Running on Empty?
Observing Causal Relationships of Play and Development

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In an article in the January 2013 *Psychological Review,* Lillard, Lemer, Hopkins, Dore, Smith, and Palmquist set out to critique the customary claim that pretend play contributes to healthy child development. Following Peter Smith, they distinguished three possibilities for the impact of pretend play. Pretend play, they proposed, might serve a crucial causal role in healthy development, function as one of many equifinal routes to healthy development, or represent an epiphenomenon of other factors that promote healthy development. They reviewed a variety of correlational and experimental studies to choose among these three possibilities and, in the absence of consistently strong positive correlations, they cast doubt on the notion that pretend play serves a crucial, causal role. In this article, Harris and Jalloul review the arguments of the Lillard article to reassess this negative conclusion. The authors suggest that studies emphasizing the frequency of pretend play may not be able to tell us whether it serves a crucial role in healthy development.
Key words: cross-cultural comparison; children with autism and pretend play; early-child development; pretend play; theory-of-mind tasks and pretend play

Recently, cognitive psychologist Angeline Lillard (2013) and five of her colleagues reviewed the psychological literature on pretend play and concluded that "existing evidence does not support strong causal claims about the unique importance of pretend play for development." The authors called for fresh research and new thinking in several areas. We applaud their review for two reasons, one retrospective and the other prospective. The review serves the field by offering a comprehensive analysis of fairly scattered literature and by firmly noting the strengths and weaknesses of the literature. It also provides a stimulus to future work and an indication of how to conduct this work with greater rigor. Nevertheless, in thinking about how best to promote future research in psychology and education in the wake of the review, we raise questions about

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the conceptual framework that was used. To set the scene, however, it will be useful to discuss some basic findings on the development of pretend play.

The Robust Emergence of Pretend Play

Pretend play emerges during early childhood in quite different human cultures. For example, Callaghan et al. (2011) interviewed mothers of toddlers in urban Canada, rural India, and rural Peru. In each setting, 90 percent or more of mothers said that their child began to produce pretend actions involving social role play or props at around two to three years of age. Indeed, in the course of short four-to-six-minute observational sessions, most children in all three settings engaged in one or more acts of pretend play (e.g., feeding a doll with a toy fork) when presented with suitable toy props. Nevertheless, children in Canada more often play pretend than children in India and Peru—perhaps because of the social scaffolding they had previously received from care givers. All the Canadian mothers reported pretending with their children whereas considerably fewer Peruvian (42 percent) and Indian (24 percent) mothers did so.

How exactly does pretend play, whether it is social role play or prop-based pretense, emerge in early childhood? Its emergence does not likely depend on explicit or deliberate instruction in the meaning of pretense for two reasons. First, it is far from clear how adults or older children teach toddlers to pretend if the toddlers lack any natural ability to make sense of this kind of play's unusual characteristics. For example, in pretend play, a mother can stipulate a temporary identity of an object so that it takes on new powers, at least within the pretend world she creates. When she stipulates that a shoebox is a bath, it makes a teddy bear "wet" when it is placed in the box (Harris 2000). Second, even in cultures where adult care givers do not encourage or support pretend play, it still emerges. For example, Gaskins (2000) notes that among the Yucatec Maya early episodes of pretend play at approximately eighteen months are "rarely acknowledged and almost never supported by adults or older children" (385). Nevertheless, from infancy to middle childhood there is a steady increase in the amount of time Maya children spend in pretend play. Thus, while rare in infancy, pretend play takes up more than 10 percent of children's time when they are six to eight years old (Gaskins 2000).

In sum, it is important we recognize that the widespread emergence of pretend play in markedly different cultures is fully consistent with the possibil-

ity that children vary in the extent to which early pretending is nurtured and encouraged by other play partners. Such a relationship is not peculiar to pretend play. Recent research on the pointing gesture provides similar evidence of a relatively stable pattern across different cultures with respect to its morphology and emergence (Liszkowski et al. 2012). Thus, in all seven cultures studied, the majority of infants began to point with the index finger between ten and fourteen months and, as compared to whole-handed pointing, this gesture became more frequent with age. At the same time, there is evidence of considerable cross-cultural variation in the frequency with which care givers and infants engage in pointing. Salomo and Liszkowski (2013) observed care givers and their infants ranging from eight to fifteen months in three different countries (Mexico, the Netherlands, and China) as they went about their daily lives. Hand gestures (including pointing, showing an object, placing an object in front of an interlocutor, and offering it to an interlocutor) were more frequent for both care givers and infants in China compared to those in Holland and more frequent in Holland compared to those in Mexico. Pointing was the most frequent gesture overall. Salomo and Liszkowski conclude that the engagement of infants by their care givers in triadic social interactions (i.e., interactions involving a care giver, the infant, and an object of joint interest) promotes such gestures.

Although the evidence is less clear, it is likely that other distinctive, early emerging human capacities—for example the tendency to ask information-seeking questions about novel objects and functions—show a similar pattern of widespread emergence across markedly different cultures together with considerable variation in the frequency of production (Chouinard 2007; Gauvain, Munroe, and Beebe, forthcoming; Harris 2012).

If pretend play is an activity that comes naturally to human beings, we can reasonably expect genetically based pathologies to disrupt its emergence in some children. The long history of research on children with autism documents such disruption. Kanner (1942) noticed that the children he diagnosed with autism rarely, if ever, engaged in pretend play. Subsequent research has borne out Kanner's clinical acuity. The absence of pretend play at eighteen months, particularly when accompanied by an absence of pointing and a failure to monitor another person's gaze, is very often associated with a later diagnosis of autism (Baron-Cohen et al. 1996). Moreover, as compared to typically developing children and children with other developmental disorders (such as Down syndrome), children who receive a diagnosis of autism remain limited in their production of pretend play—both with and without prompting from an adult (Rutherford

et al. 2007). Although various interventions have been designed to increase the production of pretend acts by children with autism (Kasari, Freeman, and Paparella 2006; Lang et al. 2009), it is doubtful that such interventions succeed in promoting a capacity for genuine pretend play because the heavily structured and repetitive nature of these interventions is obviously not compatible with pretend play's characteristic spontaneity and flexibility (Jarrold and Conn 2011; Luckett, Bundy, and Roberts 2007).

In short, human children likely enjoy a biological endowment that ensures the emergence of pretend play in typically developing youngsters of markedly different cultures. At the same time, adults of dissimilar cultures differ in the extent to which they nurture pretense by playing with their children and by offering toys and props. Children with autism show marked restrictions in pretend play and, in their case, interventions by adults are not likely effective in eliminating this restriction or in promoting genuine pretend play.

In this broader context, we understand Lillard and her colleagues to be asking how far children's engagement in pretend play has repercussions on other aspects of their functioning—for example, on their understanding of mental states or on their ability to reason cogently from premises that they know to be false. Consistent with the framework offered by Peter K. Smith (2010), Lillard and her colleagues lay out three types of relationships that might hold between pretend play and some psychological benefit. First, they suggest if pretend is crucial, then variation in pretend (whether it is naturally occurring variation, variation that is the result of an experimental manipulation, or variation that is the consequence of some broader educational intervention) ought to correlate with superior performance in a target domain such as theory of mind or reasoning.

The second type of relationship that they envisage is one of equifinality (meaning that the same endpoint can be reached in different ways). In such cases, pretend play is not crucial because other processes can bring about the same gain—and indeed these other processes may do so more effectively. If such a relationship holds, then one would expect to observe that more pretend play brings benefits but that these benefits can also be achieved in other ways and, indeed, that the other ways might be more dramatic in their impact than pretend play itself. Accordingly, given this type of relationship, Lillard and her colleagues argue that one would expect to find that variation in pretend play is associated with an uneven pattern of results. Sometimes, a correlation with some alleged benefit might be observed, but quite often other processes will display a stronger correlation. By implication—and in contrast to the first type

of relationship mentioned above—it is plausible to conclude that pretend play is not crucial to achieve the benefit in question.

The third relationship Lillard and her colleagues described holds pretend play to be, at most, epiphenomenal, meaning that it serves no crucial causal role. Thus, it might be a frequent accompaniment to some beneficial process but in itself brings no benefit. Granted, in such a relationship, variation in pretend play will only correlate with the outcome in question to the extent that pretend play correlates with whatever process is truly beneficial.

At first sight, this three-way framework appears convincing and helpful because it orients us in finding our way among a relatively complex set of results. However, on reflection, we think it is important to note some doubts. We find it helpful to step outside of child development momentarily to think about a familiar example easier to analyze. Suppose we know little about the inner working of a car engine, but we decide to conduct some experiments to establish what affects a car's performance. We consider four cars to test. Let us indulge ourselves by supposing that each car is an Aston Martin DB5 (circa 1964).

We begin our investigation by studying the impact of fuel. We are helped by the fact that each car has a fuel gauge on its dashboard and each gauge indicates a different quantity of fuel in the gas tank. One car has a fourth of a tank of gas; one, half a tank; one, three-fourths of a tank; and one, a full tank. Noticing this variation, we drive each car, anticipating that the different levels of fuel will likely affect performance. However, we eventually establish that the acceleration and top speed of all four cars remain equivalent despite the amount of gas in the individual fuel tank. The car with a fourth of a tank accelerates as rapidly and drives as fast as the car with a full tank. In short, there is no correlation between the amount of fuel in the tank and the car's performance. Guided by the framework set out by Lillard and colleagues, we are led to the conclusion that fuel in the tank is not crucial to the performance of the car.

Nevertheless, to be sure of this conclusion, we conduct one further test: we drive each car until the tank is empty. At this point, we realize that there may, after all, be a crucial relationship between fuel and performance. In the first place, we find that the distance that we can drive each car is roughly proportional to the fuel in the tank (although that distance can be further complicated by the speed with which we drive). More importantly, we discover that once the fuel gauge signals the tank is empty, each car comes to a grinding halt.

The moral ought to be fairly straightforward: if we vary the quantity of a given factor, X (e.g., fuel)—and we find no discernible impact on another fac-

tor, Y (e.g., performance)—we are not entitled to conclude that X is not crucial for Y. It may be that we have observed the relationship between X and Y under conditions in which a modest amount of X— anything above zero—is sufficient to ensure that we can observe Y. In this case, we will not observe a correlation between X and Y. But we cannot be sure that Y will be unaffected if we completely eliminate X. An additional lesson from this example should also be clear. If we alter the way in which we measure Y (for example, we focus on distance traveled as opposed to acceleration or top speed), we may find a relatively strong correlation between variation in X and observable performance even if it has eluded us so far. Thus, in principle, the absence of a consistent and strong correlation may indicate that the factor we are scrutinizing is indeed not crucial for performance. But we should beware—it may indicate no such thing. Applying this to the case of pretend play, if we are tempted to conclude that pretend play is not crucial for healthy development based on the review provided by Lillard and her colleagues, then we should beware. The thought experiment implies that, even in the absence of any consistent and strong correlation between pretense and various other measures, it still remains possible that pretend play is crucial.

There is, however, a plausible objection to our thought experiment. Some may reasonably argue that any attempt to draw an analogy between the role of pretend play in mental functioning and the role of fuel in an internal combustion engine is farfetched. Fuel is, admittedly, crucial for the functioning of the engine, but maybe the fact that the engine can run on a cup of fuel and will cease to function entirely when there is no fuel left has no obvious psychological parallel. More specifically, some might argue that we do not observe a catastrophic breakdown in mental functioning in the absence of pretend play.

We believe, however, that this objection identifies the difficulty of gathering relevant empirical evidence rather than a fatal objection to the logic of our critique. Admittedly, in the context of typically developing children, which was the focus of Lillard and her colleagues, it is unlikely that we ever observe the total absence of pretend play. As we discussed earlier, there is certainly evidence that the frequency of pretend play varies from one culture to another. But even when we consider those cultures with a documented paucity of pretend play, we should not conclude it has no function (Harris 2007). In other words, the modest amount of pretend play we have observed in those cultures—like even a cup of combustible fuel—may be sufficient to permit normal functioning.

What about atypical development? Are there cases in which we see a major deficit in pretend play and a severely compromised pattern of development? As

we know from twenty-five years of sustained investigation, many children with autism display persistent problems with the classic theory-of-mind tasks that are routinely solved by typically developing preschool children. In these tasks, children are invited to say where a story character will search for an object, given that the character believes it to be where she last placed it and is unaware that it was moved in her absence. It is too early to conclude that a capacity for pretend play is crucial for solving such theory-of-mind tasks. The evidence would be more persuasive if we could show that, as opposed to the complete absence of pretend play, its presence correlated with differential performance on theory-of-mind tasks. But pending the availability of such evidence, we should not jump to the unwarranted conclusion that pretend play is not crucial even if we observe that, in normal development, variation in pretend play shows no correlation with performance on theory-of-mind tasks.

A second objection to our Aston Martin fantasy may be that we have ignored an important distinction. Perhaps human children are born with a variety of species-specific capacities, such as pointing, asking questions, and pretend play, but these capacities do not ordinarily emerge in a vacuum. A supportive environment would prove helpful. Lillard and her colleagues might argue that claims about the benefits of pretend play are not ordinarily couched in terms of variation in some internal fuel for the generation of pretend play. Instead, they are couched in terms of variation in the opportunities to exercise the capacity for pretend play. Thus, advocates of pretend play claim that the early and frequent exercise of the capacity for pretense—an exercise nurtured to varying degrees in particular settings—benefits the skills that depend on this capacity. Lillard and her colleagues aim to examine this "exercise-oriented" claim rather than a claim about variation in internal resources.

Pursuing this objection, and in sympathy with the framework offered by Lillard and her colleagues, when we think in terms of the exercise of a capacity it might be plausible to look for incremental relationships. Thus, we might plausibly expect that any skills that build on the capacity for pretend play will do so more effectively if there is a richer developmental history of engagement in pretend play.

Once again, however, it is important that we use caution. In particular, we may find cases in which the exercise of a given capacity is crucial for later development, but variation in the amount of exercise of that capacity bears either a weak relationship or no relationship to later development. Consider the case of running. Children do not run before they walk; and it seems likely

that unless children exercise their capacity for walking, it would be difficult—if not impossible—for them to master the skill of running. Yet there is no obvious reason to suppose that children who walk more will turn into better runners as a result of that early exercise. Modest exercise of the capacity for walking may be a sufficient foundation. As an alternative example, consider the case of language. Children do not produce narratives before they have managed to produce simpler two- and three-word utterances. But we know of no evidence that the extra exercise of the capacity for such simple utterances has a detectable impact on subsequent narrative development.

We suspect that a similar argument is feasible for pretend play. It is possible that some minimal exercise of the capacity for pretend play is crucial for subsequent development in domains such as theory of mind, but that does not necessarily mean supplementary exercise will be associated with any systematic variation in the pattern of subsequent development. In short, despite the contribution Lillard and her colleagues made, we urge caution in drawing the implication that pretend play has no causal role in healthy development.

Conclusions

The analysis that we have offered points to an important working distinction between two ways of thinking about child development. According to one view, there may not be a linear relationship between a given psychological factor, X and an outcome, Y. Although X may be crucial for Y, we should not expect a simple correlation between the two, nor, in the absence of an observed correlation, are we entitled to conclude that X is not crucial for Y. According to the alternative view, development can be reasonably considered as the successive acquisition of related skills. The more we exercise and consolidate the earlier skills, the more effectively we can master skills that build on what we have already accomplished. There is nothing illogical or implausible about this incremental view. Still, as developmental scientists, we need to keep an open mind about the way development works. Indeed, the first view carries with it a forward-looking optimism, even if the flavor of that optimism is less obviously connected to early educational interventions than the second. It implies that for typically developing children, despite considerable variation in the extent to which their early capacities are nurtured and exercised, important foundations for subsequent development may well be put in place across a variety of cultural environments.

Finally, we comment briefly on the educational implications of our analysis. We might be interpreted as implying that children will typically have enough opportunities for pretend play outside the school setting—at home for example—so that there is no need for schools to nurture pretend play. That is not what we wish to imply. Such an implication would follow only if we knew what activities are indeed crucial for later development, and schools should confine themselves to what has been shown to be crucial. We have argued that it is no easy task to show what activities are crucial. But even if it were easier, we hope that schools would not feel obligated to eliminate the allegedly noncrucial. Some activities—like pretend play—are good in themselves.

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