

Application of DIR/Floortime model in the psychiatric service for very young children with autism in Hong Kong

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Abstract

In recent years, children suspected of autism referred to our service have been getting younger; and some are toddlers at the time of referral, so there is a need to provide an age-appropriate intervention program for this very young age group. The DIR/Floortime model, which encourages caregivers to follow their child's emotions and interests and to interact with them in a natural social environment, fits well to the young children's developmental characteristics. This helps children develop along the roadmap of the functional emotional developmental milestones, in which a child has to master the basic ones in order to build healthy foundation for higher levels of social, emotional, and intellectual capacities. This paper shares our experience in applying the DIR/Floortime model in a local psychiatric setting for very young children with autism, and states how it helps to address the current service gaps. Some local preliminary data indicating the need of interaction coaching for caregivers, and future directions for local autism services for very young children are also discussed.

Keywords: DIR/Floortime, autism spectrum disorder, Hong Kong

Introduction

In our hospital, there has been a long history of psychiatric service for young children with autism spectrum disorder (ASD). It can be dated back to over thirty years ago, at which time whole day training for an extended number of years was offered to the preschool children till they left for their primary school. In response to the enhanced public awareness and the advances in research evidence, our services for young ASD children

have undergone gradual changes in frequency, intensity and duration of the intervention, as well as in the intervention approach.

With current advances in the early detection sciences, children suspected of autism referred to our service are getting younger and younger, and some of them are toddlers at the time of referral. They have not yet attended schools, and spend most of their waking time with their caregivers at home. The characteristics of these young age children

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are different from those of preschool ones, and so are their intervention needs. To look into the most efficacious interventions routinely used for this age group, Wallace and Rogers (2010) reviewed 32 controlled, experimental intervention studies for infants and toddlers with developmental impairments under age three years, and figured out a combination of four specific intervention procedures, that included (1) parent involvement, (2) tailor-made intervention to a child's unique developmental profile, (3) focusing on a broad range of developmental targets, and (4) provision of early, intensive interventions for a long duration. The DIR/Floortime model fits very well the above characteristics as an appropriate intervention approach for very young ASD children in our service.

What is DIR/Floortime model?

The DIR/Floortime model was first described by Stanley Greenspan in 1975 and was further developed over the next 20 years. He and Serena Wieder reported the results of an extensive chart review of 200 children with autism in 1997 (Greenspan & Wieder, 1997), and the longitudinal follow-up of a subgroup of these children in 2005 (Greenspan & Wieder, 2005), demonstrating that some children with autism, after receiving DIR/Floortime intervention program, could become more empathetic, creative and reflective. The implication of these published work is significant as it suggests that an intervention approach that focuses on individual differences, developmental level, and affective interaction is especially promising, and worthy for further study.

Basic principles of DIR/Floortime model

The Developmental, Individual-differences, and Relationship-based (DIR) model is a developmental biopsychosocial one, which is a conceptual framework to assist professionals, parents and educators in

constructing a comprehensive program that focuses on improving a child's functioning in all the functional developmental capacities where there are challenges, and, at the same time, promotes healthy overall emotional and intellectual functioning. It is a developmental approach based on affect/emotion, which takes up a central role that works as a "team leader" to orchestrate the entire mental team, including a child's all critical developmental areas like language, cognition, motor and visual-spatial processing skills. For a child to function adaptively, he/she has to master the six core functional emotional developmental capacities (Greenspan & Wieder, 2006a). The first six levels are:

- Level 1: Shared attention and regulation
- Level 2: Engaging and relating
- Level 3: Two-way intentional affective signaling and communication
- Level 4: Long chains of co-regulated emotional signaling and shared social problem solving
- Level 5: Creating representations or ideas
- Level 6: Building bridges between ideas: Logical thinking

The mastery of these six core capacities characterizes a child's healthy development. On the contrary, deficient in or partial mastery of these capacities account for a child's developmental delays or mental health symptoms. Thus, the goal of the DIR model is not merely to help the child overcome the presenting problems, but rather to enable him/her to get back on track an adaptive developmental pathway.

To achieve the above goal, one of the key intervention techniques is the Floortime. Its basic principle is to join in at the child's functional developmental level and to build on his/her natural interests. The hardest part of the Floortime is to follow the child's lead to harness his/her affect, and at the same time to challenge the child. It is through a developmentally appropriate play environment

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that the child is encouraged to extend the circles of communication so as to move up to higher levels of functioning. Thus it is crucial to offer the child intensive and ongoing, one-on-one caregiver-to-child interactions geared to the child's individual differences and current developmental capacities throughout most of his/her waking hours.

Theoretical basis of application of DIR/Floortime model to children with autism

Countless co-regulated, affective interactions with the major caregiver are necessary for a child's emotional development, which encompasses the capacity to understand intuitively what another person is thinking and feeling. These attuned affective interactions occur via different modalities, e.g. emotional, behavioural, perceptual, and somatosensory aspects such as sights, voices, touches, and smell. Ultimately all these interactions change the infant's brain structure in ways that later affect social and emotional development (Siegel, 2001).

Children with autism, whose core deficit lies in their social relatedness, have most of their difficulties in engaging in ordinary interactions with their parents and people owing to their biologically determined individual differences in processing and modulating these various sources of somatosensory and emotional behavioral information. They are often reported to be under-reactive or over-reactive to different kinds of stimuli (Shanker, 2004). For example, a child who is over-sensitive to auditory stimuli may find the sound of a hair dryer unbearable, and may feel perplexed, confused and frustrated, and wants to retreat from his/her immediate social environment. When this occurs, together with his/her overall individual differences in somatosensory and emotional behavioral processing, appropriate engagement and relatedness to his/her major caregiver is compromised. Without these countless co-

regulated interactions as the "nutrient", the subsequent development of the brain structures vital for social-emotional development is affected.

In fact there was preliminary neurobiological evidence to suggest that interactional experience did change the brain functioning of children with autism, with brain scan findings showing reduced over-activation of the amygdala governing the processing of fear and anxiety, and enhanced activity in areas of the frontal cortex responsible for the processing of others' facial expression and social cues after the DIR/Floortime intervention (Shanker, 2012).

Therefore, in order to enhance the capacity of children with autism to self regulate to sustain social interactions, due consideration should be given to their individual differences in their visual and auditory processing, motor planning and sequencing, and sensory processing and modulation so that appropriate interactional experience can be provided.

DIR/Floortime approach to assessment and intervention for children with autism

The primary goal of DIR/Floortime intervention program is to enable a child to form a sense of himself/herself as an intentional and interactive individual, and to develop his/her cognitive, language and social capacities from this basic sense of intentionality. A comprehensive assessment that aims to identify each child's unique DIR profile is essential (Greenspan & Wieder, 2006b). Developmental history and clinical observations of child-caregiver and/or child-clinician interactions give useful information about the child's current level of functional developmental capacities. Besides, the assessment has to review each of the child's processing capacity, such as his/ her speech and language capacities (including auditory processing and oral-motor capacities), motor

and sensory processing capacities (like muscle tone, motor planning and co-ordination, perceptual-motor capacities, visual-spatial capacities and sensory modulation) and cognitive functions (including psychological, neuropsychological and educational domains). Furthermore, it is also significant to explore the child's caregiving context, which might include mental health evaluation of family members, family patterns and family needs. If clinically indicated, biomedical evaluation (e.g. extended sleep EEG, metabolic work-up, genetic studies, and nutrition), and hearing and vision assessments have to be done.

Review of the evidence for DIR/Floortime intervention in children with autism

Since developmental programs target at a child's underlying capacities, like spontaneous reciprocal interactions and affective co-regulation, as the focus of intervention, it would be much more challenging in their measurement of outcomes when compared to behavioral approaches in which the targeted behaviors are more specific. Having said this, there has been growing number of pilot studies that indicate support for the DIR/Floortime intervention in children with ASD. In 2007, Solomon reported a pilot study on the PLAY Project Home Consultation program, which was using the DIR/Floortime model to train the parents of children with ASD for 8 to 12 months at home (Solomon, et al., 2007). Results showed 45.5% of participating children made good to very good functional developmental progress. Besides, Pajareya in Thailand also published a randomized controlled trial about the application of the DIR/Floortime model to preschool children with ASD (Pajareya & Nopmaneejumruslers, 2011). Results showed there were greater gains in Functional Emotional Assessment Scale, Child Autism Rating Scale, and Functional Emotional Questionnaires in the intervention group, confirming the positive results of Solomon's 2007 study. A more recent study was done by Casenhiser in

Canada that also reported preliminary results from an ongoing randomized controlled study of 51 children aged 2 years to 4 years 11 months, and suggested that children in the social-communication-based treatment group made significantly greater gains in social interaction skills in comparison to the community treatment group (Casenhiser, Shanker & Stieben, 2013). Though these are preliminary results of pilot studies, they are sophisticated scientific attempts from various parts of the world, providing positive and encouraging empirical support for the DIR/Floortime approach.

In fact, there is increasing recognition for developmental approaches in recent years. Zwaigenbaum and other 19 authors, representing 17 major institutions and 3 countries, attempted to outline the principles of assessment and effective intervention for young children with suspected autism under the age of 2, and concluded that "Interventions should ultimately be directed toward specific functional concerns and be informed by key developmental principles, including the child's role as an active learner, the social contexts of learning, and the pivotal role of the parent-child relationship" (Zwaigenbaum, et al., 2009, p.1388). Besides, the NICE clinical guide for autism (2013) also recommends a social-communication intervention that has to be adjusted to the child's developmental level, and includes play-based strategies, with an aim to increase the caregiver's sensitivity and responsiveness to the child's patterns of communication and interaction. All these are basic principles of the DIR/Floortime model. Indeed, current systematic reviews have found evidence for some support for developmental approaches and some support for behavioral approaches, and there is no definite evidence for either one to be superior to the other (Ospina, et al., 2008; Spreckley & Boyd, 2009). The future for the developmental and relationship-based approaches in ASD intervention appears promising.

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Applying DIR/Floortime model in local psychiatric service for very young children with ASD

Indications for the need of interaction coaching for parents in local service setting

Though it may take a number of years to build up the local empirical studies to demonstrate the treatment effectiveness of the DIR/Floortime model to the ASD intervention science in Hong Kong, some local preliminary data have already been available which indicate the need for parent coaching of child-caregiver interaction. Mok and others (2012) investigated the association between caregivers' approach behavior and their ASD children's social engagement in a play-based assessment. Results showed children with autism were, as expected, less socially engaged with their caregivers; and even when they had been engaged, less than half of the number of engagement episodes was followed up by effective scaffolding strategies from the caregivers. This current finding does suggest the need for interaction coaching targeted at parents' social approach behaviors and scaffolding strategies, through play, to enhance child-caregiver interactions in naturalistic, reciprocal social engagement episodes.

As caregivers play such a significant role in facilitating their ASD children's social interaction, what if the caregivers who have mood problems are not so ready to relate or communicate with their children? Another study by Mok and others (2014) found that depressed mothers exhibited fewer shared positive affect with their children with ASD than their non-depressed counterpart. Such empirical finding has a far-reaching clinical implication, as positive affect is the primary drive to relate among one another in human relationships. This is particularly important for young ASD children who are struggling for relating and communicating with others, for they rely on their caregivers to incessantly

bring in positive affect to join them and to follow their lead in order to enhance their communication intent, which could be an exhausting task even to caregivers without mood problems.

Using DIR/Floortime model to address the current service gaps

A number of services gaps in our service have been identified, which include (1) an extended time gap between the age at referral and the age of diagnosis and intervention, (2) inadequate consideration of each child's individualized developmental profile, and (3) insufficient parent involvement in intervention. To address the above, the following measures have been done.

First of all, a separate queue has been set up for new cases of suspected autism under age 4, and there is a weekly session especially assigned to the intake assessment of these cases conducted by a multi-disciplinary team, comprising psychiatrist, psychiatric nurse, clinical psychologist, occupational therapist and speech therapist. It is a comprehensive assessment which covers observation of child's interaction with clinicians and caregivers, the child's different aspects of functioning, like social and emotional functioning, sensory and motor functioning, language comprehension and expression, as well as family patterns and needs. This enables the overall care plan to be tailor-made to each child's unique functional developmental profile and his/her specific caregiving context.

Enhancing parent involvement is another area that has our attention. The child's caregivers, mostly parents, as well as grandparents or relatives sometimes, being the major persons who relate and communicate with the child in his/her immediate social environment, can contribute a lot to the child's intervention plan. Caregivers are involved in the service right from the very beginning. They stay together with their child throughout the

multi-disciplinary assessment process, and they are well informed of their role in the overall care plan of how to facilitate the healthy social, emotional, and intellectual development of their child. They will be arranged to attend the Floortime parent training, and to be given advice and feedback of their home video of child-caregiver interaction. Through didactic teaching and interaction coaching, caregivers learn ways to promote appropriate child-caregiver interaction that can elicit more episodes of social engagement with their children, and further extend the number of reciprocal interactions to solve social problems. These scaffolding strategies are useful for the caregivers to offer continuous support to their children to move up to the higher functional developmental levels.

Challenges encountered when applying the DIR/Floortime model in local service setting

As the role of caregivers is strongly emphasized in the DIR/Floortime model, parental mental health is a big area needed to be addressed. Caregivers are usually the parents of a child just diagnosed with a serious chronic developmental disorder, and they are facing a crisis that takes time to adjust. Current literature suggests an association between maternal psychiatric disorders and childhood autism (e.g. Montes & Halterman, 2007). A recent local study done by Yu (2013) in an ASD clinic of a regional hospital showed that the point prevalence of psychiatric disorders in Chinese mothers of preschool children with ASD was 29.8%, of which 14.9% were major depressive disorder, 10.8% were adjustment disorder, and 3.4% were anxiety disorders. With such a prevalence rate of psychiatric morbidity as high as about 30%, early screening of parents' mental state deems necessary so that timely intervention to those parents who are experiencing emotional disturbances can be rendered. The offer of immediate psychological/ psychiatric intervention is

not only for their own sake, but it also helps optimize their capacity to scaffold their children's reciprocal interactions.

In order for the Floortime intervention to be effective, adequate dosage of the intervention is one of the crucial factors. It is suggested for the caregivers to spend at least 15 to 20 hours a week with their children for Floortime activities. This is a real challenge for most caregivers who are working parents with limited time to communicate with their children after work. Besides, caregivers are often struggling whether to engage children in play activities, or in drilling and memorizing words in hopes of bolstering children's academic performance. Indeed, to increase the effectiveness of the Floortime intervention, the essence is to do it all the time, everywhere, during most of the children's waking hours. How to incorporate the Floortime strategies into the daily family life is a challenge for both the clinicians and the caregivers.

Future directions for the psychiatric service for very young children with autism

There is growing evidence that the behavioral signs of ASD can be detected by the first year of life. Early behavioral and biomarkers include impairments in social communication, repetitive behaviors involving body movements and/or atypical use of objects, and atypical emotional regulation (Zwaigenbaum, Bryson & Garond, 2013). Owing to the increasing understanding of the symptoms in the first two years of life, there is an urge for a standardized diagnostic measure for ASD. The Autism Diagnostic Observation Schedule, which is widely accepted as a 'gold standard' for this, has been revised and extended to assess toddlers as young as 12 months of age up to 30 months who have nonverbal mental age of at least 12 months (Luyster et al., 2009). Thus, psycho-education is beneficial for parents and professionals working with

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very young children to watch out for the early signs of autism at infancy and toddlerhood so that those children who are 'at risk' can seek early attention from the professional teams specialized in autism service.

To match with these advances in early detection and diagnosis of autism at toddlerhood, timely access to effective specialized assessment and intervention deems necessary, in particular for those children who are very young. Further research for evidence-based intervention is needed for children with autism younger than three years of age in view of their unique developmental characteristics. Usually very young children rely on observational and experiential learning within their natural social and physical environment. Thus the quality of responsiveness and sensitivity of their caregivers is an important facilitator in social interaction with the young children. For interventions tailored made for very young children, they should focus on child's lead, natural learning environment, and the development of nonverbal intentional communication and reciprocal interaction with their caregivers (Zwaigenbaum et al., 2009).

Last, but not the least, a child's functional emotional development is an area that deserves more attention, in particular for all parents and professionals who are really concerned with children's healthy development of mind. There is a roadmap of functional emotional developmental milestones that a child has to master in order to build healthy foundation for social, emotional, and intellectual capacities. The basis of all is affect/emotion. Strong positive affect plays a critical role for an infant's development of self-regulation, which is fundamental in his/her overall intellectual and emotional development.

摘要

「DIR/地板時間」模式如何應用於香港自閉症幼兒的精神科服務

近年來，由於轉介到本服務的懷疑自閉症兒童年齡愈來愈年幼，有些在轉介時還是學步幼兒，因此有需要為這個年齡群組的兒童提供適切的治療方案。「DIR/地板時間」模式鼓勵照顧者跟隨兒童的情緒和興趣，並在自然的社交環境下與兒童進行互動。這正好配合了幼兒的學習特徵，將有助兒童循着功能性情緒發展的路線圖，首先掌握基層的里程碑，以便為更高層次的社交、情緒及智能發展打穩良好的基礎。本文會分享我們如何應用此模式於自閉症幼兒精神科服務的經驗，並且根據一些本地研究數據探討親子互動技巧訓練的需要，及展望香港自閉症幼兒服務的未來方向。

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