

From the Lab to the Living Room:
Stories that Talk the Talk and Walk the Walk

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Once upon a time, experimental and theoretical psychology were deeply invested in issues of practical application. James' (1890) functional psychology knitted together discussions of stream of thought, memory, and self in an effort to understand individual action and the human capital that created civilization. Dewey (see Viney & King, 1998), who chaired the first psychology department at the University of Chicago, followed in James' footsteps in recognizing the value of psychology for education. Even Watson, the father of behaviorism, was convinced that if people followed the dictates of his field, "the educator, the physician, the jurist and the businessman could utilize our data in a practical way..."(1913, p.169). Psychology was a science that had *relevance* to the problems of the day. Psychology studied problems that affected people's daily lives, from family, to emotions, to the workplace.

Somewhere in its adolescence, the field of theoretical and experimental psychology came to downplay the role of relevance. Ironically as our methodological skills improved, relevance went out the window. Predictability, control, and measurement occupied center stage. As philosophical positivism took hold, even fields like social and clinical psychology changed in character. Morawski (2000) notes that in this shift that occurred early in the 1900s, "the experiment and its conclusion presented no visible theoretical appreciation of the social or of the relation of the individual to the social or society" (p.429). Many years later, Ulrich Neisser, the father of cognitive psychology, would echo the same concerns about the lack of ecological validity of lab-based cognitive

studies. In 1976, he wrote, “the study of information processing... has not yet committed itself to any conception of human nature that could apply beyond the confines of the laboratory” (p.6). Professor Urie Bronfenbrenner of Cornell University joined the chorus of those hoping to put relevance back into psychology. He argued that somehow the tables had turned and that science needed social policy to provide it with two elements it lacked: vitality and validity. Laboratory experiments failed to understand children in their natural ecology; it failed to examine behavior within the larger social systems of child care, school, and neighborhood in which people actually knew each other and participated in roles and relationships (Bronfenbrenner, 1974). In this era, however, psychologists were largely unconcerned about practical matters. With a jargonized vocabulary of operational definitions and a narrow set of hypotheses, they went about building scientific cathedrals that were largely inaccessible to the public.

Today we return to days of old, once again asking how theoretical and experimental psychology might offer evidence-based information to address some of the concerns of our time. Renewed in part by Urie Bronfenbrenner’s plea (1979,1998) research psychologists are investigating everything from the criminal justice system (Steinberg & Scott, 2003), to child care (NICHDECCRN, 2005a) to optimal standards for the burgeoning universal preschool movement (Zigler, Singer, & Bishop-Josef, 2004). Psychology has become not only a science seeking to explore the depths of human behavior, but also one that can speak to social and public policy (Foster & Kalil, 2005). As we move back to the future, however, we must relearn how to *talk the talk* of the media writer, the layperson and the policy maker. How do we make what we do accessible to different audiences? We must also have the courage to *walk the walk* by

stepping out of the lab so that we can appreciate how our findings might bear on questions that are somewhat tangential to those we research directly. In what follows, we share our experience in this journey with stories that helped us learn to talk and to walk in foreign lands outside the laboratory and the classroom.

Talking the talk

The Printed Venue

Laaadies, I read your book proposal yesterday. The first page was exciting. I wanted to learn more about how babies talk. By the second page, I was still with you, but I was losing interest. By the third page, I was dyyyyyyyying! Ladies, you really have to learn how to write (said in a deep New York accent).

These words uttered by our agent hit us like a head-on collision. As academicians, we were never trained to write in inviting language so that intelligent college educated adults could read our work. We were even told that stepping out of the closed system of academic scholarship was frowned upon. In fact, one of us was told disparagingly in graduate school by one of her professors that she had a “Sunday supplement style.” Nonetheless, we mustered the courage to write an overview piece on language development for the *World Book Encyclopedia*. We had also given what we thought were clear and coherent interviews to reporters from parenting magazines and national news outlets (e.g., *US News*; *Newsweek*). The bold next step in our progression was writing a popular press book that shared the fruits of the research community with parents, teachers and policy makers. We *thought* we had written an interesting and exciting review of the literature that brought science into the hands of consumers. We envisioned our book, *How babies talk* (1999), as representing years of scientific research

from laboratories around the globe. Unfortunately, our first attempt at conveying this enthusiasm failed. Our honest agent was “dyyyyyiiing” of boredom as she read our dense review.

It soon became clear that writing for lay audiences was completely different than writing cogently and coherently for academic peers or even for encyclopedias. A glance at the *New Yorker* reveals some of the secrets of good writing. *Real* writers start with an anecdote and then lead the reader from the particular to the general. As Jay Belsky taught one of us, writing is about socializing readers and holding their hand as you take them through the mystery of the science. If you’ve done your work well, by the end of the book readers are engaged with the writer and often comes to the same conclusions.

To understand what we mean, take a minute to review the following two abstracts: one for scientists and one meant to speak to a general audience. The difference in writing style is obvious.

Example 1: Sciencespeak

A core task in language acquisition is mapping words onto objects, actions, and events. Two studies investigate how children first learn to map novel labels onto novel objects. In Study 1, we investigate whether 10-month-olds are able to use both perceptual and social cues to learn a word. Study 2 assessed whether the mapping of word to referent is a product of infants’ pairing the label in training with a particular spatial location. Results across both studies showed that 10-month-olds could learn a new label and do so by relying on perceptual salience of the object instead of social cues provided by a speaker. This approach is in direct contrast to the way in which older children (12-, 18-, and 24-month-olds) map and extend new object names (Pruden, Hirsh-Pasek, Golinkoff, & Hennon, 2006).

Example 2: Down home

*Ten-month-old Marissa sits on the living floor rolling her toy car. Marissa’s mother is talking on the phone in the same room, “Wow, you got a new **dress** for the party? What kind of **dress**?” she says as she looks towards the kitchen.*

*How do children learn their first words? Much language is used around them and so many objects and actions are present simultaneously. Does “dress” refer to the car Marissa is playing with? To the door? To the kitchen? Or to something completely different? A new study examined how 10-month-old infants learn the names of objects. The authors found that even at this tender age, babies **are** listening to what we have to say. But at 10 months, babies link words to objects in a way that is totally different than their older brothers and sisters or even adults. Like Marissa, 10-month-olds assume that the word “dress” must refer to the car, even though the mother is paying little attention to Marissa or to what she is doing. In just 8 months, however, Marissa will be keenly aware of her mother’s gestures and whether her mother looks at her while speaking. By a year-and-a-half, Marissa will only “glue” a name to her toy car if her mother is looking at the car or gesturing to it. By that time, Marissa will only learn a word when her mother makes the connection clear between what she is talking about and what she is looking at. Once infants can use these correlations, they can learn the name for what the **adult** has in mind rather than what **they** have in mind.*

Example 3. Educated layman

There is power in language. It can start wars or ruin marriages. Readers of these words barely remember a time when they did not have language. But every word you know had to be learned. Imagine bending over your car engine with your mechanic and being told, “Your zorch is shot.” You follow your mechanic’s eyes and body orientation to the part he is examining. That rusty metal protrusion must be the zorch. How do we learn the mapping between words and the objects and events they represent (Golinkoff & Hirsh-Pasek, 2006)?

*Two scientists have made inroads into this question by asking whether the process that word learning involves changes over the course of development. Do 10-month-olds, for example, learn a new word in the same that an 18-month-old or a 24-month-old does? It turns out that 10-month-old babies learn words for new objects based on how interested **they** are in the object, whereas older babies attach more importance to whether the **speaker** is interested in the object. These findings suggest that parents might want to talk more about what their babies are interested in rather than what they, the parents, are interested in (Browning, 2006).*

Somewhere in graduate school, even good writers, learn to write in cryptic language and to adopt a concise style. Much of this stems from the premium on journal space. In game-like fashion, we see how many words we can edit out to make our paper seem “tight” and terse and still comprehensible to others in our field. Background for the

problem we study is often minimized; why be expansive in reviewing the prior work when the reader can look it up? Scientific writing, while quite exact, is filled with the passive voice, viz. above, *A core task in language acquisition is mapping words onto objects, actions, and events*. Good scientific papers always examine alternative explanations for their results and leave the reader with hedges rather than confirmations. For example, one formula for a casting doubt on what you just wrote is something like this, “While these results seem to show X and Y, we have yet to test Z as a possible explanation for these findings...” And these sentences usually come in the final two or three paragraphs of a paper, just before one that says, “Despite these limitations...”

In stark contrast, down home language uses a cute example as illustrative and then unpacks the lessons we can learn from the example. The writing is in an active voice, often fails to acknowledge alternative explanations, and rarely suggests caution in interpretation. Educated layman writing is also active and also makes less use of examples. The difference between these two styles is that an educated layman stance invites the reader into the intellectual problem that the findings are about and treats the reader more as an intellectual equal who might have considered these issues on their own.

What had we done so wrong in our first proposal? First, while we thought we had stripped the writing of scientific jargon, we hadn’t completely done so. What seems like often used, easy to understand terms for two psychologists, is still jargon to lay readers. We learned to catch each other when we tripped up and replaced a technical word with a lay word. For this reason, it is useful to have an agent or some lay person who knows nothing about your field read your popular press writing. For example, when we were tempted to talk about “processing information” or “linguistic capability” one of us would

catch it and transform these phrases into English, as in “learning” or “language skill”, respectively. The second way in which we missed the boat was the quality of the writing. Although we mostly used lay terms, we were still far from the active, enticing, and colorful writing that takes a story beyond the facts to the journey and mystery of language development. As David Marcus, a Pulitzer Prize winning journalist and author once told us, when you write or speak for a more general audience you want to invite them into the excitement of your field. Make them feel special to be a witness to the information you are sharing. Keep them on the edge of their seat. They will soon see that you can be their private guide into the unknown world that helps us understand children and their growth. Finally, our writing still too much resembled a textbook in the way that we described people’s research. We needed to adapt the way citations are done in popular press writing. Although we had been taught since college that not making attribution to someone’s work by name was plagiarism, our agent told us time and again to remove the citations. (As she colorfully put it, “No one cares who did the work! They just want to know what they found!”) What works for a textbook does not work for a popular press book. While we occasionally recognized the authors of various research projects by name in the text, we had to become comfortable with having a bibliography for each chapter where the eager reader could find the actual citations and the researchers’ names.

We are clearly not ready for the Columbia School of Journalism, but we did revise that proposal and *How babies talk* was released by Dutton/Penguin Press in 1999. Our foray into the world of trade books also taught us a number of lessons. First, few of us will ever write like Stephen Pinker or Stephen Jay Gould or Carl Sagan, but learning

to write for more general audiences and to show the spark and passion that we share for our work is an important goal to which we should all aspire. It is one of the reasons that many of us enjoy teaching. In fact, teaching an introductory class in our specialty is a good model to use for how to approach popular press writing. Consider the factors that fuel us to keep improving our offerings and returning to the classroom. The rewards of awakening a class's amazement at the latest findings (e.g., *8-month-old babies are like little statisticians, computing the frequency of the syllables they hear in speech!* (Saffran, Aslin, & Newport, 1996); watching the wheels turn as students offer alternative explanations or additional tests of the hypothesis under discussion (e.g., *but if babies do babble on their hands, shouldn't blind babies fail to do so?* Pettito & Marentette, 1991); and having students blurt out their surprise (e.g., *but babies can't do that!*) all go a long way toward making us want to communicate the science we treasure. If we feel the excitement, we can find a way to explain it so others will too – without their having a Ph.D.. Just as in teaching, using examples and analogies the reader can relate to are crucial for getting the point across. And just as it takes time when we begin to teach to appreciate the level of our students, it also takes time to find the right level to write popular press materials.

Anyone interested in doing this who is already an academic, will have a leg up, having had to translate complicated concepts into lay language. Importantly, however, popular press writing might be best reserved for after an individual has achieved tenure. This is for several reasons. One is that it takes time to learn the best way to present material in teaching, let alone writing that speaks to broader audiences. Another reason is that it is necessary to establish one's expertise in the field before touting one's credentials

as an expert. Finally, budding researchers need to be careful to establish their bona fide to their colleagues by conducting excellent independent research before they go in the popular press direction.

Learning to write for more general audiences offered us a second lesson. It added a crispness and timeliness that improves our scientific writing. Learning how to communicate and to communicate well should not be considered “on the side” of what scientists do. Once you have entered the popular arena, you are no longer happy with sentences that contain strings of gobbledygook. Not that we do not continue to produce such sentences; just that our commitment to clarity and communication has hopefully decreased their frequency. Third, it is important to be able to write and speak so your grandmother can understand what you are saying and why. Your grandmother represents the taxpayers who support our research and who should also reap the benefits of what we do. It is all about taking the perspective of the reader. If we think a finding is important, we should be able to explain it in a way that communicates this and why; what practical relevance might these findings have? Being forced to explain ourselves (in writing or teaching) often requires that we take the work to the next level, considering the implications that might have passed us by as worried over the details of a study’s design. Looking beyond the design for the big picture can be extremely heuristic for our research programs.

How babies talk was an overview of scientific research in the field of language development and was dotted throughout with examples. Each chapter contained boxes called “Try This!” where readers were urged to perform their own mini experiments in their living rooms in search of the phenomenon we had just described. In a section that

ended each chapter called *scientific sleuthing pays off*, we helped readers to “mine the scientific knowledge base to make informed decisions about everyday issues” (p.9). Because we both taught language development at our universities (indeed, that is an understatement: we ate and breathed language development), once we found our voice, we actually enjoyed writing this book and sharing our enthusiasm for our field. Another thing that popular press writing allowed us was to be who we are. No journal article or book chapter allows humor to creep into its somber pages. In a popular press book, we could have a field day *kibbitizing* with the reader to help bring home our points. If we made each other laugh, we knew that at least some readers would be amused.

In our second and more widely read manuscript, *Einstein never used flashcards: How children really learn and why they need to play more and memorize less* (Hirsh-Pasek & Golinkoff, 2003), we pushed the agenda even further. Here we not only reviewed research across the field of child development, but we chose to organize that literature in a way that supported the issue that PLAY = LEARNING. Two factors coalesced to bring forth this book. The first factor was the inspiration we received from presentations at the meetings of the International Society for Infant Studies. In back to back talks, both Professor Andrew Meltzoff of the University of Washington and Professor Rachel Clifton, then President of the organization, asked a pointed question, “Why is developmental psychology so misunderstood?” Our society was being barraged with claims that *seemed* to reflect developmental science. For example, the word was out that brain development stopped after the first 3 years of life (but see Bruer, 1999), that babies could add, subtract, multiply, and divide (but see Wynn, 1998), and that unless parents purchased “educational” toys to introduce their babies to foreign languages, they

would never speak like a native (but see Kuhl, Tsao, & Liu, 2003). All these claims in the context of a changing, global economy had the effect of making parents anxious and concerned, an effect that we were observing first-hand in the parents who visited our labs. We wished to reassure parents that the childhoods they experienced were good enough for their own children and that they did not need to invest in “educational” toys, adult-structured classes, or packets of flash cards to have intelligent and well-adjusted children.

The second factor that prompted the book was an offshoot of the first. Due to these “empirical” claims, policy makers were reinventing preschools and schools so that there was more work and little play. Yet 30 years of developmental science suggest that play is the work of childhood, the context in which children learn about the world around them (Hirsh-Pasek, Golinkoff, Singer, & Berk, 2006). We wrote *Einstein*, as we affectionately called it, to share the real research in the field with parents so that they could have something more than the hype in the media and on the toy boxes. We envisioned *Einstein* as an approachable, accessible, and straightforward review of the developmental research that parents and policy makers might learn from. As such we saw it as an antidote to the current trends to treat childhood like a disease, to be gotten over as quickly as possible. Childhood is not a rehearsal; time in childhood is precious for building memories and learning about the physical and the social world.

Offering an overview of everything from brain research to numeracy and literacy development to social development, we drove home the conclusion that children learn from play. In a world flooded with unfounded developmental claims (Abram & Dowling, 1979) that seem to support the use of didactic learning for young children, this was news. *Einstein* became the voice of *balance* and teachers and administrators tell us

that they now have something to show parents who are demanding work sheets in the preschool. Written in a way that reviewed the science, it contains sections called “Discovering Hidden Skills” that continued the tradition we began in *How babies talk* by showing the reader how they could see their child’s capabilities right at home. In “Teachable Moments,” we showed readers how to capitalize on everyday situations to guide learning naturally and without “educational” expenditures. Finally, sections called “Bringing the Lessons Home” that ended each chapter, we offered concrete suggestions based in the research about what readers could do to promote their children’s intellectual, social, and emotional development. *Einstein* reinforced David Elkind’s (1981) message that children are not just little adults. It did more, however than cry wolf. It offered evidence-based descriptions of how children really learn and what works best for helping children become happy, well adjusted, and capable individuals.

Einstein talked the talk, but also took us into two other related arenas: that of public speaking and op-ed writing. Each of these is critical to supporting the message that we were trying to give with our writing. Each of these is critical to taking science out of the laboratory and placing it into the public’s hands.

The Public Speaking Venue

We are not alone. When you do research in child development, you are vaguely aware that what you may have impact on parents, teachers, and policy makers. But the world is larger than that. Even before *Einstein* hit Amazon.com and the shelves of Borders, the ripples began. Early on, we heard from Ellen Galinsky, founder and president of the *Family and Work Institute* as well as author and advocate for children and families. She was convening a conference in Washington that would be jointly

sponsored by the American Library Association, the Association of Children's Museums, Media for children (PBS), her group, and the Civil Society among others. All of these groups were invested in young children. All were deeply troubled by the misuse of science resulting in misleading and confusing information for parents, preschool education, and policy makers. The conference was designed to spark a new conversation supported by real data on children – to change the current agenda now and into the future so that childhood could again be viewed as a journey and not a race.

There were fellow travelers at that conference, including Professor T. Berry Brazelton, a pediatrician, author and long time, trusted public advocate for children, and Professor Alison Gopnik (1999) from the University of California at Berkeley who authored the well received trade book, *The scientist in the crib* (1999). The visionary committee wanted us to set forth the data in a way that compellingly and forcefully made the case for balance in early education – that separated the real data from the fiction. Of course we faced a challenge. How to give a talk that was both substantive and entertaining; a talk that was memorable and that did not drown the diverse audience in facts; a talk that would be seen as relevant for media, schools, and museums?

As in the parallel task of creating print for non-academic audiences, there was much to learn. The key, and one that is taught in media training classes, is to center your talk on three points and to reinforce them repeatedly but in varying ways. Good politicians do this all of the time. In fact, politicians often twist the question asked to make certain that the three points they are interested in making get heard. For us, the three points were as laid out in *Einstein*: 1) *How* you learn is as important as *what* you learn; 2) EQ (Emotional intelligence) is as important as IQ; and 3) it takes a village (or

the importance of learning in context and with community). PLAY = LEARNING was the mantra that pervaded each of these messages. This headline had immediate appeal in libraries, museums, and schools and preschools where informal learning coupled with more didactic learning helps children reach their potential.

We also learned about the importance of iconography for that first talk. Showing a picture of the twenty-first century toddler at a computer says more about today's world than a picture of a child in a stroller. Showing parents on the phone and Blackberry while their children are being ignored says more about today's world than a picture of parents and children reading. And using people in our slides who our audiences know and can relate to – such as Mr. Rogers and Mr. Spock – captures their interest and allows us to say less with more pictures. We have been learned the simple fact that too many words on our slides puts audiences to sleep. Instead we have fewer words and pictures on each slide but use a larger number of slides than we would ever use for the same amount of time if we were giving an academic talk.

One public speaking event begat another and before we knew it, we were invited to share our message with states who wanted to increase children's achievement but not follow national trends slavishly. These venues sometimes resembled prayer meetings, as members of the audience who shared our views practically said "amen" as we presented our points. For many who invited us, the *Einstein* message gave people who worked with children a research-based justification for what they knew was best for children. For example, infusing the new preschool accountability movement with the importance of social development was a welcome message.

Children's museums around the country resonated completely with our message about the importance of play for learning. Libraries that wanted to reach parents with the message that reading was more than just recognizing letters and barking memorized words were thrilled to hear us argue that literacy opportunities are pervasive and when playful, can readily lead to learning. The interactive venue of speaking also offered us a platform for addressing more localized questions and concerns. For example, as we traveled the country speaking to schools and parents, people shared their concerns with us about the practice of eliminating recess. We were eager to share the work of colleagues in the field like Pellegrini and Bohn (2005), or the practices used in Finnish schools, to document the importance of recess and breaks for learning.

We also learned much from our audiences. One woman coined the term "plearning" to capture how play = learning. Another told us that she discovered her inner life when left alone by parents who did not endeavor to keep her every childhood moment occupied and managed. And we also learned about things happening around the country that startled us but were important to learn. Preschool teachers in some states for example, are given a script they must follow for how and what they are to teach their children each day. With the sword of No Child Left Behind over their collective backs, some schools require that reading be taught in tightly prescribed ways without regard to the fact that children may speak a dialect different than the texts they are reading.

Through both print and speaking, we were trying to offer our readers and listeners a new lens for development that was informed by research. If parents, teachers, and policy makers could begin to see the rich opportunities in everyday experiences, their definition of learning would more closely parallel that of the developmental scientist. In

the real world, few understand that a supermarket is a rich context for learning about literacy and numeracy. This message, however, would need to come from an army of researchers in the field and our field was just beginning to assemble the foot soldiers. Throughout our history, leaders like Berry Brazelton and David Elkind spoke to broader audiences. If we are to combat the current misinterpretations and misapplications of the field, however, there need to be more of us trained to speak with groups invested in children and more of us willing to work on applied issues that flow naturally from our work.

Speaking to lay audiences more than pays back the effort. For local venues, it reminds people of the importance of participating in research with their children and more broadly, how scientific inquiry informs us all. Getting these messages across is crucial to the survival of science in this country. For more national venues, it allows us to become familiar with the issues the particular group we are speaking with faces. We also interview the individual who tendered our invitation to discern the group's before we speak. When our talks are couched in terms of a group's current concerns, they can appreciate what we are saying and when appropriate, bring their problem solving skills to the fore as we speak.

The Newspaper Opinion Editorial () Venue

Finally, we can *talk the talk* by addressing specific issues in pieces. Researchers can do write pieces at any point during their career. Once we finish our Ph.D.'s we have the credentials and the knowledge base to call attention to issues relevant to children's lives. We can write a piece critical of some current practice, or a more positive note, we can inform readers about some aspect of human development they might not have

noticed. One of us for example, wrote a local editorial entitled, “They’re taking away the blocks!” to remind policy makers and the public that the advent of all day kindergarten should not mean children in rows at desks doing work sheets. An overheard conversation at a party was the source of the title. A follow-up conversation highlighted the urgent need to make sure this perspective was heard. It has been interesting how often that editorial is cited as evidence for a position. Op-eds can be powerful.

We have also made our voices heard in op-ed pieces about children’s toys. Every year the toy industry announces the new “educational” toys for young children. The educational toy market has grown exponentially in the last 5 years with profits that measure in the billions of dollars. Around the holiday season, parents are barraged with advertisements that make unsupported developmental claims. Among our favorites are those that promise brain growth – separate tapes that feed the right and left brains -- and those that sport increases in “newborn IQ” -- whatever that is. In 2005, a Kaiser Foundation report exposed the bogus scientific claims printed on the packages. Even before their report was complete, however, it was clear that something needed to be done. Those trained in developmental and child psychology could offer informed opinion about the toys, refute some of the claims made, and herald the advantages of more common toys like rubber balls, play dough, and construction toys. And the press was ready to listen to our views. For two years running, *USA Today* published separate op-ed pieces that spoke to the issue under the titles: *Bah, Humbug: Whatever Happened to Children’s Toys?* and *Retro Toys: Back to the Future*. The rules we follow for producing an op-ed piece are the same rules we use for writing a talk addressed to laymen: Invite the reader

in by identifying the problem, make at most three clear points, use examples, discuss what we have learned from research, and avoid jargon.

Lessons From Talking the Talk

It is critical to *talk with* rather than to *talk at* our audience. As professors and researchers we tend to lecture and indeed to pontificate, thinking that learning is unidirectional. It is not. There are many lessons to be learned in the field and later translated into research. President Bush authorized No Child Left Behind in 2001. That same year, Head Start Reauthorization required the testing of young children several times per year in the areas of language, numeracy, and literacy. There was a national outcry from teachers and from psychologists on at least three counts. First, professionals of various stripes were worried that teachers would teach to the test, narrowing the curriculum to just those skills to be tested. As the *New York Times* reported, schools are indeed cutting back on class time for subjects other than reading and math since only these areas must meet state testing requirements (Dillon, 2006). Second, the emphasis on academic learning was to be examined in the new regime to the exclusion of the mastery of social skills. In the wake of the ensuing chaos, it became clear that our field had not yet created really good, comprehensive assessments to examine early social skills and that even our tests in language and literacy were somewhat lacking (Hirsh-Pasek, Kochanoff, Newcombe, & deVilliers, 2005). Nonetheless, the research clearly shows that social skills are critical for children's success in school (Raver, 2003; Konold & Pianta, 2005).

Concern from outside of academe sparked conversation, debate, and then the generation of a request for proposals from NIH to fund further research on assessment.

Speaking *with* others – especially those outside of our field – often exposes areas where future research is desperately needed. This research not only feeds the theoretical and experimental agenda, but also practical concerns.

On a more general note, it is often the case that audiences ask us a question that we then turn back to the crowd. For example, one of us spoke at the Atlanta Speech School recently. A question from the audience focused on why parents feel it is necessary to drive their children to attain a high degree of academic achievement. Asking the audience to respond to this question led to a rich and vibrant discussion about the factors that influence the current zeitgeist. While we may have steered the discussion and underlined key points with support from the research (it's just another form of teaching after all!), the audience gained a great deal by having members of their community own the issues and speak to the solutions themselves.

One size does not fit all. As is probably obvious, op-eds and books are written for different audiences and the language used and examples presented have to be relevant for those audiences. When we give talks about play and learning, the talk for educators includes much more data than does the talk for parents. The message must be tailored to the reader or the listener. For example, when we give talks to parents, we begin by asking them to take the STRS test (a test we made up to be able to use the acronym), allowing them to reveal by a show of hands, how many feel that they are not doing enough for their children. Other, related questions on the STRS test (also answered by a show of hands) help parents realize immediately that they are not alone; others face the same issues. It also tells parents that this talk will be for them, as it addresses their concerns and their lives.

When we speak to professional preschool or teacher groups, for example, we have used a picture of a seesaw to accompany our assertion that we must find more balance in education between memorization and real learning. We also try to have our graphics complement the message we are giving. Graphics – even cartoons and jokes – often give the message better than our words. For some of our cartoons, we say nothing as the audience laughs, generating the point all by themselves.

There is something to be said for informed opinion. We are used to waiting a long time for research to deliver some answers to our questions. And even then, our research opens new questions and new vistas without being definitive. After all, there is still a .05 possibility that our result happened by chance. While *we* are content to wait, museum directors building an exhibit, preschool coordinators working on curricula, and parents who want to do best for their children need direction now. In a classic article, Shonkoff (2000) writes of *Science, policy and practice: Three cultures in search of a shared mission*. He noted, “When all of the answers are not in, the scientist’s job is to design the next study. The service provider, in contrast, does not have the option of waiting for more data” (p.182). Thus, when we talk the talk, we must recognize the different needs of different consumers.

We must come to understand that opinion informed by research is better than editorial opinion alone and that this at least brings science into the public arena. Scientists who work with research on a daily basis -- unlike journalists -- understand the import of findings and their likely limitations. Therefore it is crucial for scientists to interpret the research for media outlets and for the public directly. This does not mean that we offer unqualified information, although popular venues generally only want the *news* and not

the caveats. For example, when a study came out on how watching television was associated with ADHD several years later (Christakis, Zimmerman, Di Giuseppe, & McCarty, 2004), we included this study in our talks. However, we also used this opportunity to explain how correlations are not necessarily causal and suggested some other hidden factors that might be responsible for the association.

The science that we share typically comes from the best, most rigorous journals and has stood up to the test that we cannot point to obvious artifacts that caused the effects. Of course, some of the science we offer may turn out to be incorrect with further research. For this reason, for us to talk about a finding publicly or in print, the particular finding needs to fit with a history of related findings and to make sense given what is already known. But sometimes there is a fine line between discussing the science as if it is the *truth*, and helping the media or our audiences recognize that sometimes truth is what we believe. Examples of course include the *facts* that the world is flat and that ulcers are caused by stress. That facts sometimes get overturned does not mean that we can wait until it is all sorted out to speak to the press or give a talk about what we have learned. To do so would be to deny the public much useful information that will not be overturned.

Talking the talk is a critical component that will bring scientists in closer contact with practitioners – be they policy makers, journalists, or parents. But talking the talk is only part of our mission. If we are to be truly relevant, we must also walk the walk out of the halls of ivy and into the toy companies, schools, childcare centers, and parenting centers, among others. Those in child development, for example, have laboratories that invite parents to visit as they participate in research. But, how much do we, as

researchers, really know about the world of parents and families today? What toys are available in the toy stores? What are the television shows that capture parents' eyes and what are they being told about child development? Without doing some homespun anthropological observations of our own and about families of today, our talk – even if accessible – may be off the mark.

Walking the Walk

Adventures in the toy store. It was mid December 2002, when we got the call from ABC News. Peter Jennings' assistant wanted to know if a simple trip through a toy store would reveal the remarkable and extreme claims made by educational toy vendors. We were certain that the shelves would abound with inappropriate material and outrageous developmental claims. Though we did not want to single out any particular company to critique, the zeitgeist was apparent in the industry at large. Touting brain development and early skill learning fed the anxiety of new parents. No parent wants children who will fall behind their peers. If toys can help children acquire the ABCs and 1,2,3s – then why not use them?

One of us went to the toy store and ABC News followed with a camera in hand. We did not have to travel far down the aisle before noting how many of the toys boasted brain development and learning. One toy company offered parents a report card for brain growth. Another suggested that the electronic gadgetry would teach toddlers social skills. Yet a third toy suggested that babies as young as 6 months of age could learn 6 languages! These so-called educational toys were offering “brains in a box” (Hirsh-Pasek & Golinkoff, 2006). The television piece that resulted added a dose of reality to the fantasmical claims.

Though we were busy being outraged, we were soon to learn how much we did not know. One of us was invited to leave the lab and journey to Aurora, New York outside of Buffalo to join the Play and Learn Council for Fisher-Price. The executives at Fisher-Price explained that after 75 years in the toy business, they felt the twin pressures to both do what was right for children and to ensure that their toys were well represented at the nation's two leading stores: Target and Walmart. Buyers from the large chain stores wanted to meet parental demands for educational toys that would prepare preschool children for kindergarten. Thus, toys for preschoolers that were not "educational" were unlikely to be featured. Could we help them work within the constraints and to take small steps to turn the market around? Impressively, Fisher-Price even funded a survey of over 1000 parents and 100 psychologists to learn more about the role of play in learning. Survey results suggested that while parents thought young children should play, they were worried that play would not be as good as more didactic learning for their children. Furthermore, the lower the social class of the parental respondents, the more they believed "educational" toys were important for their children. Developmental psychologists overwhelmingly noted the value of playful learning.

Scientists soon became an integral part of the toy development strategies as the designers considered and tweaked new products for the coming years. In fact, the award winning *Play and Learn* toys were developed after watching real children play with everyday objects like lights switches and mailboxes. Fisher-Price also sponsored a major conference that we ran with Dorothy Singer at Yale University in the spring of 2005. Entitled "PLAY = LEARNING," the conference hosted over 150 guests and had a waiting list of over 500. We were shocked to learn the extent to which teachers of young

children needed the support of experts for arguing that play is good for children. This was the message of the conference. The scholars present, including those in media for children, the toy industry, and writers, heard researchers put forth the scientific evidence that was collected for an edited book: *PLAY = LEARNING: How play motivates and enhances children's cognitive and social-emotional growth* (Singer, Golinkoff, & Hirsh-Pasek, 2007).

The synergy that took place when we agreed to walk the walk into the toy industry had far reaching consequences that brought toy makers and scientists into the same conversation. It also gave us a better understanding of the constraints facing the industry and the reaction of parents who will hear our message. By learning about the toy industry, we not only forged a partnership but have a better understanding of how to tailor messages so that they can be heard. If the science of development is to be relevant to children, the toy industry is an important ally because more people buy toys than read books or op-ed columns.

Preschool tutoring

The Today Show was among many who were clamoring for developmental scientists who would address the new demand for preschool tutoring. Just a month earlier, in July of 2005, NPR ran a story reporting on the tutoring fad among upper and middle class preschoolers. Now a multi-million dollar business and growing, Junior Kumon a branch of Kaplan tutoring reports that tutoring for the younger set now accounts for over 20% of their business. Driven by many of the same forces that put educational toys on the market, preschoolers can now sign up for lessons in reading and

math at the local tutoring center. Though most conduct the sessions in a playful way, children are passively learning the subject matter and practicing at home.

Is this trend good for young children? An inquisitive public wants to know. As in the toy industry, there is little data to suggest that having the alphabet on your toddler rocking chair will hurt you. So too, there is no research to our knowledge that infant tutoring will hurt and it might help say its supporters. Developmental psychologists and other professionals who work with children by and large disagree. While the evidence is sparse, going out to see these programs leaves the researcher with the sense that preschool tutoring is another case of learning devoid of context, of passive learning. For those who embrace a Piagetian approach to development and who are sensitive to Zigler and Bishop-Josef's (2005) argument for the importance of the whole child, these tutoring programs are big business with promissory notes for increased intelligence. Even without direct research in the area, educated guesses might suggest to the press that these programs are less about learning and more about feeding public anxiety.

Getting parents involved: An open question for museums, media, libraries, and schools

Finally, there is the overarching question that has been raised by so many venues that it is a burning question of our time. As Bronfenbrenner once said (quoted in Wozniak, 1991), "Development, it turns out, occurs through this process of progressively more complex exchanges between a child and somebody else—especially somebody who's crazy about that child." With so many parents working and with a blurred line between work and home, the time parents and children spend engaged in these increasingly complex exchanges continues to shrink. Furthermore, no child—especially among the affluent (Luthar & Latendresse, 2005) -- is immune from isolation

from parents. Many institutions wonder how they can promote parents' and children's engagement in joint activity.

Museum staff note that parents sit with friends on the periphery of an exhibit while children play. Libraries ask how one can encourage more reading between parent and child. Indeed, a number of state initiatives and even United Way (Born Learning with CIVITAS) are addressing this question. Finally, high quality and trusted media outlets like PBS and Sesame Street Workshop want to know how to create responsible programming for infants and toddlers that promote better communication between parents and children. Despite a firm recommendation from the American Medical Association that children under 2 should not view television, 74% of parents allow children to watch the tube. In fact, 25% of young children up to age 2 years have a television in their bedroom and these children are watching an average of 2 hours a day of electronic media (Rideout, Vandewater, & Wartella, 2003). Can parents be a part of this process? A recent study for PBS conducted by Mathematica (Boller et al., 2004) found that Herculean efforts on the part of PBS in the form of educational material, co-viewing opportunities, and a 90-minute workshop on parent-child interaction around the television screen left barely a mark on parent involvement in children's television viewing and had no affect on child outcomes.

The question of how to get busy parents more involved with their children is an overwhelming one. Few families are eating together and yet research shows how crucial this is for children's development (Center on Substance Abuse & Addiction, 2002). Even Kentucky Fried Chicken has joined the movement noting that parents rarely have meals with their children. They use this fact as a basis for their recent

advertisement campaign that families should have fried chicken together. Perhaps we can walk the walk with museums, libraries, and media developers and jointly ask how to enrich parenting and child development by supporting more child- parent interaction. The research is clear that children do best when they have sensitive and responsive parenting (Shonkoff & Phillips, 2000). Perhaps the social organizations in our communities can partner with us to put science into practice. We can in turn study whether the implementations bear any fruit in parent education and action as well as in child outcome.

Taking the walk is a critical piece of turning talk into action. We must become aware of the many organizations that have wide reaching appeal and who are seriously committed to the issues we study. By meeting these groups half way, we not only increase the influence of our work, but also learn about new and sometimes obvious questions that can further our research agenda.

Translational science: Talking the talk, walking the walk, and coming back to the lab

There are many good studies in early literacy (e.g., Dickinson & Tabors, 2001; Storch & Whitehurst, 2002; NICHD ECCRN, 2005b; Senechal & LeFavre, 2002). It might even be fair to say that early reading is among the few areas in which research has penetrated policy and practice. Those creating state standards for preschools are keenly aware that the development of print skills, phonics and letter to sound correspondence are among the factors central to later reading success.

Yet, even with this remarkable synergy between research and practice, large holes exist. By way of example, electronic books now account for an apparently growing percent of the book market for young children. Unlike traditional paper books, these

books are nested into an electronic base and are accompanied by buttons, sounds, and gizmos. Given that these books read to the child, they signal a reading experience that appears to be more solitary. What happens when children pick up these books? Are parents likely to be involved in the reading experience? Do children engage in the kind of dialogical reading with adults that allow them to ask questions and to go beyond the words in the text? Surprisingly, we know little about the interactions that these books stimulate and even less about what children might learn from these experiences. Very few studies have examined these questions. For the few studies that are available, there are relatively mixed findings with respect to the value of electronic literature (Wartella, Caplovitz & Lee, 2004; Chera & Wood, 2003; Ricci & Beal, 2002; Medwell, 1998).

Given the paucity of evidence especially with young children and the high use of e-books in homes and preschools (Chen, Ferdig, & Wood, 2003), a research question was born. Partnering with Fisher-Price and the children's museums in Philadelphia and Chicago, we are now investigating two questions. First, do parents and children prefer real books or e-books? Second, is the nature of the parent-child interaction different with e-books and matched regular books? Here developments in the real world inspired research questions and hypotheses that can inform basic research as well as practice. Doing research that lies at the cusp of basic science and practice promotes a better understanding of basic processes while also offering clues to questions that are central to the well being of the participants in our study.

Conclusions

The times are changing. In 2002, the NSF announced that all grants would have to meet the criteria of applicability to be considered for funding. The notion of

translational science became part of the vernacular in recent years. Indeed, *Child Development* now requires an abstract for lay audiences that can be shared with the public. Job announcements also reflect the change. Finally, the Society for Research in Child Development is launching a new journal called *Child Development Perspectives* whose mission is to,

provide *accessible*, synthetic reports that summarize emerging trends or conclusions within various domains of developmental research....[for] research consumers (e.g., policy-makers, instructors, and professionals who work with children in clinical or intervention settings) who need access to succinct and accessible scientific summaries of developmental research” (SRCD website, 2006; our italics).

We italicize “accessible” to make highlight that the communication of science is seen as a primary mission of the main professional society of developmental psychologists.

Communication is so key that an entire journal is being launched to do what we have been arguing for in this chapter: to make useful to various constituencies who can profit from our findings. Once a new journal arrives with a mission that calls for the ability to describe science to professionals in related fields, perhaps we will even see some graduate programs starting to train their doctoral students to be able to write in this way. Surely the present collection is a step in that direction as well, as it provides readers with rationales and strategies for how and why to communicate their scientific findings to person on the street.

Having struggled to talk the talk and walk the walk in our own professional development, we think that science can and will be advanced as theory and practice begin to talk to each other. If our ultimate goal is to improve the lives of children, neither theory nor practice can stand alone. Instead, the field seems to be moving toward a marriage of theory and practice, a marriage based on equality and mutual respect that requires (as any good marriage) communication. The tools required for the communication of science take some practice to acquire but the rewards are great for all concerned. It is time to enter that union and to retool ourselves and our students to insure that we can talk the talk and walk the walk.

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