamento, UFPE, Professora do Instituto Federal de Educação, Ciências e Tecnologia da Bahia (IFBA); [7] Estagiário (a) do Laboratório de Imunopatologia Keizo Asami, LIKA, UFPE; [8] Doutora em Ciências Biológicas pela Universidade Federal de Pernambuco, UFPE; [9] Doutorando em Neuropsiquiatria, Pós-graduação em Neuropsiquiatria e Ciências do Comportamento.

Estudo realizado na Pós-graduação em Psicopedagogia da Universidade Estadual Vale do Acaraú, UVA-PE/ ISEAD, Recife, Brasil.

*Author's address: Avenida Armindo Moura, 581. Quadra D – Bloco 02 – Apartamento 201. Conjunto WXL. Bairro: Boa Viagem. Cep.: 51.130-180. Recife-PE. Fones: (81) 9986-4399/ 9245-6031 ou 3339-5420. E-mail: professorribas.isead.uva@gmail.com

RESUMO

Avaliou-se a atenção em 20 crianças do sexo masculino com faixa etária entre 9-12 anos de uma escola particular da cidade do Recife-PE. Os sujeitos foram divididos em 2 grupos. Filhos de pais sem nível superior (CONTROLE, n=10) e filhos de pais com nível superior (FPNS, n=10). As avaliações foram realizadas pelos testes Digit Symbol, d2 e Span de dígitos em ordem direta e inversa. Os dados foram analisados pelo teste t-Student, com $p<0,05$. Em relação ao fator distribuição de atenção, apesar do foco de atenção (37 ± 2,04) e da manutenção do foco (303,2 ± 14,07) dos FPNS terem sido encontrados com resultados superiores aos seus respectivos controles (33,7 ± 1,56), (284,10 ± 21,22), não houve diferença estatística significativa, $p=0,215$. Quanto ao fator capacidade de atenção, na avaliação da atenção auditiva realizada pelo Span de dígitos em ordem direta, os FPNS apresentaram uma capacidade de atenção auditiva aumentada (10,5 ± 0,67), quando comparada ao grupo CONTROLE (7,50 ± 0,45, $p<0,05$) e na capacidade de manipulação mental avaliada pelo Span de dígitos em ordem inversa, os FPNS apresentaram uma capacidade de manipulação mental superior (5 ± 0,54), quando comparada ao grupo CONTROLE (3,50 ± 0,22, $p<0,05$). Conclui-se que alunos, filhos de pais com nível superior, possuem uma capacidade de atenção superior aos alunos, filhos de pais sem nível superior.

Palavras-chave: foco de atenção, manutenção do foco, manipulação mental.

INTRODUCTION

The present study integrates the researches related to the learning and the infantile development. The interest for that approach in prominence comes from the lack of attention in some students in classroom.

This study can contribute to the health, education and society areas, once it will present subsidies to work with the lack of attention.

According to Coll (1995) some theories and explanatory models attribute learning difficulties to maturation delay in neurological structures or psychological functions (1).

The several tests about the attention gives us opportunity to evaluate attention deficiency possibility and in which degree for that way can find a method minimize the problems caused for that difficulty.

The attention is a neuropsychological basic function that is underlying to all the mental processes in some aspect of the internal or external atmosphere, answering predominantly to the incentives that are significant, inhibiting responses to the other incentives (2,3).

There are different attention types due the involved processing type, including selective attention, sustained attention, alternate attention and divided attention (4). For example, selective attention refers to the incentive specific responses emit capacity not disrespecting those important. Sustained attention represents the individual's capacity in maintaining incentives sequence focused attention for a period to get task development, being characterized by an incentives detecting ability (vigilance level) and for a decrease in the acting along the time. Each aspect of the attention links to encephalic specific structure areas and that act as an integrated system (5).

Several models of attention have been proposed. In effort to integrate different models, Mateer and Mapou (1996) proposed an assessment model that separates attention into two major areas: deployment and encoding. As a matter of fact, we preferred to say into major factors to avoid confusion with cortical areas (6).

Deployment refers to how well an individual can channel and focus attentional resources and includes arousal, focused and sustained attention. Arousal is evaluated by direct observation. Focused attention requires the individual to reject irrelevant information while attending to relevant input. It can be assessed by tasks that require quick scanning and identification of targets such as the digit symbol (from Wechsler Intelligence Scale), trail making, d2 and others tests (7).

The second factor, capacity/ encoding, refers to how well and individual can keep information in mind and then process it, even if distracted or required to divide attention among tasks. It includes span of attention (Digit span forward), mental manipulation (Digit span inverse) and resistance to interference (PASAT) (8).

Although several attention researchers have been found in some of the studies (9), attention evaluation in parent's children with high school level is still very scarce. The objective of this study was test the hypothesis that the parent's sons with high level education have high level of attention when compared with parent's son without high level education.

METHOD

The study was approved by the Ethics Committee in Research of the Agamenon Magalhães Hospital in meeting of October 29, 2008, obeying the researches norms involving human (Resolution 196/96).

The experiment was accomplished in a Recife particular school (Viver Colégio & Curso). This institution works from maternal to the medium teaching.

Subjects

The students with ages among 9 to 12 years were random selected in Viver Colégio & Curso, constituting a 20 masculine sex children sample.

The subjects were divided in two groups. Parents' son without high school (CONTROL, n=10) and parents' son with high school (PSHS, n=10). The control group was constituted by children in the same PSHS age without any damage in the school activities.

The subjects were submitted to the evaluations in the school auditorium under pattern conditions in building with central air conditioned at 22° C (± 2°) temperature. The research included masculine sex students and excluded the feminine sex students.

Attention Evaluation

It accomplished by a Psychologist, Valdenilson Ribeiro Ribas, with registration CRP 11.797, in agreement with the Brazilian Psychology Federal Council guidelines.

Deployment factor - digit symbol and d2 test application

The digit symbol requests the correct correspondence of the numbers from 1 to 9 and its respective symbols for 1 minute and 30 seconds; while in the d2 the individual should mark in a specific form contends 14 lines with 47 lines each one, the letter d, maintaining the focus in d2, according to previous explanation, position that the letters " d " can be differentiated with only or double lines, above or below the letter.

Attention capacity factor - Digit Span Forward - Digit Span Inverse

Digit Span Forward - First with a sequence of 2 digits and it is going increasing progressively. The subject must repeat correctly that sequence. That is an indirect form of measuring the amount of information that the subject is able to retain.

Digit span inverse - similar to the Digit span forward, even so the subject should repeat the digits sequence in inverse order. For example, 4-3-7, the individual should repeat 7-3-4. It is so forth. The digits sequence are increasing and the subject is going repeating in contrary order. Besides the information maintenance in the memory, the subject should also do information mental manipulation.

DATA ANALYSIS

The found data in the attention tests individual application were expresses in mean ±

SEM and analyzed by Student's "*t*" test. The significance level adopted for statistical tests was p<0.05.

RESULTS

Attention focused evaluation - Digit Symbol:

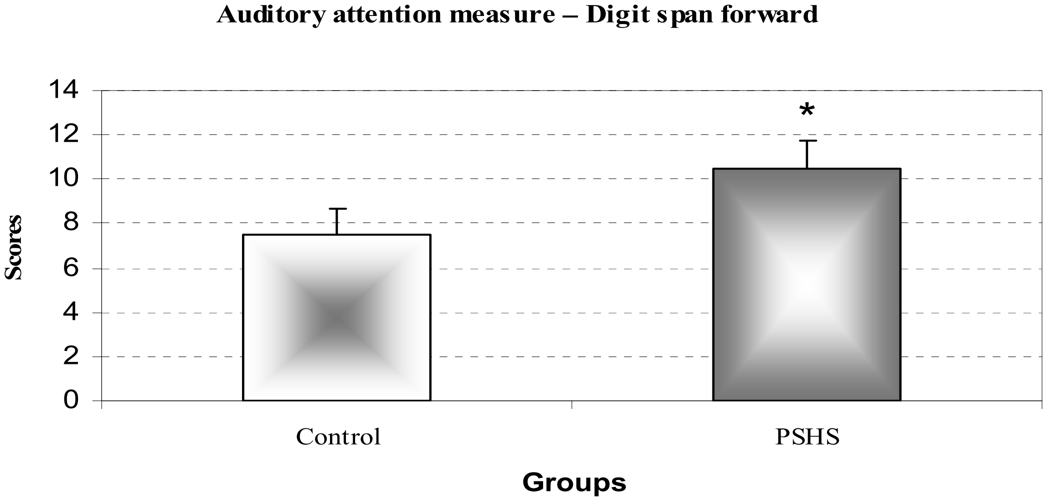
Although, the parents' son with superior level (PSHS) have presented increased attention focus (37 ± 2.04), when compared to the CONTROL group (33.7 ± 1.56, p=0.215), there was not significant statistical difference.

Sustained attention evaluation –d2 Test:

In spite of PSHS have presented a liquid revenue or sustained attention increased (303.2 ± 14.07) compared to the CONTROL group (284.10 ± 21.22, p = 0.463), there was not significant statistical difference.

Auditory attention measure – Digit span forward:

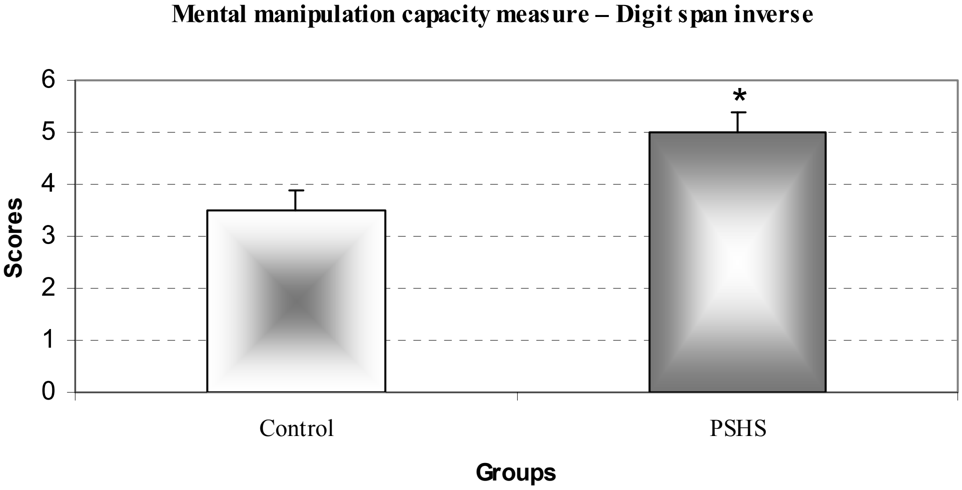
The PSHS presented attention auditory capacity increased (10.5 ± 0.67), when compared to the CONTROL group (7.50 ± 0.45, p<0.05) (Graph 1).



Graph 1. Auditory attention measure – it was evaluated by the Digit span forward test in parents' son with high school level (PSHS; n=10), compared to the control group (CONTROL; n=10). T-test was used with p<0.05 and expresses data in mean ± SEM.

Mental manipulation capacity evaluation – Digit span inverse:

The PSHS presented superior mental manipulation capacity (5 ± 0.54), when compared to the CONTROL group (3.50 ± 0.22, p <0.05) (Graph 2).



Graph 2. Mental manipulation capacity measure – it was evaluated by the Digit span inverse test in parents' son with high school (PSHS; n=10), compared to the control group (CONTROL; n=10). T-test was used with $p<0.05$ and expresses data in mean ± SEM.

DISCUSSION

It was verified in this work that the parents' children with high school present a span of attention and mental manipulation with higher level than parents' children without high school.

Our work corroborates Antunes' *et al.* discoveries (2001). Those resulted agree just to the attention increase aspects. However, it makes necessary to expose in this discussion the difference and the likeness among them. The difference is in Antunes' fact and collaborators have worked with the attention level evaluation in the senior people current of physical exercises. Although the activation cerebral patterns in seniors present great differences compared to the young operation patterns (10), the likeness of those studies is exactly in the cerebral pattern alteration possibility in the perfusion with blood flow increased observed in structural neuroimaging exams accomplished after the physical exercise (11) or during the reading accomplishment (12).

In the last years, neuroimaging techniques have been used intensely in the human cerebral operation investigation. The most traditional methods are the positron emission tomography – PET and the single photon emission computed tomography - SPECT. Both allow the three-dimensional maps construction of the cerebral activity from the gamma rays detection emitted for tracer marked with radioactive isotope administered via veined or inhalational (10).

The reading and writing are the elevated forms of language that demand an anatomical and neuropsychological operation so much complex. The learning difficulty related to the reading and writing abilities are denominated dyslexia or, according to DSM-IV, reading disturb that can come with difficulties in the oral language, calculation, attention, memory and perceptive-motive integration(13).

Recent studies have been demonstrating by SPECT the neurological functional deficits existence as reason of several manifestations that take the dyslexia (14).

Besides the physical subject that involves the brain use, providing the blood displacement in certain areas with the simple reading act, there is a subjective question that comes before and it determines this behavior that is its learning. Our explanatory hypothesis bases on the data obtained with each student in an interview done before the tests accomplishment that confirm the parents' reading habits and for more two theories that base the child's thought construction. The first refers to the imitation (15).

Bandura proposes that great part of the social behavior is learned by the other behavior observation and imitation, mainly, father and mother. The second hypothesis, same belonging to another theoretical approach, psychoanalysis, it seems to bring the same sense of the Bandura thought.

The one that the parents are doing represents a lot in the thought formation and structure children's personality. Lacan approaches this same subject in his "big Other" theory. That Other different from the other that is my fellow creature, equal and rival constitutes the symbolic alterity and the language, where the subject finds not identity but its representation: in the significant ones that came from those that occupied in its history that place for him: Father and Mother (16).

The results of this work seem to demonstrate the interaction of the behavior learned by those children with the increase blood flow in certain cerebral areas. If the parents teach to the children to use the mind, possibly, they will use and, consequently, they will irrigate more their brains and this conduct facilitates a larger cognitive acting, above all, in relation to the attention capacity aspects.

In the same way, if the parents don't stimulate the children's reading and these start to work in activities that demand a few operation of the cognitive system, there will not increase their attention level and if these individuals be still submitted the stress in long period, the result tends to present decrease of the attention capacity, as it was the case of the Guerra-Ribas *et al*. (2009) work. These authors evaluated stress and attention level in feeds manipulators in Recife Public and found reduction of the attention level in feeds manipulators with more than 5 (five) years in the profession compared with manipulators with less than 5 (five) years in the profession (17).

In spite of our work just have been a case study, we concluded that parents' children with high school level tend to present a higher level then parents' children's attention without high school .

REFERENCES

1. FRANCO ES, PANHOCA I. Pesquisa da função vestibular em crianças com queixas de dificuldades escolares. Revista Brasileira de Otorrinolaringologia, 2008; 74: 815-825.

2. LAKS J, ROZENTHAL M, ENGELHARDT E. Neuropsicologia VIII – Atenção. Aspectos Neuropsicológicos, Revista Brasileira de Neurologia, 1996; 32 (3): 101- 106.

3. STERNBERG RL. La inteligencia exitosa: una visión má ampla de quién es más listo en la escuela y en la vida y Entrevista exclusiva in Códice 2,5, Bogotá : Instituto Alberto Merani , Ano 1, no. 1, fevereiro de 2000

4. SARTER M, GIVENS B & BRUNO JP. The cognitive neuroscience of sustained attention: where top-down meets bottom-up. Brain Research Reviews, 2001; 35: 146–160.

5. MATEER C & MAPOU R. Understanding, evaluating and managing attention disorders following traumatic brain injury. Journal of Head Trauma Rehabilitation.1996; 11: 1-16.

6. STRAUSS EA. A compendium of Neuropsychological Tests. New York, 1998.

7. OLTMANNS T, NEALE JM. Schizophrenic performance when distractors are present: attentional deficit or differentional task difficulty. J Abnormal Psychol. 1975; 84: 205-209.

8. GRONWALL D. Information processing capacity and memory after closed head injury. International Journal of Neuroscience, 1981; 12: 171.

9. ANTUNES, H. K. M.; SANTOS, R. F.; HEREDIA, R. A. G.; BUENO, O. F. A.; MELLO, M. T. Alterações Cognitivas em Idosas Decorrentes do Exercício Físico Sistematizado. Revista da Sobama. 2001; 6 (1): 27-33.

10. BUSATTO FILHO G, GARRIDO G, CID GC, BOTTINO C, CAMARGO C, CHEDA C, GLABUS MF, ALVAREZ AMM, DE CASTRO CC, JACOB FILHO W, BUCHPIGUEL C. Padrões de ativação cerebral em idosos sadios durante tarefa de memória verbal de reconhecimento. Revista Brasileira de Psiquiatria. 2001; 23 (2): 71 - 78.

11. MILES C & HARDMAN E. State-dependent memory produced by aerobic exercise. Ergonomics, 1998; 41 (1): 20-28.

12. HAMBURGER SD, AQUINO T, KING C, PIKUS A, COHEN RM. Normal activation of front temporal language cortex in dyslexia, as measured with oxygen 15 positron emission tomography. Arch. Neurol. 1994; 51: 27-38.

13. ALVAREZ A, ZAIDAN E. Processamento auditivo central: novas abordagens em habilitação. In Dislexia, cérebro, cognição e aprendizagem. São Paulo: Frôntis Editorial, 2000.

14. SAUER L, PEREIRA LD, CIASCA SM, PESTUN M, GUERREIRO M.M. Processamento Auditivo & SPECT em Crianças com Dislexia. Arquivos de Neuro-Psiquiatria, 2006; 64 (1): 108-111.

15. BANDURA A. Social learning theory of identificatory process. In: GOSLIN D. (Ed.) handbook of socialization Theory and Research. Chicago Rand McNally, 1089; 213-262.

16. QUINET, A. A Heteridade de Lacan. In: Colóquio Internacional Lacan no século (2001 - A Odisséia Lacaniana), Formações Clínicas do Campo Lacaniano, 2001, Rio de Janeiro. Anais de Colóquio Internacional Lacan no século (2001 - A Odisséia Lacaniana), Formações Clínicas do Campo Lacaniano, 2001.

17. GUERRA–RIBAS, R. M. Efeitos do estresse na atenção de manipuladores de alimentos de um hospital público de Recife-PE, Brasil. Recife – PE, Monografia apresentada à Universidade Federal Rural do Semi-Árido (UFERSA), como exigência final para obtenção do título de especialização em Gestão da Qualidade e Vigilância Sanitária em Alimentos. 2009.