A model for play-based intervention for children with ADHD

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Background/aim: The importance of play in the social development of children is undisputed. Even though children with attention-deficit hyperactivity disorder (ADHD) experience serious social problems, there is limited research on their play. By integrating literature on ADHD with literature on play, we can postulate how play is influenced by the characteristics of ADHD. These postulations enabled us to propose a theoretical model (proposed model) to depict the interactive process between the characteristics of ADHD and factors that promote play. This paper presents the revised model and principles for intervention based on the results of a study investigating the play of children with ADHD (reported elsewhere).

Methods: We tested the proposed model in a study comparing two groups of children (n = 350) between the ages of 5 and 11 years. One group consisted of children diagnosed with ADHD (n = 112) paired with playmates (n = 112) who were typically developing; the control group consisted of typically developing children paired with typically developing playmates (n = 126). The Test of Playfulness was administered, and the model was revised in line with the findings.

Results and conclusions: The findings suggest difficulties in the social play and lack of interpersonal empathy in the play of children with ADHD. We draw on the revised model to propose preliminary principles for play-based interventions for children with ADHD. The principles emphasise the importance of capturing the motivation of children with ADHD, countering the effects of lack of interpersonal empathy, and considerations for including playmates in the intervention process.

KEY WORDS child development, developmental disorders, mental health, paediatrics, play.

Introduction

Although there are vast amounts of research on attention-deficit hyperactivity disorder, and to a lesser extent play of children with ADHD, there is surprisingly little research on the sequelae to ADHD conducted in the context of play. This is particularly unexpected as professionals working with children with ADHD commonly use play to explore behavioural and social difficulties and as a medium for intervention (Barley, 2006). What limited research there is on the play of children with ADHD suggests that children with ADHD engage in less associative and cooperative play compared with typically developing peers (Alessandri, 1992). Leipold and Bundy (2000) found that children with ADHD are less playful. In addition, Alessandri found that children with ADHD struggle to transition between play activities. Melnick and Hinshaw (1996) established that children with ADHD demonstrate more negative behaviours in play (e.g. disruptions, rule violation).

This paper presents the proposed theoretical model and a revised model of the play of children with ADHD based on research findings. A proposed model was constructed by integrating literature on ADHD with literature on play and postulating how the characteristics of ADHD may influence play. This has enabled us to construct a model that depicts the interactive process between the characteristics of ADHD and factors that promote play (play enablers). This proposed model is based in an accepted definition of play: a transaction with the environment that is intrinsically motivated, internally controlled, and free of many of the constraints of objective reality (e.g. Skard & Bundy, 2008). In keeping with Bateson (1971, 1972), the proposed model also
Intrinsic motivation and ADHD

The motivation to play rests on the premise of a fear-free environment\(^7\) (Moyles, 1989), where tasks are self-selected\(^2\), and players experience success much of the time\(^3\) (Malaguzzi, 1998). Furthermore, the impetus for the player’s involvement stems more from the activity itself than from an external reward\(^4\) (Bundy, 2004). The presence of intrinsic motivation can be observed, in part, in the extent to which play is all absorbing and the player gets completely caught up in the play transaction\(^5\) (Bundy; Csikszentmihalyi, 1990).

Suspension of reality and ADHD

Freedom to suspend reality means that the player is not bound by unnecessary constraints of reality and is thus able to choose how close to objective reality a transaction will be\(^14\) (Bundy, 2004). The usual meanings of objects no longer apply\(^15\). The situation is under the control of the player who has the power to orchestrate it in such a way as to influence the outcome\(^16,17\) (Dennis, 1996). Postulation:
FIGURE 1: Proposed model.
The ability to suspend reality depends on taking control. Children with ADHD who have reduced internal control will have a decreased ability to suspend reality and therefore be less playful.

**Framing and ADHD**

Bateson (1971, 1972) described the player’s ability to give and respond to social cues as ‘framing’ the context of play18. Responding to playmates’ cues requires an understanding of social rules19 and gives players the possibility to support their playmates20 (Bundy, 2004). The social behaviours of children with ADHD are seen as abnormal because they often are inappropriate for task or environmental demands21 (Barkley, 2006; Fadely & Hosler, 1992). Evidently, the cumulative effect of impulsivity, hyperactivity and inattention leads to a reduction in social functioning (Barkley et al., 1990; Schachar, 1991; Wood, 1995). Postulation: The decreased ability of children with ADHD to give and respond to social cues will cause them to be less playful.

The proposed model described in Fig. 1 provides a theoretical view of how play might be influenced by the symptoms of ADHD. We tested the proposed model in a study comparing two groups of children (n = 350) between the ages of 5 and 11 years. One group consisted of children diagnosed with ADHD (n = 112) paired with playmates (n = 112) who were typically developing; the control group consisted of typically developing children paired with typically developing playmates (n = 126).

We administered the ToP (Bundy, 2004) in an environment designed to be particularly appealing. The details of the study are presented elsewhere (Cordier et al., forthcoming). The purpose of this paper is to present the revised model as it was adjusted based on our findings and to present preliminary principles for play-based interventions for children with ADHD derived from our findings.

**Revised model**

The model presented in Fig. 2 depicts the play profile of children with ADHD and their playmates. This revised model is discussed under four subheadings: primary symptoms of ADHD, social dimensions of play, interpersonal empathy and summary of overall differences between the proposed model (informed by literature) and the revised model (informed by research findings).

**Primary symptoms of ADHD**

In contrast with our postulations, none of the ToP items that related directly to the primary symptoms of ADHD differed significantly between children with ADHD and typically developing children, suggesting that the primary symptoms of ADHD (inattention, hyperactivity and impulsivity) did not account for the difficulties experienced by the children with ADHD with regard to play. By definition, six ToP items relate directly to the primary symptoms of ADHD. See Table 1 for a summary of the descriptions of the ToP items and their relationship to...

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**TABLE 1: Primary symptoms of attention-deficit hyperactivity disorder (ADHD) and Test of Playfulness (ToP) item**

<table>
<thead>
<tr>
<th>Meanings of low scores</th>
<th>ADHD DSM-IV criteria*</th>
<th>Interpretation using the ToP</th>
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<tbody>
<tr>
<td>‘Initiate new activities (1)’ — players attempt to initiate play destructively or do not try to initiate activity that can be readily identified as play.</td>
<td>Impulsivity: Often interrupts or intrudes on others (e.g., butts into games)</td>
<td>Players may tend to initiate play destructively due to impulsivity.</td>
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<tr>
<td>‘Intensity of interaction with objects (6)’ — players do not get involved with objects.</td>
<td>Inattention: Often has difficulty organising tasks and activities and loses things necessary for tasks or activities (e.g., toys).</td>
<td>Players’ interaction with objects may be superficial due to inattention.</td>
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<tr>
<td>‘Modify activities (8)’ — players simply repeat the activity or the activity does not seem to evolve.</td>
<td>Inattention: Often fails to give close attention to details in activities.</td>
<td>Players may have difficulty adapting play due to inattention.</td>
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<td>‘Extent of engagement (21)’ — players often do not engage in purposefully selected activity or wanders aimlessly or participates in a non-focussed activity.</td>
<td>Inattention: Often has difficulty sustaining attention in tasks or play activities. Hyperactivity: Often has difficulty playing quietly.</td>
<td>Players may often have difficulty focussing on an activity, due to inattention and hyperactivity.</td>
</tr>
<tr>
<td>‘Intensity of engagement (22)’ — players have great difficulty concentrating on the activity.</td>
<td>Inattention: Often has difficulty sustaining attention in tasks or play activities. Hyperactivity: Often has difficulty playing quietly.</td>
<td>Players may interact superficially due to inattention and hyperactivity.</td>
</tr>
<tr>
<td>‘Persist with an activity (24)’ — players have difficulties following through on activities.</td>
<td>Inattention: Often does not follow through on tasks.</td>
<td>Players may have difficulties persisting due to inattention.</td>
</tr>
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*Excerpts from the DSM-IV criterion for ADHD (American Psychiatric Association, 2000).
**REVISED MODEL: THE PLAY PROFILE OF CHILDREN WITH ADHD: INTERACTION OF THE CHARACTERISTICS OF ADHD WITH THE ELEMENTS OF PLAY**

**ADHD symptoms**

- Inattention
- Hyperactivity
- Impulsivity

 Leads to significant impairment in social functioning

**Top results where play is inhibited**

ToP items relating to primary symptoms of ADHD

- Six ToP items relate most directly to the primary symptoms of ADHD: 'initiate (3)', 'deciding (5)', 'interaction with objects (6)', 'modify (8)', 'engaged (22)', and 'persever (24)'.
- Children with ADHD did not score significantly lower on any of these ToP items.
- The primary symptoms of ADHD do not seem to account for the play profile of children with ADHD or their playmates.

**ToP items representing the social dimensions of play**

- Children with ADHD performed significantly lower in some but not all six ToP items representing the social dimensions of play: 'initiate (3)', 'negotiates (5)', 'support (5)', 'social play (10, 11, 13)', and 'responding to cues (29)'.
- Social difficulties explain the play profile of children with ADHD better but not fully.

**ToP items representing the construct of empathy**

- Children with ADHD scored significantly lower on all the empathy items.
- Seven ToP items represent the construct of empathy: 'shares (4)', 'support (5)', 'transition (9)', 'social play (10, 12)', and 'self-cue (13)'.
- The main theme that emerged is that children with ADHD lack of interpersonal empathy.

The playmates of children with ADHD

- The play patterns of playmates of children with ADHD resembled that of the children with ADHD and similarly they also demonstrated lack of interpersonal empathy.

**FIGURE 2: Revised model.**

- **Non-Play**
  - Source of motivation
    - Extrinsic
    - Intrinsic
  - Perception of control
    - Negotiate (5)
    - Intrinsic motivation
    - Internal control
  - Suspension of reality
    - Pretend (13)
    - Free
    - Not-Free
  - Play cues (framing)
    - Respond
    - Respond cues (32)
    - Not Respond

- **Play**
  - Resulting effects on elements of playfulness
  - T/ P results where play is enhanced

- **Key**
  - ToP items on which children with ADHD differed significantly from typically developing children

- **Children with ADHD scored significantly higher on:**
  - 'negotiating (2)'
  - High scores may reflect their skill in having their needs met.

- **Children with ADHD scored significantly higher on:**
  - 'mischief (27)'
  - They seem to use mischief and teasing as their main tool to keep playmates engaged.

- **Children with ADHD did not demonstrate any strength in framing as a play enabler.**
the characteristics of the primary symptoms of ADHD. This finding might be explained by the play environment in which data were collected, which was designed to be particularly appealing in order to increase the chances that play occurred. The environment where data were gathered for children with ADHD was a playroom set up specifically for the study in a clinical setting where the children with ADHD came regularly for assessment or intervention. The play environment for children in the control group was a designated play area at the respective schools that children in the control group attended. The play environment was designed to be appealing in order to increase chances for spontaneous and intrinsically motivated play behaviour to occur. Apparently a very appealing environment does indeed offset the primary symptoms of ADHD (Diamond, 2005).

Social dimensions of play
The children with ADHD had difficulty with many but not all ToP social items (i.e. items that require social interaction to be scored), thus underscoring their social difficulties. While there was no difference in the proportion of time children with ADHD and typically developing children interacted with playmates, the intensity of that interaction was significantly less for children with ADHD and they were less skilled at social play than the children in the control group. Taken together, these findings suggest that children with ADHD seek out social interaction as much as typically developing children but struggle as the transaction develops, perhaps in part because they have difficulty responding effectively to their playmates’ cues.

Interpersonal empathy
Our results suggest that children with ADHD have difficulty identifying the emotional states of their playmates, taking on their perspectives and sharing their affective responses (Cordier et al., forthcoming). The pattern of observations that occurred in the context of social play suggests a developmentally inappropriate lack of empathetic responding. As a continued reflection of their diminished empathy, children with ADHD seemed to lack insight into the importance of reciprocity; thus the play frame often was disrupted. These findings are particularly important because lack of empathy may have significant implications for prosocial development, particularly as play is the milieu within which children develop social skills and form peer relationships (Dodge, 1983). In the extreme, diminished empathy could have adverse implications for the development of morality and can potentially lead to antisocial behaviour (Barkley, 1995, 1997).

Summary of overall differences between the proposed and revised models
Although very similar to the proposed model, the data led to four modifications in the revised model. First, the intrinsic nature of the motivation of children with ADHD was not affected as had been postulated originally. While, as expected, internal control was severely affected, surprisingly the ability to suspend the unnecessary constraints of reality was not. This was due to high scores on mischief/teasing which have offset low scores on pretend play. Finally, the children’s ability to frame play by giving and responding to play cues was affected, but not as severely as anticipated; they were very able to give cues but had difficulty responding. The graphic representation of the revised model of the interactive play transaction of children with ADHD compared with typically developing children is depicted in Fig. 2.

Using the revised model to plan interventions for children with ADHD
Some of what we learned about the play of children with ADHD will enable the development of useful guidelines for a play-based therapy structure. If a model for play-based therapy is employed as an adjunct therapy for ADHD, therapists need to consider the following.

Intrinsic motivation
Our findings clearly suggest that addressing the motivational aspects of play could offset the primary symptoms of ADHD in a free-play context. Therefore in planning interventions for children with ADHD, one of the primary considerations should be to capture children’s intrinsic motivation. As such, consideration should be given to setting up a physically and emotionally safe environment and providing opportunities to choose or develop activities that reflect the things the child is seeking through play. Capturing children’s motivations ensures that they engage in the activities for the sheer pleasure of being involved rather than for a specific outcome; it also increases their ability and willingness to sustain attention and to maintain play themes.

Empathy
The strength of our findings regarding the lack of interpersonal empathy that was characteristic of the play of children with ADHD suggests the need to consider the process of decentering when planning interventions for children with ADHD. Specifically, features such as discriminating and identifying the emotional states of playmates, taking on playmates’ perspectives or roles, and evoking shared affect are important. Interventions aimed at decentering that have proved effective include using nascent collective symbolism where playmates practice imitation with same symbolic meaning to actions during pretend play (e.g. both players know that handing each other pieces of paper represent payment) (Hoffman, 2001) and collective pretend play which involves shared cooperative activities and joint creation of characters (Stambak & Sinclair, 1993).
Ironically, a very good example illustrating collective symbolism in pretend play came from a play session we observed between a boy with ADHD (Evan) and his friend (Troy). Their play transaction stood out as exceptionally creative and complex and it was characterised by finely tuned perspective-taking. The boys created a world of princes and dragons out of simple toys and sand (collective symbolism — joint creation of characters). They alternated taking the lead in creating their imaginary world, sometimes by verbally announcing a new character with a short description: ‘This can be the prince who has gone on a journey to find the spiked-back dragon’, pointing to an oddly shaped piece of wood. On other occasions they seem to follow each other intuitively, knowing that burying the dragons in the sand meant that the princes had secured yet another victory (collective symbolism — imitation with same symbolic meaning to actions). So absorbed were they in their play that when the 20-min play session was finished, they pleaded for more time to kill off the dragons who threatened their kingdom. Upon enquiry, the parent of the child with ADHD indicated that the boys play for hours and it is often difficult to get them to go to bed when they are having a sleep-over.

Studying those children with ADHD whose play is not affected is useful as it could provide us with important clues in developing interventions for children with ADHD whose play is affected. What then enables a child with ADHD to be so skillful at play while most struggle to keep the play transaction flowing? The answer is unclear given that we did not observe the ‘Evan’ playing with another playmate. ‘Evan’ may simply be a good player. However having a good friend and playmate also seemed key. The mother described an intimate friendship lasting many years, which endured even though ‘Evan’ had experienced many challenging times in his young life as a result of difficulties associated with ADHD. ‘Troy’ was always there to take his mind off things when the going was tough at school.

How do we foster friendships for children with ADHD? Using social skills groups to improve peer relationships has had mixed results in effectiveness (Piffner, Barkley & DuPaul, 2006). Play seems an obvious medium, as it is the natural context within which children learn to socialise and make friends (Power, 2000). While there is no research specifically on children with ADHD in interventions, the idea of including peers in interventions is supported in general in the inclusive framework for children with disabilities adopted in many countries (Turnbull, Stowe, Turnbull & Schrandt, 2007), as it provides children with disabilities with the opportunity to acquire skills that would not have been possible if they were grouped together with like children (Hunt & McDonnell, 2007). Integrating children with disabilities with typically developing children also is beneficial to the typically developing children as it promotes altruism. Therefore it makes sense, both theoretically and intuitively, to involve and support the playmates of children with ADHD in interventions.

Considerations in including playmates in the intervention: Targeting dyadic friendships of children with ADHD may provide a more realistic means for improving peer relationships, than attempting to improve peer relationships using social skills training in a group (Hoza, Mrug, Pelham, Greiner & Gnagy, 2003). Ultimately, the intervention should be geared towards forming friendships as these potentially counteract the adverse outcomes associated with peer rejection (Hoza et al.). The friendship between ‘Evan’ and ‘Troy’ clearly demonstrates the potential protective value of a close friendship for children with ADHD.

Peer- and sibling-mediated interventions have shown to be effective in enhancing the social play of children with autism. Even though difficulties in play are different for children with ADHD compared with children with autism, some of the principles used in social play interventions for children with autism can be considered. Using peers and siblings as change agents is an example of such interventions (Strain, 2002). Peer-mediated interventions assume that training typically developing peers to initiate, prompt and reinforce social interactions will result in greater improvements in social play behaviours than simply having children with autism in close physical proximity to typically developing peers. A standard training protocol is used to teach the typically developing peers to deliver specific social offers (e.g. ‘Do you want to play?’), assuring uniformity and quality instruction (Strain). Peers role-play with adults until they have learned the strategies; they are then prompted to interact with the target children around designated play materials and activities. External reinforcements are systematically and carefully faded as the peer acquires the necessary skills (Strain).

The Integrated Play Group (IPG) model is another effective intervention using playmates and siblings. By promoting ‘common focus’ on an activity, the IPG model has been found to double the amount of interaction with peers, increase functional object use and decrease manipulative, repetitive and isolated play (Wolfberg, 2003). The IPG model emphasises arranging the environment to foster mutually enjoyable social interaction, play and imaginative experiences (Wolfberg). The target child is encouraged to engage in and maintain interactions with peers who, in turn, learn to use a variety of skills (e.g. getting a friend’s attention, sharing, requesting, organising play and giving compliments).

Regardless of the approach, interventions for children with ADHD should be geared towards support of playmates to help children with ADHD shift their social behaviour away from the tendency towards domination and disruption. This can be achieved by optimising the playmates’ strengths (e.g. perseverance, adaptability and being process focussed) (Cordier et al., 2009).
While critical to promoting the social development of children with ADHD, including playmates in intervention may be difficult. Our work as well as previous research has shown that children with ADHD tend to affiliate with other children who experience peer problems (Cordier et al., 2009; Marshal & Molina, 2003) and similarly display negative and antisocial behaviour (Mrug, Hoza & Gerdes, 2001) and their siblings (who are common playmates) are also at risk of emotional and behavioural difficulties (Mash & Johnston, 1983). Clearly, further research on the playmates of children with ADHD is needed.

Finally, in promoting friendships for children with ADHD, therapists need to consider the difficulties the children experience in responding to (and presumably reading) cues during social play. When they are playing, all creatures (not only humans), provide clear cues about how they want to be treated (Bateson, 1971, 1972). For instance, to initiate social play, dogs adopt a characteristic posture called the ‘play bow’ — forelegs flexed; rear legs extended; rump in the air with tail wagging — that they use as both invitation and commentary. The dog performs a play bow at the beginning of a play bout, crouching back into it if a nip is accidentally too hard and the other dog wants assurance: ‘Don’t worry! Still playing!’ Bateson (1972, 2000) said it cleverly, ‘The playful nip denotes the bite, but it does not denote what would be denoted by the bite (p. 180)’. Children with ADHD need to develop their own social play language — expressive as well as receptive — using verbal and non-verbal cues that denote play and promote the flow of the play transaction.

Conclusions

The importance of play in the social development of children is undisputed. Findings from our study and previous studies underscore that the play of children with ADHD is severely affected, which potentially could lead to adverse outcomes in adulthood. Literature on play and ADHD allowed us to propose a model of the interactive process between the elements of play and the primary characteristics of ADHD. We then tested and subsequently revised the model, which we have put forward in this paper. The revised model of the interactive process between the elements of play and the characteristics of ADHD can be used as a guide to plan interventions for children with ADHD, using play as a medium for intervention. Such interventions should capture the children’s motivations, counteract the effects of lack of interpersonal empathy, and include a playmate who must be supported actively.

References


