Simplifying Early Childhood Development:
Findings from Cognitive Analysis and Phone Interviews

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Executive Summary

Earlier research conducted by the FrameWorks Institute and Cultural Logic showed that the American public's understanding of early childhood development is constrained by a core group of widely shared and largely unconscious cognitive models. At the heart of these "folk models" is a general causal schema in which certain causal factors (such as Genes, Parental Influence, Individual Will, Fate, etc.) have a direct impact on the child, leading to successful or unsuccessful development.

In the research reported on here, cognitive analysis of this general schema reveals several basic features which stand in the way of child advocates' messaging:

- The causal arrow in the folk models tends to go in one direction only. That is to say, according to the general schema, factors such as genes or the environment impact the child – there is little sense of a dynamic back and forth process between the child and its environment. Even when the causal factor is in some sense "internal" to the child (as with Genes or Individual Will), the causal arrow is still unidirectional.

- The causal interaction in the folk models tend to be highly abstract and absolute rather than concrete and contingent. It is not easy to integrate notions such as Genes, Individual Will, or Fate for example, into policy.

- The locus of early childhood development is itself a "black box" (see Aubrun & Grady 2001). That is to say, it is difficult for people to think about exactly what is going on inside the child, and consequently to close the conceptual loop and imagine what the impacts of specific environmental factors might be.

In addition, empirical research (based on phone interviews with 40 subjects) adds several components to this picture:

- The existing variants of the general causal schema that guides people's thinking are resistant to new information. In part because the models are structured as causal explanations (albeit somewhat empty ones), they are intellectually satisfying and self-sufficient. Even when new information is compatible with the existing model, it tends to be quickly forgotten rather than integrated into people's thinking.

- The existing folk models are highly resistant to being displaced by new models. This is in part because the general causal schema ("Causal Factor [working invisibly] Affects Child Development") accommodates a number of variants which, while all consistent with the general schema, are contradictory to each other. As a result, replacing one model with its "opposite" (e.g., Environment for Genes) just reinforces the basic message of the general causal schema.

- The existing folk models are triggered and thus reinforced by many common metaphors for early childhood development. New information could in principle be conveyed by the metaphor that a child is a Sponge. Unfortunately, however, once the old metaphor has been grasped, the old schema will be triggered and the new information will be blocked out. Thus, it is difficult simply to "build on" old metaphors.

The task of communicating to the public about early childhood development is thus complicated by an unhelpful cognitive "landscape:" On the one hand, people know too much about ECD already (and further, are highly invested in their folk theories), and thus are often skeptical about new information and new theories about ECD – people don't mind being taught the basics about global warming, but resist being told the basics about ECD. On the other hand, people know too little, and thus cannot simply be reminded of what they already knew (something which was hidden by media representations, for example). In the case of gun control, it is enough to remind people that guns are an issue of public health more than personal liberty. In the case of ECD, however, the appropriate causal model simply isn't there.

That is to say, advocates are in the uncomfortable position of having to cope with existing and deeply entrenched cultural models that resist both new information and alternative models of ECD.

The cognitive analysis and empirical research reported on here suggests a way out of this dilemma. Two conceptual directions – pointing out the dynamic and interactive nature of the relationship between the child and its environment, and drawing attention to the brain as a locus of much of ECD – each show promise for moving the public beyond existing and limiting folk models of ECD. These complementary approaches are effective in part because they are able to provide correctives to the public's exisisting "black box" model of ECD.

- The "interactive-dynamic" conceptual direction changes a one-directional causal arrow to a two-directional arrow between the "black box" and causal factors.

- The "brain" conceptual direction provides a concrete embodiment of the "black box," which makes it possible to see how ECD might actually be impacted by various factors.

These directions make it easier for ordinary people to more clearly visualize and accept ECD, by linking ECD to American ideas of both Mind and Body. A key characteristic of Mind is the ability to dynamically react and adjust, e.g, in feedback processes such as the favorite infant game of Peek-a-boo. At the same time, interaction of this sort is highly compatible with scientific models of brain development. Similarly, drawing attention to the brain as the chief locus of ECD, allows people to marshal their basic idea that development occurs in physical bodies (and to displace their false intuition that Minds are somehow apart from bodies). Drawing attention to the brain has the potential to bring new life to the old idea of describing the Mind in physical terms, as a "slate" or "sponge," with the added advantage that it is much closer to being scientifically true.

This said, it is important to recognize the limitations of this preliminary research into the effectiveness of two general messages about ECD. A critical next step in this research program would be to explore more specifically how to talk about these concepts. What are the best ways of conveying the key facts about how brains develop? What is the most effective language for talking about the role of interactive engagement with the environment?

Background

From a lack of quality childcare (i.e. early childhood education), to chronic exposure to toxic materials in the home, to conditions of poverty which make it impossible for parents to provide a stable and nurturing environment, many thousands of American children are confronted with conditions that make it less likely they will thrive. Many of these threats to our children's healthy development could be reduced through public policies, if only the policies were widely understood and supported. Previous research conducted by FrameWorks and Cultural Logic (see discussion below) has shown that the fundamental problem is not that Americans place a low priority on taking good care of children. Instead, the reason that damaging situations are allowed to persist is that too few of us think about children and early childhood development in ways that allow us to understand and engage with the critical questions. Research reveals that most of the American public lacks important kinds of information they would need in order to appreciate the importance of policies supported by child advocates. Even more critically, their thinking is often (mis)guided by a set of entrenched assumptions and default patterns of reasoning which actually obscure and take the focus off of some real and important issues.

This paper reports on a preliminary effort to navigate the complex terrain of Americans' thinking about children and child development – that is, to find ways of communicating that can bring lay members of the public closer in line with the perspectives of experts about what children need for their healthy development. The research presented here, supported by the A.L. Mailman Family Foundation, is part of a larger effort which has been sponsored by a number of different organizations interested in children's issues. We begin with a brief review of relevant findings from previous research projects.

Overview of previous research

The work reported on here is not about public attitudes towards specific policies, but about the more general patterns of thought which underlie those attitudes. Two previous projects in particular have explored relevant questions about the default patterns of reasoning which Americans bring to the area of children's issues. The first of these (see "Promoting School Readiness and Early Child Development: Findings from Cognitive Elicitations," Cultural Logic, 2002) explored the thinking of the general American public – based on forty interviews with a demographically diverse set of individuals in four different regions. The second (see "Business Leaders and Early Childhood Development: Findings from Interviews", Cultural Logic, 2001) involved conversations with a more focused population – ten businesspeople (of different ages, genders, ethnicities, and so forth.).

Some dominant causal stories

The most striking findings from this research concerned patterns of reasoning which it is easy for people to default to even when on some level they "know better." For example:
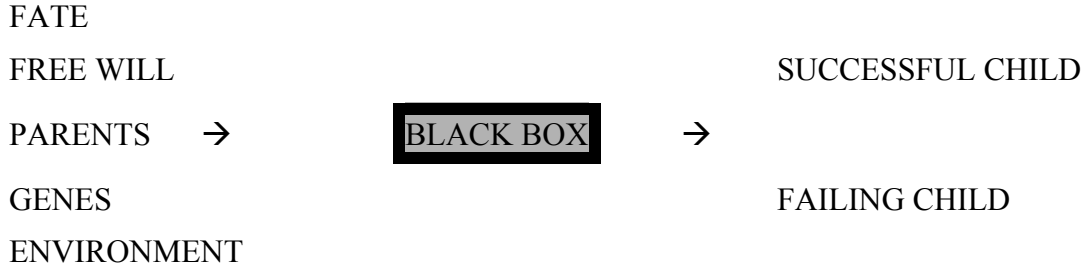
- "Horatio Alger": The idea that children can overcome any obstacles and thrive despite all adversities – and perhaps even *because* of them – is strong and prevalent in American thinking. While this optimistic perspective certainly contains a kernel of truth, it also obscures the many ways in which a child's circumstances can *significantly lower the odds* of healthy and successful development.

- "Hand of Fate": It is just as easy for Americans to default to the (seemingly contradictory) view that developmental outcomes, and ultimate success in life, are a matter of chance. Some kids get lots of breaks and others don't. Again, this view reflects some undeniable truths, but it overshadows many others – particularly, the ways in which interventions can be very effective in improving outcomes.

- "The Apple Doesn't Fall Far From the Tree": For various reasons, genetic and otherwise, a child is likely to share many characteristics of his or her parents. It is easy for lay people to exaggerate this idea so that it obscures all other factors and implies that a child is more or less predestined to a particular level of success or failure (in whatever sphere).

Even highly educated Americans can easily default to one or more of these views – often in ways which flatly contradict each other – as they think about children and their development.

These often unconscious folk models are powerful factors in the public's thinking and acting on early childhood development, because they provide convincing *causal stories* for ECD. In these stories, *Causal Factors* have determining effects on the *Developing Child*, leading to positive or negative *Outcomes*. From the point of view of advocates (and developmental scientists) there are two major problems with these stories.

- First, for most Americans, the Causal Factors are at best reductionistic, and at worst simply false or nonsensical. They include, for example,The Hand of Fate, Genes, Individual Free Will, and Parental Involvement. None of these causes are scientifically accurate or sufficiently complete.

- Second, the complex causal processes leading to children's development – which require various catalysts and are influenced by many interacting factors – take place largely within a "black box." It is very hard for most people to picture how these Causal Factors actually impact the Developing Child.

That is to say, lay Americans tend to have only a vague sense of the causal mechanisms involved in early childhood development. Just as they don't think about how digestion works, let alone cellular metabolism, they have no particular images in mind of the mechanisms by which children's various capacities develop. Instead they draw upon a truncated model:

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FATE

FREE WILL                                    SUCCESSFUL CHILD

PARENTS    →          BLACK BOX         →

GENES                                        FAILING CHILD

ENVIRONMENT
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As is apparent from this diagram, the causal factors – and how they actually work – that concern child development advocates are largely absent from the dominant Causal Stories. Unfortunately, the dominant Causal Stories are cognitively satisfying to most people most of the time. This is in part because they take the *form* of a causal explanation which provide a way of interpreting what is going on in the world. Further, they are constantly *reinforced* by real examples, and media representations ("Abandoned Child Overcomes Odds to Achieve Success"). Finally, because the stories are available in a number of (often contradictory) variants, they are all but *impossible to disprove*.

In order to help the American public move a step forward in its understanding and engagement on children's issues, this project set out to explore ways of communicating about the topic of ECD that would have the capacity to take the public beyond these default patterns of thinking, taking an approach based on the idea of "simplifying models."

The simplifying models approach

One effective approach to communicating about public policy issues is to frame an issue in terms of familiar understandings and values, pointing out how those known ideas apply to the new issue and lead to particular inferences and conclusions. Handgun control, for example, can be framed in terms of personal liberty, in which case controls become an abridgement of rights, or alternatively as a question of public health, in which case controls become an essential tool for protecting the health and safety of innocent Americans.

An essentially different (but complementary) approach is to provide people with a *new* model rather than reminding them of a familiar one. In order to be helpful (i.e. both informative and "catchy"), such a model must be fairly simple and concrete – such as a vivid metaphor – while also capturing the essence of an expert perspective. For example, research conducted by Cultural Logic and FrameWorks has shown that most Americans lack any real understanding of how global warming occurs, and that describing the problem in terms of a simplifying model – for example, as *a carbon dioxide barrier that traps heat* – makes it significantly easier for people to understand and engage with the issue. This is a matter of providing a mental model where none existed before.

Since people lack an understanding of the causal factors involved in early childhood development (ECD), this topic seems to be a prime candidate for the simplifying models approach. The idea is that by providing people with a simple and vivid story about how ECD works, we can give them a new and useful tool for thinking about all the various issues on which advocates hope for their support.

(For a fuller discussion of the principles and rationales of the simplifying models approach see FrameWorks' KidsCount Ezine number 19: "Opening Up the Black Box: A Case Study in Simplifying Models" – by Axel Aubrun and Joe Grady with Susan Bales, FrameWorks, 2002,
<http://www.frameworksinstitute.org/products/issue19framing.shtml>)

Identifying the right simplifying model

Generating possible simplifying models is relatively easy. Various analogies and metaphors for early childhood development are already in common usage – e.g., "kids are *sponges*", "raising a child is like *molding clay*", "developmental *milestones*". Selecting the simplifying models that are most effective – i.e. which do the best job of informing people, are most likely to be accepted and remembered, and are most likely to spread, presents a significant challenge. This process requires both analysis of the patterns of thought people bring to the topic, and empirical (qualitative and/or quantitative) evidence that a model has particular effects on people who are exposed to it.

Furthermore, in the case of childhood development, people bring some long-held understandings and associations to the topic that a simplifying model will have to be compatible with if it is to be accepted – for instance, children are a focus of love and nurturance, and certain kinds of analogies, to car repair for example, are a poor fit and will be rejected out of hand, however instructive they might seem.

Identifying promising simplifying models requires a number of components:

1) Analysis: The Simplified Causal Story

The first stage in the process of identifying promising simplifying models was to construct a simplified causal story of ECD. Constructing this account involved breaking down the massive knowledge of experts into the kinds of ideas and connections that are compatible with everyday thinking. It also involved selecting the key facts and concepts from which others follow. The following are the key propositions which make up this simplified causal story:

- *Everything counts*: Nearly everything about a young child's life has an effect on the kind of person he or she grows up to be – from chemicals in the home, to interactions with caregivers outside the home, to economic conditions in the community which affect the emotional tone of the child's family.

- *Action and interaction*: ECD depends on interaction and feedback – a child's active engagement with surroundings and caregivers, along with appropriate "responses" from the environment. (Russian psychologist Lev Vygotsky was one well-known exponent of this message.)

- *Multi-track development*: ECD takes place simultaneously in several different key areas. Physical, intellectual, social, emotional and self-regulatory development are all critical and all interconnected.

- *The brain and the person*: Most of the qualities and capacities that make us who we are are based on early developments in our brains – including emotional and social qualities as well as cognitive/intellectual ones.

- *Experience shapes the brain*: Experiences of all kind have physical effects on how the brain develops. More specifically:

  Use it or lose it: Using a particular capacity – whether social, intellectual, physical or emotional – creates long-term development in the part of the brain that handles that capacity. If the ability isn't used much early on, the child's brain might never be strong in that area. And,

  Emotions and development: All areas of brain development depend on chemicals that the brain releases when the child feels secure and loved – excessive stress, fear etc. create a chemical state that hinders development overall.

  Food, chemicals and the brain: Proper nutrition is vital for healthy development of the brain. And exposure to toxic materials such as lead can have long-term or permanent damaging effects on the developing brain, and therefore the person.

Several important ideas are not represented here because they do not contribute to a causal story that foregrounds experts' chief concerns and policy priorities – e.g. the fact that significant brain development continues at least into adolescence. While this idea is both true and significant, emphasizing it works against the goal of teaching people about the important long-term effects of events in the life of a very young child.

2) Consideration of additional desiderata

Beyond conveying one or more of the key propositions listed above, an ideal simplifying model would meet other criteria as well. No single way of talking about ECD can accomplish all the following, but the list includes a number of useful guidelines. An ideal simplifying model for ECD would:

- Suggest, at least indirectly, that people besides parents have an impact on children's outcomes.

- Convey a positive vision of ECD, rather than just pointing to possible problems.

- Be compatible with people's nurturant feelings towards children. (Consider the "car" metaphor mentioned earlier. This is also a potential problem for the common "computer" metaphors.)

- Be usable by practitioners such as advocates and legislators – e.g., it should be compatible with a focus on policy.

- Convey urgency, and prevent people from postponing or sequencing ECD behind other seemingly more pressing problems or waiting for economic conditions to improve.

3) Generating possibilities

Another important step was to generate many different ways of expressing these ideas about ECD – language, metaphors etc. that might have the capacity to convey information effectively and motivate people to act. This process involved a review of many materials produced by experts and advocates, including, for example, books as different as *Neurons to Neighborhoods* (Shonkoff & Phillips, Eds.) and *Building Healthy Minds* (S. Greenspan), and many reports, pamphlets, web pages and other materials produced by children's issue organizations. Possibilities were also discussed with other members of the FrameWorks team, who have worked for many collective years on communicating children's issues.

4) Testing selected messages

Based on the Simplified Causal Story of ECD, four chief candidate messages were tested, because each makes a key point which lay people often ignore and which advocates feel provide critical motivation for the policies they support: Everything Counts, Multitrack Development, Action and Interaction, and The Brain. The Brain message can be broken down into a number of distinct propositions, as outlined above, but was considered a single direction for purposes of preliminary testing. For exploratory purposes, two versions were tested – one more concrete, using simplifying models ("wiring the brain," the brain as a toolkit, stimulation as food), and one using no simplifying models.

A final direction, Ready to Learn, was chosen because it is a concept that many advocates are currently using in the hope that it provides an effective motivating and organizing principle for their communications efforts.

5) Crafting particular language

From the early phases of work a long list of candidate simplifying models for talking about ECD was also generated – e.g., "the brain as an orchestra", "raising a child as cultivating a garden", "exercising the mind", "wiring the brain" and so forth. For each of the general directions above several simplifying models were selected for preliminary testing – for example, the Orchestra metaphor is potentially an effective way of talking about Multi-track development.

Method

The research phase of the project involved telephone interviews with forty Americans with no special expertise in early childhood development. The group was diverse in terms of age, gender, educational level, political orientation; subjects were drawn from several regions of the country, primarily Washington, New York, California, and Colorado.

The three interviewers (each with a Ph.D. in anthropology or linguistics) first asked subjects about their understanding of how ECD works and what factors are most important, then presented each with a "prime" – a brief statement explaining one of the key propositions discussed above, using a variety of simplifying models/metaphors to help explain the concepts. Subjects were then asked a series of open-ended questions designed to explore both the conceptual grasp of factors that affect ECD and their views of policies supported by experts. At the end of the interview, subjects were asked to repeat what they could of the prime.

The goal of the interviews was neither to conduct a "mini-poll" on particular policies, nor to test subjects' current knowledge, nor to test which frames and language people "prefer," but to observe the effects of exposure to the primes on subjects' thinking – e.g. by observing any new associations they drew, or the kinds of patterns of thought that subjects exhibited as they answered the open-ended questions, explaining and thinking aloud about their views.

The forty interviews were divided as follows:

Everything Counts	7
Multitrack Development	7
Action and Interaction	7
The Brain 1 (with SMs)	7
The Brain 2 (no SMs)	6
Ready to Learn	6

Results – How the six strategies fared

In this section we briefly discuss the results of interviews using each of the primes. (For the full text of the primes, see Appendix A.) In the next section we offer a more extended discussion of these results – some of which were quite surprising – and their important implications.

Criteria

There were a number of criteria in particular where the six directions distinguished themselves from one another:

- "New information": Did subjects indicate that the prime was in some way surprising in the information or impressions it conveyed about ECD?

- "New reasoning": Did subjects spontaneously do some new reasoning, e.g. drawing their own inferences, based on the information presented in the prime?

- "Counterproductive associations": Did the prime trigger some unfortunate associations, including objections?

- Applying the knowledge: More generally, we were interested in whether people seemed to use the concepts they had just been presented with in order to answer a question about why children from poor neighborhoods have lower skills as they first enter school.

- Memorability: Did subjects remember much about the prime by the end of the interview?

Findings

Everything Counts

People remember this prime very well, including the metaphors used to express the concept. On the other hand, none of the subjects responded as though they had been presented with new information, and the prime had only a moderate and vague effect on their answers to the follow-up question about why poor children have low skills. Here is an example of someone seemed to use the prime a bit in thinking about the question:

Umm..is that true? Maybe the stimulating nature of the home environment wasn't so good. [However, the subject then goes on to speculate that the parents were not good in school, that genetics are involved, etc.]

Furthermore, many people had a particular objection to this prime – which heavily emphasizes the developmental effects of a child's environment. They were eager to point out that children also have innate qualities. In other words, the prime easily triggers people's understanding of "Nature" (as opposed to "Nurture").

The metaphors were well remembered and understood overall – particularly garden plant and river.

Multitrack Development

Like Everything Counts, this information was generally well received by subjects but did not strike them as new. It had even less effect, if any, on their subsequent reasoning. It is remembered fairly well by the end of the interview.

Of the simplifying metaphors used to talk about Multitrack Development, the idea of a child's mind as something like a band or orchestra was the most accepted and best remembered.

Action and Interaction

This prime was the most likely of all to give people a sense that they were learning (or remembering) something new about ECD. Here are two examples of (excerpted) responses to the prime:

> *What I didn't mention when you asked me ... is [that] one-on-one, constant interaction and positive reinforcement I think are very important.*

> *The stimuli is important, and something they can interact with – I guess I didn't say that but that would again seem logical, that if they're put in situations where they're active participants they're going to learn more than if they're just passively following, kind of being lectured to.* A moment later this subject goes on to do a bit of her own reasoning about the idea of action and interaction: *It occurred to me that if they were somehow frustrated by their interactions that would probably also have an effect but a not so positive one.*

Subjects were also likely to apply this message to their responses about the disadvantages poor children face – e.g.,

> *Do we know that for sure? They may have that different environment, with different people taking care of them all the time if both parents are working. They could get to the point of not having as many interactive things going on for them.*

> *Probably due to lack of involvement. If they're not being engaged by the people who're raising them, then they have less inclination to do so in a more structured environment.*

The general concept of interactivity and responsiveness are well remembered aspects of this prime. Several people also remember the vivid examples of peek-a-boo and hide-and-seek.

The Brain 1 (with simplifying models)

This prime was the most likely of all to get people to begin to do their own reasoning, to extend and think aloud about the ideas in the paragraph – e.g.,

> *I think all this stuff is necessary, and if there's any lack of it, lack of sleep or lack of comfortable sleep or lack of nurturing, lack of touch and feel, warm loving caring touch and feel not abusive touch and feel, I think if any one of these ingredients is missing, I think that causes stress, and it's obviously different types of stress than we would get from a boss or, you know, being late to work, but I think that type of stress, like you said, it wires the brain differently. I also think, if all those things are present, um, then it doesn't cause stress so therefore there's no conflict within the brain for the child*

A moment later the same subject also applies the ideas from the prime to the question about poor children.

The other thing that comes to mind is what we were talking about previously, the amount of stress that a baby goes through without the proper nurturing, sleep, rest, love, caring.

Here is another subject applying the prime to the same question:

Probably for the [reasons] we were talking about… I think that's part of it, [the parents] aren't able to spend quality time and give their children the kind of stimulation that they need to develop their brains.

Another subject begins to bring some of her previous knowledge to bear when she first hears the prime:

Like that concept of brain mapping, I can't remember where I read about that, but when one of my friends was expecting a baby we were looking into a lot of things and I think there's definitely something to that, sort of creating a space that you're not going to use right then but you're sort of leaving a space open for that later on

The concepts best remembered from this prime had to do with the permanence of early effects. The metaphors (wiring, "starved" for stimulation, etc.) were not recalled often, probably because they are common enough that they did not stand out and attract attention.

The Brain 2 (no simplifying models)

This prime is not well remembered overall, and appears to have little effect on subjects' thinking, though people do state that they agree with the ideas in the paragraph. Here is one case where a subject appears to be using an idea from the prime to answer the question about poor children's lower skills:

I don't think they've had the sensory input that, you know, kids from different type homes have had.

However, he then goes on to talk about how genetics are a more determining factor.

Note: The contrast between this prime and the previous one provides an interesting illustration of the difference between communicating by means of simplifying models and not using them – even though this version of the brain prime actually includes more information, it has less effect on people's thinking.

Ready to Learn

This prime was the least successful overall. It was very poorly remembered and appeared to have no effect on people's reasoning. Moreover, it was very likely to trigger the objection that kids are never doomed to failure, "it's never too late" – e.g.,

I don't think it's a foregone conclusion that they're going to fail.

While this optimistic take holds some truth – and is very valuable in the context of dealing with older children and adolescents – it plays down and even rejects the very real importance of ECD.

For reasons discussed in several previous reports from FrameWorks and Cultural Logic (including FrameWorks KidsCount Ezine No.19 and "Promoting School Readiness and Early Child Development: Findings from Cognitive Elicitations", mentioned above), "Ready to Learn" and "School Readiness" are not particularly useful as organizing principles for nonspecialists. The general public simply doesn't understand enough about development to appreciate the importance of school readiness measures – and beliefs and attitudes about opportunity, fairness, never giving up on kids, etc., are additional reasons for many people to reject these messages. The findings in the phone interviews confirmed this previous work.

Analysis of the challenge – Navigating a cluttered landscape

The single most striking finding from the phone interviews was the great difficulty of introducing new ideas into people's thinking about children's development. On this topic (and probably many others relating to children), it proves surprisingly difficult to say something new that helps people move beyond their well-established default patterns of reasoning. People have quite a bit of experience with children (even if they have no children of their own) and they are likely to hear any new message as a version of some already familiar idea. New information is filtered through their current thinking, and can easily be heard as a either a version of an idea they reject (e.g. that some kids are doomed to fail) or a restatement of what they already think (e.g. that children learn a lot by observing what goes on around them).

The nature of folk models

The understandings that average people bring to the topic of ECD are what some cognitive scientists refer to as "folk models." These are understandings which non-experts use to reason about a topic. These tend to be at least partly accurate, since they are based largely on everyday experience, but they can also be very incomplete and misleading. They are also deeply ingrained in people's thinking – as a consequence, they are easily triggered but very hard to displace.

Folk models often feel like more than factual knowledge – they can feel like fundamental truths about the world, which relate closely to understandings of right and wrong. This means that people not only feel knowledgeable about children – unlike global warming, for instance – they also identify strongly with particular views, making it even more difficult to modify their thinking. For instance, if people feel strongly that it is important to recognize each child's individuality, they are less likely to accept any general statement about what children need.

Some dominant folk models

We have already mentioned several of the important folk models that emerged in the testing, most of which had also been observed in the elicitations in earlier research. We list a few more here, for illustrative purposes. Note again that while some of these contradict each other, they may still be (and usually are) present in the same person's mind, activated in different contexts.

<u>Love</u>

Many people introduced the idea of love into discussions (often in association with metaphorical "warmth") and felt strongly that this is one of the most important factors in ECD. Of course this is accurate, in various specific senses. On the other hand, one of the common variants of this them – that (parental) "love conquers all" – can seem like an argument against interventions.

<u>"Nature"/Genetics</u>

Many subjects mentioned children's innate qualities, particularly when they felt a statement went too far in emphasizing the developmental impacts of a child's circumstances ("nurture").

<u>"It's never too late"</u>

As mentioned above, many people resist the idea that children can ever be at a permanent disadvantage. This idea is both accurate and in some ways helpful, but works against the idea that early childhood is a unique period of special importance.

<u>"Where there's a will there's a way"</u>

Subjects in the testing confirmed that the Horatio Alger concept is still very active in the American mind. Children who are motivated enough can and will overcome any early disadvantage. This model works directly against the idea that early brain developments go a long way towards determining a child's personality and capacities.

<u>Individuality</u>

It is easy for general statements about children to run up against the objection that "all kids are different."

<u>Absorption/Exposure</u>

Various particular models discussed in "Promoting School Readiness and Early Child Development" (Cultural Logic, 2002) are examples of the idea that children develop by absorbing information from the world around them, like little "sponges." While

there is obviously a great deal of truth to this idea, it can also be misleading – e.g. it suggests that if kids aren't "learning" anything in particular during one part of the day (e.g. at daycare) they can always catch up later. It also obscures any connection between a child's emotional state and her ability to acquire knowledge or cognitive skills. Furthermore, it suggests that children can be utterly passive (even immobilized) and still develop normally.

Challenges presented by the folk models

The examples above are just a few of the default patterns of reasoning that act powerfully to shape people's thinking about ECD. Collectively, the set of folk models that people hold about children and ECD lead to some powerful challenges for advocates, which emerged sharply in this preliminary round of testing.

<u>Blocking out new learning</u>

Because folk models feel like self-contained truths about the world, they can easily limit our capacity to take in new information. Surprisingly, *it may be especially difficult to build on established models* – that is, to add refinements to an already familiar understanding. Nearly all the primes were responded to as though they were "old news," even when they were making points that were clearly different from people's everyday understandings (e.g. the various connections mentioned in the Multitrack Development prime). This finding is consistent with many studies that have shown that people misperceive images and scenes by seeing what they *expect* to see rather than what is actually there.

<u>Rejection of oversimplification</u>

Because people know a great deal about children (and feel they know even more), they are very likely to resist any explanations that sound like they are leaving out important factors. The natural role of experts – to simplify complex knowledge so as to make it accessible, and to focus on one or two key points – has to be handled especially carefully on this topic. Simplification can easily be perceived as oversimplification, since people feel they have a rich and nuanced understanding – and their own experience often provides apparent counterarguments to the emphasis on any one particular factor. This means that many different kinds of statements about children are vulnerable to rejection because they seem to ignore some other factor that is in a person's mind. The following is a reaction to the idea that children are best prepared for school if they have developed in various areas, such as emotional, cognitive and social:

> *I don't think you can be terrific at everything at the same time. I think people focus on different things at different times in their life, in their early learning process… There's certainly no prescribed or absolute first, second, third, fourth thing that develops.*

<u>Rhetorical mode</u>

Because understandings about children are closely related to more general beliefs about right and wrong and the world in general, people easily move into "rhetorical mode" when discussing children's issues. That is, they can quickly enter into a mode that is about oppositions between one view and another, and in which their own identity is at stake – "I'm the kind of person who believes that …" For example, the view that nothing can stand in the way of a child (person) who is truly motivated emerges as an (often defiant) statement of principle as much as an opinion about a factual matter. This rhetorical tendency obviously complicates the task of maintaining a balanced view of ECD – e.g. in which both nature and nurture play important roles.

Handguns vs. global warming

In some ways this issue is like global warming – there are particular scientific facts which most of the public is unaware of, e.g. relating to brain development. In some other ways, it would be appear to have more in common with the handgun issue – people hold a set of understandings and beliefs that they feel are sufficient to allow them to make judgements.

An important difference from handguns, though, is that advocates for handgun control, for example, can be persuasive by referring to familiar concepts which have most or all of the right implications. For instance, tying handgun control to public health can create a new perspective in which people feel that controls are an essential form of protection. People's understandings of children, though, are so well established that they resist simple communication of this kind, which simply invites them to think of children in a certain way.

Rather than reminding people of, or building on, familiar models, it will be important on this topic to find ways of opening doors to new learning – in other words, to treat it in some ways as though it were about an unfamiliar, technical topic like global warming.

Recommendations

Two directions with particular promise emerge from the testing: The Brain and Action-and-Interaction. These directions have two key points in common which distinguish them from the other candidates, and which help them avoid pitfalls that can render the other directions ineffective:

<u>New information</u>: Importantly, both of these messages are easy to frame as new information, rather than versions of what people already think or know. This means that people are more likely to pay attention and to get beyond their default patterns of thinking and responding.

<u>Mechanism</u>: Both of these directions offer people an understanding of a *mechanism* by which early childhood development takes place – one physiological and the other social/behavioral. The mechanism element proves to be important for several reasons.

(1) Closely related to the previous point, new information about a mechanism can elicit an "aha!" response, allowing people to move beyond default patterns of reasoning. (2) Discussions in terms of mechanism are harder to reject than more indirect statements about the connection between early childhood conditions and developmental outcomes. For example, many people naturally resist the idea that poor kids start school with lower skills and lower prospects for success, but statements about *how* a child's skills and capacities develop are harder to argue with, or to reject for philosophical reasons. (3) Also very importantly, the mechanisms in question truly are very general (even if outcomes are unique owing to the complexity of factors), so that these messages *get around people's resistance to generalization* – facts about the brain and about the role of interaction are relatively easy to accept as facts about the species.

Further discussion of the Action-and-Interaction message

The message that a child's development depends on certain kinds of interactions with people and things in the environment has some clear cognitive advantages:

- It defuses the highly loaded Nature/Nurture dichotomy, because it is explicitly about how certain kinds of circumstances interact with certain kinds of predispositions.

- It moves beyond the false dichotomy between the child as an active explorer, responsible for his/her own destiny (see e.g., Free Will), and the child as a passive "sponge." dichotomy.

- It may be a helpful way of avoiding controversy about the exact nature and duration of a "critical period," since in principle it applies well to older children and adolescents as well as infants and young children.

- It is very compatible with the useful folk model of practice/repetition as a form of learning.

- It foregrounds positive outcomes in early childhood development, avoiding the temptation to "give up" on kids who have had poor environments.

- It is very compatible with the extremely dominant model of warmth/love – for instance, peekaboo and motherese are natural examples for conveying this message.

- It helps bridge mind and body since it is just as much about the effects of hugging as it as about the development of math skills, for example.

- It provides a natural way of including people beyond the child's parents (i.e. the "Village") in discussions of ECD. It frames the child as a "social explorer."
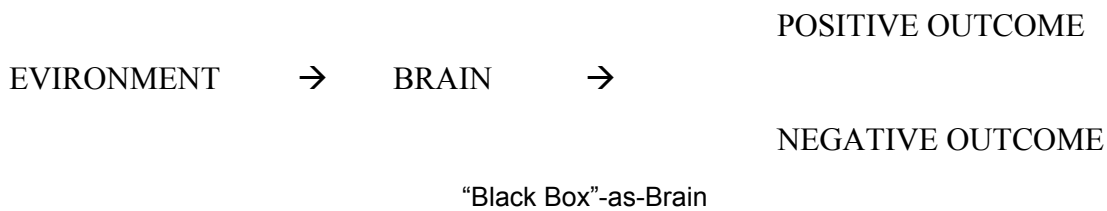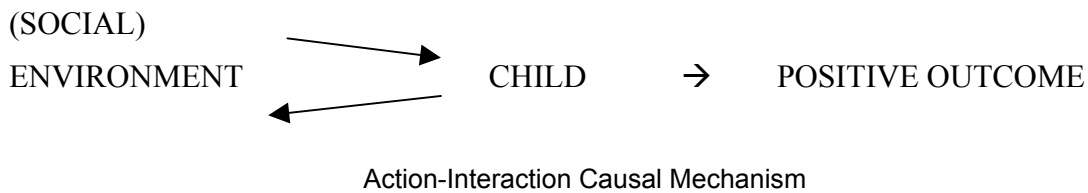
Further discussion of the Brain message

Given the test results plus the cognitive analysis above, it is easy to see a number of the communicative strengths of brain-related messages :

- The brain is a topic about which there is a constant flow of *new information*. It is a focus of attention, which child advocates can work to capitalize on more effectively than they already have.

- Messages about the brain can avoid the "oversimplification" objection by including as much detail as is necessary to convey a new understanding.

- Messages about the brain are immune to the "overgeneralization" objection – these are easily accepted as general facts about all kids.

- The brain is a concrete, biological object, and messages about it are inherently more vivid than some other kinds of information.

- Messages about the brain invite people to be thoughtful about cause and effect: "Something must have caused the brain to develop in this or that way."

- Discussions of brain development bridge mind and body in ways that can be very useful for advocates – e.g. the brain is the link between lead exposure and a person's cognitive capacities.

- Messages about the brain work symbiotically with – i.e. lend strength to and derive strength from – all other kinds of information about ECD, such as Everything Counts, Multitrack Development, and Ready to Learn.

- Discussions about the brain offer many natural opportunities for clarifying relationships between Nature and Nurture – for instance, it is well understood how certain kinds of experiences trigger certain kinds of predetermined growth (e.g. in areas that process speech sounds).

- Discussions of the brain sound scientific, objective and authoritative. They are not just opinions or value statements.

The chief downside of messages about the brain is that they can be perceived as cold and technical – i.e. incompatible with people's nurturant stance towards children – unless they are framed carefully. (See Margaret Bostrom's focus group findings on this topic.)

The two directions discussed in this section can work well independently, but are highly complementary. For example, discussions of interaction are very compatible with models of love and nurturance, and may be a very natural way of lending "heart" to information about how the brain develops. Communications that don't touch on the nurturance theme in some way are likely to seem distant and distancing.

The two causal stories can be diagrammed as follows:

(SOCIAL)
ENVIRONMENT   CHILD   →   POSITIVE OUTCOME

Action-Interaction Causal Mechanism

                                           POSITIVE OUTCOME

EVIRONMENT   →   BRAIN   →

                                           NEGATIVE OUTCOME

"Black Box"-as-Brain

Conclusion – Directions for further research

The analysis and preliminary testing discussed in this paper have revealed important facts about how people respond to messages about early childhood development. There is a set of understandings which most Americans carry in their heads, and which constitute a "landscape" that successful communications must navigate. It is clear that providing people with a new frame or a new piece of information is not always enough, or even possible.

The recommendations above are about the potential effectiveness of two general messages about ECD. A critical next step in this research program would be to explore more specifically how to talk about these concepts. What are the best ways of conveying the key facts about how brains develop? What is the most effective language for talking about the role of interactive engagement with the environment?

Metaphors

The interviews yielded some preliminary findings about metaphors that can be helpful. For example, the orchestra metaphor was widely appreciated and remembered. There were also suggestions that it helped convey new understandings, which is the critical point. The familiar simplifying metaphors for brain development – including wiring, building a toolkit, and "feeding" the brain – also appear to have been effective. The indirect evidence is that the paragraph which used these models had more impact than the

one which did not. Some metaphors were liked and remembered without having any apparent teaching benefit, including the garden plant metaphor, for example. However, this may be because the metaphor was used in the service of a proposition which people did not recognize as new.

Concrete examples

The interviews provided some satisfying confirmation of the principle that concrete examples are helpful communicative tools. Subjects were quite likely to remember hide-and-seek or peek-a-boo as examples of the kinds of interactions that help children develop. Age-appropriate toys would also fit in this category. This is an area which can be developed much further in connection with the brain. For example, it would be possible to test the effectiveness of talking about specific connections between brain development and cognitive or other capacities – language learning, stuttering, dyslexia, fetal alcohol syndrome, etc.

About the Author

Cultural Logic, directed by anthropologist Axel Aubrun and linguist Joseph Grady, is an applied cognitive and social science research group that helps organizations frame their messages for maximum effect. Working with a network of experts and partner organizations including the FrameWorks Institute, Cultural Logic focuses on research relating to public interest issues. Topics have included global warming, violence reduction in communities, conserving the Chesapeake Bay, global interdependence, gender equity in schools, and toxins in the domestic environment. Axel Aubrun, Ph.D. is a psychological anthropologist whose research and publications take an interdisciplinary approach to problems of communication and motivation. Joseph Grady, Ph.D. is a linguist whose research and publications focus on the relationship between metaphor and other aspects of thought and communication.

A. Everything counts

Nearly everything about a young child's life has an effect on the kind of person he or she grows up to be – from chemicals in the home to all their interactions with people, to economic conditions in the community. In many ways, a young child is like a garden plant whose successful growth depends on the total environment – everything from sunlight and rain to pruning and protection from bugs. Or like a tiny tree whose rings reflect everything about the conditions it has grown up in. A child is also like a river that is only as clean and healthy as the thousand streams that feed it. A child's developmental outcomes reflect his or her environment in an infinite variety of ways.

B. Multitrack development

Young children are developing simultaneously in several different key areas. Physical, intellectual, social, and emotional development are all critical and all interconnected. So is the development of the child's ability to regulate him- or herself. In many ways a child's mind is like a band or orchestra, with many different instruments playing roles that sometimes solo and sometimes need to harmonize. Or like a machine that has different parts that all need to work well and sometimes need to work together. Or like a team where all positions must be played well for the team to be successful. For example, if a child doesn't feel secure and loved, this can affect development in other areas, like intellectual skills.

C. Interaction & Feedback

A responsive environment is critical to young children's social, intellectual, and emotional growth. Exploring and interacting with people and things, and getting feedback that challenges and stimulates them is a key to successful development. Playing "peek-a-boo," playing with blocks, and listening to and repeating words, are simple activities where the child's actions lead to satisfying responses that help the child develop a skill and learn something about the world. This interactive process is a kind of back and forth conversation between kids and their surroundings – where children are active participants, and a good environment is one that responds in a helpful way. Successful development requires this kind of back and forth interaction – exploring on the part of the child, with lots of positive feedback from the environment.

D. The Brain

Early experiences have a direct and critical effect on a baby's brain. Early experiences can be thought of as literally wiring the brain for future use, creating the toolkit the child will have for the rest of his or her life. Most of the traits and abilities that make us who we are are based on these early developments in our brains. As a child learns to crawl, or

speak, or interact with others, for example, specific areas of the brain develop and grow. Pictures of the brain show that brains get bigger with experience, and that children who are starved for stimulation, or poisoned by too much stress, have brains that stay smaller and less developed.

E. The Brain (no simplifying models)

Most of the traits and abilities that make us who we are are based on early developments in our brains. Nearly everything about a young child's life – from chemicals in the home to interactions with people and other experiences – has an effect on how the child's brain develops. Using a particular ability triggers long-term development in the part of the brain that handles that ability – whether it's social like making friends, emotional like controlling anger, or cognitive like saying words. If the ability isn't used much early on, the child's brain might never be strong in that area. Experiences also have more indirect effects on the brain – development in all brain areas depends on the chemicals that are released when the child feels secure and loved.

F. Ready to learn

Children who come to school equipped to succeed have a specific set of cognitive, linguistic, social, and motor skills that allow them to do well. When children don't come to school ready to learn, they are starting at a disadvantage, and may never achieve their full potential. We know for example that reading and learning can often remain a struggle for children who enter school without even knowing the basics, such as the alphabet and counting. And children, who start school behind, often stay behind. These children can face alarming challenges. Children who enter kindergarten without the healthy minds and bodies they need in order to succeed may later end up dropping out of school, using drugs, or even committing serious crimes or suicide.

This appendix discusses the assumptions and principles that form the basis for the "cognitive approach" taken by Cultural Logic.

Frames

Researchers who study cognition and culture have established that people understand all concepts in terms of related networks of ideas, also known as *frames*. For example, the concept of a "father" is not understood in isolation, but in connection with understandings of mothers, children, families, biology, responsibility, and so forth. People are usually unaware of the frames they are using, and the frames themselves are usually expressed indirectly. They are revealed most clearly in the language and reasoning a person uses in connection with a concept. Seeming contradictions in the way a person discusses a topic can be particularly enlightening, because they may reveal conflicting frames at work. It should be noted as well that "frame" is a general term — used somewhat differently in different disciplines — to refer to more specific concepts such as *cognitive model*, *cultural model*, and *cultural theory*, discussed below.

Cultural models vs. cultural theories

A cultural theory is a set of explicit propositions that describe the nature of some general phenomenon (R. D'Andrade 1995, *The Development of Cognitive Anthropology*). Cultural theories are typically the most apparent and immediately coherent structures of knowledge — the ones that are volunteered by focus group participants for example, and the ones that lend themselves to direct description and summary by the analyst. Cultural theories are closely related to public discourse and, because they are explicit understandings, to rhetorical positions adopted for purposes of argument.

A cultural model, by contrast, consists of a set of largely implicit assumptions that allows a person to reason about and solve a problem (D'Andrade 1995). A cultural model specifies relationships between a given concept and others — specific domains (e.g., School) are typically connected to broader cultural assumptions (e.g., understandings about Achievement or Growth). Cultural models are associated with private understanding and individual reasoning.

A classic example of the difference between cultural models and cultural theories is provided by Strauss's study of blue-collar workers in Rhode Island (1992). Her informants clearly understood, and explicitly articulated to the interviewer, the American model of self-made Success. In some cases, they even claimed that this style of success was important to them. Close analysis of discourse, however, revealed that these men were actually basing their behavior on an implicit model of a

Breadwinner, which is more strongly related to ideals of husband and father than to wealth and status.

Cultural models, while less explicit and more challenging to identify than cultural theories, typically have more directive force — i.e., they are more relevant to understanding what people actually do.

Cognitive Analysis

An important assumption of this view of human motivation is that a variety of cultural models typically compete for expression in a given defined situation. Putting it simply, people often have conflicts about basic issues. For example, many Americans believe that a woman should work outside the home; a contradictory assumption, held by many of these same people, is that women should stay in the home and nurture children. Though contradictions such as this one often find partial resolution (e.g., through the contemporary American notion of the "Supermom"), typically such deeply held beliefs are compartmentalized; i.e., only one will be invoked in a given context.

Cognitive analysis first identifies the relevant deeply held models to which a given subject such as "School" is connected (literally or through metaphor). Second, it attempts to map the fault lines that predict which of the models will be expressed as action in a given situation, often triggered by particular cues. Third, it suggests a picture of the dynamic relationship between public messages, cultural models, and individual action around a given topic.

Metaphors

It is a universal finding of cognitive linguistics that people use metaphors to think, speak and reason about the world, even on topics as familiar as "weather" — i.e., some of the cultural models used to reason about any given topic are metaphoric models. For example, teenagers are sometimes metaphorically understood as unfinished objects, materials that haven't been formed into their final shape. The metaphors people use to think and talk about teenagers contribute to guiding adults' behavior towards adolescents, including whether and how they choose to nurture, ignore, discipline, or otherwise engage with adolescents.

Cognitive interviews

Because cultural models tend to be organized into distinct and recognizable patterns, they lend themselves to qualitative investigation. The cognitive interview format is designed to approximate a "natural conversation" (Quinn 1982). In an interview situation people are often most comfortable providing cultural theories (explicit and familiar explanations which are known to have general currency); the semi-structured interview puts them in a situation which encourages them instead to do their own reasoning about the issues we are interested in, i.e., to use the relevant cultural models.

Skilled interviewing shifts the informant away from a "performing" mode and toward a "training" mode. The natural give and take of a conversation puts informants in a position of teaching the interviewer how to think about a given issue. The analyst's job is to identify cultural assumptions, first in the interview setting by responding to and subtly challenging or asking for clarification of intuited premises, and second in the analysis of transcriptions by making these assumptions explicit.

Subjects and sample size

Because a culture is defined by a set of broadly shared understandings and assumptions, studying cultural models is analogous to studying the structure of a natural language. One does not need a large group of speakers to determine the basics of a language's grammar and syntax — a few speakers will typically suffice. Similarly, working with only a relative few subjects, one can identify the commonly held belief system typical of those subjects' culture. In-depth work with a relatively small group of informants has been the norm in cognitive anthropology, allowing researchers to work more closely with subjects than is possible using large-scale methodologies. Findings from cognitive interviews may subsequently be expanded upon and refined through quantitative methods, which may establish, for example, how strongly particular models are held in different segments of the population. Where the cognitive approach identifies the nature of the models, carefully devised quantitative research, using fixed-form surveys for example, can establish the distribution of the models (see Kempton et al 1995).