



National Institute for Direct Instruction

Letter to the Editor of *Scientific American Mind* The Premature Death of Preschool

In an article dramatically titled, "The Death of Preschool," in the November/December 2011 issue of *Scientific American Mind*, Paul Tullis attempts to establish a link between "direct instruction" and a host of psychological and physical ailments that preschool children may suffer later in life due to "toxic stress". Without clearly establishing what he means by "direct instruction," Tullis makes the claim that "early exposure to academics" has the potential "to psychologically damage developing brains," and can lead to physical health problems, including (but presumably not limited to) "depression, anxiety disorders--even cardiovascular disease and diabetes." Damage to the hippocampus is evidently a likely outcome if a child learns the names of different types of whales in preschool, according to Tullis.

Readers of *Scientific American Mind* should be reassured that Tullis's loose thesis that "direct instruction" represents a threat to their preschool child's long-term health is built on very shaky scientific evidence and faulty logic. One of the prime sources that he references is research conducted by the HighScope Educational Research Foundation that has been thoroughly discredited. An analysis of the HighScope studies on delinquency can be found in an article that appeared in the March 1999 issue of *Educational Leadership*, "How Sound Is High/Scope Research?" Among other important factors, the HighScope research failed to account for the effects of gender and residential environment on juvenile arrest rates. As described in the follow-up article, the HighScope research:

"ignores the very reasonable possibility that moving to a different environment may cause a difference in arrest rate, rates which are highly correlated with particular environments. The difference in mobility may therefore result in children growing up in greatly different environments, and being subjected to different pressures that relate to criminal activities. The difference in environments is a more recent possible cause than the differences in preschool curricula; the difference in environments has a longer duration and provides a more pervasive effect on the behavior of the subjects. Stated differently, the differences in environment, mobility, and sex between the curriculum groups could be used to make a far stronger case for differences in arrest data than any arguments based on preschool curricula." Engelmann, S., (1999) How Sound Is High/Scope Research? *Educational Leadership* March, (pp. 83-84)

The HighScope research was replicated by a more recent study, using a larger sample and more sophisticated techniques. Paulette Mills and associates followed 171 children with disabilities who had been randomly assigned for preschool to either direct

instruction or a cognitively oriented, child-directed model similar to the High Scope approach. At age 15 there were no differences in levels of reported delinquency. Mills and colleagues conclude:

"Our results indicate young children with disabilities can be provided direct instruction as an aspect of intervention without fear that the method will result in later antisocial behavior. The findings also suggest that Schweinhart et al.'s (1986b) conclusion that direct instruction results in later juvenile delinquency with typically developing children should be viewed with caution until their data are reexamined for the variable of gender. Gender should certainly be considered in studies of juvenile delinquency. Until this is done, such conclusions lack a scientifically sound empirical base." (Mills, Cole, Jenkins, & Dale, 2002)

Tullis fails to mention either the critique of the original HighScope studies or the research by Mills and colleagues that suggest *no link between direct instruction in preschool and later delinquency*.

Tullis also cites the seminal work of Hart and Risley in understanding the language development of young children, but he misrepresents the key discoveries the two psychologists made through their extensive research. Tullis claims that Hart and Risley "found no instances of direct teaching among the kids who went on to develop the widest vocabularies and richest use of language." This does not correctly portray Hart and Risley's discovery of two fundamental differences between the language environments provided by families of different socioeconomic statuses. First, the quantity of word exposure was much greater in affluent families as the sheer volume of words uttered by parents in higher socioeconomic families (the talkative parents) was much greater than in lower socioeconomic families (the taciturn parents). And second, the type of word exposure was different across the socioeconomic spectrum. The speech of parents in the more affluent families contained much more *teaching* than the parents of children in high-poverty families. As Dr. Risley explains,

"the talkative parents are taking extra turns responding to what the child just said and did, and elaborating on it, or responding to it..."
(From <http://www.childrenofthecode.org/interviews/risley.htm>)

Hart and Risley called this type of interaction "incidental teaching," which involves "capitalizing on the teachable moment to expand and elaborate your child's comment or words." What parents teach is "incidental" in the sense that they don't set out to teach the name, *poodle*, for instance. But if the name comes up in the interaction, the parents will model it, discuss poodles, correct mistakes the child makes, and reinforce the child for making observations about poodles. Perhaps this type of interaction doesn't meet Tullis's criteria of "direct teaching," but nowhere in his article does he convey that the parents of children who develop the broadest vocabularies have extensive interaction with their parents that involves *teaching*.



The result of the natural parent-child interaction described by Hart and Risley is a tremendous difference in cumulative language exposure for children of different socio-economic strata by the time they reach preschool age. In a typical hour, the average child from a "welfare" family hears 616 words at home, while the average child from a "professional" family hears 2,153 words. By the time children reach preschool age, children from affluent families are exposed to *more than three times the number of word utterances than children from less-affluent families, totaling tens of millions more word-exposures.*

This difference in early language exposure in the home has stark implications for the academic future of children from less-affluent backgrounds. As demonstrated through the research of George Farkas, Professor of Sociology at the University of California at Irvine, and others, children who enter kindergarten with sizable deficiencies in vocabulary and oral language proficiency will tend to experience academic difficulties throughout their school years.

How can a preschool overcome these differences in language exposure so that children from less-affluent families can be academically successful in elementary school? Certainly not by structuring the preschool as a playschool. The incidental language exposure that children encounter through play will not allow them to acquire vocabulary at a fast enough rate to close the gap with their more affluent peers.

Redesigning the preschool so it has substantially more personnel and provides one-to-one interactions of the form of natural parent instruction is also not a viable option. Less affluent families cannot afford the high-tuition that would be required to provide one-to-one interactions. Moreover, the rate of language exposure in a simulation of the natural parent interaction would still not be high enough to close the language gap. If the preschool program could somehow expose children to 2,000 words an hour for one full year, children from welfare families would still fall farther behind because the rate at which they are exposed to language at home is still far less than the language exposure rate for more affluent children (a deficit of over 1,500 word exposures per hour).

The option that has been demonstrated to narrow the language deficit significantly is to structure part of the preschool day to implement effective ways of teaching preschoolers what is essential, and to teach it faster than it occurs in the language-rich home environment. This involves designing discrete activities that explicitly teach the language of instruction--the basic sentence types, concepts and vocabulary that teachers use in instructional settings. Mastering the language of instruction in preschool allows children to participate fully in school activities in the primary grades and comprehend the academic skills and content they will encounter when they leave preschool.

This form of direct instruction should not take much time out of the preschool. In his article, Tullis presents a false dilemma of choices: *play* versus *no play* for preschoolers, with *play* leading to the healthy development and *no play* leading to calamitous psychological and physical damage. He asserts that "children may suffer when deprived of play." But in the experience of the National Institute for Direct Instruction (NIFDI),



preschools that use direct instruction devote a small fraction of the total preschool time to explicit teaching. Only about 20-30 minutes is devoted to structured language instruction over the course of the day, usually in ten-minute periods separated by other activities. (Students with high language proficiency may also receive a total of an additional 30 minutes of math.) The instruction is light and quickly paced with frequent student responses in a game-like manner, not "seatwork or lecturing". The rest of the time is devoted to play, rest and nutrition.

The direct instruction programs used in such settings are designed to ensure that children acquire vocabulary and critical background information that they otherwise might not receive. This is not done for trivial reasons, nor as part of "testing and test preparation," but because their futures depend on it greatly. Denying children from the lower socio-economic strata carefully implemented direct instruction perpetuates the sharp language differences between the classes and predictably leads to school failure--a much more certain consequence than the litany of health ailments Tullis lists so dramatically.

Kurt E. Engelmann, President
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January 12, 2012

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