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Interpersonal Relationships in Early Childhood

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Abstract

Child interactions with the environment (adults, peers, materials) constitute the engine for development and learning, especially in early stages of development. Emotionally secure, responsive, and contingent interactions with adults and peers promote emotional, cognitive, and social development. Interpersonal interactions facilitate the acquisition of social skills and emotion regulation strategies, which are learned through the observation of the behaviors of adults and peers and through the direct interactions with them. This chapter presents the theoretical foundations for considering interpersonal relations as engines of development, and synthesizes the latest results on the impact of interpersonal relationships on the development of children in natural environments (school, home, and the community).

Keywords: social relationships, learning, development, functional domains, natural environments

1. Introduction

The experiences of children in early stages of life contribute to establish the foundations for future learning and development [1]. Great amount of experiences is related to those interactions with adults and peers in the natural environments where children grow [2]. Research findings support the positive impact of warm and sensitive interpersonal relationships with adults and peers in natural environments, highlighting the positive outcomes at social, emotional, and cognitive levels [3]. Moreover, caregiver-closeness and autonomy support from the caregiver predicts the vocabulary acquisition and emotion regulation of the child [4]. Therefore, it is crucial to understand which are the styles of interaction and environmental characteristics that will support positive interpersonal interactions. This chapter aims to discuss (a) the theoretical foundations that underline the promotion of positive interpersonal interactions, (b) the functional domains of development that serve as a guide to understand the development of children from a holistic perspective and the importance of child interactions with peers and adults, and (c) the considerations to ensure positive interpersonal interactions of children with peers and adults in different natural environments.

2. Theoretical foundations

From the developmental science of normative development perspective, three types of family patterns of interaction are crucial for influencing children's

development (i.e., (1) parent-child interactions, (2) family-orchestrated child experiences and (3) health and safety provided by the family) [5]. The first one emphasizes as key aspects of effective parent-child interactions: reciprocal, sensitive, and affectively warm social exchanges, discourse-based interactions and avoidance of intrusiveness. The second pattern of interaction focuses on providing the child with developmentally appropriate materials, organizing activities compatible with the child's interests and needs, choosing quality child care, making the child part of family routines and organizing activities that facilitate child interactions with peers. The third pattern of interaction addresses the parents' responsibility for ensuring the child's well-being (e.g., immunizations, adequate nutrition, protection from harm) to promote child developmental outcomes [5]. These types of family patterns of interaction promote learning and development through positive children's experiences and by surrounding children with loving, secure and rich contexts. Nevertheless, to understand the link between development and experiences for positive developmental trajectories, the results of studies on epigenetics and development, and the bioecological model, can contribute to enlighten the reader about this linkage.

2.1 Epigenetics

The results of research efforts to better understand brain development, its functioning and linkage to behavior have pointed at the importance of the first years of life, which will support current and future development of brain structures and learning [6]. It is well documented how the size of the brain increases at a speedy rate in the first years of life. By age 7, the brain reaches 95% of the size of the adult brain in males and 93% in females [7]. In fact, once the child is born not all structures that support all senses and functions are fully developed and the experiences of the child during this early years can determine the outcome of this development [8]. Experiences can act as facilitators or inhibitors of positive expression of genes [9]. Also, interactions with the environment can contribute to minimize the effects of gene expression related to developmental difficulties or delays. Therefore, the environment can have an impact on the phenotypical expression of genes. *Epigenetics* represents the bridge between genome and environment, it is the chemical code through which the environment communicates with genes and the phenotype of the individual is modified [10].

Greater levels of brain neuroplasticity have been found in the first years of life [11, 12]. Interactions with family members and adults and peers in early childhood education and social contexts influence the way cognitive abilities and even personality is developed. By three years of life, the basic structure of the brain is fully developed, but other areas such as the prefrontal cortex (key structure for the recognition and expression of affection) or the visual cortex continue to develop [13]. Findings of studies with humans and animal models supported the influence of the environment in the development of the brain and the future behavior of individuals. The results of studies with monkey cubs provided evidence on the importance of the interaction with the mother after birth and the detrimental effects of isolation at this stage of life [14]. Monkey cubs which were deprived of the interaction with their mothers experienced significant negative effects such as malnutrition and alterations of the cognitive, affective and physical development, and such negative effects were irreversible [15].

The limbic system and the neocortex are responsible for the control of our emotions, which is directly related to the child's ability to establish and maintain social interactions. The development of the connections among these brain areas occurs in the late early childhood period and continues through adolescence. The experiences children have in those early stages of development will contribute to

the strengthening of synaptic connections between these areas facilitating a better functioning at the socioemotional level [16] and in other areas [9–15]. Interactions with adults who are responsive and procure emotional secure environments for children's learning and development have a huge impact in the formation of such connections from an epigenetic standpoint.

Positive interpersonal relations in early years, especially with main caregivers, are crucial. When the caregiver repeatedly pampers, feeds, cleans, talks, rocks, and cares for the child in a loving way, the developing brain is stimulated. These interactions modulate the behavioral patterns related to the early stimulation of brain areas (hypothalamus, amygdala, hippocampus, and nucleus accumbens) and neurohormonal substances (oxytocin, vasopressin and dopamine) directly related to early parental care [13]. Consistency in the interactions between the child and caregivers is most needed for optimal child development [16].

The Center on the Developing Child at Harvard University pointed at serve and return interactions as fundamental for nurturing child development. Serve and return interactions are understood as back-and-forth interactions between the child and the caregiver [17]. The child initiates an interaction by pointing at something, babbling, getting the adult's attention or crying. Then, the adult responds to the child in a sensitive and encouraging manner (i.e., through eye contact, words, or a hug). These responsive and contingent feedback from the adult contributes to the building of the child's brain structure. Serve and return interactions consist of 5-steps: (a) noticing the child's serve and sharing the child's focus of attention, (b) returning the serve by supporting and encouraging the child, (c) naming it, (d) taking turns and waiting keeping the interaction going back-and-forth, and (e) practicing endings and beginnings. For example, while being at the park, a child may point at a bird on a tree (i.e., a serve), the adult smiles and says: "Yeah! That's a beautiful bird!". The adult waits for the child's response. The child bounces looking at the adult and looking back at the bird. The adult, then, responds by picking the child up so the child can have a better view of the bird on the tree while saying: "Look Thomas, the bird is eating some of those red fruits". The adult observes the child's reaction and waits. The child loses interest on the bird and starts looking at some children climbing a slide steps. Then, the adult says: "Would you like to go to the slide?" This responsive, contingent, and encouraging interaction contributes to the child's learning of language and provides a secure and loving space for the child to explore his surroundings. Such a rich experience would contribute to the strengthening of brain structures, therefore, impacting the child's development.

When adults fail to respond to the child's serve in a reliable and appropriate manner, or when there is a lack of interaction the child development may be negatively compromise. Toxic stress due to neglect or abuse is related to detrimental effects on healthy brain development. As neglect or abuse continue over time, the alert system of the child states on, activating the release of the hormone cortisol [17, 18]. High levels of cortisol and stress are negatively related to child learning and development. Thus, for healthy children, who will be prepare for future learning, adults must ensure that the experiences and interactions of children are responsive and encouraging and stress is not prolonged for long periods of time.

2.2 Bioecological model

As Dr. Robin McWilliam, professor of The University of Alabama at Tuscaloosa, USA, and an expert on child development and developer of the Routines-Based Model [19], would say "When children are busy, children are learning!". Being busy is related to interactions with adults, peers, and materials [20, 21]. This idea of children's learning and development occurring through interactions with the

environment has been also supported by Bronfenbrenner [22]. Bronfenbrenner contributed to deepen the understanding of the influence of the context on the development of children through the development of the bioecological model [23]. This author describes development as a process of interaction between the person and his or her context [23–25]. Thus, child development is affected by four interacting elements, which are described in his Process-Person-Context-Time (PPCT) model.

According to Urie Bronfenbrenner, the engines of development are the *proximal processes* (first element of the PPCT model). Proximal processes represent the interactions of the person with the context [23]. The interactions a person has with peers and adults in the environment are determinants for the child's development.

The *characteristics of the person* (second element of the PPCT model) influence the proximal processes [23]. For example, the characteristics of the mother and the child can be related to the frequency and responsiveness of the mother in the dialectic interaction. If a child cries frequently or does not respond to the mother's attempts to gain his attention, the frequency of interactions between mother and child may decrease. As pointed by Hinde and Stevenson-Hinde [26] interpersonal relationships between caregivers and children are affected by the characteristics of the child and the caregiver and previous interactions can predict the frequency and quality of future interactions. In addition, the temperament of the child predicts the quality of social relationships in early childhood [27]. The findings of these authors suggested that child temperament accounted for 41% of the variance in Peer Relations, 40% of the variance in Self-Management, and 49% of the variance in Academic Behavior beyond the contribution of emotion regulation.

The best-known element of the bioecological model is the *context* [28], and how factors at different context levels interact and affect the proximal processes and, thus, the development course of the child [23, 25]. Bronfenbrenner described the context using the following levels: microsystem, mesosystem, macrosystem, and exosystem.

The first one, the *microsystem* represents the immediate context of the child. The child belongs to different microsystems such as the home, the school classroom, or the grandparents' house. In this microsystems, the majority of proximal processes or interpersonal relationships will take place. Second, the *mesosystem* results of the interaction of microsystems. For example, when the parents (home microsystem) and the classroom teacher (school microsystem) interact, this interaction creates a mesosystem. Third, the *exosystem* refers to the situations that occur in the microsystems of others, but end up indirectly affecting the child (e.g., if the company where the mother works closes down and the father is taking care of children at home, then the family microsystem may not have the means to cover essential needs such as food or housing, affecting the development of the child).

The fourth level is the *macrosystem*, which represents the policies and values of governments and societies that influence the child's development. If the child lives in a society that promotes healthy eating, and several stores with healthy products are available at accessible prices for the family to purchase, this will have a positive impact on the child's physical development, who will get the nutrients and vitamins necessary for an optimal development. In the same way, a culture which promotes values of consistent, sensitive, and responsive care for children, and at the government level funds are designated to develop effective positive upbringing programs to support parents and caregivers, this would have an impact on the caregiver-child interpersonal interactions. Therefore, there is an impact in the child's socioemotional, communicative, and cognitive development.

The last element of the PPCT model relates to the *time or the époque* in which the child was born. This is also known as the *chronosystem*. Bronfenbrenner explained that values and perceptions change with the passing of the years, and the conception

of education or marriage, for example, is not same now as it was 50 years ago. Such values and perceptions can shape government policies and society behaviors.

The most important component of Bronfenbrenner's model for the understanding the importance of interpersonal relationships, is the idea of development occurring through the interactions of the child with his or her environment. Such understanding of development goes along with the findings of epigenetic studies on the influence of experiences on the brain development in early years. Even though Bronfenbrenner does not explain child development from a neurobiological perspective, his model targets the engines of development (interactions with the environment). It is highlighted how positive proximal interactions or processes between the child characteristics and those of the surrounding environment, make possible to reach optimal developmental levels [28].

From this perspective, the vision of child development is seen as a constant process in which children acquire increasingly complex processes of thought, movement, affection, and social relationships through interactions with their context [19]. The child develops with the participation and engagement with his or her own environment, family, school, close people, culture, beliefs, and ideologies, among others [29].

3. Functional domains of development

McWilliam proposed the functional domains of development-engagement, independence, and social relations [19]. Engagement is understood as the cornerstone of development. The engagement of children in daily routines promotes their development and learning [21, 23]. When children are interacting with adults, peers, and materials have opportunities to practice and acquire skills. Receiving feedback from adults and peers while these interactions occur contributes to improve current abilities and crystalized previous learnings through practice. Engagement embeds social relationships and independence. A child who is capable of (1) communicating and relating with others in an adequate manner for the context and his or her age, and (2) carrying out actions to meet needs and meaningfully participate in everyday routines, where learning opportunities occur [30].

At the socioemotional level, interactions with caregivers and peers in early years mediate between internalizing problems and engagement levels [31], acting as protective factors against low engagement levels [32]. The effects of positive interactions remain strong even after controlling for variables like gender language proficiency of the child and the educational level of parents [32].

3.1 Engagement

Engagement is defined as the interaction of the child with the context (peers, adults, and materials) in an appropriate manner for the child's abilities and the demands of the context [22]. It consists of nine levels of complexity ranging from non-engagement to sophisticated engagement [33]. Each level represents an increase on the complexity of the behavior of the child. Lower levels of engagement relate to repetitive behaviors, passive paying attention, or engaging in activities with no differentiated behaviors, and higher levels of complexity, relates to children engaged in symbolic play and speech who persist in the activities while trying to solve problems or challenges [34].

For an infant or child to engage in a routine, there must be a fit between the child's skills, his or her interests, and the demands of the routine [35]. In a routine where the abilities and interest of the child fit the demands of the routine, there is an increment in the duration and/or complexity of the child behavior, reflected on higher levels of

sophistication engagement levels [34]. Adults in the natural environments who are responsive and skillful at identifying misfits between the child characteristics and the demands of the routines, are more likely to make the necessary adjustments to facilitate meaningful participation of the child in the routines, through their interactions. During adult-child interactions, adults can teach the child a skill so she or he can meet the demands of the routine, adjust the routine or make it more interesting -so it matches the abilities and interests of the child-, or decide that the fit between the child abilities and demands cannot be addressed by teaching the skill or adjusting the routine demands, therefore, it is better to let it be and focus on the learning and acquisition of other skills. Interpersonal relationships become relevant for promoting proximal processes. Positive and strong interpersonal relationships will facilitate more effective interactions (proximal processes) because feelings of trust and well-being are associated to the interpersonal interaction between the child and the adult or early childhood education peers [35].

3.2 Independence

Independence refers to the degree to which a child can act to meet its needs, in other words, how much help does a child need to engage in a task or activity and successfully complete it. This functional domain has been related with selfcare behaviors and the child been able to request help from adults when needed after trying several times to solve a problem and failing to solve it [35]. Sensitive and responsive adults, observe the behavior of the child and offer help to the degree it would allow the child accomplish the task, and as children are able to complete more steps of the task by themselves the adults can withdraw the support. Emotionally supportive environments that focus positive learning (acknowledging all steps the child takes to accomplish a task even though his or her performance is not perfect on the first trials) will have a better impact on children's skill acquisition than those environments where learning is based on trial and error, and error is emphasized after the child performance [36]. This does not mean the adult will not model adequate responses or provide prompts and supports to facilitate the success of the child when completing a task, but the adult does so by being empathic of the child's efforts and providing encouragement after the attempt or completion of a task.

3.3 Social relationships

This domain relates to the way children communicate (express and respond) with others (peers and adults). In this regard, research supports the importance of the interactions with adults and peers for acquiring semantic language (vocabulary), phonetical awareness, and the pragmatics of communication (synaxis and nonverbal communication). Early years are crucial for the development and strengthening of the brain areas related to language acquisition and non-verbal forms of communication (imitating, understanding others no-verbal communication and using nonverbal communication) [37]. Adults model new words, offer feedback of children's use of words and through interactions strengthen those neural circuits related to understanding of non-verbal communication forms. Research results support that frequency of exposure to vocabulary is correlated to noun vocabulary acquisition [38]. In addition, parents who provide more input in their interactions with children have children whose early vocabulary grows more quickly [39, 40]. Moreover, children who have difficulties imitating behaviors or participating in joint attention are more likely to have difficulties on language acquisition and expressive and responsive communication, such is the case child who suffer neglect or are at risk of presenting or have Autism Spectrum Disorders [15, 37].

In addition, the social relationships domain is associated to the degree which the child is able to get along with others by been able to understand and communicate with others and regulate his or her emotions. Vicarious learning (modeling) is crucial for the child learning to understand situations, control his or her affective and emotional responses [13], behavioral responses [41], and language acquisition [42, 43]. Direct learning through child-directed speech interactions has also been related to increased vocabulary size [44, 45]. As discussed previously, executive functioning and emotion regulation are acquired at later stages of development in early childhood [13]. Adults who are mindful and responsive of children's emotional and communicative needs and model emotion regulation strategies and language can have an impact on the behavior of children when face with high emotional situations and children's communication skills.

4. Supporting interpersonal relationships in natural environments

Natural environments are understood as home, classroom, and community settings. Learning occurs in each of these environments, and adults can take advantage of learning opportunities through caregiver-child interactions. Through this chapter, it has been emphasized the relevance of the caregiver being consistent, responsive, and sensitive in his or her interactions with children to promote learning and development. It is also important to provide the child with feedback of their actions in a loving way, focusing in positive learning (i.e., acknowledging child steps towards the completion of a task) instead of highlighting the child errors (i.e., trial-error learning). Adults must offer children opportunities to reflect on their actions and performance and must highly effort before outcome. For example, before providing feedback to a child on a task, the adults can ask the child his or her perception on his or her work. In this manner, the adult helps the child to identify his or her strengths and difficulties. Such interactions prevent the child from getting frustrated and cultivate trusting and loving relationships between caregivers and children.

Environments that are interesting, with a variety of materials and toys, promote child engagement. Based on child interest, adults can use *incidental teaching* [46–48] or *scaffolding* [49] to promote learning. These are strategies that allow caregivers to interact with the child in a warm and encouraging manner, while providing feedback of their performance to reinforce the learning of skills or contents [50, 51].

4.1 Incidental teaching

Incidental teaching (IT) is a naturalistic strategy, first proposed by Hardy and Risley [46–48] for teaching communication skills during free-play routine. Then, it was adapted by McWilliam [52] to teach different abilities in daily routines. McWilliam's adaptation of IT includes four steps to guide the interaction of the adult with the child: (a) engaging (making sure the child is engage with an activity or introducing an activity to the child), (b) following (if the child is engage, the adult follows the child's interest), (c) eliciting (based on the activity the child is engaged, the interacts with the child to increase the time the child is engaged in the task or promoting more complex levels of behavior), and (d) reinforcing (the adult reinforces the child behavior, such reinforcement must be related to the activity itself).

For example, the caregiver sees the child (6 months old) looking at a toy (e.g., a bottle with water and yellow glitter), the adult ensures the child is engaged (i.e., he is looking at the bottle), then follows the child's interest (the caregiver takes the bottle and starts moving it), then elicits a behavior (the caregiver tries for the child to reach the bottle with yellow glitter, while bringing the bottle in his eye sight and moving it

slowly back and forth). As the child looks at the bottle and tries to reach it, the caregiver says: “Thomas, look how pretty is the yellow color”. The child giggles in response to the adult’s comments and movement of the bottle content. Then, the caregiver reinforces this joint attention interaction by moving the bottle so the glitter moves a little bit more, while bringing the bottle closer to the hands of the child and saying: “You like the yellow color, don’t you? Do you want to grab the bottle?”. It is important to highlight that the reinforcement in this interaction must be related to the activity itself, it will not be enough with just saying: “Good job, Thomas!” as Thomas looks at the bottle. The caregiver reinforces the interaction by repeating the name of the color of the glitter and moving the bottle back and forth to maintain the child’s interest in the activity and had him try to reach the bottle. The adult is teaching the child color names and stimulating his visual and motor responses by moving the bottle and trying for the child to grab it. To continue the interaction, the adult could use other bottles with other glitter colors or materials to stimulate the child’s sight or hearing. This example of interpersonal interaction could apply to the home context (being used by the parents or other family members) or at the nursery classroom (being used by the teacher).

4.2 Scaffolding

As for *scaffolding* [49], this strategy is used to support the child’s learning of skills which are in *Zone of Proximal Development* (ZPD). Such skills are those the child has not mastered yet, but can perform with some help from the caregiver. For instance, Lucy is a 3-year old, who has not mastered going up the steps of the slight in the playground in her neighborhood. She can lift her legs, but struggles alternating the legs to go up the next step, mainly because is a little scare of heights. Her father supports her by using his hand to push a little bit the alternating leg, so Lucy can climb to the next step. While the father does so, he is encouraging Lucy by saying: “You are lifting your leg so well, I am so proud!” As Lucy gets stuck and does not want to go up because of the height, her father pushes up her leg gently and says: “You are okay Honey, daddy is standing right behind you!” As time passes, the father fades his help for lifting the leg to climb the next step, and once Lucy can alternate her legs by herself to climb the slight, the father starts stepping away from the slight to allow Lucy gain independence and to grow in her perceptions of self-confidence and self-competence.

These examples portrayed how *incidental teaching* [52] and *scaffolding* [49] can be used by family members and teachers to support children’s learning and development. This is attained through trusting, caring, sensitive, responsive, and consistent interpersonal interactions in their natural environments, and within their interpersonal relationships. These interactions are providing learning opportunities that are the basics for experiences that would affect the child’s early brain development and skill acquisition.

5. Conclusions

This chapter supported the importance of interpersonal relationships in early childhood. The important role of early experiences of children to impact their brain development was emphasized through the results of epigenetic studies. In the same line, Bronfenbrenner’s Bioecological model, contributed to the understanding of the interaction of different system levels, which can ultimate affect the interpersonal interactions of the child in their microsystem supporting of hindering their developmental trajectories. As well, the functional domains are introduced to guide the understanding of the child’s meaningful participation in natural environments form his or her level of engagement, independence, and social relationships. Adults and

peers in natural environments can support the acquisition of skills in those domains by providing sensitive, responsive, and contingent care. Finally, two strategies that could be used in different natural environments and during interpersonal relationships are introduced to support child development and learning in early childhood.

As stated by Bronfenbrenner and Evans [22], children's learning and development occurs within the interactions with the context through proximal processes. Also, supported by the results of epigenetic studies, is well documented the impact of early experiences on the brain structure and functioning. Interpersonal relationships are crucial for early childhood development and the impact of the interactions occurring within such interpersonal relations will transcend the early stages of life, affecting future learning and development at cognitive, communicative, socio-emotional and physical levels. Mindful caregivers who understand the importance of their interactions with the child in early years of life will provide care that spurs optimal developmental trajectories of the child promoting future optimal functioning and participation of this child in society.

Acknowledgements

This work is dedicated to the memory of Dr. Tânia Boavida, whose work has inspired the authors immensely. She mentored us in the kindest and most generous ways. We would like to thank her for her time and support. You are terribly missed.

Conflict of interest

"The authors declare no conflict of interest."

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