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Fulfilling the Promise of Applied Developmental Science:

Is it Time to Reconsider our Approach?

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Abstract

The promise of applied developmental science is that we can use scientific methods to promote positive human development and improve the lives of children and families. However, the present political environment in the United States makes the creation of research-informed federal policy difficult, even when the evidence base supporting that policy is unequivocal. In this essay we hope to begin a conversation about how we, as applied developmental scientists, may modify our approach. To begin this conversation, we discuss the potential for establishing long-term partnerships with smaller entities, including state and municipal governments and non-governmental organizations to narrow the gap between what we know about children and families and the policies and programs that impact them. This “bottom-up” approach has a long lineage in applied developmental science, and is currently enjoying a renaissance through the burgeoning interest in researcher-practitioner partnerships. Whether implicitly or explicitly, these partnerships often incorporate a systems perspective on children’s development; here we review embracing a systems perspective may increase the likelihood of crafting policies and programs that can improve the lives of children and families.

Keywords: applied developmental science; developmental science; community-engaged research; researcher-practitioner partnerships; ecological systems theory.

Fulfilling the Promise of Applied Developmental Science:

Is it Time to Reconsider our Approach?

“Applied developmental science” is a term with a multitude of meanings, but as used by Richard Lerner (2000), Cecilia Fisher (1993), and many others, it broadly refers to the use of scientific methods to promote positive human development. Although it shares many features in common with developmental science as conceptualized by Robert Cairns and his colleagues (Magnusson & Cairns, 1996) – most notably, a systems perspective (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006) – an explicit goal of applied developmental science is the improvement of the lives of children and families (Lerner, 2002). One strategy that applied developmental scientists have recommended for achieving that goal is to narrow the gap between research on children and families (i.e., what we know) and the policies and programs that impact children’s and families’ lives (i.e., what we do; Jensen et al., 1999; Lerner et al., 2000).

In this paper we ask whether it may be time to refocus some portion of our field’s efforts towards the policies and programs of states, municipalities, and individual organizations, given the current state of federal policymaking and political discourse in the United States. Consider the case of the Child Tax Credit (CTC): As part of the American Rescue Plan, the United States Congress expanded the CTC to provide modest cash payments beginning in mid-July 2021 to families with children of up to \$300 per household (per child) for all single-parent households making less than \$112,500 annually and all two-parent households earning less than \$150,000 (American Rescue Plan Act, 2021). The expansion represented a per-child increase of \$1600 (or 80%) over the existing credit. Not surprisingly, the expanded CTC reduced rates of child poverty by nearly one-third among all children (relative to poverty rates prior to the enactment of the

CTC; Parolin, Collyer, & Curran, 2022), and by approximately half among Black and Hispanic children (Center on Poverty and Social Policy, Columbia University, 2021).

Decades of research have demonstrated that growing up in poverty is associated with worse developmental outcomes across domains (Brooks Gunn & Duncan, 1997; Engle & Black, 2008; McEwen & McEwen, 2017). Furthermore, recent research has indicated that alleviating poverty by providing families with additional funds *causes* improvements in children's development, even at the level of neurological activity (Troller-Renfree et al., 2022). And yet, in January 2022 families stopped receiving cash payments as Congress allowed the expansion of the CTC to expire. As a result, the child poverty rate is expected to return to its December 2020 levels within the year (Parolin et al., 2022). Clearly, where the CTC is concerned, the distance between what we know and what we did is more accurately described as a chasm than a gap.

The question for applied developmental science (and applied developmental scientists) is how to proceed from here. The goal of applied developmental science – to apply scientific methods to improve the lives of children and families – remains absolutely vital; it is the strategy that we pursue to achieve this goal that may require modification. The purpose of this paper is to begin a dialog about what these modifications might entail. To catalyze this conversation we review select features of community-engaged research and researcher-practitioner partnerships that may enhance the likelihood of narrowing the gap between research and practice, even in the current federal policymaking environment in the United States. These features comprise: the establishment of long-term partnerships with smaller entities, including state and municipal governments, as well as non-governmental organizations that serve children and families; the prioritization of research questions that address the needs of these smaller entities; and the embrace of a systems perspective on development. Given our purpose and the constraints of

length, it is beyond the scope of this paper to delve into any one of these features in detail, or to provide specific guidelines or best practices for how to conduct community-engaged research or form researcher-practitioner partnerships. Readers interested in such guidelines might consult Farrell et al. (2018), Penuel and Gallagher (2017), and Handley et al. (2018) as a starting point.

Community-Engaged Research & Researcher-Practitioner Partnerships

A strategy focused on smaller entities that are “closer to the ground” has a long lineage in applied developmental science. Lerner and his colleagues recommended the formation of partnerships between researchers and their surrounding communities over two decades ago (Jensen et al., 1999; Lerner et al., 2000). More recently, researchers representing disciplines from education (Coburn, Penuel, & Geil, 2013) to criminal justice (Braga, Kennedy, & Tita, 2002) to health (Wallerstein & Duran, 2010) have embraced the deliberate formation of partnerships between researchers and practitioners as a way to more closely align knowledge, policies, and programs. Many community-engaged research and researcher-practitioner partnerships share a number of features that may increase the likelihood of research informing policy and practice, including the establishment of long-term relationships, and, perhaps most critically, the adoption of a systems perspective on children’s development which recognizes that the processes driving development forward arise out of interactions occurring across levels of organization, from the genetic to the sociocultural.

Although they may not reference this perspective *per se*, many formulations of researcher-practitioner partnerships acknowledge either implicitly or explicitly that children inhabit an environment (or a developmental ecology) that is comprised of multiple systems (see, for example, Coburn & Penuel, 2016), each nested within the other like a set of Russian dolls, to paraphrase Bronfenbrenner (1979). Thus, a child is a part of the environment comprised by their

immediate family, which is part of an extended family, which may identify with one or more cultures, and so on. According to a systems perspective, it is the child's interactions with each of these environments (which themselves interact with one another) that propels development forward over time (Bronfenbrenner & Morris, 2006). Although this perspective is as central to developmental science as it is to *applied* developmental science, conducting policy-relevant research from this perspective may maximize the likelihood of narrowing the gap between research and practice, particularly when that research is conducted with smaller entities over longer periods of time, in accordance with the principles of researcher-practitioner partnerships.

The Value of a Systems Perspective

Acknowledging the Importance of the Macrosystem

One way in which a systems perspective may accomplish this is by acknowledging the importance of the macrosystem, including the culture(s) and society in which children develop, as macrosystemic forces can shape not only child development, but also the policies and programs that are most effective or even feasible. At this hyper-partisan moment in the history of the United States, imposing uniform, top-down federal policies may not be possible, even when the research evidence supporting those policies is unequivocal (as, for example, in the case of policies designed to expand vaccinations against the novel coronavirus). Policies and programs that recognize the importance of the macrosystem – and the concomitant cultural, religious, and regional variations in expectations around parenting, education, and the role of others (including the government) in those processes – are more likely to yield policies and programs that match what a particular group of people are willing to accept (Eccles & Gootman, 2002; Garcia-Coll et al., 1996). Adopting this perspective and approach prospectively, instead of after the fact, allows

for more immediate engagement, implementation, and realization of positive effects for children, families, and communities.

Avoiding Warped Studies

A systems perspective may also serve as a hedge against conducting what might be called *warped studies*: intervention studies in which the unit of study is misaligned to the unit (or units) of intervention. When conducting intervention studies, it is common and often necessary to examine the intervention's impacts on children, as these are often the intervention's ultimate outcomes. However, if children are the sole focus of the study, the capacity of that study to inform policy and programs may be quite limited. This is because the impacts of nearly any intervention on children will be mediated by that intervention's impacts on the systems that collectively comprise the developmental ecology, in accordance with the premise that proximal processes of reciprocal interaction between the child and their environment propels development forward and sustains it over time.

Consider the example of a study of an early education intervention that limits data collection exclusively to young children's cognitive development. Such a study would be well-suited to revealing *what* happened – children's scores on some measure(s) of cognitive development went up, down, or stayed the same – but can offer little insight into *how* or *why* that happened. As a systems perspective would suggest, the answers to those questions would have required collecting data that could speak to how the intervention changed patterns of interaction between parents and children, or teachers and children, or how they failed to do so, and, in either case, why (for examples from the field early education, see Brooks-Gunn, Berlin, & Fuligni, 2000; McClelland et al., 2017). Moreover, without these data, researchers can draw incorrect conclusions even about the narrower question of what happened: early studies of Head Start

looked for and failed to find changes in participating children's cognitive development (as indexed by IQ scores; Zigler & Styfco, 1997), thereby overlooking gains in other aspects of children's development (e.g., socioemotional learning) attributable to changes in patterns of parent-child interaction that later research would reveal (Administration for Children and Families, 2006).

Increasing the Likelihood of Replication, Expansion, and Refinement

Collecting data on these proximal processes often requires the use of qualitative measures such as observations or interviews. Developing sensitive and valid qualitative measures is difficult, and collecting data using these measures is time-consuming and expensive. This is one consideration that recommends combining the systems perspective of researcher-practitioner partnerships with their emphasis on working with smaller entities and organizations: all else being equal, it is more feasible to collect qualitative data when working with smaller entities than larger ones. Somewhat counter-intuitively, the potential for delivering research-informed programs and policies at a larger scale (i.e., to greater numbers of children and families) may be higher when those programs are initially developed using a ground-up approach in partnership with smaller entities, given that this approach is more likely to yield the sorts of qualitative data that are essential to replication and expansion. The availability of these data on proximal processes, together with the longer time horizon afforded by the long-term collaboration that is a feature of researcher-practitioner partnerships, also increases the likelihood that policies and programs can be refined in order to maximize their benefits for children and families. If early data indicate that a policy or program is not achieving its desired aims on proximal processes, those policies and programs can be refined before moving on to collect data on child outcomes,

provided that a well-developed theory of change exists for those policies and programs (see Fabiano, Reddy, & Dudek, 2018; Smith & Hasan, 2020, for examples).

Focusing on Human Behavior as a Lever for Sustained Change

Cairns observed that the process of child development is essentially conservative (Cairns, 2000). Patterns of development and the features of the proximal processes that propel it forward have been shaped by eons of evolution, and therefore although they are capable of rapid, short-term change in response to brief environmental fluctuations, they are quite resistant to sustained, long-term change. Viewed from this perspective, the potential for policies and programs to affect sustained change in the processes of child development would appear to be quite limited.

However, Cairns also observed that among the systems that comprise a person – genetic, neurophysiological, neurological, cognitive, and behavioral – it was human behavior that was most open to change. As such, changes in behavior could serve as a catalyst for the re-organization of the activity of other systems. Although Cairns was referring to the systems that comprise a single individual, the same potential for behavioral change exists within the multitude of people who comprise the child's microsystem, including their family members and teachers. Targeting the behaviors of these members of the child's microsystem – and, in particular, their behaviors in their interactions with the child – may offer the best opportunity to change the course of that child's development (see, for example, Stormont et al., 2015; Weisenmuller & Hilton, 2021). When these behavioral changes occur in a critical number of people, they have the potential to affect change at levels of the developmental ecology beyond the microsystem. The sociocultural sea change that was the civil rights movement began with behavioral changes among a relatively small number of people; the same could be said for marriage equality. However, as these examples make clear, initiating and sustaining those changes may require a

long-term investment of time and energy on what may be, at least initially, a relatively small scale.

To illustrate how these features of a systems perspective can enhance the likelihood of creating improved policies for children and families, we offer two examples of researcher-practitioner partnerships, one focused on adolescents' mental health, and a second focused on early childhood education that is drawn from our own work.

Illustrative Examples

Resilient in Spite of Stressful Events

The Resilient in Spite of Stressful Events (RISE) program emerged from a partnership between researchers affiliated with a pediatric teaching hospital in Philadelphia and a community collaborative comprised of a non-profit community-based health promotion agency, representatives from the city council and the United Way, various youth serving agencies including faith-based institutions, as well as block captains and neighborhood youth council representatives. The program was designed to prevent mental health problems among primarily Black adolescents living in low-income urban communities by training these adolescents to differentiate between stressors they could not control and those they could, and then aligning their coping strategies to match (Clarke et al., 2022). In this way, the mechanism by which the program was designed to achieve its effects not only incorporated a systems perspective (wherein adolescents' mental health was influenced by their interaction with stressors in their environment), but acknowledged the macrosystemic forces (e.g., poverty) that contributed to an environment in which those stressors were chronic and, in some cases, uncontrollable.

During the initial design of RISE, the project's director collected data from high school students, after-school program directors, and community leaders to identify their perspectives on

critical components for inclusion in the program. Subsequent iterations of the program were developed with feedback from members of a Community Advisory Board comprised of school counselors, neighborhood block captains, community youth development staff workers, faith-based community leaders, caregivers, and a recent high-school graduate who served as the youth representative. Data collected over the course of six years during these successive rounds of iterative implementation revealed that adolescents who were randomly assigned to the program were rated by their primary caregivers as having significantly fewer behavior problems relative to their peers who were assigned to the waitlist (Clarke, Gallop, & Power, 2013). In the ensuing years, the program has continued to expand, eliciting feedback from stakeholders before and during implementation to facilitate the fit of the program to the local contexts in which it is being implemented, which now range beyond Philadelphia to include the larger region.

The Kaleidoscope Program

Our partnership with the Kaleidoscope Program began 15 years ago, when we contacted Head Start preschools in our area that were not then working with applied developmental researchers, but were open to the possibility of doing so. The Kaleidoscope Program was the one that responded most positively to our inquiry, and, in some ways, it was characteristic of many Head Starts: nearly all the children were from families classified as low-income, and over half were living below the federal poverty level. However, the Kaleidoscope Program was also distinct in that it was administered by a community-based arts organization and featured an arts-integrated early education curriculum.

Given the financial circumstances of the families served by the program, a systems perspective suggested that their children were disproportionately likely to encounter poverty-related risks at multiple levels of their developmental environment. However, that perspective

also indicated that many families would feature strengths or sources of resilience that might mitigate the effects of these risks. Indeed, in our initial meetings with program administrators, teachers, parents and children about the potential areas of research focus for our partnership we found that teachers and parents, in particular, were far more interested in talking about these sources of strength than about risks, and that they were particularly eager to understand the benefits that the program's arts-integrated curriculum might confer to their students and children.

Our initial investigations into these benefits focused on how teacher-child interaction and pedagogical practice during arts-integrated instruction might foster young children's school readiness. Early evidence of program impact on socioemotional aspects of school readiness (OMITTED FOR BLIND REVIEW) led to the refinement of the curriculum to further support the development of children's socioemotional skills, which, in turn, has yielded further evidence of the program's impact on children's socioemotional development (OMITTED FOR BLIND REVIEW) and school readiness more broadly (OMITTED FOR BLIND REVIEW). Our focus on the proximal processes of teacher-child interaction and teacher behavior in the classroom as a lever for impacting children's school readiness throughout the partnership has yielded considerable insight into how the program achieves its effects. This, in turn, has allowed the program to serve as a resource for early educators in the region who are interested in offering arts-integrated instruction in their own programs, and, increasingly, as a national model for how an arts-integrated early education curriculum can foster school readiness among children placed at risk by poverty.

Ultimately, the replication of this program and its effects will require the formation of new researcher-practitioner partnerships, wherein the particulars of the program are aligned to the confluence of macrosystemic forces in the community in which the program will be

implemented, and the questions addressed by the researchers are aligned to the interests of the program's stakeholders. These alignments may mean that the program, as delivered in a particular context, yields different benefits to children's development, and that the research is accordingly focused on these benefits, rather than those of the stakeholders involved in our work. These iterative variations of both program and research efforts should be welcomed, as they have greater potential than any single program or study to yield insight into how to craft research-based policies and programs for children and families.

Conclusion

In this paper we have framed a conversation about how applied developmental science may most effectively improve the lives of children and families. The strategy that has been the focus of this paper is for applied developmental scientists to work from a systems perspective in long-term partnerships with smaller government entities and organizations. Of course, this is but one of many possible strategies that may be pursued in parallel as we work to bridge the gaps between research, policy, and programmatic practice, and these strategies should certainly include efforts to narrow the gap between research and federal policy whenever possible, despite the challenges enumerated above.

As illustrated in our example, pursuing long-term partnerships with smaller entities may require that scientists tailor their research questions to meet the needs of the communities and organizations with which they work as those communities and organizations perceive those needs, rather than as perceived through the narrower lens of the researcher's agenda. However, before establishing this expectation we must acknowledge that researchers are humans, and, as such, for their approach to their research (i.e., their behavior) to change their ecology must change as well. Researchers working in institutions of higher education must believe that their

employers value community-engaged research and researcher-practitioner partnerships in practice (in, for example, the way that decisions about tenure and promotion are made), rather than merely in theory (via their public relations and communications activities). Institutions that fund research will also need to reconsider their investments; presently, most major funders in the United States (e.g., the National Institutes of Health) primarily support research that addresses questions driven by theory and prior research. Although many of these funders now place a greater emphasis on the translation of research to practice than they once did, it is often assumed that policy will shift as theory-driven research reveals about what is best for children and families.

In an era of rampant misinformation and increasing hostility toward expertise, it is an open question whether this “trickle-down” approach (Lerner, 2002, p. 323) represents an effective strategy for crafting research-informed policies and programs that support children’s development. As a field, we may wish to consider whether a more effective approach may be to capitalize on the fact that nearly all families desire the best for their children. Developing research-informed programs and policies from the ground up and over the long-term provides families with the opportunity to witness firsthand the benefits of those programs and policies as they accrue over time not only to their children, but also to other children in their community, thereby elevating the status of those children above an abstraction. It is one thing to support consigning children to poverty when those children are statistics; it is quite another to do so when those children are your child’s friends.

Ultimately, this “bottom-up” approach could benefit federal policy and practice as well. As community stakeholders participate in shaping developmental science, and as we, as developmental scientists, assume accountability for reporting back our findings in ways that are

accessible and meaningful to these stakeholders, we will promote the transparency of scientific process and greater understanding of its importance. By building trust ‘on the ground’ in developmental science, and by providing stakeholders with examples of research-based programs and policies that are responsive to the needs of local communities and beneficial for children and families in those communities, we can support longer term goal of creating conditions that can support and sustain research-based initiatives at the federal level.

By conducting applied developmental science from a systems perspective and with smaller organizations and entities, we may harness the powers of direct engagement and empathy to overcome our differences and ultimately create and sustain research-informed policies and programs that fulfill the promise of applied developmental science to improve the lives of children and families.

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