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What Exactly Is Play, and Why Is It Such a Powerful Vehicle for Learning?

Peter Gray

"Play" is a word used commonly to refer to children's preferred activities and to some adult activities, and it is often said that play promotes learning. But what is play exactly, and what and how do children learn through play? This essay begins with a description of an evolutionary, practice theory of play by German philosopher and naturalist, Karl Groos, followed by a system of categorizing play according to the kinds of skills most obviously practiced: physical/locomotor play, constructive play, language play, fantasy play, social play, and play with formal rules. Play is then defined as activity that (1) is self-chosen and self-directed, (2) is motivated by means more than ends, (3) is guided by mental rules, and (4) includes a strong element of imagination. These characteristics are elaborated upon to show how each contributes to play's developmental value. Two final sections describe the special developmental value of age-mixed play and deleterious changes in children's well-being that have accompanied the decline of play in recent decades.
Key words: *age-mixed play*, *learning*, *play*, *play deprivation*, *practice theory of play*

PLAY is a concept that fills our minds with contradictions when we try to think deeply about it. It is serious, yet not serious; trivial, yet profound; and imaginative and spontaneous, yet bound by rules. Play is not real, it takes place in a fantasy world; yet it is about the real world and helps children cope with that world. It is childish, yet it underlies many of the greatest achievements of adults.

The primary goal of this article is to describe, briefly, the nature and developmental functions of play from a biological, evolutionary perspective. Related to this, a second goal is to describe developmental consequences of play deprivation, which is much too common among children in our culture today.

Author Affiliation: *Department of Psychology, Boston College, Chestnut Hill, Massachusetts.*

The author has indicated that he has no financial and no nonfinancial relationships to disclose.

Corresponding Author: *Peter Gray, PhD, Department of Psychology, Boston College, McGuinn 300, 140 Commonwealth Ave, Chestnut Hill, MA 02467 (grayp@bc.edu).*

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PLAY AS PRACTICE

The first person to develop a Darwinian, evolutionary theory of play was the German philosopher and naturalist, Karl Groos. In his book, *The Play of Animals*, published in 1898, Groos argued that play came about by natural selection as a means to ensure that animals will practice the skills they need in order to survive and reproduce. This *practice theory of play* is quite well accepted today by most researchers who study play in animals (Bateson, 2014). It explains well a number of basic facts about play, such as why young animals play more than older ones, why those animal species that have most to learn play the most, and why animals play most at skills that are crucial to their survival. To a considerable degree, one can predict how an animal will play by knowing what skills it must develop to survive and reproduce. For example, lion cubs and other young predators play at stalking or chasing and pouncing. In contrast, young gazelles and other animals that are preyed upon by lions and such play at fleeing and dodging (Gomendio, 1988).

In a second book, *The Play of Man*, Groos (1901) extended his insights about animal play to humans. He pointed out that human beings, having much more to learn than other animal species, play more than other animals. He also pointed out that humans, unlike the young of other animals, must learn not just the skills that are crucial to their species everywhere but also those that are unique to the specific culture in which they develop. Therefore, he argued, natural selection led to a strong drive, in human children, to observe the activities of their elders and incorporate those activities into their play.

Anthropologists have confirmed this aspect of Groos's theory many times (Gray, 2012b; Lancy, 2015). Children in hunter-gatherer cultures play often at hunting and gathering; children in farming cultures play often at farming; and children in many cultures today play often at computers. Although Groos presented his theory as a theory of play, it can be argued that it is also a theory of education (Gray, 2013, 2016). It is a theory of how children come into the world biologically designed to learn what they must to become effective adults in the culture into which they are born.

From the perspective of Groos's theory, it makes sense to categorize human play in terms of the varieties of skills that children practice in play, with the proviso that the category boundaries are not sharp and any given instance of play might (and usually does) fall into more than one category. Children everywhere, when free to do so, play in the following ways (Lancy, 2015):

- *Physical/locomotor play*. This is the kind of play our species shares most clearly with the young of other mammals. It includes playful running, leaping, climbing, swinging, chasing, and fighting. All young mammals must develop fit bodies, learn to move in coordinated and effective ways, and learn to handle themselves, physically and emotionally, in dangerous situations. Young mammals, including our children, are, therefore, motivated to play in ways that are physically strenuous and, sometimes, physically risky as well. They climb high up in trees, run along cliffs, and so on, as that is how they practice controlling their minds and bodies while experiencing fear (Gray, 2011a; Sandseter, 2011). In this way, they develop courage.
- *Constructive play*. We are the species with opposable thumbs, which survives by building things, such as tools, shelters, and means of conveyance. It is no surprise, therefore, that children everywhere, when free to do so, play at building things, though what they build varies across culture. Extensions of constructive play include artistic and musical play, the construction of psychologically meaningful sights and sounds.
- *Language play*. We are the linguistic species, and so we engage in language play to learn to talk. Cooing, babbling, and first words are all playful (Bloom & Lahey, 1978). They are produced for their own sake, for the joy of producing them, not to get anything. As children grow older, they play with phrases, puns, rhymes, alliterations, and alternative grammatical constructions, which help consolidate their growing understanding of all aspects of their native language. Some of the evidence for this comes from recording young children's "crib talk," their monologues and pretend dialogues when alone, in which they may repeat the same phrases, again and again, varying them in systematic ways, as if deliberately experimenting with nuances of pronunciation and meaning (Kuczaj, 1985). When language play is carried into adulthood, we call it poetry.
- *Fantasy or pretend play*. We are the species that can think of things that are not actually present. That is the foundation of our inventiveness, our ability to think of new possibilities, to create hypotheses, to reason deductively, or even to think about tomorrow. Children everywhere practice these skills in fantasy play, in which they construct pretend worlds—of princesses, trolls, or heroes—and then think about and act out what

might happen in that world. Fantasy play also feeds into the development of language, because it exercises the child's ability to symbolize. A stick can represent a horse in fantasy play, just as the word "horse" can represent a horse in language. Research indicates that developments in fantasy play reliably precede and may help bring on analogous developments in language ability (for review, see section on typically developing children in the study by Lewis, 2003).

- *Games with formal rules*. All play has implicit rules (as will be explained later), but in games with formal rules, the rules are explicit, meaning that they can be stated rather precisely in words and passed along verbally from one generation of players to the next. Players may change the rules to meet their desires or needs, but the changes themselves must be stated and agreed upon. In our culture, games with formal rules are generally competitive—like baseball, four square, chess, and dominoes—and the rules provide the boundaries for the competition. In hunter-gatherer cultures, games with formal rules are nearly always cooperative and are often dance-like in character (Gray, 2009; Sutton-Smith & Roberts, 1970). In either case, in playing such games, children are exercising their ability to agree to rules, hold them in mind, and follow them—skills that are important in all human societies.
- *Social play*. This category of play cuts across all the others. All play, regardless of to which other category it belongs, is social play when two or more children are involved together. Children everywhere are naturally drawn to play with other children, and, except in our own modern society where children are often isolated in homes, social play is far more common than solo play (Lancy, 2015). Social play is how children learn how to get along with peers. It is how they learn to compromise, negotiate, recognize one another's needs, and please one another. This is true whether they are play fighting, building something together, engaging in word banter, cocreating a fantasy, or playing a game with formal rules. We are an intensely social species. We survive by cooperating and sharing, and social play is how children learn to do that. It is hard to imagine any skill more crucial for a satisfying human life than that of getting along with peers. This cannot be taught; it can only be learned through experience, and for children that experience comes primarily in play.

DEFINING CHARACTERISTICS OF PLAY

The aforementioned list identifies varying ways that children play and what they learn in play, but it does not tell us exactly what play is. Two individuals might be engaged in what looks like the same activity, and one might be playing while the other is not. Play, at least human play, cannot be defined in terms of the motor activities involved; it must be defined in terms of the motives and attitudes that underlie the activities. Scholars of play tend to agree that play is best defined in terms of a constellation of motives and attitudes, which, taken together, make an activity playful.

In his classic book, *Homo Ludens*, the Dutch cultural historian Huizinga (1955, p. 13), summed up his extended definition of play as follows:

> Play is a free activity standing quite consciously outside "ordinary" life as being "not serious," but at the same time absorbing the player intensely and utterly. It is an activity connected with no material interest, and no profit can be gained by it. It proceeds within its own proper boundaries of time and space according to fixed rules and in an orderly manner.

In his influential essay, "The Role of Play in Development," the Russian developmental psychologist, Vygotsky (1978), characterized children's play as activity that is "desired" by the child, "involves an imaginary situation," and "always involves rules." In a chapter on play in the *Handbook of Child Psychology*, Rubin, Fein, and Vandenberg (1983)

characterized play as behavior that is (a) intrinsically motivated, (b) focused on means rather than ends, (c) distinct from exploratory behavior, (d) nonliteral (involves pretense), (e) free from externally imposed rules, and (f) actively (not just passively) engaged in by the players.

My analyses of these and other attempts by scholars to define play, coupled with my own observations of what everyone refers to as play, have led me to conclude that an activity is play, or is playful, to the degree that it contains the following four characteristics (Gray, 2012a).[1] That is, play is (1) self-chosen and self-directed, (2) intrinsically motivated, (3) guided by mental rules that leave room for creativity, and (4) imaginative. These four characteristics are described, along with their contributions to the developmental and educative value of play, in the subsections that follow.

Play Is self-chosen and self-directed

Play is always *voluntary*. It is what one wants to do as opposed to what one is obliged to do. Players not only choose *to* play but they also choose *what* and *how* to play. They direct their own actions in play. If a coach, teacher, or anyone other than the players themselves is directing the action, it is not play, or at least not fully play. In play, the child must decide what to do, follow through on that plan, and solve any problems that arise along the way. This is how children learn to create their own activities and see them through.

In social play, the ways of playing must be agreed upon by all of the players. Every idea or rule that any player proposes must be approved, at least tacitly, by all others. There is a simple reason for this. The most fundamental freedom in play is *freedom to quit*. That is part and parcel of play's voluntary nature. Every player knows that all of the other players are free at any time to quit, and they will quit if they are not having fun. Freedom to quit is what makes social play the most democratic of all activities. Because players want to keep the game going so as to continue their own fun, and because they know that others may quit at any time, they are motivated to make sure that others are having fun. That means paying attention to what others are saying and even to their nonverbal expressions of happiness or unhappiness. In this way, social play provides conditions that help children overcome narcissism and learn that they are not, after all, the center of the universe (Gray, 2011a). Social play is where children practice getting their own needs and desires met while also helping others meet theirs.

If you unobtrusively watch and listen to any group of preschool children playing a make-believe game, you will likely observe that they spend more time talking about how to play than actually playing. What will happen in the game? Who will be the princess, or dragon, or baby sister? Who gets to use which props or dress up clothes? You may also be impressed, as you listen, by the complexity and sophistication of the language used in such negotiation. The play is worked out verbally before it is acted out, and the negotiations are verbal. Excellent examples of such negotiations can be found in the preschoolers' play dialogues transcribed by Furth (1996). In these negotiations, children learn new words and constructions from one another in the context of communication that is meaningful to them. One research study revealed that the language used by preschoolers in their shared fantasy play was far more complex than that used by the same children in a structured teacher-led activity or when they were sitting around a table eating (Fekonja, Marjanovic-Umek, & Kranjc, 2005). Older children, in, say, a pickup game of baseball, likewise engage in much negotiation, as they work out balanced teams and ground rules to fit the immediate conditions of play and argue about what is fair or foul.

When adults take over—such as when children's dramatic play becomes a teacher-led

[1]In other writings (e.g., Gray, 2012a), I have listed five characteristics of play, but the fifth characteristic—that play is carried out in an active but relatively unstressed state of mind—follows naturally from all the others.

activity or a pickup baseball game becomes Little League led by an adult coach—the children's responsibilities for rule-making and negotiation are removed. Now adults create and direct the activities and solve the problems, and it is no longer so easy to quit. It is no longer play and the real lessons of play are lost. Little League may be a good place to learn how to bunt or to slide into second base, but it does not provide practice in creating your own activities, negotiating differences, overcoming narcissism, and ensuring that other players, including those on the other team, are having fun (Gray, 2013).

Play is intrinsically motivated—means are more valued than ends

Play is activity that, from the conscious perspective of the player, is done for its own sake more than for some reward outside of the activity itself. In other words, it is behavior in which means are more valued than ends. When people are *not* playing, what they value most are the results of their actions. When people are not playing, they typically opt for the least effortful way of achieving their goal. In play, however, all this is reversed. In play, attention is focused on the means more than the ends, and players do not necessarily look for the easiest routes to achieving the ends.

Play often has goals, but the goals are experienced as part and parcel of the activity, not as the primary reason for the activity. Goals in play are subordinate to the means for achieving them. For example, constructive play is always directed toward the goal of creating the object that the players have in mind, but the primary objective in such play is the *creation* of the object, not the having of the object once it is created. Children play intently at building a beautiful sandcastle, although they know that when the tide rises, it will be washed to the sea. Similarly, competitive play is directed toward the goal of scoring points and winning, but if the activity is truly play, then it is the *process* of scoring and winning that matters to the player, not some subsequent consequence of having scored and won.

Competition can turn play into nonplay if rewards for winning extend beyond the game itself (Byron & Khazanchi, 2012; Lepper & Henderlong, 2000). "Players" who are motivated primarily by trophies, praise, or increased status outside of the game are not fully playing. Among nonhuman animals, there is a clear distinction between *contests* (including ritualized battles of bluff as well as actual fights), which are aimed at achieving dominance, and *play*, in which strivings for dominance must be set aside (e.g., Bekoff, 2001). Human competitive games can be understood as blends of contest and play. The blend can veer more in one direction or the other, depending on the degree to which heightened out-of-game status or other extrinsic rewards are present for winning.

Superficially, the statement that play is activity done for its own sake may seem to contradict evolutionary theories about play's functions, which posit that play promotes long-term physical, intellectual, social, and emotional gains. The contradiction is resolved by appeal to the players' conscious motives. To the degree that a person engages in an activity deliberately for its long-term benefits as opposed to its immediate enjoyment or attraction, the activity is not fully play.

People often think of play as frivolous or trivial, and, in a way, they are right. Play is not directed toward achieving serious real-world goals such as food, money, praise, or an addition to one's résumé, and it takes place at least partly in a fantasy world. So, it is indeed trivial. But here is the most delicious of play's paradoxes: *The enormous educational power of play lies in its triviality*.

Play is the ideal context for practicing new skills or trying out new ways of doing things precisely because play has no real-world consequence. Nobody is judging, no trophy is on the line, no teammates will be let down, and so the player is free to fail. With freedom to fail comes freedom to experiment. The play world is a simulation world, a safe and fun place to practice for the real world.

Players may exert great effort to move gracefully or create a beautiful product, but

the primary reward comes from the doing, not from the product. Attention is focused on the activity itself, which is where it should be focused when learning a new skill or trying out modifications of an old one. Play is often highly repetitive, which fits with the idea of attention to means. Children at play do the same things again and again, perhaps making small changes each time. Repetition and systematic variation are part and parcel of practice.

Many research studies have shown that children and adults are more creative when they are playing than when they are trying to impress a judge or win a reward. For example, Amabile (1996) has conducted many experiments in which participants were asked to produce some creative product, such as a poem or a collage, under varying conditions. In some conditions, the participants were instructed to do this just for fun and were told that their names would not be on the products. In other conditions, they were told that this was a contest and that those with the most highly creative products would win prizes. The result, inevitably, was that the products of those engaged just for fun were found to be more creative than the products of those who were trying to win prizes. Other experiments have shown that research participants are far more able to solve problems that require them to see novel uses for familiar objects when they are in a playful state of mind than in a serious state of mind (e.g., Isen, Daubman, & Nowicki, 1987).

Play is guided by mental rules, but the rules leave room for creativity

Play is freely chosen activity but not free-form or random activity. Play always has structure, and that structure derives from rules in the players' minds. In social play, the rules must be shared by all the players. The rule-based nature of play is the characteristic that Vygotsky (1978) emphasized most strongly in his essay about the roles of play in development. He argued that play is the primary means by which children learn to abide by socially agreed-upon rules, an ability that is essential to every human society.

The rule-based nature of play is an extension of the point made earlier about the prominence of means in play. The rules of play are an essential aspect of the means. The rules provide boundaries within which the actions must occur, but they do not precisely dictate each action. The rules always leave room for creativity. Activities that are precisely prescribed by rules are better referred to as rituals than as play.

Different types of play have different types of rules. A basic rule of constructive play, for example, is that you must work with the chosen medium in a manner aimed at producing or depicting some specific object or design that you have in mind, such as a sandcastle. In shared fantasy play, the fundamental rule is that players must abide by their shared understanding of the roles that they are playing; they must stay in character. Even playful fighting and chasing, which may look wild to the observer, is constrained by rules. An always present rule in children's play fighting, for example, is that the players mimic some of the actions of serious fighting but do not really hurt the other person. They do not hit with all their force (at least not if they are the stronger of the two); they do not kick, bite, or scratch. Because of its rule-based nature, play is always an exercise in self-restraint.

It is interesting to consider the similarity between play and language with regard to rules. All human languages, of course, are based on rules—rules of phonology, morphology, and syntax. Whenever we speak, we are using those rules implicitly to produce a structured statement, yet that statement is a new creation. Like playing, speaking is always a creative yet rule-based activity. In linguistic play, children play with and practice directly the rules of their native language, but in all play, they practice a basic ability that underlies language, the ability to create something new that nevertheless abides by a set of rules (Lewis, 2003).

Play is imaginative

Play always involves some degree of mental removal of oneself from the immediately

present real world into an imaginary world. Imagination is most obvious in fantasy play, where the players create the characters and plot, but it is also present to varying degrees in all other forms of human play. In rough and tumble physical play, the fight is a pretend fight, not a real one. In constructive play, the players may say that they are building a castle from sand, but they know that it is a pretend castle. In formal games with explicit rules, the players must accept an already established fictional situation that provides the foundation for the rules. For example, in the real world, you can get home by any of an infinite number of different routes, any time you choose, but in the fantasy world of baseball, you must get "home" by running from base to base around a diamond-shaped path, only after a pitch occurs.

The imaginative aspect of play is the characteristic that Huizinga (1955) emphasized most strongly, as he built his argument that play provides the engine for cultural innovations. This is also the characteristic most strongly emphasized by researchers who focus on the role of play in the development of creativity and the ability to think in ways that go beyond the concrete here and now. As Vygotsky (1978) pointed out, the imaginative nature of play is, in a sense, the flip side of play's rule-based nature. To the degree that play takes place in an imagined world, the players' actions must be governed by rules that are in the minds of the players rather than by laws of nature or impulsive instincts. A great human ability, which distinguishes us from other animals, is our ability to imagine in ways that are not random but are structured by rules, which allows us to produce potentially useful new products. That is the essence of creativity.

THE SPECIAL VALUE OF AGE-MIXED PLAY

Through most of human history, children almost always played in age-mixed groups (Gray, 2011b; Konner, 1975, 2010). A typical group playing together might consist of children ranging from 4 to 8 years of age, or 7 to 14 years of age. Often, such groups would also include toddlers, who were being cared for by older siblings in the context of play. Only with the advent of age-graded schools and age-graded adult-led activities outside of school have children been regularly segregated from one another by age. It is difficult now to find places where one can observe free age-mixed play, but my colleagues and I have been able to do so at a radically alternative democratic school, where students 4–18 years of age are free, all school day, to follow their own interests and associate with whom they please (Gray, 2011b). The founders of the school believe that free age mixing is the key to the school's educational success (Greenberg, 1992).

When children who differ widely in age and ability play together, the older ones, by necessity, boost the younger ones up to higher levels of activity. For example, children younger than about 9 years generally cannot play complicated board or card games with one another. They lose track of the rules, their attention wanders, and the game quickly disintegrates. But children younger than that can play and enjoy such games when they are playing with older children or adolescents (Gray & Feldman, 2004). The older players remind the younger ones what to do: "Hold your cards up." "Pay attention." "Try to remember what cards have been played." "Think ahead." Paying attention, remembering, and thinking ahead are the elements of intelligence. In keeping the younger players on task to keep the game going, the older players in such a game are, in effect, boosting the younger players' intelligence. We have also observed young children learn to read or to perform mathematical calculations by playing games with older children that involve reading or calculations (Gray, 2011b). Simply to keep the game going, the older children point out the elements of reading and calculating to the younger ones.

A number of research studies have examined the effects of creating multiage classrooms in traditional schools and preschools.

In separate studies, Goldman (1981) and Mounts and Roupnarine (1987) found that 3-year-olds engaged in more advanced levels of play when they were in classes that included 4-year-olds than when they were in classes that included only 3-year-olds. Bailey, Burchinal, and McWilliam (1993) found that 1- and 2-year-olds in mixed-age childcare groups (which included 3- and 4-year-olds) exhibited more rapid development of motor, cognitive, and linguistic abilities than did 1- and 2-year-olds in same-age childcare groups. Christie, Stone, and Deutscher (2002) found that kindergarteners in a multiage classroom, which included first and second graders, played much more frequently at literary activities (playful reading) than did kindergarteners in a kindergarten-only classroom. In a summer enrichment program that included children from preschool age through fifth grade, Emfinger (2009) noted many instances of older children teaching numerical concepts to younger children in the context of play. Angell (1998) reported on instances in which the moral reasoning of younger children was enhanced by interaction with older children in a Montessori classroom of children 9–12 years of age.

Other research shows that age mixing can enable true social play in children previously thought to be too young to play socially. Two- and 3-year-olds, when placed only with age mates, engage in side-by-side parallel play, paying some attention to one another but not merging their play into a socially combined activity. However, as anthropologist Konner (1975) has pointed out, such play is an artifact of age-segregated nursery schools. Traditionally, toddlers have been more or less always in the presence of older children who could draw them up into truly social play. In separate studies, Howes and Farver (1987) and Maynard (2002) found that 4- and 5-year-olds can engage 2-year-olds in truly shared fantasy play by structuring the toddlers' roles and explaining to them what to do.

Even when they are not playing together, younger children learn from older ones by watching and listening. They see older children climbing trees or solving puzzles, for example, and then they want to do that, so they work at it by emulating the older children's actions. They hear older children talking and, in that way, acquire a richer vocabulary, new linguistic constructions, and new ideas. They see older children reading and talking about what they have read, and that motivates them to learn to read. My own observations suggest that children are more prone to learn in these ways from children who are a little older than themselves than they are from adults, because adults are too far beyond them, too much in a different world (Gray, 2011b).

Older children also learn crucial lessons through playing with younger ones. They gain a sense of their own maturity as they practice caring, protecting, and leading. Cross-cultural research has revealed that children who have regular contact with younger ones are generally kinder, not just to the younger children but also to one another, than are children who do not have such regular contact with younger ones (Ember, 1973; Whiting, 1983). Often, in age-mixed play, the older children can be heard explaining rules and concepts to the younger ones, and to do so, they must make their own implicit understanding explicit (Gray & Feldman, 2004). They must rethink what they know, so that they can put it into words that the younger ones can understand. Adult teachers regularly discover that they learn more by teaching than by being taught, and in age-mixed play, children have many natural opportunities to teach.

Research and observations also suggest that age mixing can help socially withdrawn children become more socially active and competent. In one experiment, socially withdrawn 4- and 5-year-olds were systematically paired with either same-age peers (within 3 months in age) or younger peers (more than a year younger) for a series of one-on-one play sessions. Withdrawn children in both of these groups showed greater improvement in social behavior, as measured by their subsequent social activity in their day care center, than those in the untreated control group, but those paired with younger children showed

the greatest improvement (Furman, Rahe, & Hartup, 1979). In fact, at the end of the series of sessions, those paired with younger children were as socially active as the average child in the centers. This study was inspired by an earlier set of studies showing that socially isolated young monkeys could acquire social competence through being paired with younger monkeys but not through being paired with age mates (Novak & Harlow, 1975; Suomi & Harlow, 1972). In both the monkey and human experiments, the improvement apparently occurred because the socially inhibited individuals were less frightened of younger individuals than of age mates and were stimulated by the younger ones into play. Less formally, I have observed at least one instance of a socially withdrawn boy who, after enrolling at the age-mixed school where I was observing, began by playing only with much younger and much older children. Over time, as he lost his social fears and acquired social skills, he began increasingly to play also with children of his own age. The idea that free age mixing may help socially inhibited children overcome their inhibitions warrants further study.

CONSEQUENCE OF THE DECLINE IN CHILDREN'S PLAY

If play is how children learn to create their own activities, solve their own problems, take control of their own lives, get along with peers, overcome narcissism, and learn to deal with fear, then the lack of play would be expected to have serious consequences. There is good evidence that it does.

Over the past 50–60 years, in the United States, there has been a continuous, well-documented, ultimately huge decline in children's opportunities and freedom to play—to really play, with other children, in their own ways, without adult interference (Gray, 2011a, 2013). Evidence for this comes from traditional historical analyses (Chudacoff, 2007), from diary studies of how children's time is spent (Hofferth, 2009; Hofferth & Sandberg, 2001), and from surveys in which parents were asked about their own childhood play life compared with that of their children (Clements, 2004; O'Brien & Smith, 2002). This decline has resulted most likely from a variety of social changes, including (a) a rise in parental and societal fears about the risks entailed in children's free play, away from adults; (b) an increase in children's time spent in school and at homework; (c) an increased tendency for children to be enrolled in adult-led activities even out of school rather than allowed to play freely; (d) a decline in the degree to which neighbors know one another, resulting in a decline in neighborhood play; and (e) a decline in family size and in total number of children in many neighborhoods, resulting in fewer potential playmates (Gray, 2013).

Over the same period of time that play has been declining, there have been large, well-documented declines in mental and social well-being among young people, of the sort that would be predicted if play indeed serves the functions described earlier in this article. The most telling data come from cross-temporal meta-analyses of clinical questionnaires that have been used with young people in unchanged form over the decades. For example, analyses of scores on the depression scale of the Minnesota Multiphasic Personality Inventory and scores on Taylor's Manifest Anxiety Scale indicate that the rates of what today would be labeled as Major Depressive Disorder and as Generalized Anxiety Disorder are, for teenagers and young adults, five to eight times what they were in the 1950s (Twenge, 2000; Twenge et al., 2010). The increase over time in these scores has been roughly linear, just as the decline in play has been roughly linear. In an analysis of clinical assessments of locus of control, Twenge, Zhang, and Im (2004) also found a continuous decline in young people's sense of being in control of their own lives, between the years 1960 and 2000. Clinical psychologists have long known that a lack of internal sense of control predisposes a person for depression and anxiety (Alloy et al., 2006; Weems & Silverman, 2006). So, a reasonable causal

chain here is that, with reduced freedom to play, children fail to develop a strong sense of control over their own lives (as play is where they *do* control their own activities), which, in turn, increases their likelihood of depression and anxiety. Moreover, research with monkeys and rats has revealed that play deprivation in animals creates symptoms similar to human depression and anxiety (LaFreniere, 2011; Pellis, Pellis, & Bell, 2010).

Other cross-temporal research has revealed in young people increased narcissism (Twenge & Foster, 2010), decreased empathy (Konrath, O'Brien, & Hsing, 2011), and decreased creativity (Kim, 2011) over the past several decades. These, again, are changes that would be predicted if, as contended previously, play is a major vehicle for children's overcoming narcissism, learning to attend to others' needs, and learning to create their own activities. Also consistent with the view that play promotes self-control and creative thinking are a study showing that children who had more free time to play scored better on a test of self-directed executive processing than did those whose time was more fully structured by adults (Barker, Semenov, Michaelson, Provan, & Snyder, 2014) and a longitudinal study showing that children who had more freedom to play and explore exhibited greater creative potential years later, in adolescence, than those who had less such freedom (Harrington, Block, & Block, 1987).

It seems plausible that some of the disabilities affecting language development today are at least exacerbated by the decline in play, perhaps especially by the decline in opportunities for age-mixed play. Along with the other disorders just noted, there has also been a rise in young people who are diagnosed as on the autism spectrum. These people are typically socially disinterested, not playful, and delayed in language development. Although the tendency toward autism is well established to be genetically determined, with symptoms appearing in early infancy, it seems quite possible that deprivation of play may intensify those symptoms or prevent their amelioration. At one democratic, age-mixed school, I had the opportunity to observe a boy on the autism spectrum who had apparently made great social strides over the time that he had been enrolled there. He did not at first seek or respond well to social interaction, but he had excellent computer skills. Because of this skill, others, including younger children, were drawn to him for computer play, and this led to increasing levels of social interaction, which sometimes even went beyond the focus on the computer. This observation is consistent with research showing improved social and linguistic development, in children on the autism spectrum, when they are integrated with typically developing peers in a supportive play environment (Wolfberg, Bottema-Beutel, & DeWitt, 2012; Wolfberg, 2016).

We are at present a society very much oriented toward formal therapy, by adult therapists, as routes to trying to help children with developmental difficulties. Perhaps if we could reinstate the levels of age-mixed play that, in the past, occurred regularly in homes and neighborhoods, some of these problems would resolve themselves.

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