

Research and Scholarship

My professional mission is to use my expertise in child psychology, brain development, family functioning, and interdisciplinary and community collaboration to *create, disseminate and apply knowledge* to improve the well-being of children and families, *prepare students* for work in changing and challenged communities, and *encourage child- and family-friendly policies*. This integrated mission provides cohesion to and increases the efficiency of my work. In this essay I address this mission in the context of my research and scholarship.

As a post-doctoral fellow in 1993 I co-designed two well-controlled, prospective, empirical studies: the “Phillips Lead Project” (Amos Deinard PI) and the “DREAMS Project” (Developmental Research on Early Attention and Memory Skills; Elsa Shapiro PI). I wrote three grants and secured \$3 million from the Centers for Disease Control and the Maternal and Child Health Bureau to fund these projects and raised \$80,000 to support extensions of this work. I directed DREAMS and was interim director of the Lead Project. These projects have defined my work at the University and I focus this essay on their design, outcomes and impact.

Our research questions were straightforward. The Lead Project asked “Is cultural-specific, peer education effective for the primary prevention of lead overburden?” The DREAMS Project asked “How does lead overburden affect the development of attention, memory, and behavior regulation in inner-city children controlling for medical, social, and home environment variables?” What we learned answered these questions and many more.

The Lead Project used a randomized controlled design, assigning 594 Phillips neighborhood mothers representative of the community’s demographics to a one-year intensive peer education intervention (plus two years of booster sessions) or a control group that received basic written materials. Children’s blood lead levels were measured quarterly for three years. Education intensity and lead burden monitoring frequency exceeded the standards set by previous studies. We found that children of mothers in the intervention group maintained lower lead levels than those in the control group, though the significance level was marginal. We concluded that education is important but not sufficient to prevent lead burden.¹⁻⁵

The DREAMS Project followed over 200 infants for 36 months using developmental tests and quarterly lead and hemoglobin levels. Confounding variables related to medical history, sociodemographic variables, parenting, parent intelligence, and home environment quality were controlled. This study was innovative and unique because: two measures of preschool attention and memory were designed for the project, filling a gap in our assessment repertoire; we studied component neuropsychological functions rather than global IQ; we followed children and measured lead levels prospectively for three years; and we applied a novel statistical method to analyze predictors of development. We learned that lead was not as important as maternal cognitive assets and psychological distress in predicting development. These maternal variables also predicted risk for lead overburden. Children of stressed mothers with fewer resources were most likely to become lead burdened, regardless of lead levels in the home.⁶⁻¹⁹

These projects were part of a ten-year community-University partnership, the Phillips Neighborhood Healthy Housing Collaborative (PNHHC), composed of researchers in five departments, neighborhood residents, Honeywell Foundation, Valspar Paint Company, city and state health departments, non-profits, and State Representative Karen Clark. Both studies were

conducted using a Community-Based Participatory Research (CBPR) approach. CBPR is a collaborative approach to research that equitably involves partners and recognizes their unique strengths. CBPR begins with a research topic of importance to the community, with the goals of combining knowledge with action and achieving social change (adapted from W.K. Kellogg Foundation). CBPR is about the relationship between researchers and communities; it does not dictate project design. Quality CBPR involves collaboration between researchers and community in all research phases. We co-designed these projects, hired neighborhood residents to perform most project duties, co-interpreted data, and collaborated in disseminating findings to community and academic audiences. (Note in my vita that I have highlighted publications and presentations completed in collaboration with my community research partner.)

CBPR is meant to *benefit the community*. Community members benefit from the research process, which contributes to their skill, economic and leadership development, as well as from the speedy application of findings to urgent community problems. I worked with PNHHC resident members to convince Hennepin County to reverse its policy of condemning lead contaminated homes, a policy that often resulted in tenant eviction. Consequently, 100 fewer families per year were traumatized or made homeless. I testified with community residents before the Minneapolis City Council about preventive education in comprehensive lead hazard reduction programs. A PNHHC member, Sustainable Resources Center (SRC), changed its housing intervention practices and state and national advocacy strategies based on my research and asked me to join its Board of Directors. I am now working with a DREAMS Project researcher and SRC to build partnerships with two community-based human service organizations, Hennepin County, and additional faculty researchers to design and evaluate a combined healthy housing/family stabilization intervention program grounded in our research.

CBPR is also meant to *enhance the science*. I feel strongly that because of community-engagement, my research produced more valid and reliable results through improved recruitment and retention rates, heightened cultural sensitivity, and increased trust resulting in participants sharing important, sensitive information. My research has had impact on academic audiences. After reading my *Environmental Health Perspectives*¹ article reporting Lead Project findings, a University of Texas Health Sciences Center at San Antonio researcher hired me to assist with design of a similar intervention. I have been contacted by readers of my publications on challenges of community-based research⁶ and the trustworthiness of research²⁰, resulting in invitations to present at local and national conferences. I am invited annually to lecture with my community research partner to cross-disciplinary Medical School and Public Health classes. I was interviewed by Humphrey Institute's Harry Boyte about my community-based research and he uses my interview regularly in his courses.

My work has expanded beyond my discipline as I now participate in University and national efforts to address public engagement in higher education. I discuss this further in my Service statement, but mention it here as I have created scholarship through service. For example, I have published in *Academic Medicine*²¹ with public health researchers from Portland State University and University of North Carolina concerning promotion and tenure and community-engaged scholarship. I am currently chairing a national work group sponsored by Community Campus Partnerships for Health that is designing guidelines for evaluating community-engaged scholars. I will present this work at four conferences and submit an article for publication.

My continued involvement in CBPR and my direction of the Children, Youth and Family Consortium (CYFC) are valuable to the Department of Pediatrics because community-engaged scholars and centers like CYFC, incubate interdisciplinary and community collaborations and translate University research for public audiences, resulting in an increase in both the public's knowledge and its trust in research and the University. These public stakeholders include policy makers who make higher education and health care policy and appropriations decisions, practitioners who treat our patients in the community, parents of our patients, and potential research participants, particularly those from communities of color that are increasingly required by NIH to be represented in research such as clinical trials.

My research effort has varied from nearly 100% to 5% (currently 20%). My future research and scholarship will include: 1) completing DREAMS Project analysis and dissemination, 2) securing funding for and completing collaborative research with SRC, and 3) continuing my scholarship about partnerships, publicly engaged universities, and promotion and tenure.

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2. Jordan, Lee, Hampton, & Pirie (2004) Recommendations from lead poisoning prevention program participants: Best practices. *Health Promo Pract*, 5(4), 429-437.
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4. Shapiro, Jordan & Deinard (June 1996). Prevention and effects of lead burden on the development of children: A study of the Phillips Neighborhood Lead Collaborative and the U of M. Presented at Pediatric Grand Rounds
5. Deinard, Jordan, Yust & Gust (February 2001). A randomized trial of education to reduce lead exposure in high risk children: The Phillips Neighborhood Lead Project. Presented at Pediatric Grand Rounds
6. Jordan, Lee & Shapiro (2000). Measuring developmental outcomes of lead in an urban neighborhood: The challenges of community-based research. *J Expo Anal Environ Epidemiol*, 10, 1-11.
7. Potegal, Anderson, Robison, Jordan & Shapiro. Sequence and priming in 14 month olds' reactions to brief arm restraint: Evidence for a hierarchy of anger responses. *Aggressive Behav*, Accepted with revisions
8. Jordan, Johnson, Hughes & Shapiro. The development of a new measure of declarative memory for 18 to 36 month old toddlers. *Child Neuropsychol*. Accepted with revisions
9. Jordan, Hughes, Roche, Zelinsky-Goldman, Robison & Shapiro. Predictors of sustained attention development in children under 3 years of age. In preparation
10. Jordan, Shapiro, Kunin & Zelinsky (February 1995). The effects of lead overburden on neuropsychological performance: A pilot study. Presented at the INS Conference, Seattle
11. Zelinsky, Hughes, Rumsey, Jordan & Shapiro (February 1996). The Early Childhood Vigilance Task: A new measure of attention in very young children. Presented at the INS Conference, Chicago
12. Jordan, Goldman, Johnson, & Shapiro (February 1999). The Color Object Association Test: A new technique for the measurement of memory in very young children. Presented at the INS Conference, Boston
13. Hughes, Jordan & Shapiro (February 2001). Defining maternal variables in an at-risk population. Poster presented at the INS Conference, Chicago
14. Anderson, Jordan, Shapiro & Gunnar (February 2001). Salivary cortisol levels in lead- and non-lead-burdened inner-city children. Poster presented at the INS Conference, Chicago
15. Hughes, Jordan, Roche & Shapiro (February 2003). Two factor parent model predicts development at 36 months in at risk children. Poster presented at the INS Conference, Honolulu
16. Robison, Jordan, Hughes, Zelinsky-Goldman & Shapiro (February 2003). Can sustained attention be measured in children less than 3 years. Poster presented at the INS Conference, Honolulu
17. Jordan, Hughes, & Shapiro (February 2003). Maternal risk factors predict child lead burden. Poster presented at the INS Conference, Honolulu
18. Jordan, Hughes, Roche & Shapiro (February 2004). The DREAMS Project: Risks and developmental outcomes in inner city preschoolers. Chaired symposium at the INS Conference, Baltimore
19. Jordan (February 2004). Relative contributions of maternal, socioenvironmental, and biomedical variables to the development of vigilance. Presented in above symposium at INS Conference, Baltimore
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21. Calleson, Jordan, Seifer (2005). Community-engaged scholarship: Is faculty work in communities a true academic enterprise? *Acad Med*, 80(4).