

Psicología y Educación: Presente y Futuro

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Children's play, learning and development

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Abstract

Play in humans, especially in human children, has been written about extensively by psychologists and anthropologists. Play forms are primarily exercise play, rough-and-tumble play, object play, pretend and sociodramatic play. Play behavior can take up an appreciable part of the time budget.

There is a spectrum of views on the importance of play in human development, amongst theorists and amongst human societies generally. Different views can be found both historically and cross-culturally, from Spencer's (1898) description of play as "*superfluous and useless exercise*", through to Gaskins, Haight and Lancy (2007), who describe three types of societies with differing prevailing attitudes to play, which they call '*culturally cultivated play*', '*culturally accepted play*', and '*culturally curtailed play*'. The 'play ethos' (Smith, 1988), or "*the realisation that play is essential for normal development has slowly but surely permeated our cultural heritage*" (Department of Environment Report, UK, 1973), has greatly influenced the value put on play in much of modern western society, and on the way research has been carried out and reported.

I review the history of views on play, and the evidence for developmental functions, as regards various types of children's play. The evidence comes mainly from anthropological studies, correlational studies, and experimental studies. Three models will be tested against the evidence: that play is epiphenomenal, shows equifinality, or is essential for development. .

Children's play, learning and development

Children commonly engage in various types of play. These are often categorized as exercise and rough-and-tumble play, object play, and pretend play. How much children play, and the context of play, varies in different societies. For example, Morelli, Rogoff, and Angelillo (2003) observed children aged 2 - 3 years in the Efe of the Democratic Republic of the Congo, a traditionally hunter-gatherer (foraging) people; a Mayan agricultural town in San Pedro, Guatemala where people either did craft work at home or worked as labourers or farmers; and two middle class communities in the USA where parents had a lot of formal schooling, and a majority were employed away from home. They found that the Efe and San Pedro children had much more access to, and opportunity to observe, adult work activities, and this was reflected in their play - they were seen three to five times more often with other children in emulation of work in play, imitative of adult work activities. The U.S. children were seen four to five times more often in play with an adult, sometimes in scholastic play (literacy or numeracy related activity for fun, such as singing alphabet songs, reading a story).

Play is commonly thought of as important, sometimes essential, for development, but there are differing views on this from anthropologists, psychologists, educationists, and lay people. Here, and in my book *Children and Play* (Wiley-Blackwell, 2010), I review the evidence and suggest a middle way between what can be extreme views on the topic.

Differing views about play have been described in the anthropological literature by Gaskins, Haight and Lancy (2006). They delineated 3 types of societies with differing attitudes to children playing, and how adults are expected to react. *Culturally cultivated play* is found primarily with urban, middle-class Euroamerican families. Here, play is stimulated, by the presence of toys, and of parents who encourage play as a means of cognitive development and learning. *Culturally accepted play* is found in societies where parents typically expect young children to play and do not disapprove of it, but neither do they invest much time or energy in supporting it. Adults see play as harmless and keeping children busy and out of the way until they are old enough to be useful; by around 6 years children start helping in subsistence tasks and looking after younger siblings. In these societies, if an adult plays with a child, it is not for benefits of play for the development of the child, but for the pleasure of the play itself, and to make their children happy. *Culturally curtailed play* is found in societies where adults will tolerate only minimum amounts of play. A study by Gaskins (1999) of the Yucatan Maya people of Mexico is an example. Children are busy running errands, accompanying parents etc, from 3 or 4 years. Parents believe that children need to acquire skills through observation and imitation; and play is seen as "having little purpose beyond being a distraction for children when they cannot help with the work to be done and as a signal that the children are healthy" (Gaskins et al., 2006, p.192).

Some parallels for this variation of ethnotheories of play, can be found in theories of play in the psychological or social scientific literature. The nineteenth century theorist Herbert Spencer famously described children's play as "*Superfluous and useless exercise*" and that play is carried out '*for the sake of the immediate gratifications involved, without reference to ulterior benefits*' (Spencer, 1898, pp.629-632). However the opposite view was proposed by Susan Isaacs, Professor of Educational Psychology at the Institute of Education at London University. She (Isaacs, 1929, p.9).argued that "*Play is indeed the child's work, and the means whereby he grows and develops. Active play can be looked upon as a sign of mental health; and its absence, either of some inborn defect, or of mental illness.*"

The view that Isaacs propounded has been much more influential in industrialized societies through the twentieth century. Smith (1988, 2010) argued that this can be described as a 'play ethos'; an uncritical assertion of the importance of play as not only useful but in some sense vital or essential. Such a view is well illustrated by a government report in the UK: "*The realisation that play is essential for normal development has slowly but surely permeated our cultural heritage*" (Department of Environment Report, UK, 1973), by a book title from a decade

ago: “*Play=Learning*” (Singer, Golinkoff & Hirsh-Pasek, 2006), or another quote: *Play is essential for optimal development*” (Hewes, 2007, p.120).

This play ethos has been challenged, by both anthropologists and psychologists.

One view is that statements such as those above are “... *completely unjustified by either the experimental literature in child development or, especially, the ethnographic literature*” (Lancy, 2007). So what do we know about these literatures and about the functional values of play? A starting point is an evolutionary perspective on play and its likely functions in mammalian species generally.

Play in non-human species

Although Burghardt (2005) has described some possible play forms in a wide range of species, it has been mostly described in mammals, and most commonly as exercise (physical activity) play, and rough-and-tumble play (play fighting and chasing); although with some object play especially in monkeys and apes. Pretend play is not seen in non-human species, with possible rudimentary exceptions in (usually captive) great apes (Matavia et al., 2002).

Given that exercise and rough-and-tumble play are quite common in many mammals, a basic evolutionary argument is that if play has costs, it should have compensating benefits (if not, it would have been selected out from the behavioral repertoire of the species). Play certainly does have costs. These include the time spent in play (when you could be doing other things); energy spent (compared to base level, or resting); injury risk (e.g. young ibex may fall on steep slopes when playing); and lack of vigilance to predators (e.g. young fur seals can be caught and killed by Southern sea lions, a larger species, most often when playing). Thus, there should be outweighing benefits. The main likely benefits proposed for non-human play are neural and muscle development in the case of exercise play; fighting and hunting skills, and social affiliation, in the case of rough-and-tumble play; and developing skills in tool use, in the case of object play. These benefits might be immediate (for the young animal now), or deferred (for long-term skill acquisition or stamina, in adult life) (Burghardt, 2005; Smith, 2010).

What do children learn from play?


Evolutionary arguments would suggest that the propensity to play has been selected for, in human children just as in young mammals. Thus, we can expect there to be benefits to children’s play, which may vary by type of play. Of course there may be ‘incidental’ benefits to play, since it keeps children active and encountering new situations, more so than might happen if they were not playing. In modern societies, where scholastic play and teaching occurs much more than in traditional societies, there will be a balance to be drawn between benefits of playing, and of instruction.

Benefits of exercise play in children

Exercise play is playful activity which involves large body activity, such as running, climbing. It increases from toddlers to preschool and peaks at early primary school ages, then declines in frequency. Boys typically do more exercise play than girls. There appears to be some intrinsic motivation for exercise play in young children, as it is more frequent after deprivation of exercise opportunities; this has been found in 3-4 year olds, and in 7-8 year olds (Smith & Hagan, 1980; Pellegrini & Davis, 1993).

The main hypothesized function of exercise play (as in mammals generally, Byers & Walker, 1995) is to support physical training of muscles, for strength and endurance, and skill and economy of movement. Exercise play clearly provides opportunities for this, and there is considerable evidence for the beneficial effects of exercise, although these can be provided by organised physical training activities, as well as by play (Pellegrini & Smith, 1998).

Another hypothesis, proposed by Bjorklund and Green (1992) is that exercise play encourages younger children to take breaks from being overloaded on cognitive tasks; the ‘cognitive immaturity hypothesis’. This hypothesis pre-



dicts that children would show more concentration at work after exercise breaks, for which there is some evidence (Pellegrini & Davis, 1993). It has practical importance for scheduling school breaks. However given the evolutionary recency of schools and structured learning activities, this seems unlikely to be an evolutionary function of exercise play.

Benefits of rough-and-tumble play (R&T) in children

Play fighting and play chasing increases in frequency from toddlers through the preschool and primary school ages, to peak at late primary school and then decline. Boys do more than girls (especially play fighting), and it is often between friends. It looks superficially like real fighting and chasing in an aggressive context. However it differs from aggression by a number of criteria, including facial expression, restraint, role-reversal, and how the encounter starts and finishes (Smith, 2010).

Although distinct from real aggression, many teachers regard rough-and-tumble as a problem, not only because it can be noisy and disruptive, but because they think it often turns into real fights. However in the primary school years, the evidence suggests that only about 1% of rough-and-tumble episodes turn into real fighting. But by early adolescence there is some change, with dominance/status (as well as friendship) becoming important in choosing play partners, and with a greater risk of play fights turning into real fights (Pellegrini, 2002).

This change with age may signal a change in the functional significance of play fighting. Pellegrini and Smith (1998) argued that in younger children it might have practiced fighting/hunting skills (at least in earlier human societies); but that as well, adolescents may use play fighting to establish or maintain dominance. This was disputed by Gosso et al. (2005, p.233), who argued that *“it is our view that play fighting, so important in so many mammals, may have lost nearly all of its relevance for humans ...”*

However Fry (2005, pp.79-80) found meaningful associations between play fighting and fighting skills in various traditional societies, and concluded that *“the manifestation of the R&T theme in children around the world suggests the presence of evolved functions for the behavioral pattern, of which the practice of fighting skills, broadly conceived, and dominance assertion seem likely candidates”*.

Benefits of object play in children

A prominent suggested function for object play in traditional societies is that it is beneficial for skill development. For example, Bock (2002) studied play pounding of grain amongst children in Botswana. This was done more by girls, and this and the age trends he documented suggest that it can help in skill learning, but that it is only tolerated by parents until actual productive work is possible by early adolescence.

Object play has also been put forward as beneficial for creativity, and innovative problem-solving (Bruner, 1972; Bateson & Martin, 2013), because of the unconstrained and flexible combinations that can occur in free object play. Pellegrini (2013) and Pellegrini and Pellegrini (2013) similarly argued that object play may be related to children's discovery of novel uses for objects, and also to social status benefits that may come from this. Such arguments may be most relevant to modern societies, as in traditional societies most object play is much more stereotyped, and imitative of adult activities. As an observer of hunter-gatherer societies, Hewlett and Boyette (2013) commented that *“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”*. Even in modern societies, experimental studies that were initially supportive of a link from object play to creativity, have been shown to be subject to experimenter effects and poor controls, and lacking ecological validity, so good evidence on this is still lacking (Smith, 2010, but see Bateson & Martin, 2013, for a different view).

Benefits of pretend play in children

Pretend, or fantasy, play, is more specifically human than the other types of play discussed. Definitions vary, but Lillard (1994) proposed that pretence involves 6 defining features: a pretender; a reality; and a mental representation that is projected onto reality; with awareness; and intention on the part of that pretender. This is quite a tough definition which would rule out the simple, imitative examples, or precursors of pretend play, seen in some great apes, and in prelinguistic infants.

Pretend play is common between about 2 and 6 years, and although it can be solitary, from 3 years onwards it often takes the form of sociodramatic play. This was defined by Smilansky (1968) as social pretend play with definite roles for the players. She found that children from disadvantaged backgrounds typically showed less, or less complex, sociodramatic play; but that this could be raised by play tutoring – encouragement and provision of suitable materials by adult.


Although children vary in the extent of pretend play, it does appear to be a universal human feature. In hunter-gatherer societies, object play is often pretend; Konner (1972) described how Kalahari San children used sticks and pebbles to represent village huts and herding cows. Gosso et al. (2005, p.233) stated that “*children of all forager groups studied exhibit fantasy play*”. In non-western societies generally, Slaughter and Dombrowski (1989) reviewed over 40 accounts articles, all of which mention pretend play, though there are variations in amount and type. Harris (1994, p.256) has suggested that “*The stable timing of its onset in different cultures strongly suggests a neuropsychological timetable and a biological basis*”.

So what might be the functional significance of pretend play? There have been many suggestions! These include benefits for: cognitive and language development, role-taking, anticipating and manipulating cause-effect relations in social cooperation and competition, executive function, imaginative planning, flexibility of goal adjustment, imagination and transcending directly encountered experience, creativity in childhood and adulthood, narrative skills, theory of mind, and mastery of traumatic events.

The arguments around benefits for theory of mind are recent and have a strong basis, so will be considered here as an exemplar of these hypotheses. Perner et al. (1994, p.1236) argued that “*pretend play is perhaps our best candidate for a cooperative activity which furthers the eventual understanding of false belief*” (i.e., theory of mind). The supporting arguments are that like pretend play, theory of mind is absent in non-human species, but with threshold examples in the great apes; is present in all normal humans and societies (with possible exceptions for autistic and a few other clinical syndromes); and has a characteristic developmental trend (first-order theory of mind tasks achieved around 3.5 to 4 years, when pretend play is most characteristic).

The empirical evidence to link pretend play and theory of mind has come from correlational and experimental studies. One example of many correlational studies is that of Taylor and Carlson (1997), who studied children aged 3 and 4 years. Although they found no relationship between measures of pretend and fantasy with theory of mind tasks for 3-year olds, they did find a significant relationship for 4 year olds. There was a modest effect for the whole sample (correlation of Principal Fantasy Component with a composite measure of theory of mind was $r=.16$, $p<.04$). There are many such studies, which typically show a mixed pattern, but often including some positive correlations which are of modest size but (for large enough samples) statistically significant (see Smith, 2005).

The evidence from experimental designs comes from play tutoring studies (inspired by the work of Smilansky). Since play tutoring can reliably raise levels of pretend or sociodramatic play (especially in children whose baseline level is low), a prediction is that play tutored children should improve more on other measures (such as theory of mind) compared to control group children. During the 1970s-1990s, a number of such studies appeared to support most of the functions of pretend or sociodramatic play that were tested for. For example, a study investigating this for theory of mind specifically was reported by Dockett (1998).



Critiques of these play tutoring studies were presented early on by Christie and Johnsen (1985) and Smith (1988). It was argued that the design and interpretation of such studies (as well as those on object play and creative problem-solving, mentioned earlier), were influenced by the play ethos, and were often flawed due to selective interpretation of results; effects of experimental bias; and use of inappropriate control groups. Improved play tutoring studies which used double-blind procedures and better matching of control groups, found that play tutored children typically improved no more than children tutored in (non-pretend) skills (such as colour and shape matching activities). A review following this second generation of studies by Hutt et al. (1989, p.116) argued that “*We would seriously question the importance placed upon fantasy play as an aid to cognitive development*”.

Over 20 years later, this assessment was reiterated by Lillard et al. (2013). Reviewing the evidence in detail they concluded that “*Despite over 40 years of research examining how pretend play might help development, there is little evidence that it has a crucial role*”.

Models of role of play in development

Smith (2010) suggested three models for examining the relationship between pretend play, or indeed play generally, and developmental outcomes. Model [1] is that play is a by-product of other aspect(s) of development, with no important developmental consequence(s) of its own. It is ‘epiphenomenal’. Model [2] is that play is a facilitator of developmental consequence(s); it can help bring about important developmental consequence(s) but it is not essential for this if other expected developmental pathways are present (‘equifinality’, or many routes to the same goal). Model [3] is that play is necessary or crucial for important developmental consequence(s); in the absence of play, these developmental consequences will not occur or will at least be significantly held back. This is a play ethos view, that play is essential for development. Many play workers and theorists would assume this.


Smith (2010) considered these models most specifically in relation to pretend play, and argued that model [2] was most consistent with the data. For example, model [1] would predict near-zero correlations of play with developmental outcomes, after controlling for age – but in fact, most correlations are positive. Model [3] would predict uniformly strong correlations of play with developmental outcomes – but in fact they are variable and typically medium to small in size. Model [2] best explains these usually positive but variable and often small correlations, where play experiences may be helpful in developmental outcomes, but only as one of many other influences (such as observation, exploration, trial-and-error learning, and instruction).

A similar three models (play as epiphenomenal, equifinality, or essential) were contrasted by Lillard et al. (2013) for pretend play, specifically in relation to different kinds of developmental outcomes. Their conclusion was that for language, narrative, and emotion regulation, there was insufficient evidence; for executive function, and social skills, the balance of evidence was against play being essential, thus supporting equifinality or epiphenomenal; for reasoning, equifinality was supported; and for problem solving, creativity, intelligence, conservation, and theory of mind, the epiphenomenal model was supported. Contrasted with the view of pretend play as essential in development, then, they concluded that “*equifinality and epiphenomenalism have as much if not more support*”.

Conclusions: how important is play for learning and development?

There are clearly not only varied views on the importance of play, but also varied empirical findings. Can any conclusions be reached?

On the one hand, there are strong arguments for the benefits of play in learning and development. On an evolutionary basis, exercise and rough-and-tumble play would not have evolved in mammals unless there were benefits to balance the costs; and similar arguments may hold for object play and even pretend play in humans. It is also obvious that playful activity, being an active engagement with the physical and social environment, will give more opportuni-



ties to learn than would doing nothing. Furthermore, some design characteristics of play are compatible with various learning opportunities (for example, the flexibility in object play, or negotiation of roles in sociodramatic play). Finally, there are many studies that report positive correlations of play opportunities with developmental outcomes.

All these suggest that an epiphenomenal or by-product view of play is unlikely to be convincing at a general level. But what about the opposite view, the play ethos view, that play is essential? This is counter-indicated by the observation that amounts of play, especially pretend play, vary greatly between cultures, with no obvious deleterious outcomes. The correlational evidence for the importance of play is present, but is very variable and usually of a modest magnitude suggesting many other influences at work. The more limited amount of experimental evidence is often flawed, and inconclusive.

My own overall view is that in general the evidence is most compatible with the second model above, an equifinality model where play is a facilitator but not essential. The play ethos overstates the case for play. Neither the evolutionary evidence, the anthropological evidence, or the psychological evidence, provide a compelling case that play is 'essential'. But, there are two very good reasons for ensuring that children's play continues to be supported and encouraged. First, play is fun, and enjoyable. It is also usually harmless. Generally speaking, an enjoyable and largely harmless activity is something to be treasured and celebrated. Second, play may not be essential, but there is little doubt it is useful. Again, the evolutionary, anthropological, and psychological evidence come together to confirm this. Play is one way in which children get a lot of experience about the world – the physical world, and the social world. Inevitably, they learn some things through doing this.

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