Playful Learning and Raising Successful Children in the Twenty-First Century

An Interview with Kathy Hirsh-Pasek and Roberta Michnick Golinkoff

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American Journal of Play: In your work, you champion child-led play experiences as necessary for meaningful social and emotional development.

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Looking back at your own childhoods, can you share some of the memorable play experiences in which you took the lead?

Roberta Michnick Golinkoff: I grew up in New York City, Brooklyn actually, and I had no supervision once I reached a certain age. I lived in a six-story apartment building surrounded by other apartment buildings a block from Brighton Beach. Between the two buildings on my block and the two buildings behind me on the next block, there was a concrete backyard with a stoop in the middle where the moms would sit with their baby carriages. We played handball (where you bounce it first), regular handball, hopscotch, and hide-and-seek (in the basements with the utilities), and no one would supervise us! We played for hours until my mother would go to the window and yell my name. I would go in for lunch, and then I would go back out. I had a totally fun childhood where I played and played physically all the time. I loved it.

My children grew up here in Wilmington, Delaware, with grass and trees. When I took them to see my backyard in Brooklyn, they were like "What?" They could not relate to a backyard that was totally concrete. My own kids also had a lot of freedom once I could count on them to cross streets appropriately. They had bikes, they had friends around the corner or across the street.

I thought it was wonderful for them. The whole thing is to increase the amount of independence your child gets—little by little—as they equip themselves and show good judgment.

Now I say this with the luxury of knowing that I did not live in neighborhoods—either when I was a kid or when my kids were kids—where there were random gun battles going on. Wilmington, at one time, was called the murder capital of the world, where you wouldn't want to let your kid out. That's a whole different ball of wax. My kids were lucky; they could go outside and could have the independence. I didn't have to worry about stray bullets. The kids who are inside and can't go outside are missing a lot. They are not learning how to manage themselves or using their bodies in the same way. You can literally have a race around the block. My neighborhood wasn't well-to-do at all. The elevated train, or El, was one block down from my house, and it didn't matter. We had a blast. But had there been firearms in the picture, I'm sure I would not have been permitted to go outside.

Kathy Hirsh-Pasek: My parents understood that play was what I needed. Won-

derful memories: in the fall, I loved romping through leaves. I would pile them up so high that I could make a big house and jump head first into my creation. I did the same thing with snow, making igloos to crawl into. I remember igloos were a bit harder to build than a pile of leaves. Igloos were also cold inside; I missed the warm part! I had a lot of fun when I was growing up. My mother even allowed us (or encouraged us) to make blue pancakes and to paint with pudding. And she let me learn for myself that if you put peanuts and butter into a blender you do not get peanut butter. That is a lesson I have never forgotten. Tasted awful.

I also remember inventing a lot of stuff. My mom would always find things taken apart, and I got to put them together in new ways. When I did not want to get out of bed in middle school (and who does not feel that way?), I invented a way to stay in bed longer. With a combination of hangers and brooms and two sticks, I could make my bed and get my clothes from the closet without ever moving from my bedside.. Did it save any time? No, my invention was a total waste of time. Nonetheless, I thought it was cool. I also had a musical band in my basement. I made a bowling alley out of paper boxes. I still remember you could knock down the pins and the ball would hit a slope and come back. I had a great childhood.

AJP: What opportunities do you find to play as an adult?

Golinkoff: I am big on play! I see friends for walks and hikes. I bike a lot and play tennis and pickleball and really enjoy that. That part of me is still alive, the kid in me. I'll dance whenever I get the opportunity. I consider myself very playful verbally. I could play more, but I'm locked up (due to the pandemic). I hope, it's going to change.

When I am with one of my grandkids, I quickly turn into a child their age. They soon discover I am more amenable to doing what they want to do than their friends are. I really do try and follow their lead.

Hirsh-Pasek: My whole job is play. Seriously! I explore the human condition! How do people learn, think, do? As an observer of people, I see the difference that science can make. When we add playful moments to bus stops, we change downtime into action and learning time. People's faces light up with smiles. And I get to work with and mentor the smartest young people, who are going to be the leaders of our field along with terrific colleagues and playmates who are all charged with the mission to use what we learn to help create a better world for all. What could be better than that?

My granddaughter, now five and three-fourths years old and soon to be

six seemed to recognize that I liked to play a lot. When she was three, she engaged me in the following exchange: "You know what you are?" I said, "No." "You like to play, don't you?" I said, "I love to play." She responded, "I know what you are. You are a 'little grown-up.'" She nailed it. I am a little grown-up and hope never to lose the view from the child's eyes. Play is a wonderful medium through which to see and explore the world we live in. If you allow yourself to still see the wow, to appreciate the sunset, to hear a wave at a beach, you keep the child's play alive within. If each time you go up to your house, you look at it in a new way, then you stand in awe of pretty much the world you live in. I think that's what kids have: a curiosity, a sense of how to perceive it. Enter Ellie, again, my five-year-old granddaughter who put it best (maybe you can tell she's my new psychologist). I asked her the other day "What is curiosity?" We use this word, but we don't even understand it. She said, "Curiosity is when there's something you don't know, but you do want to know it." Yes, that's it! That's it! Playful learning opens us to the openness and experience that each person brings to the table. Together we bring different outlooks and skills that make life more exciting.

AJP: In your early collaboration, *The Origin of Grammar: Evidence from Early Language Comprehension,* one of the studies employed *Sesame Street* hand puppets to test children's name recognition with the television show characters. What sparked your interest in the relationship between early language acquisition and children's play?

Golinkoff: It was from our knowledge of kids. How do you keep kids interested and motivated? You go to their level. You show them things that they find intriguing and exciting. You can't talk to kids about death and taxes. You can't lecture them about how to learn to speak. If you were in our biz, you would have done it too.

AJP: Who are the scholars who helped shape your understanding and investment in the study of play in childhood development?

Golinkoff: Catherine Garvey, who used to be at Johns Hopkins and wrote a book on play in 1977. I had the good fortune to work with her, and we used her book for a long time. Jean Piaget argued persuasively that kids can learn on their own through play. And Lev Vygotsky with that phrase "kids are a head taller than themselves in play"—that's where they show their attention span. Greta Fine is another one, too.

Joan Almon used to be head of the Alliance for Childhood, of which

I'm still a member. We had the best conversation where she reminded me that play is all about democracy. When children have the opportunity to play, to invent, to make their own choices and decisions, it goes along with what a democratic nation can look like. When they are under severe external control, they are no longer in a democratic framework. Edward Miller and Joan Almon put out a little book called *Crisis in the Kindergarten: Why Children Need to Play in School,* because Joan would be challenged when she would speak. People would say "What do you mean they're not playing in kindergarten? Of course they are!"—they wouldn't believe it. She and Ed documented this by looking at kindergartens on two coasts, revealing how little play was really going on. It had a big impact, and it was such a very important book. Unfortunately, Joan is no longer with us.

Hirsh-Pasek: Obviously, there are some greats like Piaget, Vygotsky, Brian Sutton-Smith. Vivian Paley did beautiful descriptions of children playing in schools. There are beautiful examples out there in the history of the field, but truly if you ask me about the people who most influenced my view, it's children and their families. Children amaze me. It doesn't matter whether they have plush houses filled with toys or are refugees fleeing their war-torn countries. The minute this pandemic is over, we will again see children play in our parks and streets and make toys from branches. Children play. What is it about the power of play, about the power of discovering the unknown and experimenting with what is known? Only children concoct recipes with cantaloupe and peanut butter for lunch. They give the world more meaning.

There are many other people who have also influenced my thinking. Doris Bergen, Angeline Lillard, Elisabeth Bonawitz, Catherine S. Tamis-LeMonda, and so many others. As I am known for saying, science is a team sport. Once you understand that science is a team sport, you realize that what we learn and who we become is part of being in the sandbox together. We stand on the shoulders of those who traveled before us and add to their genius and understanding of this marvelous behavior of child play.

AJP: Your book, *Becoming Brilliant: What Science Tells Us about Raising Successful Children* introduces the "6 Cs," six playful strategies to help raise a twenty-first century kid. Collaboration is the first, alongside communication, content, critical thinking, creative innovation, and confidence. Would you share what informed your thinking for the project?

Hirsh-Pasek: If you look at the science, it's completely clear. My colleague and

friend, Professor Patricia Kuhl, who arguably started education neuroscience, says that the brain is socially gated. We are a social species. Are we the smartest species on the planet? We may not be. Monkeys can solve problems of causality. Great apes can do a lot of calculations that humans can do and some just as fast. There are animals that can climb better than we do, animals that are better gymnasts. A horse is a faster runner than I and a better runner than most people. What is the crowning achievement for human beings? Social connection. Our connections allow us to build societies and to have a cultural heritage. Connections allow us, to share ideas, and to start where other minds left off. We need not relearn that it is deadly to touch fire. It comes through care givers who show us and guide us. Our social relationships set the stage for the kinds of social engagements that we are privy to and invited into. Scientifically, there's no question that our social connections and social relationships serve as our foundation for all learning. Bottom line, if we don't have collaboration, the rest doesn't work.

What is built on that? Learning to communicate. When you trust someone and have a relationship, you can communicate with them. Language and conversation are contingent on having someone to speak with. Communication builds on collaboration. Communication includes language, literacy. and even that rare quality these days—listening. Content emerges in the context of conversation. If you think reading or reading readiness is somehow going to happen without language skills or without having communication, you are just wrong. You can't possibly learn it. I can try to code skills and vocabulary, but by fourth grade, the code skills won't matter as much as the meaning skills. Stringing those vocabulary words into meaningful sentences is central to understanding written passages.

Built on content is our critical thinking. How can I use the evidence at hand—the content—to solve a problem or answer a question? What can I ignore? What do I include? Creativity and curiosity flow from content and critical thinking. Indeed, many talk about the "ten-year" rule first introduced by psychologist John Hayes in 1989 where only after you learned and practiced enough content can you really use the information in a creative way. Finally, creativity requires the perseverance to keep trying, to dust off and try again when you fail. Entrepreneurs of the future will need to have the confidence to give new ideas a try. Take a risk, take a playful, intellectual risk and see where it gets you. In concert, we call these skills the "6 Cs."

All adults should live by the 6 Cs, because at the end of the day, none of us wants to say about our kids: "Well, they were unbelievable test takers! Wow, they could rock test taking!" I would rather say they were happy, healthy, caring, thinking—the thinking is still there—individuals who are creative, critical thinkers and strong citizens. These are the kinds of people who chart the next level of societal advancement. Where do you get these skills? From the sandbox when you are active, engaged, and when what you are doing is meaningful and socially engaging, not the same boring old thing. When it's fun, you stick with it; when it's not fun, you don't. You're out of there, which is why so many people think that schools of today might not be preparing children for the future. Bottom line is that you build these skills in playful learning.

AJP: As collaborative researchers with an extensive body of scholarship together, you two exemplify the first C. Could you tell us about your partnership?

Hirsh-Pasek: I get to work with Roberta, who's the most wonderful person in the world. It's like working with your best friend.

Golinkoff: When my son was thirteen, I took him with me to Kathy's house. We were working that day writing together. We always critique each other's writing, but it is rare that we write together now. I took Jesse to Kathy's house, and Jesse said, "You are so mean to each other!" And I said, "No, we're not! We can say what we mean with each other." I don't know how many times stuff like this happens, but I feel like my relationship with Kathy—it's forty years, we're like married—has been amazing for both of us really. We each have somebody with whom we can confide about any concerns we have of a professional nature. We were each other's child-care consultants, which was also great. Now we talk about grand kids! Having someone who could practically complete my sentences, but could also say "Nope, you're missing the boat. That's not it." And vice versa. That was, and still is, fabulous.

AJP: How does your long relationship inform your broader understanding about collaboration and play?

Golinkoff: We both work hard and play hard! We love to hear when the other has had an amazing play experience. But we work really hard too. One of the discoverers of the DNA molecule said (I'm paraphrasing), "Politeness is the enemy of science." If you worry too much about what you're going to say, you're not going to say what you think. We know each other so well. Collaboration is one of our 6 Cs, and it means hearing each other's

perspectives and really using your Theory of Mind skills. What is the other person thinking? You have to have good communication skills, another of the 6 Cs, which all work together. Communication is essential for collaboration. You have to say what you think. And you have to have respect for the person you're working with.

For some reason, we developed this relationship early on, which continues to grow and evolve. We're just lucky—that's how I see it. When junior colleagues ask, "What do I do to get ahead? How does it work?" I say I hope you can find people with whom you can collaborate—people you really like who can tell you the truth and whom you can trust. Kathy and I were planning on having an anniversary party to celebrate our long-standing collaboration at the Society for Research and Childhood Development (SRCD) meeting. We were going to play childhood games and have kid food, but we can't do that now, because the SRCD meeting is not an in-person event. Our collaboration is unusual really, except for a couple of married couples who do this. Working together has been wonderful, just wonderful.

AJP: In *Becoming Brilliant,* you challenge care givers to reexamine their perception of success. You say that when children learn how to play well together, they develop the social and emotional tools to be citizens of a community. Are there any obvious—and perhaps not so obvious—hindrances to supporting the development of playing well together skills?

Hirsh-Pasek: First of all, we learned from many, many years in research that when people have a common purpose, they play together well. You'll notice that businesses now are all talking about teams. Who is on your team? Who is on my team? That's huge! Secondly, why are we in teams? People with slightly different strengths working together can accomplish anything. With one common mission, they are more likely to get along. A study done by Sherif and Sherif did a color war game with two camps competing with one another. They randomly divided the kids between a red team and a blue team. What did they find? The teams gelled and formed a group identity.

What if we could re-create a new public square? Right now, we are so polarized. We increasingly sit in front of our computers, digging deeper into what we are fed by heuristics. And so we never hear the opposite points of view or play with children who are different from us. Playful Learning Landscapes (playfullearninglandscapes.com) are designed to create the piazza of the future—the public square where different people can meet

and have common playful goals together. If we can work together and see each other as people, if we offer equal access to all people through our public places, I believe that through Playful Learning Landscapes, we not only create more equity, more social and cognitive opportunities, but build the sense of togetherness and connection at the same time.

AJP: Let's talk more about Playful Learning Landscapes. With the support of the National Science Foundation and community publics, these interactive installations (such as Parkopolis, Ultimate Block Party, and Urban Thinkspace) aim to make early childhood development science more accessible to the public. What are some of the most rewarding takeaways from these community-centered projects?

Hirsh-Pasek: Roberta and I create what we call edible science: accessible, digestible, and usable. It isn't any less scientific to study science in a way where the public can get something out of your work. In Playful Learning Landscapes, we get to work directly with communities and codesign playful, meaningful and edible science with them. Take a game created by a colleague, Andres Bustamante: fraction ball. We repainted a basketball court, then we created different throw lines: the one line, three-quarter, the half, the one-quarter. We tested the game in a school yard playground. Teachers had been trying and trying to get their third-grade students to learn fraction-decimal point conversion. Two weeks, four days a week, fifteen to twenty minutes out at recess, and guess what? The children who played fraction ball aced the school tests. That's the bottom line: Playful Learning Landscapes work.

There are many scientific reasons why it should work. It captures the very same systems that brains use to learn: active, engaged, meaningful, socially interactive, iterative, joyful. The 6 Cs are right in the equation. You see collaboration, you communicate to play the basketball game, you need content in order to play. You are critically thinking, "Hmm, I don't want to go over the number ten. If I throw from here, I might." You can see kids figure out creative ways to add and calculate—to measure and to think within the game.

So, we have a choice: as educators, we can—and often do—stomp out creativity early. We take the fire from their eyes and drown them in homework. Or we can find ways to make learning come alive. Maybe if we adopt a new playful mindset, instead of the 70 percent who say they hate their jobs, they'll say, "You know, I have fun at what I do and am still productive." The playful learning mindset aligns perfectly with what business leaders

say they want from the next generation of workers. This is the first time in history where education has the opportunity to hook up directly to the business needs and their community.

I should add one more incredible outcome of this work. Playful Learning Landscapes is built through community codesign. The result of this is that neighbors have a say and a voice in the way that playful learning landscapes materialize in their communities. This is a very big deal. I think everyone should do codesign so that we use playful learning while elevating the expertise in the communities.

AJP: What else can be gained from a play equals learning mindset?

Hirsh-Pasek: Fun is often confused with frivolity. It is not the same at all. Play and learning are intricately woven together, so much so that it is often hard to find the separate strands. I would encourage every parent to change the way they see the world. Susan Engel [author of *The Hungry Mind* and *The Intellectual Lives of Children*—eds.] wrote a beautiful book in which she exquisitely illustrates learning and social opportunities that come from the simple act of taking a walk. To us, it may appear like an exercise; to our children, it is a museum. Children pick up different kinds of shells on a beach, compare them, find differences and patterns, and then tell stories about how the shells got there. Wait a minute: is that math and literature? Through that curiosity, they're seeing a different world from the one you're seeing. It's that playful mindset that is often beaten out of us. If we could re-create the playful mindset for parents and teachers, they would see the magic before their eyes every single day. I can teach you pattern recognition through knitting, playing tennis, looking at art, listening to a symphony orchestra, or doing rhythm and music in hand-clapping games. The playful mindset allows us to rethink the experiences we have every day and to nest them in the wider lesson plans of life.

AJP: Given the broader parental concerns about too much screen time, do you have thoughts about the educational possibilities of newer screen technologies?

Golinkoff: Don't count on apps to help kids catch up from COVID-19 learning loss! A new paper we wrote with Jenny Radesky and her people just came out in which educational apps were evaluated according to the metrics we developed in our paper, "Putting Education in 'Educational' Apps: Lessons from the Science of Learning." Many apps that call themselves educational do not meet the bar. But if apps are designed according to the principles of

learning we describe in that paper, children can learn from apps. We also did a study of four-year-olds and whether they could learn vocabulary and the plot of a new story from an app. They can. In fact, they learn just as well from an online interaction as they do from a live interaction. But live is the way to go. A paper with Rebecca Dore and Brenna Hassinger-Das showed that children get tons more from reading an e-book story with their mom than from hearing the story read to them by the app while they sit alone. Parents know their kids and how to link up new information to what their children already know.

Our Brookings's piece, "A New Path to Education Reform: Playful Learning Promotes Twenty-First-Century Skills in Schools and Beyond," combines our principles of learning with the 6 Cs, the six skills that children need to succeed in the twenty-first century. We need the 6 Cs as adults, institutions need them, and play is the crucible in which they develop for children. Screen time will not help children learn these to the extent that interacting with people will. And screen time often displaces other things kids might be doing, such as playing outside or with friends or just making a house out of cardboard at home, as my grandchildren did.

AJP: What is the Quick Interactive Language Screener (QUILS)?

Hirsh-Pasek: We have developed a new language screener that we call QUILS. Roberta is super proud of this work, and I am too. It will be a way to identify early whether a child has language or communication problems so that there is something we can do to strengthen their trajectory for development.

Golinkoff: I'm so excited that you want to know about the QUILS. When it is adopted by schools, pediatricians, and speech-language pathologists, it will help find children, who have problems learning language. The earlier we identify these children the better! Because it only takes fifteen minutes to give, and because it covers vocabulary, syntax, and process, and how kids learn new language items, it is unique. Our team was determined to create a screener that kids would enjoy. There are many screeners and language tests out there that depend on the skillfulness of the examiner for the child to enjoy it. We didn't have to rely on the examiner, because a machine gives the test, which is all touch screen. Every few items are followed by a funny noise or by a neat video like a giraffe flying a plane.

AJP: What was the process of creating the QUILS?

Golinkoff: Kathy and I both started out doing research in language acquisition.

That's what brought us together for our first grant. We've been collaborating for over forty years and worked with a paradigm that we created where you have a large-screen TV and there is an image on one half and an image on the other half. Let's say it shows a boat and a shoe. A voice comes out of the television and asks, "Where's the boat?" If the kid looks more to the boat, we can infer that the kid understood that word. We've done many studies with this paradigm, as has the field. We knew that it worked to assess children's language comprehension. We thought it could be used for diagnostic purposes. Wouldn't that be wonderful? That's what we do: translational research.

So, we took this paradigm and rather than using visual fixation as the dependent variable, which is too hard to use for an assessment, we said, "How can we use this for diagnostic purposes?" We teamed up with Jill de Villiers (who specializes in syntactic development), Aquiles Iglesias (who specializes in language acquisition and disorder and is a native Spanish speaker), and Mary Wilson (who owns Laureate Learning and is a speech-language pathologist). When we created the QUILS for English-speaking kids, we also created the Spanish bilingual one from the same grant. Through a project with Harvard using the QUILS, we now cover six-year-olds and have norms for six-year-olds, so QUILS is a suitable screener for children between the ages of three and six.

Now, if you're in the biz, you know the earlier you intervene, the better. We created a QUILS for two-year-olds called the Baby QUILS. We had to change some things. The Baby QUILS has a funny noise after each item, regardless of how the kid did. It has drag items, where they are asked to put the hat under the chair by dragging it under, and the kids love it. They ask to do more. I was terrified when we got this grant, because how were we going to get kids to pay attention to forty-eight items? But we got 96 percent retention! We are just thrilled and hope that we can get Brookes Publishing Company to pick up the version for two-year-olds, too. COVID-19 has really thrown things off, but we are working on it! The beauty of QUILS is that when given to whole classrooms—again, it can be administered by an aide, a teacher, or a parent since it is really done by the machine—we can identify kids who have potential language issues, including deafness and partial deafness. But the QUILS and BabyQUILS are screeners. That means we can't say definitively what the children's problems are, just that they are not progressing like others their age. Then they need to be seen

by an audiologist or speech-language pathologist to figure out the cause of their lag relative to their same age peers. Fully 10 percent of children have language issues, and parents are often not sensitive to these. The goal is to identify children as early as you can to get them into intervention. That's the goal.

AJP: Beyond the academic setting, you collaborate with many organizations such as toy industry companies, museums, libraries, and others. What perspectives do these groups share about the future of play? What role do you believe play scholars bring to such spaces?

Hirsh-Pasek: The first thing you need to do to form successful partnerships is to create the opportunity to get out of your own head—so to speak. We live in our own worlds with our own vocabulary and expectations. We need to talk across spaces if we are to generate better ideas, policies, and products that escape the narrow, constrained hallways that we make for ourselves. I think it's time to knock down the hallways and create the communal table for discussions about what's best for children and families. These communal tables also have to have representation from the families and communities themselves. It is in this spirit of collaboration that Roberta and I reach across traditional boundaries. For example, we started the Learning Science Exchange (LSX), in which we create teams of midcareer people successful in entertainment, science, policy, journalism, and social entrepreneurship to develop cross talk around early childhood learning. The esteemed fellows came from different spaces but work together, share different things, and develop a true generation of interdisciplinary leadership in our sector.

Yes, Roberta and I have used developmental psychology to work on everything from writing trade books to working with designers about how to put the playful science directly into the architecture of a building, from sitting down with museum professionals to figure how to build so that children get the most out of exhibits to working with hospitals wondering what the structure of hospitals should look like and what doctors should do to foster trusted connections with patients through playful learning. We hope we are changing a mind-set by moving interdisciplinary science to where it needs to be. If we do that and put it out into the world, it is my firmest view that we will be building a world in which we want our children to live. I think we're going to be surprised that we want and need to live there too.

AJP: Given COVID-19, what questions or curiosities about play are you currently posing in your classrooms?

Golinkoff: So funny you should ask. I couldn't teach my class, Human Development and Schooling, without recognizing the elephant in the room. Why am I not meeting with you in person? What impact does this have on you? There's a section on COVID-19 in my class and how it affects children and education and children's social development. What impact does the social isolation have on kids? On the college students? I suspect that children who have been under lock-down will need time to get their play mojo back on! I sure hope they are not chained to their desks when they return to school. They need time to play through the trauma and isolation!

AJP: Due to the pandemic, we are faced with the need to physically distance and make other adjustments to familiar forms of play and games, both indoors and out. How should we reimagine play in the current moment?

Golinkoff: I have a picture of what my grandkids did. They built a house with tape and cardboard. It's big enough for them to get inside. They had a blast. I put these photos on Facebook and people replied, "Oh my God, my children have done that! They are so excited, and they don't want to take them down." It's remarkable to me, so people should never throw away cardboard! Apparently, my five-year-old grandson has taken to becoming a sculptor. He does everything he can with cardboard. I have another photograph of the computer he made. Children are enormously creative. I want to emphasize that they do not need fancy toys or apps.

I feel very badly for parents who are trying to get a job done and collect a salary. We know that it has fallen disproportionately on women. So, what advice? Say to your child, "I'm going to work for an hour, and you can sit near me and color. When that hour is over, you and I will make up a story about the picture that you colored." The child can be helped to maintain their play activity, whatever they want to do, and give you a little space. The reward is you play with your child. You need play, too. We've talked about doing this study for years. What I would love to show is that playing with a child reduces your blood pressure and your stress. I'm sure it is true. If you can figure out how to structure the timing with your child so that you engage in some play with them, you'll feel better, too. That is what's important for parents to know: play is crucial for them, too. It gives them a break from what they're doing and, to the extent they can get involved and get into their kid's head, it's great for them both.

What I worry about is that when kids return to school, people are going to take a very didactic approach. Some educators are going to feel that the

kids missed too much, that they've got to get work in. It's going to make kids hate school. It's going to make kids suffer as opposed to letting kids play. They haven't seen their peers in like ten thousand years! They need that time to decompress, to play with peers, and to play in their classrooms by engaging in what we call playful learning. They get to make choices within the parameters set by the teachers.

Hirsh-Pasek: I was on the phone all day in a conversation about this. To put it bluntly, it has been a terrible year. It's been a year without the kinds of connections that all kids need, that the youngest kids need especially. We are going to see massive learning losses, though it looks like they're going to be greater in math than in reading, maybe up to a year's loss. People are stressed, and things are closed down. Children have been taught that if you see another person, go in the other direction. It's been a year since we've seen smiles or real facial expressions or hugs.

When we're asked if this has an impact, of course it does! We can look at it as "Oh my God, will we ever survive?!" But to be absolutely clear, kids have survived wars and depressions. There are a lot of stuff that kids have survived.

AJP: Then, what advice or creative challenge would you pose to educators and school districts?

Hirsh-Pasek: I'm going to turn this on its head for you. As a play lady, as a little grown-up, I see this as an immense moment of opportunity. To me, the school systems have struggled for a long time. Teachers have not been given enough credit for the miraculous work that they do. For me, parents have not truly understood how much work teachers do. The world, in many ways, has not worked smoothly, and the compromise on time has been terrible for all.

This is the opportunity to bring a playful mind-set to the way we look at education. We do not want to add to the teachers' burdens but to have teachers as part of the conversation around a series of principles, guided by science, while they help codesign a reimagined system to make teaching a more enjoyable profession and help children learn. It may not look the same in your school in New York, in my school in Pennsylvania, or a school in California. There will be cultural variations that show the richness and the strength that each of us bring to the classroom. At the same time, we can teach the basics of the 6 Cs along with the more familiar topics like math and science. If there's a teacher who is absolutely into knitting, then

some of these lessons can be taught through the theme of knitting. If there is a teacher who loves to travel then travel becomes the foundation for the same lessons. She shouldn't be stuck on a script that is meaningless to her and meaningless to the kids but rather create one that can achieve the same goals by using collective strengths. Yes, there will still be curricula—but adaptable rather than scripted material. This process values teachers. It has been tested, and it does work.

I think the 6 Cs and playful learning offer an optimal equation for increased equity, for celebrating differences, but still ensuring we get the baseline. The teachers we are collaborating with in Michigan, New Hampshire, and Westchester, Pennsylvania, started out not so sure. But when we launched into it, they said to us, "Thank you. There's a joy in teaching again! Our kids, who we thought couldn't succeed, were actually just struggling in a box. Now they're thriving." What else is possible? Our kids from underresourced environments are seeing that they too have the chance to show off strengths and succeed. Now isn't that what we want for America's children?

Am I bothered by COVID-19? Absolutely. But sometimes things get so bad that it gives us an opportunity to say, "Hey, what a perfect time to do what we know needs to be done."

I'm not really saying go 100 percent individualistic, because learning is a team sport. There is not a kid born who doesn't have something she can offer. One kid can count better? Maybe she can do more of the counting in a jump rope game. Maybe another is more of a gymnast. Hey, spatial skills kid, make sure I don't lose my step in the jump rope like I always do! There has to be a baseline. We all need a baseline to succeed, but we also need to know the world of possibilities and entrepreneurship. We need to be curious creators, and schools can nurture that. The world is changing so fast. If it's true that the number of facts available in the world doubles every twelve hours, then there are serious consequences if we reconstruct an education system founded on memorization. It means twelve hours from now, I could have learned every fact in the world, but would know only 50 percent. Not good enough if I haven't learned how to learn.

AJP: What creative challenge would you pose to policy makers and the new Biden administration?

Golinkoff: I would be thrilled to talk with the new administration about reforming education through play. It would be my pleasure. The fault line has been

revealed. The wide discrepancies between rich and poor are ridiculous. One in five children lives in poverty in the United States. What are people thinking? We sink or swim together. This is very upsetting to me. We know how to make good educational environments. We know how to ameliorate poverty. There are studies going on now, one by a woman named Kim Nobel at Columbia University, that gives parents money. They are going to see what differences it makes in the brain development of children. We know everything that it takes to do, but we do not have the will. President Biden is certainly moving ahead with the COVID-19 relief package, and he will want to do more for kids. But there's so much that needs to be done. It goes back to the early 1970s. President Nixon couldn't get the universal kindergarten and day care that he wanted. It has been going on forever. Compared to other Western countries, we are way behind. And it's so foolish. This is our future work force.

Somebody sent me a video of robots dancing. Why is that important? If we can get robots to dance, we can get robots to do a ton of the jobs that humans do today. It's a no-brainer now. I want to start my talks with the robots dancing, because it makes my point so well. We have to change how we are doing education. Now is the time. Many jobs have been lost during the pandemic, and they are not coming back. We must educate the populace to be able to do the jobs that robots cannot do. That's through teaching using the 6 Cs.

AJP: What future research in childhood development studies excites you?

Hirsh-Pasek: Right now, there are three, though I'm sure there will be many more. The most interesting question for me: Can I envision a world where every city, by nature of the way it does its building and its refurbishing, includes Playful Learning Landscapes? So that when kids wait at bus stops, go to hospital waiting rooms, go to basketball courts, they are getting more. This doesn't mean cities need to get didactic in the way they design their spaces. It does mean that cities can be more enriching and can provide opportunities that some children do not get at home. I also want to know why we can't make neighborhoods beautiful again. Why we can't include the community in it, in the design, so that it feels ownership. I want to continue my science in that area to bring that love alive.

The second area is the playful mind-set school, because it offers us educational reform that is extremely powerful for parents, teachers, and children. By including the broader suite of skills as outcomes and in defini-

tions, I think we will find we all want our kids to be better than that "my kids did really great on a test." They all can be helped by it.

The third is I am deeply interested in studying more about the role of social connection and social skills in cognitive and brain development. I've designed several studies now where we are going to look at synchronized brain waves of parents and children as they're connected and talking about its impact on learning outcomes.

AJP: Reflecting on all of your work, what makes you most proud?

Golinkoff: What comes to mind, and we've written a couple of books about it, is that children need to have a childhood. Here we are, screaming in the corner "Let them play!" They don't need fancy electronic toys. They don't need to just hear the ABCs. Somebody asked me to review a paper and I didn't have time, but I know I'll be sorry I said no. It was a study in Ireland with nine thousand kids covering the kinds of things parents did with their children and the impacts on later cognitive development. Making kids memorize numbers and letters didn't make any contribution. It's about reading stories, talking about them, building with blocks, building with puzzles, going outside—that's really important. At the time we wrote *Einstein Never Used Flash Cards,* parents were told to buy everything in sight and sign their kids up for classes. I think we may have had an impact there, and that makes me happy. Parents are overwhelmed, too, with just the management of it. The younger child doesn't know where they are, because they're always in a car seat, while the mother is schlepping the older child to lessons. That's not a life.

Playful Learning Landscapes can help all children and families once we infuse it into cities. Parents need a break, too, and an opportunity to engage in playful interactions with their kids. The next thing is the QUILS, even if we only find two kids who need help buried among a class of children. If those kids get help and better develop their language, I will feel really good.

Hirsh-Pasek: When we first started out, I think our first major accomplishment was being able to find ways to look into the mind of a child, even before they could tell us. We were lucky enough to be at the beginning of when people were looking into infant development. We developed several procedures that allowed us to really know what kids were thinking long before they could show us or tell us—that was way cool. They have become staples in the field and still very much used. We learned during this period, in our research and others (again, science is a team sport) that children are way

smarter, babies are way smarter, than we thought they were. Based on that work, we developed the QUILS.

Playful Learning Landscapes are crowning jewels. I am very proud that we think about the world we live in, combine a community point of view with a playful design, and give families foundations for learning. It's just remarkable. I'm thrilled that we helped bring play back to a respectable place in the literature. I hope that our new theory of education reform, bringing playful learning into the world, will make a difference. It really does offer a blueprint for enabling more enjoyable experiences for teachers, parents, and kids, while at the same time creating the kind of experiences that lead to key outcomes we need in the twenty-first century.

AJP: What you are working on now?

Golinkoff: We're writing a paper about the properties of the QUILS and how all children need to be screened for language problems. This is essential for education. We are writing a book with someone from the Godfrey-Lee School District in Michigan. They created a curriculum based on the 6 Cs! We talk about it a little bit in the "Pathway to Educational Reform." The curriculum is working, which is very exciting to me. There are places in the world that are putting out curricula that have to do with the 6 Cs, not just in Michigan, and it is working! Kids do better, and teachers are happier. We are pretty excited about changing the nature of education to focus on how kids learn. How shocking! We are using the science! What we need to know is how to succeed in the twenty-first century so our kids will not all be replaced by robots when they enter the work force.

Hirsh-Pasek: Right now, we are trying to change whole cities, so you can look forward to that! We are creating systems for cities, working together to share Playful Learning Landscapes. We're hoping to expand greatly the work that we're doing in kindergarten. We're looking to expand how educational companies look at apps so that they're truly educational and involve social connectedness as an integral part of the experience jumping on the screen.

The research I want to do next is about understanding but also impacting the world that we live in. If something new comes along that deserves our attention, I'm sure my ADD will take me there. Let me explore in a new sandbox and say, "What a minute, there's something powerful here." That's pretty much the way I feel about the neuroscience. I'll never be a neuroscientist, but when I heard you could put a cap on a kid and a mom

and, by looking at synchronized waves, you could be looking at how we are building brain structure? Oh my God, I need to do this next!

I'm lucky. I feel very lucky. I have an amazing collaborator. My colleagues are some of the most open, wonderful people. And what's our subject? Families and kids. If you don't do well by your kids, twenty years from now, it will have worse consequences than even climate change. They are the greatest natural resource we have. There's a whole crew of us who believe children need to play and that play can be a spark for just the kinds of learning that will help all children grow.