ENCYCLOPEDIA
on Early Childhood
Development

Play-Fighting During Early Childhood and its Role in Preventing Later Chronic Aggression

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January 2012

Introduction

In the last decades, the opportunity for children for freely-occurring play has eroded due to an increase in structured activities (e.g., sports, music, dance lessons) and an increasing intolerance for anything that may be construed as aggression. Because of the risk of accidental injury or perceived opportunities for abusive contact, rough-and-tumble play (RTP) – which comprises both chasing and wrestling – has been the form of play most severely curtailed.[1] In times past, when it was not suppressed, estimates of the amount of freely-chosen play to involve RTP indicate that for children, especially males, is about 10%.[2] Given the concerns for children's safety and the relatively infrequent engagement in RTP, it would seem sensible to ban it from their lives. However, a growing body of experimental evidence with laboratory animals suggests that banning RTP may be counter-productive. RTP appears to provide young animals the opportunity to finely tune their behaviour in a contextually relevant manner with peers and so modify the

brain mechanisms that underpin social skills.[3]

What the Research Shows

Obviously, experimentally manipulating childhood experiences to test for the effects of play is not possible. Thus, the strongest experimental evidence comes from studies of rats and monkeys; however, the snippets of information that can be extracted from studies of children are consistent with this research.

Play and the laboratory rat

Once weaned, young rats spend about an hour per day engaged in RTP. Depriving young rats of the opportunity to play over the juvenile period (akin to between 5-11 years of age for children) leads to a wide range of deficits, the core of which involve an inability to attenuate their emotional reaction to novel or frightening situations, and this is associated with social deficits. These deficits are seen in the play-deprived rats' failings to coordinate their movements with those of a social partner – critical for successful sexual union – and in their misreading of social signals – critical to prevent social encounters from escalating into aggression. Crucial to emotional self-regulation and social skills is the ability of the *prefrontal cortex (PFC)* to exert executive control over the options available.[4,5] Engagement in RTP leads to a modified release of chemical factors in the brain that influence growth, and to anatomically detectable changes in the number and complexity of the cells of the PFC. In the juvenile period, RTP has been shown to affect the development of the PFC, but socially reared rats, with normal experience of RTP, given damage to the PFC as adults, exhibit deficits in emotional regulation and social behaviour similar to play-deprived rats with intact brains.[6] The causal link between RTP and social competency is thus well established in rats.[3]

RTP and non-human primates

In primates, the causal links are not as established, but the evidence is consistent with that from rats. In monkeys and apes, the lack of opportunity to engage in RTP with peers leads to a reduced capacity for emotional self-regulation and impoverished social skills.[7,8] Damage to brain areas linked to the PFC can create such deficits in normally-reared animals. The findings with non-human primates, especially apes, also point to the importance of mother-infant play in preparing infants for the rough housing world of peer-peer play, a developmental stepping stone that is important in children, but less relevant in rats.[3]

What is special about RTP?

For RTP to remain playful, it has to be reciprocal. That is, partners have to show the restraint necessary to prevent one of the participants always gaining and maintaining the advantage. Also, RTP can be unpredictable and ambiguous. That is, participants cannot predict when or if they will lose control of the situation, nor how they will regain it. So, if one partner transgresses by being more forceful than expected, a decision has to be made as to whether that partner is abusing the situation or has just been carried away by exuberance.[9] Thus, RTP creates an experiential context that taxes and trains the PFC.[6]

Research on children

Children that engage in more RTP tend to be better liked by peers, over consecutive years exhibit better social skills, and, overall, perform more effectively in the school setting with regard to academic performance.[10] Although the PFC is not fully developed until the mid- to late-twenties, by exposing young children to playful situations that require the exercise of turn taking, executive function can be improved, which shows that the PFC is amenable to enhanced function even before it is fully mature.[11] Non-physical play encounters that have many of the same properties as RTP could include exercises, such as asking two children to draw something together – they would thus have to negotiate what to draw, how to draw it and determine what each individual would contribute to the drawing. Such negotiations tax the function of the PFC, as does the monitoring necessary to make sure that the partner does not cheat. Also, like other primates, children who have had positive playful experiences with their mothers and fathers prior to the onset of peer play appear to be provided with important preparation for later peer-peer behaviour. Such children are better able to establish friendships with peers once they begin school.[12,13,14]

Implications

There are different degrees of involvement of social skills in different types of aggression.[15] Lack of suitable social skill enhancement with associated emotional self-regulation could have a negative impact on aggression in at least three ways. First, as indicated by the animal experiments, play-impoverished children may misread social cues and so escalate to aggression. Second, as is also suggested by the animal literature, play impoverished children may have a smaller tool kit of options for convincing peers to cooperate, and so may resort to aggression to

gain some operational advantage. Third, more specific to humans, poor adjustment to the school setting, failure to make friends and poor academic performance may lead to frustration-induced aggression.[16] Finding ways that allow children to gain the experiences that are important from RTP, either through RTP itself, or activities that simulate core experiences from RTP, such as turn taking, may be important to offset later aggression.

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