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The Pathways Mapping Initiative (PMI) seeks to assemble and organize knowledge about what works that will be particularly useful to local communities. PMI provides communities with a broad, deep, and coherent body of practical information that can be used to strengthen efforts to improve community-wide outcomes.

PMI has been working since January 2000 as part of the Project on Effective Interventions at Harvard University, with support from the Annie E. Casey Foundation. The starting point for the project is the belief that the nation has learned a great deal in the last decade about how families, neighbors, and social institutions can improve the life chances of children growing up in America's tough neighborhoods. However, most of the information that is readily available is not well matched to the needs of communities because it:

- comes in small, isolated, and disjointed pieces;
- arrives too late;
- is derived from a severely limited range of interventions sufficiently circumscribed and standardized to allow for elegant evaluation; and
- rarely identifies the essentials of what made the intervention work.

The developers of the PMI believe that to foster and support effective strategies that will actually improve lives, the way we think about and process knowledge in the social policy world must change:

- Prevailing conventions about what counts as credible knowledge must be reexamined and modified.
- Our focus must change from making yes-or-no judgments about individual interventions to discerning patterns from an accumulation of research and experiences.
- Our knowledge-building activities must cross systems and disciplinary boundaries, even if service delivery and funding continue to operate predominantly within self-contained silos.

Two things in particular distinguish PMI from other efforts to distill information about "what works." It substantially broadens the knowledge base by incorporating lessons from experiential knowledge and evidence as well as findings from rigorous research evaluations. And, the information is developed, organized, and presented in a way that helps communities to think coherently and systematically about a complex of actions that work together to produce a desired outcome, the attributes of actions that make them effective, and the supports and conditions that underlie that effectiveness at the community level. It thereby allows local communities to combine local wisdom and their understanding of local circumstances with accumulated knowledge about what appears promising and what has worked elsewhere.

The Need for a Broader Evidence Base

The PMI approach does not limit its explorations to identifying individual programs whose success has been proven by rigorous evaluation using traditional methodology like random assignment trials. We cast a wider net to assemble evidence on what works for three reasons.

First, the experimental method that is considered the gold standard in programmatic evaluation often cannot be used to assess the effectiveness of the complex, multi-component initiatives and strategies that are considered most promising in the community change field. But even if these broad-based efforts cannot be evaluated in the most rigorous way, they often offer crucial models for action, provide valuable lessons about how to structure interventions, and promote understanding about the elements that make actions work.

Second, because the most elegant evaluations tend to be conducted in an artificially favorable environment, they may not provide the best information for understanding how the program will fare under quite different local conditions. In such circumstances, as educator/psychologist Jerome Bruner (1990, p.xiii) argues, "plausible interpretations [are] preferable to causal explanations, particularly when the achievement of a causal explanation forces us to artificialize what we are studying to a point almost beyond recognition as representative of life."

But the primary reason that it makes sense to expand the criteria for determining credible knowledge is that communities must still make decisions about what to do, even when they lack full or scientifically rigorous information about what works.

In those circumstances, as a recent report from the National Research Council concludes, effective service delivery and informed policy making will have to rest on the ability to make reasonable judgments and avoid irresponsible practices in the face of incomplete knowledge (Shonkoff and Phillips, 2000, p. 411). The challenge is how to develop and provide the information that can help local decision-makers, service deliverers, program managers and their funders make the best possible decisions despite the lack of absolute certainty.

This kind of thinking has led the PMI and similar efforts to shift focus away from assessing the effects of individual programs or strategies, and towards drawing inferences from multiple sources of evidence, analyzed in the context of sturdy theory.

The Mental Mapping Process as an Alternative Approach

The PMI is one of several efforts that seeks to assemble a knowledge base by applying reasonable judgments and plausible interpretations to "a preponderance of evidence coupled with strong theory" (Sampson, 2000, p. 223) Pathways identifies the elements of local context that will affect outcomes by facilitating or impeding implementation and effectiveness. The emphasis is not only on particular programs, but on actions that cut across programs.

The challenge in doing this is to develop alternative criteria and methods to identify credible evidence about what works. Pathways has sought to develop a method that strikes a balance between what we think are excessively rigorous and narrow efforts to assess what works, and ones that amount to little more than a champion's anecdotal accounts.

We rely primarily on a consensus process that we call mental mapping. We convene groups of highly knowledgeable, experienced individuals, including researchers and practitioners, who are steeped in their respective fields but diverse in their perspectives and beliefs. We ask them to draw on their accumulated wisdom to make explicit their "mental maps" of what works to reach the outcome under consideration. Participants are asked to respond initially to the question, "Considering the evidence from the research, theory, and experiences you have been exposed to over the years, what could a community most effectively do if it were committed to achieving the specific outcome under consideration (such as higher rates of School Readiness or higher rates of Family Economic Success)?"

Because we take great care to assure a rich mix of backgrounds and outlooks among the participants in the mental mapping process, we believe we have been able to protect both the process and the product from individual and group bias. This approach has also allowed us to identify and discard the claims around which there is little consensus and only weak support in theory or experience. We have been able to distinguish items around which there is strong agreement from conclusions that are drawn exclusively from a single program or organization or that represent an idiosyncratic point of view.

Perhaps the existing, established structure that most resembles our mental mapping process is the National Institutes of Health (NIH) Consensus Conference, which has been described as providing "a vehicle for moving beyond the piecemeal presentation of evidence from diverse bodies of literature and for ensuring the unbiased synthesis of findings that can inform broader discussions of effective strategies, in contrast to 'up or down' appraisals of individual programs" (Shonkoff and Phillips, 2000, p. 410).

PMI supplements the information that comes out of the mental mapping meetings by soliciting input from additional experts to fill the gaps that remain. (Usually these gaps have resulted from our having failed to obtain strong representation from certain categories of experience. For example, our initial School Readiness mental mapping groups did not include enough researchers and practitioners steeped in child welfare or housing.) We also do field-testing with groups of potential users to make sure that the information we are conveying is readily understood, useful, and relevant to the target audience.

Using those methods, we have constructed a prototype Pathway to School Readiness and a second Pathway to Family Economic Success, which has recently been added to our Web site. Others will follow.

Major Elements of Pathways

The Pathways that appear on the PMI Web site, www.PathwaysToOutcomes.org have five distinctive features:

1. The Pathways approach bridges disciplines.
Using the Pathways Mapping methodology, we were able to cross disciplinary boundaries so we were no longer looking at single domains in isolation.

We identified three areas in which effective action is expected to lead to higher rates of school readiness: children's health, their neighborhood surroundings, and their social and cognitive environments. Included in the last are strong bonds with a primary caretaker, a supportive home, high quality childcare and early education, connections to responsive networks and services, and family economic success.

All around the country, people tell each other that it takes more than family support services to strengthen families, more than child welfare services to keep children safe, more than the police to keep neighborhoods free of violence, and more than good preschool programs to get children ready for school. But few existing mechanisms provide a framework for drawing such cross-cutting conclusions.

The mental mapping approach makes it possible to structure thinking broadly, across disciplinary domains and helping systems. Without having to invent the whole logic chain from scratch, users can see the many ways communities can act effectively. The electronic format in which the Pathways are presented allows users to explore connections in the ways that are likely to be most useful to them. For example, they can explore the overview of the many kinds of actions that contribute to the outcome. They can drill down from a specific intervention to find the attributes and contexts likely to make that intervention or set of interventions effective, and to find the research evidence that documents the effectiveness of the intervention.

2. The Pathways approach identifies the actions that contribute to achieving specified outcomes.

We identified specific actions (services, supports, and other interventions) that were likely to achieve the stipulated goals and outcomes, including actions at the front line level, the broad community level, and the policy and systems level. We organized these actions by their hypothetical contributions to achieving the outcome. (For example, providing "a wide range of family planning services and methods that are effective, affordable, and acceptable to a variety of actual and potential users" is the first action listed under the services that contribute to higher rates of "intended, well-timed pregnancies." These in turn contribute to higher rates of "healthy wanted births," which are part of achieving the "good health" component of school readiness.)

To enhance the usefulness of the Pathways material, we added three additional layers of support. First, we assembled the rationale that lays out the hypothesized connections between the actions and outcomes and explains why seemingly

distant efforts are thought to contribute to the stipulated outcome. Second, we identified the research evidence, where it exists, that supports the contention that the actions, separately or in combination, are effective. Third, we included examples of existing programs and strategies that incorporate one or more of the identified actions and attributes. Figure 1, which is a condensed version of the example of Washington State's Early Childhood Education and Assistance Program on the Pathways Web site, shows how the examples serve to describe and highlight the following features:

- information about the emphasis of the program or initiative, the core elements of its design, and the expected or actual results as well as funding, governance, and contact information.)
- the actions the program is taking (most frequently cross-cutting) that are expected to contribute to specific aspects of the outcome, and
- the attributes of the program that are hypothesized to make the actions effective.

3. The Pathways approach identifies easy-to-use indicators of progress toward specified outcomes.

We found that communities were eager for help in selecting indicators that can be used to track interim and long-term progress and are relatively easy and economical to obtain. As communities struggle to improve, reform, and expand services, supports, and infrastructure, interim indicators (or benchmarks) become especially important for demonstrating short-term achievements—or the lack thereof—and for revealing the need for mid-course corrections. By making explicit the links between actions and outcomes, Pathways is able to guide the search for sorely needed interim indicators of progress. The Web site includes 19 Outcome Indicators that measure school readiness (for example, "percent of children in expected height and weight range," and "percent of children able to follow directions") and 28 Interim Indicators (for example, "percent of low birthweight births," "percent of parents who read to their children in the past week," and "percent of children who have moved more than once in the previous year.") Each of the indicators is accompanied by a definition, a description of why it's important, and advice as to how it can be most readily collected.

4. The Pathways approach identifies attributes of the actions that make them effective.

PMI's mental mapping process may make its greatest contribution by identifying the

attributes or characteristics that make interventions effective in contributing to the stipulated outcome. In addition to broadening the available information regarding "what works," PMI makes possible a deeper level of understanding of how it works. Most research (on both human and neighborhood development) describes the natural course of normal or abnormal development. Few resources and little prestige flow to the intervention research that could guide people in what to do. Even fewer supports go to studies that could shed light on how to do it.

And yet, success in improving outcomes often depends less on the design of the intervention itself than on the characteristics of how the intervention is carried out, which tend to be hard to measure and are often neglected. Through our mental mapping process, we were able to identify the attributes of effectiveness that seem to characterize effective interventions. We learned about a host of efforts to improve children's health, social environment, and neighborhood conditions change outcomes, which are worth investing in, when and if they incorporate certain attributes.

Examples of these attributes include the extent to which interventions are family-centered and community-based, a sensitivity to cultural differences, and the interplay among the soundness of an intervention strategy, its acceptability to the intended recipients, and the quality of its implementation. (Shonkoff and Phillips, 2000, pp. 342, 346).

By spotlighting the attributes of effective services and supports, Pathways can help solve one problem that has bedeviled efforts to scale up and spread model programs. It is now part of the conventional wisdom that we cannot simply replicate or clone a successful model. It has to be adapted to meet local circumstances. But adaptations can inadvertently undermine what works by eliminating the very elements that were essential to the success of the program. If we can describe these essential elements with precision and in some depth, even in the absence of absolute certainty, efforts to scale up will be better informed and more likely to be successful in new environments.

Attention to the attributes of effectiveness will help protect against the dilution and distortion that occurs when programs move from the hothouse conditions that produce strong evaluations to the messier and less supportive environment that characterizes the real world.

5. The Pathways approach identifies the elements of community and systems infrastructure that contribute to effectiveness.

Our mental mapping process confirmed how much context matters and enabled us to identify the elements of community and systems infrastructure that support and sustain effective change over time. We identified community contexts that are essential to improving outcomes, but don't attach to a single program or intervention. This deeper, more contextual level of analysis can clarify the limits of individual programs and illuminate the potential synergy in the work that occurs in several different domains.

The policy and systems context can also exert a decisive influence. A hostile regulatory, funding, and accountability climate can seriously undermine the ability of organizations and community groups to take effective action or to develop the institutional characteristics that underlie more successful programs. Analyzing actions in this way and laying out the attributes of effectiveness across different domains and across different levels highlights the importance of increasing effectiveness by aligning the systems and contextual conditions.

Conclusion

We believe that, because the knowledge base that emerges from the Pathways process is wider, deeper, more coherent, and more actionable than most similar collections of information, it will be useful to communities in their day-to-day decision making as well in their long-term planning. The Pathways distill, organize, and present the assembled information in a way that allows people in communities to understand not only what they might do, but why they should do it, what it will take to do it well, and what contextual forces, which may either enhance or constrain the effectiveness, they are likely to encounter. Our hope is that information derived by generalizing from a preponderance of rigorously analyzed evidence from multiple sources will be recognized as credible as well as useful. We also hope it will encourage stakeholders to think in a more integrated, ambitious way about building the knowledge needed to achieve important outcomes. We see Pathways as helping to define a pragmatic middle ground:

- between people who demand "scientific" proof of effectiveness and those who contend that good intentions are enough;
- between those who want to see funding go only to centrally designed, centrally certified interventions and those who think that everything has to be invented anew in every neighborhood;

• between those who think that the effectiveness of community-based interventions can only be determined by what is quantifiable, and those who think that each community context is so unique that no generic lessons can be drawn from what has worked elsewhere.

We hope that this middle ground offers a way to get beyond the notion that because we lack absolute certainty we have no guideposts for action. We expect the Pathways information to help those who have been given the opportunity to work toward improving community outcomes to do their work more effectively. While decisions that will ultimately affect outcomes are made not only by rational analysis, we believe that decisions will be made more wisely when they are informed by a body of knowledge drawn from a combination of research, theory, and practice. We expect that a coherent knowledge base may also enlarge the circle of citizens who support efforts to strengthen families and neighborhoods because they have become persuaded that people working in this field are achieving results that the public values.

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Table 1. **Early Childhood Education and Assistance Program, Washington State This example illustrates efforts to achieve school readiness by taking actions that contribute to achieving the following subgoals:**

• Children developing on track
• Strong bonds with primary caretaker and supportive home
• High-quality child care and early education

OVERVIEW:
The Early Childhood Education and Assistance Program (ECEAP) is a statewide program that provides Community-based education and assistance to low-income families and children who are at risk of School Failure. It focuses on:

● Helping three- and four-year-olds prepare for and succeed in school and
● Empowering families to improve parenting, literacy, job and self-advocacy skills, and increasing their knowledge of and access to appropriate resources.

ACTIONS AND PROGRAM DESIGN:
ECEAP operates 246 local programs through contracts with 35 entities (school districts, educational services districts, local governments, nonprofit organizations, child care providers, and tribal organizations). Key features include:

- **Education**—ECEAP pre-kindergarten programs foster intellectual, social, physical, and emotional growth. Staff address problems that might interfere with later learning.
- **Health and nutrition**—ECEAP staff screen children for medical, dental, mental health, and nutritional needs. Programs work with health providers to access appropriate care and to bring children's immunizations up to date. Children receive at least one complete meal each day in the classroom, as well as education about healthy eating habits.
- **Parent involvement**—ECEAP encourages parents to volunteer in the classroom and to serve on local policy councils and involves parents in training and support groups.
- **Family support**—ECEAP staff help families assess and advocate for their needs and locate resources. ECEAP also provides training and support groups that improve parenting, literacy, job and self-advocacy skills.

ATTRIBUTES OF EFFECTIVENESS:
ECEAP exemplifies the following attributes of effectiveness:

● **Staff have capacity to link children and families with both primary and specialized supports and services.** ECEAP has institutional affiliations and staff relationships with local child care providers, health resources, and community organizations and service providers.
● **Program staff and leaders recognize the importance of building social connections and developing local leaders.** By participating on policy councils, parents form social ties to their peers and develop leadership and decision-making skills.
● **Interventions occur in the early stages of a problem.** ECEAP enables families to identify and address children's needs before multiple risks accumulate and before the child's behavior reaches "diagnosable thresholds."

RESULTS:
A study conducted by the Northwest Regional Educational Laboratory between 1988 and 2000 found that ECEAP children had a steady increase in academic progress (starting in third grade) and displayed more positive behaviors in school than students in a comparison group. ECEAP parents were more involved in their children's activities outside of school than other parents. The decrease in families living at or below the poverty level was greater for ECEAP participants than for a comparison group, beginning in ECEAP's eighth year.