

The Diagnostic and Therapeutic Roles of Children's Rough-and-Tumble Play

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In this paper the diagnostic and therapeutic roles of children's rough-and-tumble play (R&T) are outlined. R&T is first defined and distinguished from aggressive behavior. The diagnostic role of R&T is explicated by discussing a recent study of elementary school children's R&T and aggression. It is argued that observing R&T and aggression can help health care providers in predicting and preventing antisocial behaviors. Finally, the therapeutic role of R&T is outlined. The strategies described are appropriate for home-based or hospital-based intervention programs.

Educators and health care professionals consider play to be an important dimension of children's development. Play is described as a process by which children develop through interacting on their own terms with their physical and social environment. The literature on the benefits of play is long and controversial. Play is often seen as having beneficial effects on children's social (Christie & Johnsen, 1983) and cognitive (e.g., Pellegrini, 1985) development. Most researchers admit that play is good for children. The positive bias toward play is probably the result of Piaget's (1962) stressing the role of play in children's cognitive development.

One such benefit may be that observing children's play provides insight into children's so-

cial-cognitive processes. This "diagnostic role" of play has a respected history in child psychology, education, and nursing (Bolg, 1984). Observations of children at play can provide valid insight into children's levels of functioning on contemporaneous measures; for example, children's sociometric status (Ladd, 1983; Rubin & Daniels-Beirness, 1983; Smith & Lewis, 1985) and reading readiness (Pellegrini, 1980) are significantly related to their free play behaviors. In addition, play seems to predict future levels of functioning; for example, aggression during free play predicts subsequent juvenile delinquency (Rutter & Garnezy, 1983).

It is the intent of this article to suggest ways in which the diagnostic and therapeutic functions of play can be applied to children who may be at risk for conduct disorders and, consequently, hospitalization. The manner in which play can be used in health care or home-based facilities to remediate these social-cognitive problems will be suggested. In addition, the diagnostic and therapeutic value of play for the health care of children will be discussed.

The form of play that will be discussed, rough-and-tumble play (R&T), has not been studied often in children. For this reason, R&T will first be defined. Secondly, a study of elementary school children's R&T and aggression on the playground at recess will be discussed. As part of this description, the ways in which R&T and aggressive play relate to children's social-cognitive status will be illustrated, including a discussion of the diagnostic value of children's R&T. The third section of this article is concerned with the therapeutic aspect of play. Recommendations for remediating children's aggressive play that are appropriate for home-based or institutional care settings will be made.

WHAT IS R&T?

The term "rough-and-tumble play" or "R&T" was coined by Harlow in his work with rhesus monkeys (Harlow, 1962; Harlow & Harlow, 1962). Generally, R&T refers to quasiagonistic behaviors. These gross motor activities do not typically result in injury to participants or in the

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separation of playmates (McGrew, 1969); examples of R&T include play wrestling and play chasing. The behavioral components of R&T are typically playful and nonaggressive (Blurton Jones, 1972, 1976). Most of the current work on R&T has been done by English ethologists (Blurton Jones, 1972, 1976; Humphreys & Smith, 1984; Smith, 1982; Smith & Connolly, 1980). The ethological method used to observe animals' behavior has been applied to the study of human children's R&T. Typically, children's social behavior was observed in their preschool classrooms (Blurton Jones, 1972; McGrew, 1972; Smith & Connolly, 1980; Smith, 1973). R&T emerged as a distinct empirical factor that was strikingly similar in these different studies. Specifically, Blurton Jones (1972) found R&T to be composed of seven behaviors: Laugh, run, jump, open beat, wrestle, chase, and flee. Smith (1973) found similar behaviors in his observation of R&T: Laugh, smile, chase, flee, wrestle/tumble, and play noises. In short, R&T resembles play fighting and chase/flee behaviors (Humphreys & Smith, 1984). These ethologists have also hypothesized some interesting functions of R&T. For example, R&T and other forms of vigorous activity may provide young children with practice in social interaction skills (Smith, 1982). It also may enable them to "blow off excess energy" during school recess (Smith & Hagan, 1980). This evidence suggests that the behavioral configuration labeled R&T by ethologists is a stable factor. It has been replicated across different research teams, different samples (e.g., Blurton Jones, 1972; McGrew, 1969), and in different cultures (e.g., Blurton Jones & Konner, 1973, in Africa; Whiting & Edwards, 1973, across six cultures).

Like other forms of play, the frequency with which children engage in R&T seems to follow an inverted U developmental function (Fagen, 1981), although the ages of onset, peak, and decline for different forms of play vary. Preschoolers spend about 5% of their free time in R&T. R&T increases to a high point at 7 years of age (13.3%) and then declines at 9 (9.3%) and 11 years of age (4.6%) (Humphreys & Smith, 1984). The frequency with which R&T occurs across the early school years appears to be substantially less than the occurrence of constructive play (i.e., 40% of preschoolers' total activities in school; Rubin, Fein, and Vandenberg, 1983), but similar to the occurrence of functional (i.e., 17% to 34%; Rubin et al., 1983) and pretense play (i.e., 12% to 32%; Fein, 1981).

There is a definitional problem with R&T. Because an important aspect of R&T is play

fighting, it often resembles aggressive behavior. Upon close observation, however, R&T and aggression are separate behavioral categories for young children (Blurton Jones, 1972; DiPietro, 1981). For example, both categories may include a "hit-at" category. In R&T, however, children use open hands and not the clenched hands that are seen in aggressive behavior. Blurton Jones (1972) has shown, with factor analyses, that the behaviors comprising R&T are distinct and independent from aggressive behaviors. The latter category has been shown to have the following behavioral components: fixate, frown, hit, push, and take and grab. Note that children exhibit positive affect (e.g., laughing) in R&T and negative affect (e.g., frowning) in aggressive behavior (Blurton Jones, 1972). This finding was replicated by DiPietro (1981). Further, aggression and R&T typically occur in different environments; R&T tends to occur on playgrounds whereas aggressive behavior occurs in the presence of play objects, and usually involves property disputes (Blurton Jones, 1972). In R&T, as compared with aggression, children typically alternate roles between aggressor and victim. At the end of R&T episodes, children do not separate, although they do at the end of aggressive acts. These differences between R&T and aggression are summarized in Table 1.

Such a thorough definition of R&T vis-à-vis aggression is necessary if observations of R&T are to serve a diagnostic function. Simply put, observers must be able reliably to differentiate R&T from aggression because these two very different sets of behavior are related to correspondingly different measures of children's social-cognitive status. Specifically, R&T seems to serve a positive social function in childhood (Humphreys & Smith, 1986; Pellegrini, 1987). Aggression, on the other hand, is negatively related to children's prosocial development. Aggressive behavior and rejected sociometric status in childhood are good predictors of children's being at risk for subsequent conduct problems such as juvenile delinquency (Rutter & Garmezy, 1983). Thus, observing children's play behaviors on a playground provides an excellent opportunity to diagnosis their social competence. Aggressive behavior on the playground should serve as a red flag to observers. Children who initiate aggressive behavior or respond to R&T initiations with aggression may have social-cognitive deficits that could necessitate some form of home-based or institutional intervention unless remediated. Health care workers should be aware of the differences between R&T and aggression. R&T is a positive indicator of children's social competence while

TABLE 1
DIFFERENCES BETWEEN R&T AND AGGRESSION

	R&T	Aggression
Behavior	Smile (upturned mouth), run, jump, open beat, wrestle, chase, play noises	Fixate, frown (downturned mouth), hit, push, take and grab
Role	Reciprocal (e.g., victim and victimizer)	Unidirectional (e.g., allows the victimizer)
Outcome	Sustained play, games with rules (e.g., tag)	Peer separation
Affective state	Positive (e.g., laughing)	Negative (e.g., crying)
Environments	Soft surface (e.g., grassy field)	Property disputes (e.g., fighting over toys)

aggressive play indicates that children may be at risk.

DIAGNOSTIC FUNCTION

Children's R&T and Aggression on the Playground

The data presented in this section of the paper are part of a longitudinal study of elementary school children's R&T and aggression on the playground. These data add credence to the diagnostic value of observing children's R&T. Although the children observed are not from an institutionalized population, those children who engage in aggressive behavior and who are sociometrically rejected are at risk for institutionalization. As such, the diagnostic function of R&T can be a useful *preventive* strategy.

The children all attended a public elementary school in a small southeastern city. These children were part of a larger, longitudinal study. Thirty-five kindergarteners, 30 second graders, and 29 fourth graders participated in the study.

Observations were made during recess periods from October through May. Recess periods for each grade level lasted 25 minutes, during which time between 120 and 150 children were on the playground. Four observers used scan-sampling techniques to monitor each child in predetermined counterbalanced order for 5 seconds (Altmann, 1974; Humphreys & Smith, in press). Each observer recorded the following information (by whispering into a tape recorder): the target's name; the location of the behavior; the number of boys, girls, and adults present; the target's behavior; and the reactors' (peers and the adults) behaviors. Interrater reliability was 87% for scan samples.

Children's R&T play and aggression play were event sampled. Observers described the behaviors of these events into a tape recorder as they occurred. These events were subsequently transformed into time intervals of 5 seconds (Bakeman & Gottman, 1986). The observer also noted behaviors preceding and following the targeted behavior, who initiated the targeted

behavior, who the reactors were, who was dominant and who submissive, and whether the participants stayed together or separated after the target behavior occurred. Interrater reliability was 81% for event samples.

A number of psychometric measures of children's social competence were administered. These measures and a description of each are listed below:

Sociometry. Children's sociometric status was determined, following Dodge (e.g., Dodge, Schlundt, Schocken, & Delugach, 1983). In this procedure each child was seated at a table before individual photographs of all of his or her classmates. Each child was then asked to point out the three peers whom he or she liked the most and the three peers whom he or she liked the least. Each child received a social preference score (number of like most minus number of liked least) and a social impact score (number of liked and number of liked least). The frequency of positive nominations and negative nominations was also scored. Children were also classified as rejected or popular, following the procedures outlined by Dodge et al. (1983). Rejected children are defined as those who others generally do not like, whereas popular children are defined as those who are generally liked.

Social problem solving. Spivak and Shure's (1974) Interpersonal Cognitive Problem Solving (ICPS) procedure was administered individually to all children. In this procedure an experimenter presented each child with five separate pictures of a child trying to get a toy from a peer and five separate pictures of a child trying to avoid being reprimanded by his or her mother. Each child was asked to generate as many different solutions to the given social problem as he or she could. Experimenters followed scripts for each picture and the number of prompts was standardized. Children's scores on the ICPS were the variety of strategies they generated.

Ability to discriminate between R&T and aggression (film). Small groups of children were shown a videotape containing 11 discrete incidents of children engaging in either R&T or aggressive

behavior (Smith & Lewis, 1985). The first incident served as a practice item. Children were then shown the remaining 10 incidents and told to mark (on a standardized answer sheet) the "sad face" if they perceived real fighting and a "happy face" if they perceived play fighting. Children's scores were the number of correct answers. Children as young as 4 years of age have been able to discriminate reliably between R&T and aggression on this task (Smith & Lewis, 1985).

Analyses of behavioral and psychometric data support the claim that observing children's (particularly boys') R&T and aggression have strong diagnostic value. Results suggest that boys' R&T was positively related to popularity and social problem solving. Further, children's R&T events tended to lead to games with rules, such as tag. Aggression, on the other hand, was negatively related to popularity and the ability to discriminate real from mock fighting.

The extent to which children's R&T leads to aggression was also examined. This question was partially motivated by adults' general concern in relation to children's R&T. Adults generally disapprove of R&T because they think it leads to aggression; as a result they often discourage it. The probability of R&T's leading to aggression was examined by means of sequential lag analyses (Bakeman & Gottman, 1986). The probability was 7%. Next, the data were analyzed with this same sequence, separately, for rejected and popular children. The probability of R&T leading to aggression was .006% for popular children and 28% for rejected children. Thus, rejected children, rather than others, tend to escalate R&T into aggression.

These sequential and correlation results suggest that adults should encourage rather than discourage children's R&T. Engagement in R&T seems to provide children with the opportunity to practice social skills, for example, to take on different social roles with their friends. It does not escalate into aggression for popular children.

For rejected children R&T often does escalate into aggression, however. This may be the result of rejected children's attributing aggression to R&T events. Rejected children's (particularly boys') aggression is often a result of their tendency to respond aggressively to socially ambiguous provocation situations (Dodge & Frame, 1982). That is, when rejected boys are in a situation that they find ambiguous (e.g., another children initiating a play fight), they typically respond aggressively. A social cognitive deficit in the ability to process social cues (e.g., smiling versus frowning; open versus closed hand beat-

ing), particularly under anxious conditions (Dodge & Somberg, 1985), may be responsible for boys' aggressive responses to others' social overtures. These children, as noted above, may be at risk for subsequent conduct problems.

The diagnostic function of R&T that is useful for all child health care workers is especially useful to particular groups. Child life specialists and nurses, for example, should be aware of children's exhibition of R&T or aggressive play as part of their provision of play environments in hospital settings. Children who exhibit aggressive play should be referred by child life specialists to those responsible for behavior therapy (e.g., child psychologists and psychiatrists). Nurses should encourage hospitalized children to engage in R&T and discourage child from taking on a passive "sick role." Opportunities should be provided for this and other forms of vigorous play. Nurses could also use the diagnostic function to identify aggressive children.

Nurses and child life specialists should be aware of differences between aggressive children and children who may be "acting out" in reaction to their hospitalization. To discriminate between these two types of children nurses can test the extent to which children can discriminate between R&T and aggression by showing them films of each. This procedure is outlined in more detail below. Generally, aggressive children cannot discriminate between R&T and aggression.

To conclude this section, the manner in which children who may be at risk for conduct problems has been shown. Observation of their R&T and aggressive behavior is necessary. The results of these analyses are summarized in Table 2.

TABLE 2

R&T, AGGRESSION, AND SOCIAL
COMPETENCE SIGNIFICANT (.05)
CORRELATIONS

	R&T	Aggression
Interpersonal cognitive problem solving	.3	
Film		-.32
Social preference	.30	
Social impact		-.29
Likes most		-.30
	Sequential analyses (Z-scores)	
	R&T to Aggression	R&T to games with rules
Popular children	1.08	2.63*
Rejected children	4.00*	-1.70

* Significant transition.

Therapeutic Function of R&T

A further benefit of R&T is that it often leads to children's engaging in cooperative games with rules. The similarity of the motor patterns in both forms of play suggests that R&T provides practice for games with rules. For example, chasing behavior, a component of R&T, and tag, a rule-governed game, both involve running, dodging, and reciprocal role taking. Engagement in these forms of play is beneficial to children to the extent that they develop physical and cooperative skills.

R&T is also related to children's social problem solving and popularity. Social problem solving, for purposes of this article, is defined as children's flexibility in solving social problems. R&T provides practice at developing social flexibility (Fagen, 1981) in that children engage in negotiation, multiparty alliances, and situation redefinition (Humphreys & Smith, 1984). Popular children rather than rejected children engage in R&T because the social skills necessary for popularity (e.g., social flexibility) are also those necessary for R&T. Rejected children do not possess these skills and, as noted above, have a negative attributional bias in R&T situations. The remediation of children who do not engage in this form of play will be discussed in terms of the positive correlates of R&T.

The advocated therapeutic model of child development is based on Bolig's typology of hospital play programs (Bolig, 1984; Bolig, Fernie, & Klein, 1986). Generally, Bolig suggests that children should move from structured, adult-guided interaction to unstructured peer-guided interaction.

Our first suggestion is that children, particularly those in hospital or institutional settings, be given the opportunity to play outdoors or in spacious indoor facilities regularly. A daily outdoor play period should be part of any therapeutic program. The lack of motor stimulation is a real problem in most of these settings (Bolig, 1984). Children who spend a large portion of their day in physically confining settings need the opportunity to exercise or "blow off steam" through such activities as R&T. Although this "energy release theory of play" has not been taken very seriously of late, recent research tends to support it. Smith and Hagen (1980) found that the longer children were confined in their classrooms the more intense and the more prolonged was their vigorous play at recess. This finding, whether it is framed in the surplus energy theory or otherwise, suggests that children need time to play outdoors.

Such daily outdoor play opportunities should

be used in conjunction with the other intervention strategies suggested below. Further, the practicability of this program in particular hospital or health care settings is obviously dependent upon available resources, such as play areas and/or personnel. As noted above, the therapeutic strategy involves a progression from adult- to peer-centered play. Initially, an adult and a child should spend time discriminating R&T from aggression. Aggressive children, as noted above, do not discriminate between these two behaviors. Such an activity would involve an adult and a child jointly viewing videotapes containing separate incidents of R&T and aggression. The child should be asked to distinguish between the two types of events and then to justify his or her answer. The adult should then review the incident in slow motion asking the subject to describe the children's facial expressions, whether their hands are open or closed, whether the children's blows are actually making contact, and if the children are exchanging roles. The adult should have the child overtly verbalize the questions and answers. Children themselves should eventually (after about five sessions) be able to ask and answer the questions for each incident. This self-questioning strategy is similar to the very effective clinical model Meichenbaum (1977) used with impulsive children.

The film analysis and questioning phase of the intervention should help children gain general knowledge about appropriate and inappropriate ways in which to play. By analyzing and talking about the films children become aware of appropriate and inappropriate social responses. This social knowledge base is necessary in the development of their social competence (Asher & Renshaw, 1981).

The film analysis phase could be useful for child psychologists and psychiatrists as well as for nurses. Diagnosing children who already have conduct disorders and who are seen as outpatients would be facilitated, as would diagnosing their ability to discriminate between real and mock fighting. Children referred to child psychologists and psychiatrists and those responding negatively to illness and/or hospitalization are also candidates for the film analysis procedure because it aids in the identification of aggressive children.

Another adult-child questioning model, developed by Zahavi and Asher (1978), should be used after the initial film analyses. Using a new set of films portraying only aggressive behavior, adults should ask children how they think the child who is the target of aggression feels. Children should arrive at the realization that aggress-

sion hurts others. Next, adults should pose hypothetical problems in which aggressive strategies are used, such as a child's trying to enter a basketball game by hitting a current player. The child should be asked, "Will this strategy be effective in getting into the game?" The intent here is for children to realize that aggressive strategies typically are ineffectual in achieving goals. Next, the child should be presented with social problems such as those listed by Spivak and Shure (1979) (for example, a child wants to play with a kite another child is using; ask the child to generate strategies that will result in cooperative interaction). The intent here is for children to realize that sharing and turn taking are effective social problem solving strategies. This questioning strategy has been shown to reduce children's aggressive behavior with peers.

At the daily outdoor play sessions, the adult and child should engage in R&T activities such as play fighting and chasing. These activities enable children to practice the skills they have observed in the films. In addition, the presence of a familiar, supportive adult on the playground will make the child feel more comfortable. That presence is particularly important to children in institutional settings because such "strange" surroundings typically inhibit children's play (Bolg, 1984). The adult then would serve as a transitional playmate for the child.

Once the child is aware of the differences between R&T and aggression and has a varied social problem solving repertoire, he/she is ready to play with peers on the playground. Based on a "social skills coaching" model developed by Oden and Asher (1977), the adult engineers the child's social experiences. First, the child is paired with a nonaggressive peer of the same sex. The two children are told to play together during free playtime. The adult observes the interaction closely. After each play session the adult and the targeted child review the session. The child is asked ways in which he/she did or did not share and take turns. The child is also asked to generate other ways in which sharing and turn taking could have been facilitated, as well as specifically how his/her peer responded to his acts and vice versa. This strategy enables children to become aware of the effects they have on others, an important component of social competence (Asher & Renshaw, 1981). This coaching strategy has been effective in increasing children's popularity.

The next phase is to have children play in a free play environment with their peers. The play environment can be constructed such that the possibility of aggression's occurring is mini-

mized. First, aggression is less likely when adults are present. Therefore, adult supervisors should be on the playground. Adult presence is also related to children's engaging in more social and more sustained interactions. Second, crowding and toys often result in aggression (Pellegrini, 1987). Thus, spacious play areas without toys should diminish the occurrence of aggression and facilitate social interactions.

CONCLUSION

In this article the diagnostic and therapeutic functions of children's R&T have been outlined. The diagnostic function is valuable as a preventive strategy for identifying children who are at risk. The therapeutic function can be used in home-based or hospital-based programs with aggressive children. Obviously, the encouragement of R&T is contingent on children's physical and medical limitations. Child health care facilities should make provision, in terms of program and space, for children's positive engagement in R&T.

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