# 61 - COMPARATIVE STUDY OF THE MOTOR PROFILE OF INFANT SIBLINGS OF CHILDREN WITH AND WITHOUT AUTISM

IZALDO FRANCISCO DA SILVA
CHRYSTIANE VASCONCELOS DE ANDRADE TOSCANO
Universidade Federal de Alagoas - UFAL – Maceió – Alagoas – Brasil
Izaldofrancisco@gmail.com

## INTRODUCTION

Autism spectrum disorders are a severe interference in the process of neural development. The symptomatic pattern refers to a set of peculiar characteristics, among these proposals we could emphasize: limitation about the capacity of individual to realize social interactions and communication, restrict interests, stereotyped and repetitive behaviors (DOWNEY and RAPPORT,2012).

Studies have made clear that specialized attention, necessary for individuals with autism, result in changes in the familiar dynamics and, consequently physical, psychological and social overload of the relatives. Gomes (2003); Mulling and White (2012); Darmiano et al (2012); Hilton et al (2011) think of infant siblings of children with autism spectrum disorders are subject to alterations in the process of development, in function of the demand of familiar attention required in the clinical and psychosocial treatment. Lampreia (2009) and Mecca et al (2011) agree that people's infant siblings with autism spectrum are in constant risk of developing characteristics related to disorders.

From a revision of literature, it realizes the shortage of studies that discuss the interferences in the process of the development of infant siblings of children with autism. In this sense, it has selected as a goal of study to compare the motor profile of infant siblings of children with and without autism on developmental perspective.

## METHODOLOGY

The present study is a descriptive research of comparative characteristics. The sampling of the study has been constituted with 10 same-sex children. Group A presented 5 children of chronological age between 3 to 7 years enrolled in the regular public school in the city of Maceió - AL, on infant siblings diagnosed with autism spectrum disorders of chronological age between 6 to 9 years. Group B presented 5 children of chronological age between 3 to 7 years, enrolled in the regular public school of the city of Maceió, in Alagoas, on infant siblings without autism spectrum disorders of chronological age between 6 to 9 years. In this perspective, both groups have for study individuals and infant siblings with or without autism of same chronological age. Instruments that have been used in this research are: questionnaire for parents, developed by the Associação Brasileira de Institutos de Pesquisa de Mercado (ABIPEME) for identification of the social and demographic characteristics of sampling; Rosa Neto's Scale of Motor Development (2002) able to identify the Motor Age (MA) from the results of the categories of evaluation IM1 (Fine Mobility), IM2 (Global Mobility), IM3 (Balance), IM4 (Corporal Scheme/Rapidity). IM5 (Spatial Organization) and IM6 (Language/Temporal Organization). Beside the identification of the General Motor Quotient (GMQ) whose classification allows the categorization of the motor development on a scale that varies the lapse of inferior level to superior level. Results have been analyzed from a descriptive observation of data, using average and deviation-standard to represent the behavior that has been presented by the subjects during the test.

## RESULTS AND DISCUSSION

According to the collected data, from a realization of motor evaluation on the group A and B, it has tried to characterize the varieties related to the motor development of the participants. On the following chart, it identifies the Chronological Age (CA) and General Motor Age (GMA) of the individuals.

| GROUPS | IC | DP | IMG | DP |
|---|---|---|---|---|
| A | 59,4 M | 19,5 M | 56,8 M | 25 M |
| B | 59,4 M | 19,5 M | 69,2 M | 24,3 M |

Chart - Data: Chronological Age (CA); Deviation Standard (DP); General Motor Age (IMG).

From the data attributed to IC and IMC on the group A, it verifies the presence of deficit of 2, 6 months in the chronological development of the motor abilities. On the opposite, group B has been characterized in a positive way in the same aspect, presenting a balance of 9, 8 months. In face of the situation indentified both groups usufruct of the same opportunity for motor stimulation in the regular public school. Results are different as for the chronological aspect of the motor abilities. In this sense, Gallahue and Ozmun (2005) attribute the motor behavior to experience proceeding from the practical function of the motive action, that is, for the author, the finding is distinguished by itself in virtues of exacerbation of motility among the variable groups, providing different standards of development of the chronological abilities.

According to Gomes (2003) another element that contributes for different results is the privation of tasks that people's infant siblings with autism, necessarily, realize in consequence of caring whose brothers with autism need. Thus, for the author, these ones could have less opportunity to experience aspects of their motive action in the environment.

From this, according to Green (2013), people's infant siblings with autism spectrum should be include in the planning of interventions, considering them, a fundamental unit for the familiar functioning, where the assistance on brother's everyday must provide better results for both of them. These perspectives emphasize the importance of relating the autism spectrum to the familiar nucleus, in special to brother without disorders.

The chart 2 presents the data related to IC of the participants and the respective results of the variable nobilities of the groups.

| VARIABLES | GROUP A | DP | GROUP B | DP |
|---|---|---|---|---|
| IC | 59,4 M | 19,5 | 59,4 M | 19,5 |
| IM1 | 64,8 M | 35,5 | 69,6 M | 26 |
| IM2 | 57,6 M | 28,6 | 62,4 M | 19,7 |
| IM3 | 50,4 M | 21,4 | 76,8 M | 27,6 |
| IM4 | 52,8 M | 20 | 74,4 M | 39,2 |
| IM5 | 67,6 M | 21 | 62,4 M | 21,4 |
| IM6 | 57,6 M | 39 | 69,6 M | 21,4 |

Chart . Chronological Age (CA); Fine Motility (IM1); Global Motility (IM2); Balance (IM3); Corporal Scheme /Rapidity (IM4); Spatial Organization (IM5); Language/Temporal Organization (IM6).

For group A, results obtained in the motor specificities of global motility, balance, corporal/rapidity scheme and temporal language/organization, present inferior average to IC. Therewith, motor varieties presented are on the standard of incompatible development to their IC. In this sense, Rosa Neto et al (2007) emphasize that the deficits presented on motor evaluations can make clear the lack of correlation between the cognitive aspects and children's motors, causing a difficulty of learning in the school environment. For the author, individuals of group A can be characterize on the stripe of risk in the educational environment in relation to the aspects of learning.

On the group B, collected data present positive aspects as for the development of the motor specificities, profiting the natural development of motive action, making clear the wide context that exists among the groups in relation to characterization of the standards of motive abilities.

From this analysis of motive evaluation, it is possible to identify that there are only two varieties that present satisfied results on the group A, while the group B does not present deficits in the motive action according to the application of EDM. From this, data present that components of group A do not possess adequate development to IC on the most part of the analyzed motor specificities, influencing on daily activities. This element can be a reflection of familiarity with autism infant siblings, where the caring to this individual is emphasized in accordance with the aspects manipulates their every day. These results corroborate with the Wozniak and Iverson's Study (2007) that directing their discussion in accordance with the motility of people's infant siblings with autism spectrum, suggest retardation for their motor development.

On chart 3, it identifies the General Motor Quotient of the participants.

| VARIABLES | GROUP A | CLASSIFICATION | GROUP B | CLASSIFICATION2 |
|---|---|---|---|---|
| QMG | 92,8 | Normal Médio | 116 | Normal Alto |
| QM1 | 103,4 | Normal Médio | 116,4 | Normal Alto |
| QM2 | 92,6 | Normal Médio | 105,4 | Normal Médio |
| QM3 | 82,2 | Normal Baixo | 131,6 | Muito Superior |
| QM4 | 89,2 | Normal Baixo | 119,6 | Normal Alto |
| QM5 | 102,2 | Normal Médio | 104,8 | Normal Médio |
| QM6 | 90,6 | Normal Médio | 118,6 | Normal Alto |

Chart . General Motor Quotient (GMQ); Motor Quotient1 (MQ1); Motor Quotient2 (MQ2); Motor Quotient3 (MQ3); Motor Quotient4 (MQ4); Motor Quotient (QM5); Motor Quotient6 (QM6).

From this analysis of GMQ, it has verified that the components of group A have a level of development characterized as a normal average, while the participants of group B have been classified as a raising normal average. Therewith, the maturation attributed to the components of group B during the study is present again from the motor superiority presented in data of chart 3, making clear the influence that the environment can attributes to both groups. In this sense, Pietsrzak and Facion (2006) consider that condition that the person with autism spectrum impose to his/her family, produces modifications in the development of infant siblings with disorders, that is, infant siblings without disorders indirectly are influenced by the context of spectrum in the familiar nucleus.

From this analysis of average by varieties of motor quotient, it observes that on group A is characterized per 67% of the subjects as a normal average, others 33% as a low normal average. Group B 50% of the participants obtained high normal average, 33% medium normal average and 17% have been classified as a superior average. In face of these results the individuals of group B have the level of development considered satisfied for standards of motility, revealing meaning data in the aspects of evaluated motor specificity. In relation to the group A, findings demonstrate low level of development, emphasizing the perspective of risk of the subjects in relation to the negative aspects of development in favor of their condition.

**LATERALITY**

The Scale of Motor Development (SMD) makes still possible evaluates the profile of laterality. According to the results, it identifies that 100% of Group A has presented complete dexterous. On the Group B, 60% of the subjects have been characterized as a complete dexterous, 20% complete sinister and other 20% crossed laterality. Results of group B point the variation of laterality that children are subject in the process of development. On the group A, we identify that children in spite of their motor difficulties that present, have defined their laterality.

Results of group A corroborate with the Rosa Neto's Study (2010) where the most of children evaluated, present definition in relation to the lateral dominance. In this sense, it is necessary a deeper study about the elements that take the children of group A to have definition of their laterality on 100% of sampling of the present study.

**CONCLUSION**

From these results, it has identified that infant sibling of children with autism present low motor development of the adequate to their chronological age coinciding with the studies realized by Wozniak and Iverson (2007). The equality of social demographic and school opportunity related to the motive actions among selected group in this research, infant siblings with and without autism, allows agreeing with the Mullingan and White's conclusive results (2012. Both authors agree that people's infant

siblings with autism spectrum present lesser capacity of motility in the exploration of environment and lesser ambition of knowing the environment, profiting negatively in the aspects of their motor development.

This study indicates also the necessary inclusion of individuals' siblings with autism in program of attention to families. It is necessary constitutes a therapeutic, educational and differentiate look in face of the specialized attention that children share in their everyday of infant siblings' symptomatic dynamics with autism.

**REFERENCES**

DARMIANO, C. R., NAHMIAS, A. HOGAN-BROWN, A. L., STONE, W. L. What Do Repetitive and Stereotyped Movements Mean For Infant Siblings of Children with Autism Spectrum Disorders. Journal of Autism and Developmental Disorders. New York, V. 43, n.6, October. 2012.

DOWNEY, R.; RAPPORT, M. J. K. Motor Activity in Children With Autism: A Review of Current Literature. Pediatric Physical Therapy. V. 24, n. 1, p. 2-20. 2012.

GALLAHUE, D. L.; OZMUN, J.C., Compreendendo o Desenvolvimento Motor: Bebês, Crianças, Adolescentes e Adultos. São Paulo: Phorte, 3º Ed, 2005.

GREEN, L. The Well-Being of Siblings of Individuals with Autism. Hindawi, Melbourne, Abril. 2013. Disponível em: < http://www.hindawi.com/isrn/neurology/2013/417194/>. Acesso em: 21 de Agosto de 2013.

GOMES, V. F. Estresse e Relações Familiares na Perspectiva de Irmãos de Indivíduos com Transtornos Globais do Desenvolvimento. 2003. 121p. Dissertação (Apresentada como requisito parcial para obtenção do grau de Mestre em psicologia) – Curso de Pós-Graduação em Psicologia do Desenvolvimento. Instituto de Psicologia, Porto Alegre. 2003.

HILTON, C. L., ZHANG, Y., WHILTE, M. R., KLOHR, C. L., CONSTANTINO, J. Motor Impairment in Sibling Pairs Concordant and Discordant For Autism Spectrum Disorders. Journal of Research and Pratice. v.7, n.1, October. 2011.

LAMPREIA, C. Perspectivas da Pesquisa Prospectiva com Bebês Irmãos Autistas. Psicologia, ciência e profissão, Rio de Janeiro, v.29, n.1, 160-171, 2009.

MECCA, T. P., BRAVO, R. B., VELLOSO, R. L., SCHWARTZMAN, J. S., BRUNONI, D., TEIXEIRA, M. C. T. V. Rastreamento de Sinais e Sintomas de Transtornos do Espectro do Autismo em Irmãos. Revista de psiquiatria. Rio Grande do Sul, v. 33, n.2, p.116-120. 2011.

MULLINGAN, S., WHITE, B. P. Sensory and Motor Behaviors of Infants siblings of Children With and Without Autism. Journal of Occupational Therapy. V. 66, n.5, Sep/oct. 2012.

PIETSRZAK, S. P., FACION, J. R. Pessoas com Autismo e seus Irmãos. Revista Intersaberes. Curitiba. V.1, n.1, p. 168-185. Jan/jun. 2006.

ROSA NETO, F. Manual de Avaliação Motora. Porto Alegre: Artmed, 2002.

ROSA NETO. F., ALMEIDA, G.M.F., CAON, G., RIBEIRO, J., CARAM, J.A., PIUCCO, E.C. Desenvolvimento Motor de Crianças com Indicadores de Dificuldade na Aprendizagem Escolar. Revista Brasileira de ciência e movimento. V.15, n.1, p.45-51. 2007.

ROSA NETO, F., SANTOS, A. P. M., XAVIER, R. F. C., AMARO, K. N. A Importância da Avaliação Motora em Escolares: Análise da Confiabilidade da Escala de Desenvolvimento Motor. Revista Brasileira de Cineantropometria e Desempenho Humano. V.12, n. 6, p. 422-427. 2010.

WOZNIAK, R. H., IVERSON, J.M. Variation in Vocal-Motor Development in Infant Siblings of Children with Autism. Journal of Autism and Developmental Disorders. V.37, p.158-170, Janeiro. 2007.

ENDEREÇO: Rua Fortaleza, Nº 189,
Costa e Silva – União dos Palmares – AL.
CEP: 57800-000

**COMPARATIVE STUDY OF THE MOTOR PROFILE OF INFANT SIBLINGS OF CHILDREN WITH AND WITHOUT AUTISM**

**ABSTRACT**

The present study has as goal to compare the motor profile of infant siblings of children with and without autism about the developmental perspective. It characterizes as a descriptive research. The sampling has been constituted with 10 both sex children. For the study, groups A and B have been constituted with infant siblings with and without autism of same chronological age enrolled in the regular public school in the city of Maceió in Alagoas. Besides, individuals' infant siblings of study are also the same chronological age in the period of realization of tests. Instruments that have been used were: semi-structured interview and Rosa Neto's Scale of Motor Development – SMD (2002). Results demonstrated that: group A presents a negative age in relation to the General Motor Age (GMA). On the group B were found positive age in relation of the same aspect. The categories of motor development, fine motility and spatial organization of six tested categories were the unique ones that presented positive motor age in the group A. On the group B all of six evaluated categories present positive motor age. Results of the general motor quotient demonstrated classification of group A on normal average, while the group B presented raising normal classification with meaning differences among the groups. It concludes that people's infant siblings without autism present better results in relation to the motor abilities, when it is compared to people's infant siblings with disorders. In this sense, it suggests that these ones are included in public policies directed to attention of people with autism, profiting lesser deficits of disorders to the familiar nucleus.

**KEY-WORDS:** Motor Evaluation, Autism, Infant Siblings.

**ÉTUDE COMPARATIF DU PROFIL MOTEUR DE FRÈRES ET SOEURS DES ENFANTS AVEC ET SANS AUTISME**

**RÉSUMÉ**

Le présent étude a l'objectif à comparer le perfil moteur des enfants de mêmes parents avec et sans autisme sous la perspective lié au développement. Il est characterizé comme recherche descriptif. L'échantillonage a été constitué par 10 enfants des mêsmes sexes. Pour l'étude, les groups A et B étaient constitué par des enfants de mêmes parents avec et sans autisme de même âge chornologique qui s'ont inscrit dans l'école publique de la ville de Maceió, État d'Alagoas. En plus, les frères et soeurs des sujets d'étude aussi ont la même âge légal dans la période de la réalisation des tests. Les instruments utilizé étaient l'interview semistructuré et Écaille de Développemnet Moteur – EDM de Rosa Neto (2002). Les résults démostraient que: le groupe A présente l'âge négatif par rapport à l'Âge Moteure Géneral (AMG), dan le groupe B étaient trouvé l'âge positif par rapport au même aspect. Les catégories de développememt moteur, mobilité fine et organisation spatial des six catégories testés étaient les uniques qui ont présenté l'âge moteur positif dans le groupe A. Dans le groupe B toutes les six catégories

évalués présentaient l'âge moteur positif. Les résults du quotient moteur général démontraient classification du groupe A en normal moyenne, pendant que le groupe B a présenté classification normal haute avec des diférences significatives entre les groupes. Il est conclu que les enfants de mêmes parents de personnes sans autisme présentent meilleurs résults par rapport à leur capacités moteures, quand il est comparé à la des enfants des mêmes parents avec déficitaires. Dans ce sens, Il est donc proposé qu'ils soient intefrés sur les politiques publiques conduits à l'attention de personnes avec autisme, en bénéficent de moidres déficits du déficitaires au noyau familier.

**MOTS-CLÉS:** Évaluation Moteur, Autisme, Frères et Soeurs.

**ESTUDIO COMPARATIVO DEL PERFIL MOTOR DE HERMANOS DE NIÑOS CON Y SIN AUTISMO**

**RESUMEN**

El presente estudio tiene como objetivo comparar el perfil motor de hermanos y hermanas de niños con y sin autismo baja la perspectiva del desarrollo. Se caracteriza como investigación descriptiva. La muestra ha sido constituida por 10 niños de ambos sexos. Para el estudio, los grupos A y B fueron constituidos por hermanos y hermanas de niños con y sin autismo de la misma edad cronológica que se inscribieron en la escuela pública de la ciudad de Maceió - AL. Además, los hermanos de los sujetos del estudio también poseían la misma edad cronológica en el periodo de la realización de los testes. Los instrumentos utilizados fueron la entrevista semiestructura y Escala de Desarrollo Motor – EDM de Rosa Neto (2002). Los resultados demostraron que: el grupo A presenta edad negativa en relación a la Edad Motora General (EMG), en el grupo B fueron encontradas edad positiva en relación a lo mismo aspecto. Las categorías de desarrollo motor, motricidad fina y organización espacial de las seis categorías testadas fueron las únicas que presentaron edad motora positiva en el grupo A. En el grupo B todas las seis categorías evaluadas presentan edad motora positiva. Los resultados del cociente motor general demostraron clasificación del grupo A en normal medio, mientras el grupo B presentó clasificación normal alta con diferencias significativas entre los grupos. Se concluye que hermanos de personas sin autismo presentan mejores resultados en relación a las habilidades motores, cuando es comparada a las de hermanos de personas con trastorno. En este sentido, se sugiere que éstos sean incluidos en políticas públicas direccionadas a la atención de personas con autismo, proponiendo menores déficits del trastorno al núcleo familiar.

**PALABRAS-CLAVE**: Evaluación Motora, Autismo, Hermanos y Hermanas.

**ESTUDO COMPARATIVO DO PERFIL MOTOR DE IRMÃOS DE CRIANÇAS COM E SEM AUTISMO**

**RESUMO**

O presente estudo tem o objetivo de comparar o perfil motor de irmãos de crianças com e sem autismo na perspectiva desenvolvimentista. Caracteriza-se como pesquisa descritiva. A amostra foi constituída por 10 crianças de ambos os sexos. Para o estudo, os grupos A e B foram constituídos por irmãos de crianças com e sem autismo de mesma idade cronológica matriculada na rede pública de ensino da cidade de Maceió – AL. Além disso, os irmãos dos sujeitos do estudo também possuíam a mesma idade cronológica no período da realização dos testes. Os instrumentos utilizados foram entrevista semi-estruturada e Escala de Desenvolvimento Motor – EDM de Rosa Neto (2002). Os resultados demonstraram que: o grupo A apresenta idade negativa em relação à Idade Motora Geral (IMG), no grupo B foram encontradas idade positiva em relação ao mesmo aspecto. As categorias de desenvolvimento motor motricidade fina e organização espacial das seis categorias testadas foram às únicas que apresentaram idade motora positiva no grupo A. No grupo B todas as seis categorias avaliadas apresentam idade motora positiva. Os resultados do quociente motor geral demonstraram classificação do grupo A em normal médio, enquanto o grupo B apresentou classificação normal alto com diferenças significativas entre os grupos. Conclui-se que irmãos de pessoas sem autismo apresentam melhores resultados em relação a habilidades motoras, quando comparada á irmãos de pessoas com o transtorno. Nesse sentido, sugere-se que estes sejam incluídos em políticas públicas direcionadas á atenção de pessoas com autismo, proporcionando, menores déficits do transtorno ao núcleo familiar.

**PALAVRAS CHAVE**: Avaliação motora, Autismo, Irmãos.