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{ Commentary }

Play in Hunter-Gatherers

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The three chapters on play provide provocative insights and diverse theoretical and methodological approaches to the study of human play. Gray reviews hunter-gatherer ethnographic literature on children and hypothesizes that play is an important mechanism by which pronounced egalitarianism in hunter-gatherers is maintained. The chapter by Pellegrini and Pellegrini is a theoretical contribution to the study of human play. The authors are critical of hard-wired brain modularity approaches associated with evolutionary psychology, and instead advocate for an epigenetic or evolutionary developmental biology approach to understanding human play. They hypothesize that juvenile play is a prime mover in the development of behavioral “modules” that enable humans to adapt to novel or diverse local ecologies. Play is viewed as a creative process (recombine, innovate, and eliminate behaviors) that enables humans to rapidly adapt to changing environments. The behavioral modules that emerge in play can lead to genetic changes (ontogeny influencing phylogeny).

The chapter by Flanders, Herman, and Paquette focuses on rough-and-tumble (R&T) play. They review the child and nonhuman development literature and hypothesize that R&T play is (1) particularly important for the development of self-regulation and cooperation between group members and (2) primarily the domain of fathers and that fathers play a key role in the development of these abilities.

Pellegrini and Pellegrini and Flanders et al. have been conducting systematic research on play for years, and their chapters provide excellent overviews and current theoretical positions of these leading researchers. Gray is relatively new to studies of play but presents a nice summary of common representations of hunter-gatherers.

Play Research in the Context of Hunter-Gatherer Studies

Each chapter provides insights, new data, and theoretical exploration into human play. In this section, we examine their positions, data, and interpretations in the context of hunter-gatherer research, our field experiences, and studies of play. Few

studies of hunter-gatherer play exist (see Bock & Johnson, 2004; Boyette, in preparation; Gosso et al., 2005; and Kamei, 2005, for exceptions). The Pellegrini and Pellegrini and Flanders et al. chapters cite more play studies from rats and monkeys than they do from hunter-gatherers. This is not their fault; many more systematic studies and data exist on rat and monkey play than on hunter-gatherer play. Although few studies of forager play have been conducted, they and other child development research on foragers provide a context for evaluating the results and generalizations from studies conducted in highly stratified industrial cultures with relatively unique social ecologies.

FATHERS AND PLAY

Flanders et al. state that “R&T play has long been considered the domain of fathers,” then go on to describe others’ and their own research about child–father R&T play. One sentence indicates culture may impact the frequency of R&T play (i.e., play may be more common in “individualist” cultures that value autonomy and competition than in “collectivist” cultures). However, data on Aka forager fathers (Hewlett, 1991) indicate they are rarely involved in R&T play and that “others,” especially older brothers and sisters who provide care during infancy and early childhood, are much more likely than parents to provide all types of play (R&T, object mediated, face to face). Hewlett (1991) hypothesized that Aka fathers did not engage in R&T play because they intimately knew their children and could listen and read their children’s needs rather than showing their love by stimulating them with vigorous play.

The collectivist–individual dichotomy is also problematic. The Ngandu farmer neighbors of the Aka are a collectivist culture (i.e., needs of the group valued more than the needs of the individual), but they highly value competition, while the Aka hunter-gatherers would be considered an individualist culture because they highly value and respect an individual’s autonomy. Father–child R&T play may be particularly important in competitive cultures, but our observational data indicate Ngandu farmer fathers rarely play with their children.

The issue is that Flanders et al. give the impression that father–child R&T play is common, if not universal, and that it is an important way by which children learn to deal with the outside world. They probably did not set out to give this impression, but nowhere do they state that their studies apply only to Western or Euro-American cultures. Fathers’ R&T play may be a particularly important process for Euro-American children to learn self-regulation because allomaternal care is limited and the nuclear family is relatively isolated by comparison to children in hunter-gatherer and other small-scale cultures.

Flanders et al. discuss aggression in children and cite several studies which indicate that most conflicts in infants and young children have to do with competition over objects. This is common in Euro-American and other cultures, but a recent study by Fouts and Lamb (2009) demonstrated that child conflicts among farmers

were over objects but toddler conflicts among hunter-gatherers were over physical and emotional proximity to particular individuals.

Innovation and Play

The innovation and creativity functions of play hypothesized by Pellegrini and Pellegrini may be particularly important for Euro-American and other children in rapidly changing environments, but it is not likely to be as important in foragers in relatively stable environments (e.g., minimal impact by the outside world). Likewise, vertical (from parents) transmission of skills is important in relatively stable environments, whereas horizontal transmission (from peers, neighbors) is more adaptive in rapidly changing environments where regular updating is necessary. Humans are capable of both vertical and horizontal transmission to learn future skills or develop innovations for current survival, but their expression depends on their environmental context and either may include play.

Forager juveniles are the energizers of culture, but their role in innovation is not clear. Even in the domains of Aka dance, music, and body modification, the innovations adopted by others come from adults. Juveniles often adopt new dances and songs very quickly through play, but the innovations come from adults. The few modifications in subsistence techniques, such as net hunting, that we have observed have also come from adults. Spontaneous innovations in language or material culture have been observed in forager children's play, but these are often short-lived or remain within the context of children's culture and are not adopted by adults.

Pellegrini and Pellegrini do not provide human examples or studies to support the hypothesis that novel behaviors acquired in juvenile play are incorporated into a human culture, though they have examined this issue in another place (Pellegrini & Hou, 2011). Only laboratory studies of monkeys and chimpanzees are described. It would be beneficial to have an example of a human behavioral or cultural variant that emerged in play and became part of an adaptive module.

DEFINITIONS OF PLAY

Authors tend to select definitions conducive to their hypothesis. Gray lists five criteria of play, and four of the five criteria are characteristic features of social learning in hunter-gatherer childhood (see Hewlett, Fouts, Boyette, & Hewlett, 2011) or hunter-gatherer life in general. The pervasive nature of play in several domains of hunter-gatherer life may be a by-product of or at least amplified by cultural values, attitudes, and practices common to foragers rather than a specific mechanism that promotes egalitarianism as hypothesized by Gray. Pellegrini and Pellegrini list four criteria of play from Burghardt (2005), and two of them (nonfunctional

and exaggerated, segmented and nonsequential in relation to functional behavior) emphasize the creative or novel component of play behavior.

EVOLUTIONARY APPROACHES

Gray is the only author to use hunter-gatherers as an approach to understanding human nature. The chapter is consistent with evolutionary psychology as it identifies a human universal (play) that functions to maintain egalitarianism, but the chapter is inconsistent with an evolutionary psychology approach because it does not describe the recurring problem faced by hunter-gatherers that led to the selection for play with these functions. The chapter also does not discuss play in mammals or primates where the social learning and social competence functions of play are emphasized. We are not aware of studies that indicate play functions to maintain egalitarianism. Play does contribute to the social learning of egalitarianism in hunter-gatherers, but it also facilitates learning how to dance, share, make nets, cook, and so forth. Among farmers and pastoralists we know, play contributes to the social learning of gender inequality and competition.

Pellegrini and Pellegrini minimize the importance of evolutionary psychology and hard-wired approaches to human nature. Their chapter is consistent with a human behavioral ecology approach because it emphasizes phenotypic plasticity and strategies that enable individuals to adapt to relatively local ecologies and minimizes the importance of genetically hard-wired behaviors. We do not have the space here to discuss the various evolutionary approaches but advocate elsewhere for an integrated (evolutionary psychology, behavioral ecology, and evolutionary cultural anthropology) evolutionary approach to development (Hewlett & Lamb, 2002).

Culture or evolutionary approaches to culture are seldom mentioned in the chapters as influencing the nature or evolution of play. Culture evolves, has specific properties of its own, and can construct environments that influence play. Play is part of human nature and has deep phylogenetic and biological roots, but at a minimum, culture influences the frequency, nature, and potential evolution of play. For instance, chapters define play as having the following characteristics: (1) is voluntary, has minimal adult intrusion, and is self-motivated; (2) emerges when an individual is secure and content; and (3) includes imagination, reversal, creativity, and innovation. Based on our work (Hewlett et al., 2011), we identify characteristics of the culturally constructed environment of forager social learning as the following: Egalitarianism, respect for autonomy, and extensive sharing are core values. Children are socialized in a physically and emotionally intimate context. Learning is self-motivated and directed (directions from parents are rare). Socialization of trust of many others is common. Creativity is also valued as it is part of respecting an individual's autonomy, and dances and songs, for instance, generally allocate time for each individual to modify and improvise standard patterns.

Given the characteristic features of play, the forager's culturally constructed environment could amplify the nature, scope, and frequency of play. These and other dimensions of the forager's culturally constructed environment (e.g., camp size, mobility, lack of storage) could also influence the nature and evolution of play in a way similar to that proposed by Pellegrini and Pellegrini; that is, particular cultural niche construction leads to its own adaptations and potential genetic change.

FUNCTIONS AND CHARACTERISTICS OF HUNTER-GATHERER PLAY

A paucity of data exists on hunter-gatherer play, but the few published studies that exist suggest several functions and generalizations. Pellegrini and Pellegrini identify three general functions: (1) learning future skills, (2) learning skills for current survival and adaptation, and (3) a source of innovation to adapt to novel environments. The limited hunter-gatherer literature provides strong support for the first, some support for the second, and no support for the third. Existing studies indicate most play occurs while imitating subsistence (hunting-gathering), maintenance (cooking, house building), and expressive (dancing, singing) skills. However, Kamei (2005) describes some elements of Baka forager children's play that are essential to living with other children and have no relevance to future adult life. Innovations and improvisations take place in hunter-gatherer children's play, but no systematic evidence exists to indicate innovations are utilized, incorporated, or diffused into forager culture.

The few systematic studies that exist suggest the following generalizations:

1. Hunter-gatherer juveniles are more likely to play than juveniles in other cultures because (a) they have relatively more free time (few task assignments) than children in many other cultures (Bock & Johnson, 2004; Konner, 2010) and (b) several of the frequently mentioned conditions of play are common in foraging cultures.
2. Most juvenile play occurs when children imitate readily observable adult and older children's behaviors, such as subsistence, maintenance, and expressive activities (Bock, 2005; Kamei, 2005). Learning egalitarianism and sharing may take more explicit instruction, such as scaffolding and teaching, and may involve less play.
3. Rough-and-tumble play and competitive and aggressive play are relatively infrequent, while exploratory play is relatively common in hunter-gatherers (Bock & Johnson, 2004; Boyette, in preparation; Kamei, 2005).

Conclusion

The three chapters provide interesting and provocative ideas about the nature, functions, and evolution of play in humans, but they rely heavily on studies of play in

highly stratified cultures or studies of play in rats and monkeys. In order to understand the nature of human play, we desperately need more systematic field studies of play in hunter-gatherers as this way of life characterized most of human history and will not exist much longer.

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