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INTELLIGENCE PROFILE OF CHILDREN WITH A HISTORY OF INSTITUTIONAL CARE: A LONGITUDINAL STUDY

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Abstract

Intelligence is the general mental capacity that involves using the ability to reason, plan, solve problems, think abstractly and learn from experience, in addition to allowing the acquisition of new learning over time that require logical and abstract relationships, as well as the ability to solve increasingly complex problems. Despite the prominent role played by genetic inheritance, when analyzing the different trajectories of human development, empirical evidence reveals the influence of the context on the development of intelligence and the structuring of distinct intellectual profiles over time. One of these development contexts may be the Institutional Home, a protective measure aimed at guaranteeing the rights and protection of children and adolescents. Thus, this study aimed to describe the intelligence profile of children with a history of

institutionalization in the Metropolitan Region of Belém. This is a longitudinal study, of a quantitative and qualitative nature, in which 15 children, located in two municipalities in the metropolitan region of Belém, who were in the childcare services participated. Data collection took place between December 2017 and December 2018, in three stages, with an interval of six months between each stage, forming two different groups: Group 1, formed by four children institutionalized throughout the research and Group 2, consisting of eleven children who were with their family at the last moment of the collection. The results show statistically significant differences regarding the average IQ in the three assessment moments, emphasizing that children in G1 have a low intellectual profile when compared to the participants in G2. Cognitive development was associated with the interaction of the individual attributes of each participant with the characteristics of their developmental context. In this sense, the existence of an unfavorable particularity, such as having psychopathological complications and being in an institutional environment, generated a low intellectual profile. On the other hand, having experienced situations of vulnerability and institutionalization, without the emergence of severe mental disorders and being reinserted in the family, made it possible to overcome intellectual damage generated by adverse experiences, provided that in the family context there were adults available for establishing a bond, carrying out joint activities and providing personalized care.

Key Words: Institutional Reception; Human development; Cognition

Resumo

Inteligência é a capacidade mental que envolve o uso de habilidade cognitivas. Evidências revelam a influência do contexto sob o seu desenvolvimento e a estruturação de perfis intelectivos distintos, sendo um destes, o contexto de Acolhimento Insitucional. Objetivou-se descrever o perfil de inteligência de crianças com histórico de institucionalização na Região Metropolitana de Belém (RMB).

Participaram 15 crianças em acolhimento institucional, em dois municípios da RMB, entre 2017 e 2018, em três momentos, com um intervalo de seis meses, sendo constituído o Grupo 1, quatro crianças institucionalizadas durante toda a pesquisa e Grupo 2, constituído por onze crianças que estavam em família, no último momento da coleta. Evidenciam-se diferenças estatísticas significativas quanto à média de Q.I nos três momentos de avaliação. G1 apresenta perfil intelectivo rebaixado, quando comparadas com as participantes de G2. O desenvolvimento cognitivo esteve associado a interatuação dos atributos individuais de cada participante com as características do seu contexto desenvolvimental. A existência de uma particularidade desfavorável, gerou um perfil intelectivo rebaixado. Contudo, ter vivenciado a vulnerabilidade e a institucionalização, sem a emergência de distúrbios psíquicos severos e ser reinserido em família, possibilitou a superação de danos intelectuais gerados pelas experiências adversas.

Palvras Chave: Acolhimento Institucional; Desenvolvimento Humano; Cognição

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Human intelligence has been studied by psychology since its structuring as a science. There are different concepts, with emphasis on the definition presented in 1997 in the *Intelligence* magazine, which considers intelligence as a general mental capacity that involves the use of ability to reason, plan, solve problems, think abstractly and learn from experience (Gottfredson, 1997). Thus, it is understood that intelligence manifests itself in a wide capacity to understand the surrounding environment, and in this way to make sense of things and perform tasks.

When considered from the perspective of human development, intelligence refers to the ability to acquire new learning over time that require logical and abstract relationships, as well as the ability to solve

increasingly complex problems (Gustafsson & Wolff, 2015). One way of assessing intelligence is by accessing the Intelligence Quotient (IQ), a measure widely used in formal assessments. Investigations with healthy individuals have revealed significant decreases or increases in IQ over time (Schelini, Almeida & Primi, 2013). However, longitudinal assessments show that there is no consensus on whether such IQ oscillations reveal a true functional change in the juvenile cerebral cortex or merely demonstrate measurement errors (Burgaleta, Johnson, Waber, Colom and Karama, 2014).

Despite its fluctuation, there are several explanatory models for the development and regulation of intelligence. When considering the IQ *score*, the subject under evaluation can be classified above, below, or on average, with more specific variations depending on the instruments and theoretical model used. In a survey about possible theoretical explanations for intellectual performance far above the average, Garcia (2015) identified 32 explanatory models, among which it can be highlighted the sociocultural model, proposed by Piirto (1999), called the Pyramid of Development of Exceptional Capabilities.

According to this model, high skills would develop from several factors that are structured in levels of a three-dimensional pyramid. Genetic inheritance would be at the base, personality attributes would be contained at the next level; above these, the cognitive aspects and at the top the specification of the area in which the high skill is visualized, for example, music, science, mathematics and others. Suspended above the pyramid are elements that influence all levels present in this structure, the “stars of fortune”.

Despite the prominent role played by genetic inheritance, when analyzing the different trajectories of human development, there is much empirical evidence that reveals the influence exerted by the context. International longitudinal studies with groups of diverse participants, such as populations in institutional care (Almas, Degnan, Nelson, Zeanah & Fox,

2016; Bick et al., 2015; Jiménez-Morago & Léon-Román, 2015), highlight the influence of the context under the development of intelligence and the structuring of distinct intellectual profiles over time.

Studies on cognitive development and intelligence in institutional care show that contexts of neglect in early life were associated with changes in the microstructure of white matter throughout the brain, generating cognitive downgrades as a whole. In addition, they identified reduced scores for the Intelligence Quotient (IQ) in children who were institutionalized, when compared to those who remained throughout their development trajectory with their family. Although all the aforementioned losses have been mapped, other studies point the overcoming of these difficulties when children who were institutionalized returned to family life (Tibu et al., 2016; Mc Call et al., 2018).

In Brazil, similar results were verified by De Luccia-Rivaben and Fiamenghi-Jr (2014), identifying intellectual level below the average of what was expected for the age group, in children who were in institutional childcare services, when compared with other groups of the same age that were living with their family. Such differences can be explained by the fact that institutional care, as a protection measure, is applied to those children who are victims of vulnerable situations, such as violence and rights violations, as regulated by the current Brazilian legislation (Brazil, 1990/2009), which can generate impairments in their cognitive functioning.

Despite the evident damage to human development, institutional care is still applied as a protective measure in an exceptional and extraordinary manner in situations such as substance abuse by parents; neglect and physical abuse of children; giving up custody; parent disease; mother and street child; family conflict; suspicion of and/or child sexual abuse, in addition to returning the child during the coexistence period of the adoption procedure (Barbosa, 2015; Hack & Fuchs, 2017; Pinto & Medeiros, 2016; Silva, 2014). Furthermore, these adverse events, neuropsychological

impacts can be aggravated by institutionalization, when rigid care routines are verified, little articulation with the service network, high turnover of caregivers, among other aspects (Zini, 2015).

In spite of adverse situations to development in which children and adolescents find themselves at the moment of institutional care, it is observed that this measure may present protective factors for development. In the reception contexts, children and adolescents may have a significant amount of care actions that promote development, such as personalized bonding, favoring external activities and contact with the community, in addition to encouraging autonomy and affection (Cavalcante, Magalhães, Corrêa, Silva & Barros, 2015; Cavalcante, Magalhães, Corrêa, Costa & Cruz, 2018; Corrêa, 2016).

Despite these aspects, the childcare facilities are unable to ensure the elements that promote child development that are present in families (Bragança & Pereira Júnior, 2015; Diniz, Assis & Souza, 2018; Ferreira & Littig, 2014). In institutions there are fewer possibilities and situations to encourage children to develop autonomy, to improve the uniqueness and subjectivity of their foster kids. In addition, care, however affectionate, is done in a professional manner, contrary to what is experienced in family groups, where affection is the result of the construction of interpersonal bonds (Cavalcante, Magalhães, Corrêa, Costa & Cruz, 2018).

In this sense, considering the intellectual development and the opportunities for stimulation that the subject experiences, it can be considered that family life significantly stimulates child development, when in this context adults are available to carry out joint activities, progressively more complex and reciprocal, characterized by mutual attachment between those involved (Bronfenbrenner, 2004/2011) thus marking the quality of care. In this environment, several factors influence the quality of care, among these, the socioeconomic level (SES) of the family stands out, especially the parents' income, occupation and education.

The family's SES influences parental figures through access to educational resources that assist them in guidance to their children, in the level of knowledge about human development and in the time dedicated to child care (Alencar, Costa & Cavalcante, 2018). Consequently, these aspects interact with the child's personal characteristics, generating effects on children's cognition and also on the intelligence quotient (Hackman, Evans & Farah, 2015; Piccolo, Arteche, Fonseca, Grassi-Oliveira & Salles, 2016; Shayer et al. (2015) Associations have already been observed between low maternal and paternal education, conditions of home stimulation, age and type of school, poverty and general health conditions of the child with their cognitive, social and school performance. These findings allowed to conclude that before children enter school age, cognitive performance is influenced by the quality of the domestic stimulus, the level of maternal education and the order of birth in the family, and institutional care can also be considered here, if by chance it occurs in these developmental trajectories.

Considering the above, this study aimed to describe the intelligence profile of children with a history of institutionalization in the Metropolitan Region of Belém.

Method

It is a longitudinal study, combining quantitative and qualitative nature, with the objective of assessing the development of intelligence of children with a history of institutional care, in the Metropolitan Region of Belém (RMB). The sample was composed after contact with professionals from the RMB's childhood and youth courts, requesting that the number of children and the address of the shelter be informed. The data collection period took place between December 2017 and December 2018, in three stages, with an interval of six months between each stage.

Participants

Fifteen children participated in the research who were in childcare facilities services located in two municipalities in the metropolitan region of Belém. As inclusion criteria, it was established to be in the age group between 2 years and 6 months and 7 years and 11 months at the start of collection. This criterion was established based on the application rules of the instrument chosen to assess the participants' intellectual development.

Instruments

Children's Characterization Form (Cavalcante, 2008; Weber & Kossobudzki, 1996), composed of 56 questions distributed in thematic axes, namely: identification of the child and its family (eleven items), family situation (six items), process of institutionalization (eighteen items), health (nineteen items) and daily activities of the child on weekdays and weekends (two items). The form guided the consultation of the medical records prepared by the professionals of the institutional childcare facilities in which the participants were admitted.

SON-R 2½-7[a] Test (Laros, Tellegen, Jesus & Karino, 2016) and the SON-R 6-40 test (Tellegen & Laros, 2012). The SON-R 2½-7[a] Test is a non-verbal instrument that assesses intelligence. It consists of four subtests, namely: Mosaics, Categories, Situations and Patterns. The four subtests comprise the Reasoning Scale (Categories and Situations) and the Execution Scale (Mosaics and Patterns). It is aimed at the intellectual appreciation of children from 2 years and 6 months to 7 years and 11 months. The instrument allows the classification of the participant in relation to each IQ value, as shown in Table 1 contained in the test manual.

The SON-R 6-40 Test (Tellegen & Laros, 2012) is used to measure intelligence in people aged 6 to 40 years with or without the use of language. It consists of a battery composed of four subtests: two with multiple choice with 36 items (Analogies and Categories), and two with 26 items (Mosaics and Patterns), which can be applied individually. The

standardized scores of the SON-R 6-40 for Brazil are not yet available, therefore, the IQ calculation was performed by the team of researchers involved in the Brazilian validation process of this test. The IQ values and the classifications corresponding to these follow the same criteria as the SON-R 2½-7[a] Test, according to Table 1, of Classification of IQ scores and intelligence levels.

Table 1

IQ scores and corresponding classifications

IQ	Description
> 130	Much higher
121 – 130	HighHigh
111 – 120	Above average
90 – 110	Medium
80 – 89	Below average
70-79	Low
<70	Very low

Source: Laros, Tellegen, Jesus e Karino (2016, page 51).

Ethical procedures

Authorization was requested from the State Coordination for Children and Youth (CEIJ) of the Pará State Court of Justice, and after its approval, it was submitted to the Tropical Medicine Ethics Committee of the Federal University of Pará, which issued a favorable opinion on number 2.301.637, of September 27, 2017.

Data Collection procedure

Contacts were made with the interprofessional teams of the Child and Youth Courts (VJIS) of Ananindeua and Belém, to identify children who were institutionally admitted in these locations and met the inclusion criteria, being identified 15 children. Then, contact was made with the professionals of the institutional childcare facilities in which the children were inserted, to schedule the application of the instruments, on a day and time that were convenient for the institutions and the children.

The instruments were applied longitudinally, at three different times, with an interval of six months. The first collection took place in December 2017, with the consultation of medical records in institutional childcare services, through the Children's Characterization Form (Cavalcante, 2008; Weber & Kossobudzki, 1996). At this moment, in addition to contacting the interprofessional teams to obtain information about the foster kids, the SON-R 2½-7[a] Non-verbal Intelligence Test was applied to all 15 children participating in the study, that were institutionalized.

In the second and third moments of collection, applications of the SON-R 2½-7[a] Non-verbal Intelligence Test and the SON-R 6-40 Test were performed in the places where the children were located, which varied between households of nuclear, extended, adoptive families, socio-affective and unrelated kinship and host institutions.

Data analysis procedure

The correction of the tests of each participant was carried out, according to the guidelines contained in their manuals. These quantitative findings were complemented with qualitative data from the consultation of institutional records, whose information was collected based on the Children's Characterization Form.

It was decided, by the formation of two groups of participants, having as criterion the place where the children were at the last moment of the collection, that is, in the institution or in family living (nuclear, extensive, adoptive and socio-affective). It is also noteworthy that each participant

was named generically, i.e., Child 1, Child 2, and so on to guarantee the confidentiality of the identity and the confidentiality of the data, as determined by Resolution No. 510, of April 7, 2016, of National Health Council (CNS, 2016).

Thus, the following distribution of participants in the groups was carried out:

a) Group 1 (G1): formed by four institutionalized children throughout the research. It had the following composition: Child 1, Child 2, Child 3 and Child 4;

b) Group 2 (G2): consisting of eleven children who were with their family, in the third moment of the collection, in December 2018. They are: Child 5, Child 6, Child 7, Child 8, Child 9, Child 10, Child 11, Child 12, Child 13, Child 14 and Child 15.

After dividing the sample into two subgroups, analysis of variance (ANOVA) was also performed to verify the existence of a statistically significant difference between the participants in G1 and G2. When significant differences were found (Fisher, 1935), and to draw more specific conclusions about the differences between the IQs of groups of children, the Tukey test was applied (Montgomery, 2012). Statistical analyzes were performed using the SPSS program, version 24.0. In all tests, the significance level $\alpha = 5\%$ was adopted.

Results

The findings obtained were organized and exposed considering the location where the children were at the last moment of data collection, that is, in the host institution or with the family, therefore, two groups of participants were formed. Group 1, made up of the children admitted throughout the study and Group 2, formed by the participants who were at the end of the family collection (nuclear, extended, adoptive or socio-

affective). Table 2 shows the characterization of all study participants, identifying the group to which they belong.

Table 2

Characteristics of participants

Identification	Sex	Date of birth	Schooling level	Reason for shelter	Date of reception	Group
Child 1	M	02/12/2011	1st grade	neglect of the child physical	12/31/2014	1
Child 2	F	07/19/2010	2nd grade	violence negligence socially vulnerable	08/30/2017	1
Child 3	F	11/29/2012	1st grade	families drug users parents	5/17/2016	1
Child 4	F	05/31/2010	1st grade	negligence sexual abuse	04/20/2016	1
Child 5	F	02/01/2011	1st grade	vulnerability	11/01/2016	2

				negligence		
Child 6	M	08/09/2011	1st grade	paternal orphanhood vulnerability	1/12/2017	2
Child 7	M	09/19/2011	1st grade	physical violence	4/26/2016	2
Child 8	F	01/18/2011	2nd grade	vulnerability physical violence	5/29/2017	2
Child 9	F	01/06/2011	2nd grade	risk situation	5/10/2017	2
Child 10	F	10/13/2010	1st grade	sexual abuse	9/14/2017	2
Child 11	F	09/11/2012	Daycare	negligence	9/03/2017	2
Child 12	F	11/30/2010	2nd grade	negligence	9/03/2017	2
Child 13	F	25/03/2010	1st grade	vulnerability	12/06/2017	2
Child 14	M	06/17/2013	didn't study	vulnerability	11/21/2017	2
Child 15	M	04/04/2014	didn't study	negligence	12/13/2016	2

				physical violence		

Source: field research

As shown in Table 2, there is a predominance of female children in the sample as a whole. Regarding the reasons for shelter, they were related to situations of violations of rights, such as physical and sexual violence, neglect and abandonment, with no significant differences being identified in these two groups. Regarding the reception time, at the moment of data collection, in December 2017, it ranged from fifteen days (Child 13, from group 2) to three years (Child 1, from group 1). Another noteworthy aspect was the school inclusion of almost the entire study, with the exception of two, children 14 and 15 (both in group 2), who were young, which prevented school enrollment in the public education system. This reveals the guarantee of the right to education carried out by the institutionalization process, made possible by its professionals.

When comparing the two groups (children who remained in foster care and children who were in a family environment) regarding the average IQ presented in the three moments of collection, significant statistical differences are evident. Table 3 allows this visualization.

Table 3

Average ± Standard Deviation and Confidence Interval (CI) of the IQ of G1 and G2 Children

Groups	Average ± Standard D.	CI of 95%	*P*
G1	83,33 ± 13,09	(75,00; 91,67)	
G2	90,03 ± 14,72	(94,00; 104,06)	0.002

Source: field research

When comparing the average of the Intelligence Quotient of the participants in Group 1 with the average of the Intelligence Quotient of the participants in Group 2, significant differences were found between the IQs (p <0.05). It can be seen in Table 3, that children in G1 have a low intellectual profile, when compared with the participants in G2, who were admitted, but were reintegrated into the family during the study.

As already highlighted in the literature, variables involved in family life and institutional care can present themselves as protective or risk factors for human development. When observing the characteristics presented by the two groups, described in table 2, it is possible to identify aspects, such as time and reason for reception, which can be related to the statistical differences observed in table 3.

Table 4 shows the scores resulting from the application of the SON-R 2½-7[a] Non-verbal Intelligence Test on children in G1. It is possible to notice that in all four participants there were variations in the three moments of application, and in two participants (Child 2 and Child 3) there were only numerical changes and in the other two children changes in the IQ classification, in an upward direction (Child 1 and Child 4).

Table 4
intelligence scores of children in G1

Participants	Collection 1 (SON-R)	Collection 2 (SON-R)	Collection 3 (SON-R)
Child 1	72 (diff. learning)	83 (below average)	91 (average)
Child 2	64 (diff. learning)	72 (diff. learning)	68 (diff. learning)
Child 3	91 (average)	100 (average)	107 (average)

Child 4	78 (diff. learning)	85 (below average)	89 (below average)

Source: field research

It is possible to note that despite upward variations of some participants (Child 1 and Child 4), there were no very broad changes in the classification of each participant when considering the guidelines given by the researchers involved in the Brazilian test validation process contained in table 1. However, when compared statistically with the performances presented in G2, more significant variations are observed. The scores resulting from the application of the SON-R 2½-7[a] Non-verbal Intelligence Test and the SON-R 6-40 Non-verbal Intelligence Test in children in G2 are shown in Table 5.

Table 5

intelligence scores of children in G2

Participants	Collection 1 (SON-R)	Collection 2 (SON-R)	Collection 3 (SON-R)
Child 5	86 (below average)	84 (below average)	97 (average)
Child 6	118 (above average)	126 (high skills)	122 (high skills)
Child 7	110 (average)	117 (above average)	118 (above average)
Child 8	80 (below average)	91 (average)	89 (below average)
Child 9	109 (average)	114 (above average)	124 (high skills)

Child 10	85 (below average)	74 (diff. learning)	70 (diff. learning)
Child 11	91 (average)	109 (average)	103 (average)
Child 12	94 (average)	104 (average)	96 (average)
Child 13	103 (average)	106 (average)	102 (average)
Child 14	97 (average)	96 (average)	98 (average)
Child 15	87 (below average)	79 (diff. learning)	89 (below average)

Source: field research

It is possible to observe again that despite variations in the IQ *score* in an ascending manner in 8 participants (Children 5, 6, 7, 8, 9, 11, 14 and 15), 50% of the participants in G2 did not suffer changes in their classification. For example, participant 9 is shown, with constantly rising scores, including being classified into three different levels and participant 14, remaining on average throughout the investigation process.

Discussion

The general data on the characterization of the participants in the present study are consistent with the Brazilian reality with regard to institutional care. There is a predominance of female children in the sample as a whole, with sheltering reasons mostly related to physical and sexual violence, neglect and abandonment, with a care time of more than 18 months in some cases. Brazilian literature (Cavalcante, et.al., 2015; Cavalcante, et.al., 2018; Corrêa, 2016) has often pointed out such factors when discussing the prevalence of female exposure to such violation of rights that can lead to an institutional care measure.

In addition to this aspect, it is worth mentioning the school insertion of almost every sample, revealing the guarantee of the right to education

carried out by the institutionalization process. This is an element provided for in Law (Brazil, 1990) that must be made possible by the professionals involved in the process, and may also represent a significant impact on the cognitive development of children and adolescents (De Luccia-Rivaben & Fiamenghi-Jr, 2014).

International and national evidence reinforce (De Luccia-Rivaben & Fiamenghi-Jr, 2014; Fox et al., 2011; Jiménez-Morago, León & Román, 2015) lowered intelligence profiles in institutionalized children when compared to adopted children and those under uninterrupted family care. Similar to what was found in the participants admitted in the Metropolitan Region of Belém, the literature highlights that the early experience of situations of vulnerability in the first years of life and the fact that they are not inserted in family groups, where the care received is personalized, were factors associated with the lowering of the intellectual profile of children living in these conditions.

These aspects are evident when comparing the investigated groups, since children and adolescents in G1 have a low intellectual profile, when compared with the participants of G2, who were admitted, but later reintegrated into the family during the study. As already highlighted in the literature, variables involved in family life, formal education and institutional care can present themselves as protective or risk factors for human development. By observing the characteristics presented by the two groups, it is possible to identify aspects, such as time and reason for shelter, which may be related to these statistical differences (Almas, Degnan, Nelson, Zeanah & Fox, 2016; Bick et al., 2015; Jiménez-Morago & Léon-Román, 2015).

It was also observed that the institutionalized participants throughout the study were subjected to the damaging effects of the situations of vulnerabilities faced before the reception and the harmful influences of this judicial protection measure. Thus, as for intelligence, it was found that these children showed increases in intellectual scores. However, these

elevations were not enough to reach the expected parameters for age. This is because institutional care practices, despite guaranteeing access to the rights of children that are ensured by current regulations, lack personalization and affection, elements that are fundamental to a healthy human development.

Children who were reinserted in families, on the other hand, also experienced developmental losses in general, as well as in the intellectual domain, due to the early experience of situations of vulnerability and institutionalization. However, upon returning to family life, some managed to overcome the intellectual damage observed, achieving performance within the expected parameters. Others, due to personal attributes (psychopathologies, use of psychotropic medication, learning disorders) and characteristics of the family environment in which they were inserted (low availability of caregivers' time, low educational level, reduced socioeconomic level), maintained or worsened intelligence deficits.

Intelligence profiles of children in G1

In relation to Group 1, consisting of the four children who remained institutionalized throughout the research, it was found that their life trajectories were marked by various adversities before the sheltering protection measure was established. Among them, it was identified neglect of fundamental rights, experience of social and physical vulnerability resulting from exposure to risks due to paternal drug addiction, submission to physical and sexual violence, in addition to abandonment. Such events are characteristic of the direction towards institutional care in view of the exhaustion of other protective measures provided for in Law (Brazil, 1990), and are described repeatedly in investigations in Brazil (Barbosa, 2015; Pinto & Medeiros, 2016).

In general terms, children in group 1 showed an increase in IQ scores over time. This data can be associated with the fact that all participants are

inserted in schools by the interprofessional teams of the childcare facilities. The insertion in educational contexts consists of one of the guarantees of rights provided for by the institutionalization measure, including through the articulation with other services, the educational system, SUAS, SUS and others, with a view to guaranteeing well-being to those sheltered (Zini, 2015)

Despite the increase in scores, it is observed that the children in group 1 did not show an intellectual growth that would allow a qualitative change in the classification of IQ according to the standards of the instrument used. This may be associated with the fact that the institutional environment, although it guarantees access to schooling, health care of various types (medical, psychological, dental) and engagement in different cultural programs, inserts all these activities in a general institutional program. This organization of activities allows the care service to function, but it often disregards the individuality of each child, the learning path that they have the easiest (visual, auditory, motor or other) and other particularities. Furthermore, it fails to account for an aspect commonly present in the lives of these children, the longing for the family and the emotional upheaval resulting from this feeling, which acts hindering the development in general.

These results may have explanations related to the risk and protection factors already widely described in the literature on institutional care (Acioli, Barreira, Lima & Assis, 2018, Cavalcante & Cruz, 2018, Piske, Yunes, Bersch & Pietro, 2018, Cardoso & Fonseca, 2019). These factors can significantly impact the performance shown, for example, by children 1 and 3 with regard to children's cognitive development. The cognitive development process is characterized by brain maturation and, consequently, by the increase and refinement of the capacity for abstraction, reasoning and the speed of information processing, which occur over time, especially the improvement of intelligence during the human life cycle (Gustafsson & Wolff, 2015).

In summary, the data showed that, despite the quality of the host institutions, they are unable to fully ensure the elements that promote development that characterize family environments. In them, there are fewer possibilities and situations that favor autonomy and improve children's potential. In addition, care is performed in a professional manner, contrary to what is experienced in family groups, where there is constant and personalized attention and encouragement (Bragança & Pereira Júnior, 2015; Diniz, Assis & Souza, 2018; Ferreira & Littig, 2014).

Intelligence profiles of children in G2

With regard to the intellectual profile of children in Group 2, an average IQ higher than those found in children in G1 was observed, despite following peculiar paths in the development of intelligence. Upon being removed from institutional care and directed to family life, Children 5 and 7 showed upward trajectories of intellectual profiles, with increases in this domain of development. Child 5, when inserted in a socio-affective family under custody, presented intelligence scores within the expected parameters, expressing their developmental gains obtained by living in a family of middle-class socioeconomic level and incomplete higher education of the guardians. Child 7 showed an increase in IQ, reaching scores whose corresponding classification was "above average", when directed to the care of its maternal grandmother.

The findings obtained with Children 5 and 7 are consistent with what was seen by Piccolo et al. (2016). The authors found that in the early years of childhood up to school age, family socioeconomic status is an important factor in structuring cognitive functions, as it models the conditions of the environment, available stimulation, access to educational materials, presence and willingness of parents or caregivers to be with the child and get involved in joint activities. The nuclear family and the extended family may have significantly contributed to the process of acquiring and developing the skills of the two children in question, which reinforces the importance of the family in enhancing children's intellectual acquisitions,

as well as the scope of this influence, considering the characteristics of this development context (Piccolo et al., 2016).

On the other hand, for other children, personal characteristics seem to have a significant influence on intellectual development, determining a stable trajectory of high functioning in this domain. In participants 6 and 9, throughout the collection, from the time they were in the reception space, intellectual profiles that were much higher than expected, corresponding to high skills, were identified, demonstrating that for some individuals the early coping with adversity, such as the use of drugs by the mother during pregnancy, and other difficulties do not necessarily imply a lowered IQ.

The development of high skills occurs from several factors that are structured in levels of a three-dimensional pyramid (Piirto, 1999). At the base of this is the genetic inheritance; the next level contains personality attributes; above these, the cognitive aspects and at the top the specification of the area in which the high skill is visualized, for example, music, science, mathematics and others. Suspended above the pyramid are elements that influence all levels present in this structure, such as gender, community and culture, school, family and luck (Piirto, 1999). Thus, it was visualized that the trajectories of the intelligence profiles presented by Children 6 and 9 were characterized by high scores, corresponding to high skills, regardless of the development context in which they were located. This demonstrated that these participants' personal attributes stood out in the improvement of their intellectual skills. However, it is important to emphasize that although such personal attributes function as protectors to the development, the need to develop and maintain aspects that are protective to development remain of paramount importance in host institutions, since the presence of superior skills does not seem to be the rule in these contexts, especially at early ages (Cavalcante et al., 2018).

This notion is reinforced from the intelligence profiles of children who were inserted in the family, but still did not show immediate gains in this domain of development. Children 8 and 15 had fluctuating IQ trajectories during the study, that is, their intelligence scores suffered increases and decreases during the measurements performed. Although IQ has a tendency to remain stable throughout life, some healthy children may experience significant decreases or increases in this measure that can be observed over time (Burgaleta et al., 2014). However, there is still no consensus as to whether such fluctuations in IQ reflect a true functional change in the juvenile cerebral cortex or if they only demonstrate measurement errors in the instruments used (Burgaleta et al., 2014).

Child 10 exhibited reductions in intelligence scores, revealing a very low intellectual profile, even though it remained institutionalized for a short period of time (for three months), and after this experience has returned to living with its nuclear family. Possibly this lowered cognitive performance is explained by the fact that they presented Hyperkinetic Disorder and Mixed Disorders of Conduct and Emotionss, characterized by intense psychomotor agitation that makes it difficult to maintain their attentional focus and engagement in the requested activities, as outlined in the Diagnostic and Statistical Manual of Mental Disorders (APA, 2014).

In addition, the low educational level of the (semi-literate) parents of the Child 10 and possibly the deficit stimulation expressed in the daily care practices directed at the daughter may partly explain the losses presented by this child. Jacobsen et al. (2013) showed the role of socioeconomic variables, specifically parents' education and family income, in their children's cognition.

The remaining participants, Children 11, 12, 13 and 14, presented an average/stable trajectory, characterized by intelligence scores within the expected parameters, which remained firm in the two development contexts examined (institution and family). Thus, they demonstrated that the development of their intelligence profiles remained consistent with

the phase of the life cycle they experienced, as pointed out by Gustafsson and Wolff (2015).

In short, it was found that the children in Group 2 had very different intelligence profiles. Two of them obtained IQ gains right after relocation in a family environment, reaffirming the frequent findings in the literature of the area (Bragança & Pereira Júnior, 2015; Diniz, Assis & Souza, 2018; Ferreira & Littig, 2014). Two others demonstrated the preponderance of personal attributes, to the detriment of the influence of environmental stimulation, present in the context in which they were inserted. Their intellectual profiles were characterized by high skills (Piirto, 1999). Two children had intelligence profiles with fluctuations, that is, an increase in scores, followed by successive reduction of this measure or vice versa, without having any health complications that could generate these fluctuations. Finally, four children had intelligence profiles within the expected average for their age, regardless of the development context in which they found themselves.

Despite the gains observed with the participants in question and the scientific evidence (Cavalcante, et al., 2015; Cavalcante, et al., 2016) that emphasize the protective nature of the family environment to development, it was observed that the placement in the family did not guarantee that all the children participating in the research would overcome the damage established before the reception process. It is possible that this data is related to the characteristics of family environments that may not have offered care that would guarantee the child's needs or children's characteristics. This, however, does not attest to the incipience of the institutional care system, or even the return to the family of origin, extended or substitute.

Final Considerations

In general terms, this study revealed that the development of the intelligence profile, in the studied sample, was associated with the

combination of the individual attributes of each participant with the characteristics of their developmental context. This evidence confirms the notion of development as a complex and multidetermined process.

Staying in a family or institutional environment may positively or not favor the development of the intelligence profile in children and adolescents. In this sense, the existence of a particularity in people or their environment does not determine the development of their intellectual profile, since this does not depend on the action of isolated factors, but on the quality of the combination established between the multiple factors that act under human development.

This study reinforces the importance of studies whose data are obtained in multiple contexts and in more than one moment in time. Complex research arrangements will allow to elucidate the role of the characteristics of the subject and its environment on human development.

Among the limitations of this study, the absence of data collection with reference persons of the children, before institutionalization, stands out, which could provide access to relevant information for the broader understanding of the intellectual development of the participants, such as pregnancy, type of delivery, diseases presented in the first years of life, early neuropsychomotor development and other factors that can help to understand the development of the participants.

Among the suggestions for future research, it is recommended to carry out longitudinal studies with a larger number of participants and for a longer period of time, as well as the use of interviews, complete neuropsychological assessments and qualitative assessment instruments. It is understood that more complex studies on this topic will enable more sophisticated analysis, revealing information that was not possible to be accessed in the present work.

References

Almas, A. N., Degnan, K. A., Nelson, C. A., Zeanah, C. H., & Fox, N. A. (2016). IQ at age 12 following a history of institutional care: Findings from the Bucharest Early Intervention Project. *Developmental Psychology*, *52,* 1858–1866. doi: org/10.1037/ dev00 00167.

Barbosa, T., Mello, C. B., Cruz-Rodrigues, C., & Miranda, M. C. (2016) Pressupostos teóricos que embasaram o desenvolvimento do Neupsilin-Inf. In J. F. Salles, ...Miranda, M. C. (Orgs.), *Manual do Neupsilin-Inf – Instrumento de Avaliação Neuropsicológica Breve para Crianças*. São Paulo: Vetor.

Bick, J., Zhu, T., Stamoulis, C., Fox, N.A., Zeanah, C.H., & Nelson, C.A. (2015). Effect on early institutionalization and foster care on long-term white matter development: A randomized clinical trial. *Jama Pediatrics*, *169* (3), 211-219.

Bragança, R. R., & Pereira Júnior, A. A. (2015). Crianças institucionalizadas: a demora na adoção. Uningá. *23,* (3), pp.89-97.

Brasil. (1990/2009). *Lei 8.069, de 13 de julho de 1990 atualizada.* Estatuto da Criança e do Adolescente. Acessado em 12fev, 2019, em http//www.planalto.gov.br/ccivil_03/Leis/L8069.htm.

Bronfenbrenner, U. (2004/2011). *Bioecologia do desenvolvimento humano: tornando os seres humanos mais humanos.* (A. Carvalho Barreto, Trad.). Porto Alegre: Artmed. (Original publicado em 2004).

Burgaleta, M., Johnson, W., Waber, D. P., Colom, R., & Karama, S. (2014). Cognitive ability changes and dynamics of cortical thickness development in healthy children and adolescentes. *NeuroImage*, 84(1), 810-819.

Cavalcante, L. I. C. (2008). Ecologia do cuidado: interações entre a criança, o ambiente, os adultos e seus pares em instituição de abrigo. (Tese de doutorado). Recuperada de

http://ppgtpc.propesp.ufpa.br/ARQUIVOS/teses/Lilia%20Cavalcante%202008.pdf.

Cavalcante, L. I. C, Magalhães, C. M. C., Corrêa, L. S., Silva, F. H. O. B., & Barros, R. M. S. (2015). *Resumo executivo do projeto de pesquisa: instituições de acolhimento em quatro regiões do Pará – perfil de crianças e adolescentes*. Belém: Tribunal de Justiça do Estado do Pará.

Cavalcante, L. I. C, Magalhães, C. M. C., Corrêa, L. S., Costa, E. F., & Cruz, D. A. (2018). *Acolhimento Institucional de Crianças e Adolescentes – Teorias e Evidências Científicas Para Boas Práticas*. Curitiba: Juruá.

Corrêa, L. S. (2016). *Serviços de acolhimento institucional de crianças e adolescentes na região metropolitana de Belém: os ambientes, os acolhidos e os educadores*. (Trabalho de conclusão de doutorado). Recuperado de http://ppgtpc.propesp.ufpa.br/ARQUIVOS/teses/Laiane%20da%20Silva%20Corr%C3%AAa.pdf.

De Luccia-Rivaben, M., & Fiamenghi-Jr, G. (2014). Comparação do nível intelectual entre crianças institucionalizadas e não institucionalizadas: um estudo piloto. *Encontro: Revista de Psicologia*, *17*(26), 157-164.

Diniz, I. A., Assis, M. O., & Souza, M. F. S. (2018). Crianças institucionalizadas: um olhar para o desenvolvimento socioafetivo. *Pretextos – Revista da Graduação em Psicologia da PUC Minas*. *3*(5), 261-285.

Ferreira, V. V. F., & Littig, P. M. C. B. (2014). Crianças e adolescentes abrigados: perspectiva de futuro após situação de rua. *Psicologia & Sociedade*, 26(1), 165-174.

García, M. G. (2015). Perfiles cognitivos asociados a alumnos com altas habilidades intelectuales. (Tese de doutorado). Recuperado de https://rua.ua.es/dspace/bitstream/10045/50251/1/tesis_gonzalez_garcia.pdf
.

Gottfredson, L. S. (1997). Mainstream Science on intelligence: An editorial with 52 signatories, history and bibliography. *Intelligence*, 24(1), 13-23.

Gustafsson, J.-E., & Wolff, U. (2015). Measuring fluid intelligence at age four. *Intelligence*, *50*, 175–185.

Hack, A. L. A. de S. e Fuchs, A. M. S. L. (2017, outubro). *O Acolhimento institucional de crianças e adolescentes: a excepcionalidade e o direito à convivência familiar e comunitária*. Artigo apresentado no II Seminário Nacional de Serviço Social, Trabalho e Políticas Sociais. Recuperado de https://repositorio.ufsc.br/xmlui/bitstream/handle/123456789/180167/101_00495.pdf?sequence=1&isAllowed=y.

Hackman, D. A., Gallop, R., Evans, G. W., & Farah, M. J. (2015). Socioeconomic status and executive function: developmental trajectories and mediation. *Developmental Science*, *18*(5), 686–702, doi: 10.1111/desc.12246.

Jiménez-Morago, J. M., León, E., & Román, M. (2015). Adversity and Adjustment in Children in Institutions, Family Foster Care, and Adoption. *Spanish Journal of Psychology*. *18*(45), 1–10.

Laros, J. A., Tellegen, P. J., Jesus, G. R. de, Karino, C. A. (2016). Manual Teste Não-verbal de Inteligência do Teste SON-R 2½-7[a]. São Paulo: Hogrefe CETEPP.

McCall, R. B., Groark, C. J., Hawk, B. N., Julian, M. M., Merz, E. C., Rosas, J. M., Muhamedrahimov, R. J., Palmov, O. I., & Nikiforova, N. V. (2018). Early Caregiver–Child Interaction and Children's Development: Lessons from the St. Petersburg-USA Orphanage Intervention Research Project. *Clinical Child and Family Psychology Review*. doi: https://doi.org/10.1007/s10567-018-0270-9.

Piccolo, L. R., Arteche, A. X., Fonseca, R. P., Grassi-Oliveira, R., & Salles, J. F. (2016). *Psicologia Reflexão e Crítica.*, *29*, http://dx.doi.org/10.1186/s41155-016-

0016-x.

Piirto, J. (1999). *Talented Children and adults: their development and education*. Columbus OH: Prentice Hall/Merril.

Pinto, T. S. B., & Medeiros, J. (2016). Artigo apresentado no XI Evento de Iniciação Científica (EVINCI) do Centro Universitário Autônomo do Brasil. Retirado de http://portaldeperiodicos.unibrasil.com.br/index.php/anaisevinci/article/view/1759/1470

Shayer, B., Carvalho, C., Mota, M., Argollo, N., Abreu, N. & Bueno, O. F. A. (2015). *Psicologia: Teoria e Prática*, *17*(1), 120-135.

Silva, T. M. (2014). *Crianças e Adolescentes em Medida de Acolhimento Institucional*. Trabalho de conclusão de curso. Recuperado de http://bdm.unb.br/bitstream/10483/8252/1/2013_ThamirisMarquesDaSilva.pdf.

Tellegen, P. J., & Laros J. A. (2012). *SON-R 6-40: Snijders-Oomen Teste Não-verbal de inteligência. Instruções para administração.* Publicação interna, Universidade de Brasília.

Tibu, F., Sheridan, M. A., McLaughlin, K. A., Fox N. A., Zeanah C. H., Nelson C. A. (2016). Disruptions of working memory and inhibition mediate the association between exposure to institutionalization and symptoms of attention-deficit/hyperactivity disorder. *Psychological Medicine*. 46, 529–541.

Weber, L. N. D. & Kossobudzki, L. H. M. (1996). Filhos da solidão: institucionalização, abandono e adoção. Curitiba: Governo do Estado do Paraná.

Zini, M. C. P. V. (2015). *O panorama da situação social das crianças e adolescentes em acolhimento institucional no município de São Francisco*

de Paula. (Trabalho de conclusão de especialização). Retirado de https://lume.ufrgs.br/bitstream/handle/10183/132314/000980669.pdf?sequence=1&isAllowed=y.

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1 Adoptive family: family group that held custody of the child, in order to adopt.
2 Socio-affective family: family group, without consanguineous links, who was living with the child, having custody of the child without the intention of adopting them during the course of this study.

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