

Chapter 24

APPLYING DEVELOPMENTAL SCIENCE: METHODS, VISIONS, AND VALUES

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INTRODUCTION

In this chapter, we describe the methods, visions, and values that have come to distinguish applied developmental science (ADS). Simply distinguishing ADS from other developmental sciences is, however, too narrow. ADS is a unique integration of science, application, and practice, and this integration distinguishes it from most other sciences. For example, it is different from basic developmental science because of its primary focus on understanding the correlates and consequences of practical problems facing individuals across the lifespan. It is different from community psychology and the study of social policy and programs in its emphasis on continuity and change and on the interactions that occur between life stage and socially constructed interventions. It is different from clinical psychology and psychiatry in its emphasis on normative development, prevention, resilience, and the promotion of positive development across the life span. The purpose of this chapter is to explicate these unique characteristics of ADS. Its singular character is reflected in its methods, and these methods are what in large part give ADS its distinctive vision and values. Methods go hand in hand with values and both frame vision.

In this paper, we first describe the origins and history of ADS as an important per-

spective to guide research. We review prior theories and perspectives, notably the life span approach and biosocial orientation that paved the way for ADS, and we discuss some general contributions of ADS to developmental research. Thereafter we explicate the methods of ADS because they are so integral to its character; we describe the areas of assessment and early intervention, evaluation research, multiculturalism, and dissemination. Following descriptions of these methods around which training in ADS should be organized, we review the core elements of training. Next we consider the unique vision of ADS, reflecting the uses of the previously described methods. This vision currently consists of attention to ethics, using research to evaluate and inform social policies, pursuing prevention and promotion, and fostering university-community partnerships.

Origins and History of ADS

ADS arose in part from the National Conference on Graduate Education in the Applications of Developmental Science Across the Life Span (Fisher et al., 1993). In 1990 representatives from several national scholarly organizations with an interest in human development met because they were concerned with the interface (or lack thereof) between developmental science and the then-current challenges to positive development. These representatives recognized the need for a national consensus on the definition of competencies necessary to apply the developmental science knowledge base to social problems facing individuals at all points along the life course. The National Conference on Graduate Education in the Applications of Developmental Science Across the Life Span was convened at Fordham University on October 10–12, 1991. The aim of the conference was to create a living document that would define the scope, methodologies, knowledge base, and field experiences necessary to conduct applied developmental science activities (Fisher et al., 1993; Fisher & Murray, 1996).

Conference participants emphasized three conjoint aspects defining the scope of ADS. The applied aspect represents the goal of synthesizing knowledge from research and from applications in order to describe and explain developmental phenomena; this synthesis then allows one to intervene and to design preventive interventions that enhance the uses of knowledge about human development. The developmental aspect represents the focus on systematic and successive changes (as well as stabilities) within and between individuals, families, and social systems. The science aspect represents the application of a broad range of research methods required to test the validity of theory and application and to highlight the reciprocal interaction between theory and application.

Five broad categories of applied developmental science activities were identified at the conference: (a) testing the validity of developmental theories and professional practices in real world contexts; (b) investigating the developmental causes, consequences, and correlates of societal problems; (c) constructing, administering, and interpreting developmentally and culturally sensitive assessment instruments to identify protective factors and vulnerabilities of individuals at developmental risk; (d) designing, implementing, and evaluating developmental interventions; and (e) disseminating knowledge about developmental processes to professionals and organizations engaged in helping individuals and families at different points along the life span.

Additionally, four broad domains of competency for the conduct of applied devel-

opmental science were identified: (a) expertise in developmental theory and content, including cultural diversity and normative and atypical biological, physical, and social processes; (b) quantitative and qualitative research techniques necessary to evaluate change over time and to construct psychometrically sound developmental assessment instruments; (c) methods to understand and enhance individual and family development, including psychosocial assessment and program design and evaluation; and (d) ethical, legal, social policy, and professional knowledge necessary to understand and assist organizations and communities to serve individuals and families.

To illustrate, the program in developmental psychology at Fordham University was organized around this vision following the conference; its graduate curriculum and training program reflect these values and teach these methods—it is an applied developmental program. For a detailed description, see Fisher et al. (1993); Higgins-D'Alessandro, Hamilton, and Fisher (1998); and Fisher and Osofsky (1997). The point is that it is possible to structure a field including training in that field around the particular components that define ADS. We believe that it represents the future of developmental science. Certainly the generation of current graduate students, the future leaders of the field, in organizations such as the Society for Research in Child Development (SRCD) keenly embrace this vision, respect the values, and hunger for the methods (Sussman-Stillmann & Brown, 1997).

THEORETICAL FOUNDATIONS

Because the methods of ADS are so closely tied to theoretical origins, it is useful to briefly review this foundation.

Life Span Perspective

A life span approach first and foremost advocates that the potential for growth and change continues throughout the full life span, unlike the grand theories of development as offered by Piaget (1960) or Freud (1964), who present development as ending in early adolescence. Second, a life span approach allows for both multiple paths and multiple endpoints in development, again in contrast to the grand theories that articulate a single path to a single endpoint. Third, a life span approach argues for multiple influences on development: age-graded ones that are typically studied by developmentalists; history-graded ones, which reflect the impact of living in a particular place and time; and nonnormative events, or the chance occurrences that happen throughout life. Finally, the recognition of multiple influences implies that the field must be multidisciplinary; psychology does not own developmental science (Baltes & Reese, 1984; Sorensen, Weinert, & Sherrod, 1986). One of the important areas of growth of ADS since the conference in 1991 is its increasing expansion to multiple disciplines in the social and behavioral sciences (Lerner, 1995; Lerner & Galambos, 1998).

The life span approach has also been instrumental in inventing new methods to guide developmental research, such as testing-the-limits (Baltes, Lindenberger, & Staudinger, 1998) and cohort sequential designs (Baltes & Reese, 1984). Cohort sequential designs not only allow for examination of history-graded influences and the impact of socio-

political factors on development, but they also provide cost efficient means of studying development longitudinally (Baltes & Reese, 1994). Testing the limits approaches borrowed from medical studies of cardiac stress allow examination of individual potential, not just of expressed performance (Baltes et al., 1998; Baltes & Reese, 1984). ADS exploits both methods, extending them in applied directions.

Biosocial Orientation

A biosocial approach builds on evolutionary science. Recognizing that biology changes more slowly than the environment, it emphasizes that we carry a genetic heritage selected for earlier and much different environments. As a result, it is imperative that we consider the organism's range of reaction to its current environments (Lancaster, Altmann, Rossi, & Sherrod, 1987).

One of the best examples of this viewpoint is the historical development of the female reproductive lifeline. In our ancestors—as represented in for example the !Kung—females became reproductively capable in their late teens, had a short period before marriage of subfertility, and then lactate for 4–5 years after each birth, which builds in natural birth control, so that across their life span females have four to five births, each separated by 4–5 years (Lancaster, 1986). This life course may be contrasted with the reproductive lifeline of contemporary females, in which reproductive capacity is typically acquired in early adolescence, with first birth typically at least a decade later. These females then have two to three births across their life spans with minimal lactation so that no natural birth control ensues. As a result, such a female faces a lifetime of artificial birth control and a tenfold increase in experienced menstrual periods. The biosocial approach now asks what is the range of reaction of human reproductive biology to this dramatic change in reproductive lifeline—in regard to health issues, for example, such as cervical or breast cancer or displeasure from menstrual periods (Lancaster, 1986).

Again, ADS expands such thought in applied directions, asking about changes in the environment and possible social policy responses to them. We know, for example, that childcare does not compromise the infant's development of an attachment to his or her major caregivers (Clarke-Stewart & Allhusen, 2002). Yet, what is the infant's range of reactions to the number of different caregivers he or she can experience in early life? This question applies to high-quality care in the form of nannies, which show turnover, as well as to center-based care.

UNIQUE CONTRIBUTIONS OF ADS

Since the 1991 Conference, the theoretical foundations and scope of applied developmental science has been broadened to include a more diverse approach to research, a new vision of program evaluation, and community-university partnerships (Fisher & Lerner, 1994; Fisher, Murray, & Sigel, 1996; Fisher & Osofsky, 1997; Lerner, 1995; Lerner & Galambos, 1998). Sherrod (2002) has argued that by recognizing the importance of context and culture, emphasizing developmental appropriateness, and focusing on continuity and change even in regard to prevention and intervention, ADS bridges the gap

between research and practice, and promotes both as appropriate for collaborations (Fisher & Lerner, 1994).

One important contribution that ADS has made during the past 10 years is that it blurs the distinction between applied and basic research. We have long believed this distinction to be artificial. The two types of research are differentiated by the source of their question and the time frame for the relevance of the results, but both can be useful in our quest to understand the core developmental process linking person and context and to improve the social good. Research on self-efficacy (Bandura, 1992) is an example of originally basic research that has proven extremely useful in the battle to prevent HIV infection (Sherrod, 1998). Because social problems arise more quickly than science can generate information to deal with them (Prewitt, 1980), we need some information on the shelves to pull off as new problems arise. The research on self-efficacy served this purpose in regard to the AIDS epidemic.

Similarly, applied research is complex. Huston (2002) has differentiated two types of applied research: policy-relevant research such as studies of the mechanisms by which poverty affects child development and policy analyses or studies of actual social programs and policies such as welfare reform. Psychologists have not typically been involved in the latter type of research, which is unfortunate because most program and policies deal at some level with behavior change (Sherrod, 2002). ADS aims to correct this situation by training psychologists specifically to do policy-relevant research as well as policy analysis and to recognize when basic research has a contribution to make to policy. It thereby blurs the distinction between types of research by emphasizing that all are equally necessary to our science of human development.

The second contribution of applied developmental science during the past decade is its perspective on program evaluations. Black-box evaluations, based on clinical drug trials, are not necessarily appropriate for studies of social programs and policies. Although experimental designs with random assignment to control and program groups are desirable because they allow attribution of causality, social programs and policies are complex, multivariate endeavors that affect and are affected by numerous micro- and macrofactors. They are not single-variable drugs. Hence, it is questionable how appropriate the experimental design may in fact be for evaluations of social programs and policies (Hollister & Hill, 1995). It is more important to note, however, that other approaches should be explored; something as simple as examining the relationship between program participation variables and outcome variables could be useful. Sherrod (1997) has argued that for disadvantaged children and youth, programs and policies are as important to their development as schools and families and should be studied as contexts for development. Hence, evaluation research is not a separate, different type of research to be pursued by contract evaluators. It becomes a routine form of learning about phenomena, a different method or approach to use as circumstances dictate the need for it.

Third, perhaps the most important contribution of ADS, is its recognition that the communication between researchers and others must be bidirectional; both researchers and community participants, for example, have lessons to learn from each other (Lerner & Fisher, 1994; Lerner & Simon, 1998; Sherrod, 1998). Nonacademicians can learn how to evaluate and critique information from scientists, and researchers can learn

what information the community needs and how it can be effectively communicated to laypersons. Such communication between researchers and community participants serves not only to improve research but is also critical to maintaining a public commitment to science. This approach has perhaps the greatest impact on the way that research is actually done. It relieves the researcher of full control of his or her enterprise and makes research a collaborative process between researcher and participant. One of the mistakes made in the current educational reform effort is its failure to recognize the need for a new three *Rs* in education—reasoning, responsibility, and relationships (B. Hamburg, 1993)—given the demands of today’s jobs. These three *Rs* are also needed in contemporary developmental science. Investigators must know how to build relationships with participants, must recognize their social responsibility to participants and to society at large, and must acknowledge the complex reasoning processes necessary to both. ADS recognizes the need for these three *Rs* in its training of researchers; they are as important as is an understanding of traditional research methods and statistics.

METHODS

The descriptions of methods in the following section illustrate the particular contributions of ADS reviewed previously, but they also review other contributions of ADS in assessment and intervention, multiculturalism, and dissemination. Finally we consider the training of the applied developmental scientist.

Assessment and Early Intervention

Assessment has become a fact of life for today’s infants, children, and adolescents, often as a result of state or federal mandates. These mandates represent a traditional one-size-fits-all approach that can provide an assessment of minimum competencies but is ill suited to understanding the complexities of individual human development or of changes as a result of educational reforms. The perspective of ADS suggests a different approach, one based on best practices for assessment.

Best Practices for Assessment First, to be applied, assessment should have purpose and utility. There are several different reasons for assessment, most of them related to the well-being of the person or group being assessed. The first step is usually screening to identify individuals at risk for poorer developmental outcomes and thus to reduce the number of individuals who receive more in-depth assessment. Traditionally, this in-depth assessment provides information for diagnosis, but in the ADS perspective, diagnosis is replaced by creation of a conceptual framework for the problem or issue. This conceptual framework then leads to the identification of an intervention through program planning. The intervention should include program evaluation at both the individual level (monitoring changes) and at the group level.

Consistent with the bidirectional nature of communication within the ADS perspective, assessment also has utility for the ADS professional. Assessment provides us with a scheme of normative development and of context effects, which are often best identified by testing the limits. A technique of theory-guided practice on specific skills or test items, the testing-the-limits technique modifies the context of assessment to ob-

serve what individuals can do under ideal conditions (Kliegl, Smith, & Baltes, 1989). In addition to contextual normative information, assessment provides information about the range of individual differences.

Within the ADS perspective, assessment should also be developmental. Developmental assessment has traditionally referred to normative, age-graded assessment (e.g., the establishment of major developmental milestones). However, the biosocial orientation of ADS clearly shows that chronological age may not be the best marker for time-related changes, especially after infancy. Instead, developmental assessment should be characterized by recognition of individual differences and by plasticity—that is, the potential for systematic change across the life span.

Finally, for assessment to be consistent with ADS, it should be a process rather than being equated with testing. A test is “a set of tasks or questions intended to elicit particular types of behaviors when presented under standardized conditions and to yield scores that have desired psychometric properties” (American Psychological Association, American Educational Research Associate, and National Council on Measurement in Education, 1974, p. 2). In other words, for a test, the end product is the score. Assessment is a larger process that may—or may not—include tests but that does examine behavior in a variety of settings, the meaning of the performance on the test or the behavior in general in terms of an individual’s functioning, and the likely explanation for that functioning (the conceptual framework).

That assessment is not equated with testing does not mean that ADS is free to ignore psychometric principles. The contrary is in fact true—additional attention to the psychometric qualities of tests, observations, and so forth in different contexts should be a hallmark of the ADS approach. In this way we can discriminate bias and random error.

Cultural Equivalence in Assessment Because of its attention to multicultural issues, the ADS perspective is particularly suited to identify issues associated with the lack of cultural equivalence of measures. The issue of cultural equivalence is easily exemplified by the issue of language used for assessment (Busch-Rossnagel, 2002). Most assessment is based on measures available just in English. The ADS professional who wants to obtain information from a non-English-speaking population (here, we use the example of Spanish) is faced with creating measures that are linguistically equivalent. This process usually starts with a simple translation, done by an individual with fluency in both languages. Because translation is not a one-to-one mapping, the process may include asking several bilingual individuals to undertake the translation to achieve a consensus. However, the result may be flowing Spanish that is not true to the intent of the English measure because of the lack of precision in the original English version. The most precise words are often less commonly used in everyday interactions, so their use in a psychological measure increases the required reading level—and hence the difficulty—of the measure.

A second way of approaching translation is through the process of back translation, which is also known as double translation. In this process, a bilingual person translates an English version into Spanish, and then this Spanish translation is translated back into English by a second bilingual person. This process completes the back or double translation. The back translation (which is in English) is compared with the original English text. If the two versions are different, the Spanish version is altered to more closely approximate the original English. The altered Spanish version is subjected to

another back translation to English. Such an iterative process, going through several rounds of translation, usually improves the comparability of the Spanish and the English versions (Marín & Marín, 1991; Werner & Campbell, 1970).

Back translation through several iterations is usually seen as the best practice to develop linguistically equivalent versions of measures. However, because only the Spanish version is modified and the English version is not changed, back translation has limitations. When the original, English measure is standardized and cannot be modified without jeopardizing the psychometric information gathered on the standardized measure, then iterative back translation must suffice to protect the standardization.

However, when both versions of the instruments are being developed simultaneously, a better option is available. This process is called *decentering* (Werner & Campbell, 1970). On the surface, the process of decentering is the same as the iterative process of back translation. However, when comparing Spanish and English versions, either version may be modified to enhance the match between the two. Where discrepancies exist between the two versions, bilingual individuals can discuss the intent of the English item, rewrite the item for clarification, and then translate and back translate again. In other words, each round of translation informs the development process for both versions of the questionnaire and often has the effect of clarifying the focus of the items. Decentering is likely to affect the development of a measure because it clarifies the linguistic boundaries of the constructs.

Linguistic equivalence does not mean psychological equivalence. It is necessary to examine the pattern of relationships for the two versions with other measures to see whether they are psychologically equivalent (Busch-Rossnagel, 1992, 1998). Psychological equivalence is particularly important when assessing interaction or social processes, such as parenting, because these processes may have different meanings in different ethnic and cultural contexts (Vargas & Busch-Rossnagel, 2000; Zayas & Solari, 1994). As with any type of psychometric effort, linguistic and psychological equivalence are never proven; we just continue to gather more evidence.

The ADS Utilitarian Perspective on Assessment What is necessary for an assessment to be valid from the ADS perspective? First, consistent with current testing standards, an assessment (or a test) is not valid in and of itself; rather, there is valid use of assessment. From this utilitarian, applied perspective, valid use first depends on the qualifications of the examiner. Like traditional testing standards, ADS assumes that the examiner is skilled, that the he or she is able to establish rapport with the individual(s), and that any standardized assessments are administered, scored, and interpreted correctly. However, the bidirectional nature of communication within ADS changes the role of the examiner from the expert to a colleague. The participants in the assessment (and the guardians for children and youth) are equals in determining the validity of the assessment. Most important is that the participants are the ones who determine whether assessment should occur and who evaluate the utility of the information obtained. In other words, the participants help to establish the referral questions that define the assessment process.

In addition to a skilled examiner who respects the participants as contributors to the assessment process, the validity of assessment rests with an adequate understanding-examination of the context—at all the possible levels. What is the effect of the con-

text in the assessment if the examiner is African American and the participant is non-Hispanic White? What is the effect of having parent permission when the assessment is of the sexual behavior of adolescents? What is the physical context effect when advanced placement exams are interrupted by a bomb scare in a high school? Use of multiple contexts during the assessment process will help identify the effects of context. In other words, context should be treated as one of the variables to be examined in the assessment process.

Validity of use also requires an understanding of lack of perfect prediction from the assessment result. Whereas current behavior-performance-functioning may be observed, future behavior is only inferred. And that inference occurs within the conceptual framework created by the assessment process. If the ADS professional has a thorough grounding in research methods, then the conceptual framework may be a series of competing hypotheses for which this assessment process is looking for disconfirmation. Research methods teach us that we cannot confirm the null hypothesis—so we phrase our research questions to reject the null hypothesis. Unfortunately, many traditional assessment methods, especially projective tests (Anastasi, 1988), approach the assessment process in the opposite way—looking for evidence to support the hypothesis. What the process should be doing is taking that hypothesis and actively seeking information that would refute it.

The utility of assessment rests with communication of the results, and here again the ADS perspective is different from traditional practice. In traditional practice the result of the assessment is a series of scores, usually standardized (e.g., an IQ score or the results of the SATs), so that they have meaning for the experts. Mental health professionals are socialized to write assessment reports for other professionals, so that the reports are dense with jargon that may have little meaning and even less utility for the participants. Such reports are often focused on weaknesses, the areas of poor functioning that originally brought the participant in to the assessment process.

In contrast, the bidirectionality of communication involved in ADS suggests that the participants should shape the method of communication of results. For some participants, a standardized score may be understandable, but for many participants and guardians, the most understandable quantitative score is the percentile rank. Quantitative information should be contextualized by identifying strengths as well as weaknesses because strengths may help identify ideas for improvement or enhancement. Reports of observations of the performance will also suggest strengths and ideas for promotion of positive behaviors. When we carefully observed the reactions of Puerto Rican children to the standardized method of assessing mastery motivation, we noted that the Puerto Rican children showed much more social referencing than the Anglo toddlers tested before (Busch-Rossnagel, Vargas, Knauf, & Planos, 1993). Social referencing occurs when the young child looks to a more knowledgeable partner to interpret a situation, and we have used this observation about the proclivity of Puerto Rican youth to engage in this behavior to develop measures of social mastery motivation (Busch-Rossnagel, 1998).

Early Intervention

The need to communicate assessment results that include ideas for the promotion of development returns us to the heart of the assessment process for ADS. The goal of assess-

ment, at whatever level should be to provide information that is useful to modify or optimize development. The life span perspective that underlies the ADS approach highlights that the potential for growth exists throughout the life course, but because of changes in the potential of plasticity across life, it suggests the importance of early intervention to facilitate change most effectively (Baltes, Lindenberger, & Standing, 1998).

For example, research in the decade of the brain—the 1990s—demonstrated that the brain has greater potential for neural development from age 3 years to age 10 years (Kotulak, 1996). During the period, the brain is densely wired, with an oversupply of synapses between brain cells. Those connections that are used—that receive stimulation—are reinforced and continue to exist, whereas those that are unstimulated are likely to be eliminated. This process facilitates the acquisition of a wide range of skills in childhood; humans certainly continue to learn after this period, but change and particularly remediation become more difficult as the network of synapses diminishes in density.

Early invention is not defined simply by age. The life span perspective notes that there are multiple influences on developmental processes. Although age-graded ones have been the focus of most developmental study (as noted previously), chronological age may not be the most appropriate indicator of ontogenetic change. In adolescence, a marker of pubertal maturity may be better, so that early intervention for girls would occur earlier than for boys.

History-graded and nonnormative influences may also be targets for early intervention. One survey found that 10% of New York City schoolchildren had some symptoms of posttraumatic stress syndrome (PTSD) after the attacks of September 11. Rather than waiting for diagnoses of PTSD in adolescents who experienced the attacks at close range (e.g., the students at Stuyvesant High School, who were two blocks away from the World Trade Center), mental health professionals intervened early with the goal of preventing PTSD. Later surveys suggest that prompt intervention was useful—rates of probable PTSD dropped by about two thirds between October of 2001 and January of 2002.

Evaluation Research

Evaluations of social programs and interventions are one explicit form of directly applied research and are therefore integral to ADS. O'Connor (1995) describes the history of evaluation research in this country since its origins around midcentury. Early efforts in particular emphasized a black-box approach, reflecting the experimental paradigm prevalent at that time. In the standard experimental paradigm, individuals are randomly assigned to groups. One group receives the intervention, one functions as a control receiving no intervention, and selected outcomes are measured in the two groups. Group comparisons then ask whether there are statistically significant differences on any of the outcomes. If such differences are found, then causality for the difference in outcomes can be attributed to the intervention because presumably that was the only difference between the groups, due to random assignment. To some extent, this paradigm persists, at least in terms of the purported gold standard to which the evaluator should aspire. This paradigm is also mandatory in drug trials that aim for FDA approval so that policy makers then expect the same standard to apply before they are willing to pass laws.

Several issues remain, however, in regard to applying this paradigm to community-based social interventions. Random assignment is frequently not possible, so that one

must then resort to a quasi-experimental design; there are several such possibilities but none is without problems (Rossi, Freeman, & Lipsey, 1999). Random assignment also often raises ethical problems about withholding an intervention from individuals who need it; such problems are often more serious if the intervention is for children. Perhaps most important is that community-based social interventions are more complex in multivariate ways than is the case with drugs. Therefore, it is not clear that random assignment works in the same way. Many factors other than the social intervention may account for outcomes (Hollister & Hill, 1995). Finally, in large social program evaluations, it is possible for statistical significance to be found for differences that in fact are too small to be meaningful in the lives of individuals. In summary, although experimentation is desirable because it does allow assignment of causality, it is not an ideal method for evaluation of social policies and community-based social interventions. Therefore, other approaches should also be utilized.

Much of what we know about child development is based on correlational, not experimental research. Children are not assigned to good and bad parents, but we think we know something about what constitutes effective parenting. We think we know something about the impact of child abuse, and yet children are not randomly assigned to abusive and nonabusive parents. Correlational and regression techniques can also be useful to evaluations. In many cases, it is just as useful to know how much of the variance in an outcome is explained by the intervention as it is to know if there is a group difference.

Furthermore, many programs and interventions are not designed as experiments. They are established to help, to heal, or to promote the well-being of their participants. Hence, it is often assumed that no learning is possible in such efforts, and no evaluation is attempted; yet all such interventions are in fact social experiments. The program developers have in mind that if they do something, their actions will lead to some outcomes; this is the basic experimental model relating independent to dependent variables. Hence, a first step in designing an evaluation is to articulate this theory of change. Then the evaluation becomes theory-based research testing this theory of change (Connell, Aber, & Walker, 1995). From this perspective, the evaluation then not only evaluates the intervention, but it also can offer basic information about the phenomena addressed by the intervention.

In this way, the evaluation then becomes an opportunity for learning more generally. Sherrod (1997) has made the point that interventions and community programs are a large part of the context in which disadvantaged children grow up—probably as important as schools and families, for example. Hence, such community-based actions merit study not only in terms of whether they work, but also as phenomena with importance as developmental influences. In short, ADS brings this broadened perspective to evaluation research, pursuing multiple methods to investigate the effectiveness of interventions, but also using interventions and programs as opportunities to study developmental phenomena.

Multiculturalism

The centrality of context for research and application is a substantive assumption of the applied developmental science perspective (Fisher et al., 1993; Fisher & Lerner,

1994; Fisher & Osofsky, 1997; Higgins-D'Alessandro, Hamilton, & Fisher, 1998; Lerner, 1995; Lerner, Fisher, & Weinberg, 2000a, 2000b; Lerner, Sparks, & McCubbin, 2000). Integral to the successful application of the developmental science base to the practical problems of individuals and families is an understanding of how diversity, plurality, multiculturalism, and multilingualism shape developmental phenomena. Developmental theory, research designs, and interventions formulated around an understanding of normative (but possibly different) cultural paths of development is essential to establish an empirical foundation about which service delivery and social policy can contribute in positive ways to ethnically diverse communities (Fisher, Hatashita-Wong, & Isman, 1999). An applied developmental science that reflects the multicultural demographic landscape of America, that goes beyond conceptualizing members from different ethnic groups as minorities, and that moves toward understanding the unique developmental trajectories of racial and ethnic minorities is essential for creating sound theoretically and empirically based social programs (Fisher, Jackson, & Villarruel, 1997). In this section we highlight three areas critical to the construction of sound multicultural theory and application.

Definitions of Race and Ethnicity

In scientific and public discourse, the terms *race* and *ethnicity* have been used categorically in the absence of clear definitions of what these terms mean (Jensen & Hoagwood, 1997; Yee, Fairchild, Weizman, & Wyatt, 1993). Racial definitions represent a fluid social phenomenon, continuously shaped and redefined by social, economic, and political forces (Chan & Hune, 1995; Omi & Winant, 1986). All too often these meanings—when applied to ethnic minority populations in the United States—carry connotations of lives characterized by lower socioeconomic status and urban life and mask an understanding of the complexities of intraindividual differences within racial, ethnic, and cultural groups and the significance of these terms for the individual, the public, and the scientific establishment (Cocking, 1994; Heath, 1997; Helms, 1996; Oboler, 1995; Ogbu, 1994; Stanfield, 1993; Zuckerman, 1990). For example, racial categorizations are used to define groups that are socially constructed on the basis of physical similarities assumed to reflect phenotypic expressions of shared genotypes; therefore, they may have little psychological meaning outside of studying reactions to how one is treated by others on the basis of racial characteristics (Oboler, 1995; Phinney, 1996; Ragin & Hein, 1993). Similarly, the term *ethnicity* refers to groups that are socially constructed on the basis of assumed cultural, linguistic, religious, and historical similarities (Cross, 1991; Fisher et al, 1997; Padilla, 1995). However, ethnic membership is not a static quality; rather, it is a dynamic process of communities that individuals may choose to identify with or from which to exclude themselves (Dennis, 1993; Giménez, 1992).

To ensure that the construction of programs and policies based upon developmental research will address the needs of all individuals and families, applied developmental scientists need to move away from the use of static definitions of race and ethnicity and begin to explore the contextual and dynamic aspects of these dimensions of groups and individuals. When designing and describing research and interventions, applied developmental scientists need to carefully consider and explicitly describe the theoretical, empirical, and social frameworks upon which their definitions of race and ethnicity are used to identify participant populations and to allow their research findings to

be evaluated within the context of continuously changing scientific and societal conceptions of these definitions (Fisher et al., 2002).

Sensitivity to Within-Group Differences and Individual Factors In addition to reconceptualizing definitions of the terms *race* and *ethnicity*, applied developmental scientists face challenges in their efforts to define the ethnic group membership of individuals and families whose development they seek to understand and promote. The unfortunate tendency to categorize participants into broad panethnic labels (e.g., Black, Hispanic, Asian, or American Indian rather than Caribbean or African American, Puerto Rican or Colombian, Korean or Japanese, Navajo or Sioux) dilutes and obscures moderating effects of national origin, immigration history, acculturation, religion, and tradition on normative and maladaptive development (Fisher et al., 1997; Fisher et al., 2002; LaFromboise, Hardin, Coleman, & Gerton, 1993; Rumbaut, 1991; Spencer, Swanson, & Cunningham, 1991). The use of panethnic terms also can produce overgeneralizations about the nature of ethnic minority development, which neglects the unique differences among individuals within various racial, ethnic, and cultural groups and masks the influence on mental health of racial, ethnic, mixed-race, or bicultural self-identification (Mio, Trimble, Arredondo, Cheatham, & Sue, 1999; Oboler, 1995; Ogbu, 1994; Root, 1992; Trimble, 1990).

A corollary to overgeneralizations caused by panethnic categorizations is the tendency to ignore the role of race and ethnicity in development. A social characteristics model of development erroneously assumes that intergroup ethnic differences can be explained by variations in demographic factors such as income, education, and employment status. Such an approach ignores the independent historical and contemporary role of culture and minority group status and identification on development and obscures influences on positive development of stressors associated with immigration, acculturation, intergenerational cultural conflict, and exposure to racial and ethnic discrimination (Biafora et al., 1993; Chun, 1995; Fishbein, 2002; Fisher et al., 2000; Klonoff et al., 1999; Slonim-Nevo, 1992; Spencer, 1995; Steele, 1997; Terrell, Terrell, & Miller, 1993)

Moving Away From Comparative and Deficit Approaches to Ethnic Minority Development To produce knowledge that will best serve the needs of ethnic minority individuals and families, applied developmental scientists move away from the historical use of comparative research designs in which the developmental patterns of non-Hispanic White or other ethnic majority groups serve as the standard of mental health and in which ethnic differences are interpreted as group deficits (Busch-Rossnagel, 1992; Graham, 1992; Heath, 1997; McAdoo, 1990; Padilla, 1995; Takanishi, 1994). When such an approach is applied to policies directed at medical, economic, and mental health disparities between ethnic minority and majority groups, interventions may be inappropriately geared to unproven genetic, familial, or cultural factors ignoring the destructive influence of discriminatory public policies on the quality of schools, access to drugs, employment opportunities, exposure to violence, and inequities in criminal justice proceedings in the lives of American ethnic minority groups (Fisher et al., 2002).

Social policies and development promoting programs will benefit from applied developmental science's incorporation of noncomparative methodologies that stress the

careful documentation of demographic parameters (e.g., language, community networks, the role of extended and fictive kin) conducted through interviews in an individual's language of preference (e.g., Diaz-Soto, 1989). Such an approach shifts the lens of applied developmental science toward the documentation of assets, strengths, and resiliencies that exist in individuals, families, and the environments in which they interact so that the characteristics associated with normative and positive development can be utilized in the formation of developmental theory, programs, and policies (Connell, Spencer, & Aber, 1994; Fisher et al., 1997; Scales, Benson, Leffert, & Blyth, 2000; Spencer, 1995).

Dissemination: Giving Child Development Knowledge Away

As the situation of children has deteriorated across the past decades (D. Hamburg, 1992; Hernandez, 1993; Lerner, 1995), organizations committed to helping children and families have increasingly realized that efforts—if they are to be maximally effective—must be based in what we know about child and youth development and about the impact of different types of influences on the development of children from diverse backgrounds and of different ages. At the same time, scientists—even those who do so-called basic research—have also recognized the deteriorating plight of America's children and as a result have begun to assume some responsibility for ensuring that their research results are disseminated to policy makers, service providers, and other non-academic audiences. Consequently, there has been and continues to be growth in the United States in recent years in the numbers and types of projects committed to using information from research to improve the lives of children, youth, and families.

ADS fully emphasizes the importance of the dissemination of research information to nonacademic audiences. All dissemination efforts are based on the idea that research on child development provides much critically useful information of relevance to parenting and family decision-making and to the design and evaluation of programs and policies serving children and families. Yet, such information is too frequently relegated to academic journals and is not disseminated to the public, to the staff of programs serving children, to evaluators of such programs, to policy makers, to funders, or to others who work on children's behalf. Such dissemination not only has the potential to improve the work that is done on children's behalf, but it is also critical to maintaining a firm and substantial national commitment to funding research on child development.

Researchers are concerned with the quality of information. The purpose of academics in pursuing dissemination is to make information available to the full array of constituencies—public and private—that are concerned with the well-being of children and to policy makers and funders who set priorities and funding levels for scientific research. Because researchers' dissemination efforts do not proceed from a partisan special interest and because they do not advocate for particular partisan purposes or positions, they maintain a political neutrality that does not always characterize other dissemination efforts. For this reason, dissemination—giving child development knowledge away—as former chair of the SRCDC's Committee on Child Development, Public Policy, and Public Information, Richard A. Weinberg, described it, is a particularly useful service for applied researchers to undertake to complement their primary concern with research and education (Sherrod, 1999).

Broad-based dissemination—especially through the various media—requires both specific expertise and a network of relevant contacts (McCall, 1992). ADS training is designed to equip the future researcher with the expertise to work with the media, to testify before congress, and to establish the necessary contacts to pursue these ends. Several lessons about the media are noteworthy.

First, even in a time of heightened legislative activity, the media are primarily interested in research information that is new and groundbreaking in some way. Relevance of known facts to policy decisions and implications of what we know for legislative directions are not sufficient to engage the media's attention. This situation indicates the need to educate the media, the public, and legislators about the general importance of research-based information. Information may not be the only factor influencing legislation or the public will, but it should make a contribution. This orientation of the media indicates the need to help nonscientists understand the nature of research and to increase their interest in basic research as well as research immediately relevant to policies. Information should be valued because of its relevance for the issues at hand, not just because it is new or groundbreaking. Old information can be just as useful as the new.

Second, researchers must be trained to serve as spokespersons to the media in specific, specialized fields, and they must be willing to do so. The media are interested in personal contact with the relevant researchers, and local media are particularly interested in local researchers' perspectives. The field of developmental research needs a resource network of researchers who are ready and capable of communicating with the media and with legislators. Researchers need training in interacting with the various forms of the media. ADS pursues these ends by considering dissemination and developing expertise in dissemination as important as statistics and research methods. Universities can be mobilized to attend to dissemination because they are interested in publicity. Moreover, researchers with appropriate training, as provided by ADS, are able to assemble what is known in specific areas in a clear, communicable fashion; that is, ADS researchers have an interest in dissemination because they have learned how to communicate effectively outside their fields.

Several years ago, the social policy committee (Committee on Child Development, Public Policy, and Public Information) of SRCDC prepared the Directory of Organizations Concerned with Public Information of Relevance to Child Development (Rosenberg & Sherrod, 1994). More than 60 such efforts across the country were identified and one-page summaries provided. That directory is now out of print, but attention to dissemination in the field has continued to grow (Sherrod, 1999). ADS is of course not the only contributor to this growth in dissemination in the field, but it has made a contribution. More important is that it elevates dissemination to a necessary, important, and respectful undertaking for researchers. Researchers accept interaction with the media for what it is. They do not fear misrepresentation. They do their part to disseminate the information from their research.

The methods of ADS, which have been described, generate unique contributions to research on development across the life span. Attention to assessment and early intervention, evaluation research, multiculturalism, and dissemination are as critical to ADS as research methods and statistics are to psychology generally. Because these methods are such an integral part of the field, training in ADS also must have a special quality. In the next section, we describe the nature of training graduate students in

ADS. The training program in Applied Development Psychology at Fordham University exemplifies the characteristics described in the next section.

TRAINING

What are the criteria that mark distinguished training programs in ADS? We believe that the recommendations from the National Conference on Graduate Education in the Applications of Developmental Science Across the Life Span (Fisher et al., 1993) are still valid today. The curriculum outlined there proposes the development of competence in four domains—development theory and content, research methods, application strategies, and professional issues—and notes that field experiences are one criterion for discriminating applied developmental programs from traditional developmental programs.

The recommendations concluded with the recognition that the ADS perspective requires a multidisciplinary emphasis, which might lead some to believe that training must occur in settings freed from disciplinary constraints. Given the nature of the academic enterprise, most training is still done—and is likely to continue to be done—within discipline-delineated departments and schools. The breadth of the discipline may vary from the traditional arts and sciences departments, such as psychology and sociology with multiple specializations, to the applications of the disciplines, such as departments or schools of education or social work, to fields that pride themselves on their multidisciplinary nature, such as child development or human ecology.

An understanding of the several issues affecting higher education is necessary if these discipline-based departments are to implement efficiently the recommendations for training in ADS. The first issue is that change within a single academic unit (e.g., a department) is usually easier than change among multiple academic units. Thus, training programs should identify in which of the four curricular domains the academic unit can provide training within itself. We suggest that by definition, a discipline-delineated department can and should be providing training in the theory and content of development. Likewise, the mastery of the basic research methods for a discipline should be the first step in this domain. For psychology, this process would include understanding of the classic experiment with random assignment to condition. With such a basis, the applied developmental psychologist can then gain the understanding as to how the experiment may be limited for the understanding of the complexity of human development. Because we cannot randomly assign majority or minority status or cultural background, our research designs do not control the potential confounding variables, such as languages, education, income level, and so forth. Such comparisons do little to enhance our understanding of the role that psychological processes underlying culture play in development (Busch-Rossnagel, 1992). However, without a discipline-based foundation in basic research methods, we ignore the advances of science and run the risk of common-sense errors such as proving the null hypothesis or attributing causality to correlated events. A final area in which to begin with discipline-delineated training is for assessment and intervention techniques, whose validities are closely tied to discipline-based research methods.

Exposure to multiple disciplines can help applied development scientists in training

to understand the limits of the basic research methods of their discipline. In addition, such exposure is critical for training in program evaluation, which must recognize the complexities of our biosocial existence, the economic realities of intervention (or of failure to intervene), and the policies affecting all applications of ADS.

Likewise, multidisciplinary understanding is the foundation of field experiences, which are the distinguishing element of ADS training (Fisher et al., 1993). Consistent with bidirectional communication, identification of the status of students as individuals in training must be an inherent aspect of ADS field experiences, particularly those involving service delivery. Although this issue may be a source of continuing discussion in other fields (Miller & Rodwell, 1997), the ADS approach clearly calls for communities—particularly those of society's more vulnerable populations—to be a part of the training process. We suggest, then, that in ADS field experiences, the in-training status of students be clearly labeled, for instance, with terms such as intern.

Negotiating University Support

McCall (1990) suggested the identification of an integrating theme as one of the first steps in establishing a unit for interdisciplinary education and research. The integrating theme should be an issue that can be addressed from the perspective of many different discipline-based departments; an example would be children, youth, and families or university-community partnerships. We note that themes (or at least the buzzwords that sell them) may come and go, but the areas of educational degrees should have staying power. Thus, we suggest that degrees from identifiable disciplines are more marketable than are fields that require an explanation. However, higher education is rapidly embracing certificates, which usually require a less tedious approval process and thus might be based on a theme.

The issue of marketability highlights a primary issue affecting all of higher education. Gone are the days when adequate justifications for a program were faculty interest and expertise. Today program development requires consideration of a series of questions. Is there a population of individuals interested in training in this area? What will be the value-added result of training in this area? ADS professionals often have a good understanding of the needs of children, adolescents, and families, but the way in which training in ADS will meet those needs may require changes in public policy (e.g., more funding for youth and family initiatives). Thus, administrators are likely to challenge not the societal need for skilled professionals in this area, but the needs of the marketplace and the opportunities currently available as student outcomes. In addition, ADS professionals need to articulate how proposals for new courses, certificates, or degrees will affect the status quo. Will new courses reduce the availability of senior faculty for other needs, such as introductory courses for undergraduates? Will new certificates or degrees cannibalize students from other programs, such as clinical or community psychology?

McCall (1990) also noted that building a base of support and securing funding were necessary first steps for interdisciplinary initiatives, and these efforts are likely to bring to light the key issues underlying the planning at the institution providing the training program. Education is becoming more businesslike as universities adopt revenue and

cost allocation models and unit- (school- or college-) based budgeting. These models emphasize educational units, such as schools or colleges as being at the heart of the educational enterprise. Therefore, they identify all revenue and costs as being generated or associated with a particular unit. For direct revenues and costs, such as tuition revenue and the faculty salaries associated with instruction, the identity of the unit that generated the revenue or cost is usually straightforward.

However, many activities conducted by universities are not directly tied to a particular unit, and the revenues or costs of these activities are allocated to the unit by some agreed-upon formula. Thus, the cost of the human resources office might be allocated on the percent of employees in a given unit out of the total number of employees. The revenue generated by the football team (or the costs associated with the team if the balance is negative) might be allocated on the basis of the percentage of undergraduate students in and alumni from the unit, under the assumption that it is the undergraduate students and alumni who benefit from or support the presence of football on campus. The cost of the office supporting research might be allocated on the basis of the percentage of faculty and graduate students to indicate that the research process is most associated with faculty development and graduate study. Such models apparently inhibit cross-unit collaboration by assigning costs for activities conducted outside the unit. However, in a valid unit-based budgeting model, revenues and costs are consistently associated with the unit—or multiple units—that generate them, and this practice facilitates planning and longer-term budget projections and commitments.

Building a base of support for the long-term viability of training programs may require adjustments in the faculty reward system. For example, how do team-taught courses count both for faculty workload and for personnel decisions such as tenure, promotion, and merit awards? McCall's notion of an independent coordinator may be applied here, particularly for the benefit of junior faculty. An individual, often an administrator, who is committed to ADS training may be necessary to propose compromises that will facilitate the multidisciplinary training.

Thus, ADS training in the four curricular areas begins in discipline-based departments but must branch out to provide the multidisciplinary exposure that is at the heart of ADS. Multidisciplinary work in turn requires new patterns of collaboration within universities that might include awarding certificates, explicit statements of revenue, and cost allocation models, and faculty rewards. In the end, McCall's proposal to market, not sell will be the key to the long-term viability of training programs. If the vision and the values of ADS are operationalized in a program that attracts students and funding, the results speak for themselves and will change the universities in which they are found

VISION AND VALUES

The vision inherent in ADS and the values it promotes derive from its methods. Vision and values represent the application of methods to important issues in developmental research in the real world. In the following section, we review the vision and values of ADS by describing its approach to ethical issues in research, the design of social policies for children and families, the prevention of problems and the promotion of positive development, and the facilitation of university-community partnerships.

Ethical Issues in Applied Developmental Science

ADS raises distinctive ethical issues. The developmental perspective raises questions about the age at which interventions should be initiated and whether an intervention at any one point in the life span is sufficient to sustain desired outcomes (Fisher & Tryon, 1990; Fisher, 1993; Lerner & Tubman, 1990). The emphasis in ADS on individual differences and within-person change challenges applied developmental scientists consulting to the courts or policy makers to distinguish knowledge based upon mean group differences from the ability to predict the developmental trajectory of any one person. Applied developmental scientists must also guard against personal and societal biases that may shape research design and data interpretation to fit contemporary norms rather than the actual experience of individuals and families studied (Fisher, 2002; Fisher et al., 2002; Fisher & Wallace, 2000).

The ethical concerns of applied developmental scientists reflect the moral values of beneficence, nonmaleficence, autonomy, and justice. Applied developmental scientists strive to design studies and intervention programs that maximize good outcomes and minimize harm, respect the autonomy and privacy rights of individuals and families, and provide equal access to the benefits of research and social policies. In this section we highlight just some of the ethical challenges of applied developmental science.

Maximizing Benefits and Minimizing Risks of Applied Developmental Science

When developmental science is applied to practical problems facing individuals and families, the potential to promote human welfare increases along with the potential to inflict harm. Both positive and negative results of research examining the correlates of social problems as well as the design and evaluation of development enhancing programs can have long-lasting impact on social attitudes and social policy. For example, one problem for the ADS investigator is that research rarely yields the single-factor, cause-and-effect statements that practitioners and policy makers want to hear. Another problem is that in responding to policy makers' desire to implement least-cost interventions, applied developmental scientists may test social programs in their weakest form, thus risking rejection of potentially valuable interventions or stigmatization of members of the vulnerable populations who were the focus of the intervention (Fisher & Wallace, 2000; Lewis, 1994). Applied developmental scientists must resist pressures to make statements that go beyond the data, to design developmental interventions that compromise maximal enrichment, or conduct program evaluations biased toward intervention failure.

The cultural and economic diversity of the American population poses the risk that a developmental intervention that has proved successful with one segment of population will be assumed by policy makers to work for a different segment, when in fact it may be ineffective or harmful; thus, applied developmental scientists must be mindful that measures of psychological constructs or interventions designed to promote positive development for one group may or may not have the same or even similar psychometric properties or patterns of effectiveness for other groups differing in developmental level, socioeconomic status, geographic setting, ethnicity, or culture (CNPAEMI, 2000; Knight & Hill, 1998; Laosa, 1990; Parron, 1997).

To avoid contributing to the implementation of ineffective social policies, the

misapplication of developmental principles to real-world problems, and an erroneous public understanding of self and others, applied developmental scientists must strive to (a) conduct research and select program outcome measures that are as close as possible to the phenomena addressed, (b) ensure the reliability and the developmental and cultural equivalence of assessment instruments, (c) ensure that intervention methods are monitored and reliably applied, and (d) obtain an appropriate balance between good experimental design and the obligation to provide fair access to research and intervention (Fisher et al., 2002; Fisher & Tryon, 1990).

Informed Consent

In research and intervention, informed consent is viewed as a primary means of protecting research participants' autonomy and welfare. Applied developmental scientists must provide individuals and (when appropriate) their guardians with information about research procedures, assessments, or interventions that might influence their willingness to participate themselves or allow their children to participate. Such information typically includes a description of the nature and goals of the procedures, foreseeable risks or benefits of participation, the extent as well as limits of confidentiality, and the voluntary nature of participation. Vulnerable families seeking services in community mental health or medical centers may be concerned that failure to consent would result in discontinuation of services. To protect the voluntary nature of consent to participate in intervention research or program evaluation, applied developmental scientists should inform individuals and families about the experimental nature of the intervention, services that will or will not be available to the control group(s), how assignment to treatment and control groups will be made, and available services if an individual does not wish to participate or wishes to withdraw after a program has begun.

Federal regulations and state law require the permission of a guardian when minors are involved in research or treatment. With a few exceptions (e.g., mature or emancipated minors), children under the age of 18 do not have the legal capacity to consent and—depending on their age and the complexity of the research or intervention context—may lack the cognitive capacity to comprehend the nature of their participation and rights (Abramovitch, Freedman, Thoden, & Nikolich, 1991; Bruzzese & Fisher, 2003; Ruck, Abramovitch, & Keating, 1998; Weithorn, 1983). However, out of respect for children's developing autonomy, in addition to guardian permission, federal regulations and professional codes of conduct require a minor's affirmative agreement (assent) unless participation provides the possibility of direct benefit not available elsewhere (American Psychological Association, 2002; Department of Health and Human Services [DHHS], 1991).

The guardian permission requirement assumes that children come from a reasonably secure and loving family. However, the high-risk conditions that bring children to the attention of applied developmental scientists (e.g., child abuse, health-compromising sexual behaviors, runaway youth) may make obtaining consent from identified guardians difficult, place the child in jeopardy, or violate a teenager's privacy rights (Brooks-Gunn & Rotheram-Borus, 1994). Thus, federal and state laws allow the waiver of guardian permission for research and intervention when such waivers would afford greater child protection (DHHS, 1991; Fisher et al., 1999). When such permission is waived, applied developmental scientists must ensure that an independent-consent advocate for the mi-

nor is present during recruitment to verify the minor's understanding of the research or intervention, to support his or her preferences, and to ensure that participation is voluntary (Fisher, Hoagwood, & Jensen, 1996).

Difficulties in acquiring guardian consent from at-risk youth have led in recent years to renewed debate over the use of passive consent (asking parents to respond only if they do not wish their children to participate) as a means of increasing research participation of underrepresented populations. An implicit assumption underlying advocacy for passive consent is that a caring and knowledgeable guardian would perceive the research as important and desirable and that parents who do not return consent forms either lack the knowledge to appreciate the importance of the research or are unconcerned about their children's welfare. The ethical dangers of passive consent are illustrated in the narratives of parents and children who view the procedure as a deceptive means of undermining the purpose of parental permission and of coercing and encouraging children to deceive their parents (Fisher, 2002).

Confidentiality and Disclosure

Applied developmental scientists conducting research or program evaluation related to risk and resilience in vulnerable populations often uncover confidential information about illegal behaviors, mental health problems, and health-compromising behaviors that may be unknown to family members or others concerned with a participant's welfare (Fisher, Hoagwood, et al., 1996). In some instances, disclosure is required by law. All 50 states have laws requiring mental health professionals to report suspected child abuse or neglect, and at least 13 states require researchers, as members of the general citizenry, to do the same (Liss, 1994). Following the case of *Tarasoff v. Regents of the University of California* (1976), a number of states have duty-to-protect laws that require health professionals to inform a third party of the prospect of being harmed by a client. Although there has yet to be case law in the area of research, applied developmental scientists need to give appropriate consideration to whether their relationship to a research participant meets the duty to protect (Appelbaum & Rosenbaum, 1989).

Decisions regarding whether to disclose confidential information when reporting is not required by law are more ethically complex. During the course of a study or program evaluation, some individuals without documented mental disorders may reveal suicidal ideation or other self-harming behaviors. Applied developmental scientists need to be knowledgeable about procedures for determining and managing suicidal intent (Pearson, Stanley, King, & Fisher, 2001) and criteria to determine whether other self-endangering behaviors that might be anticipated to arise during the course of research or program evaluation (e.g., use of a toxic inhalant to get high) require action and whether such actions involve disclosing the information to other concerned adults or assisting the participant in obtaining appropriate treatment (Fisher, 2002).

Research procedures and assessments for program evaluation may reveal additional dangerous but not life-threatening behaviors such as substance abuse, delinquency, truancy, or high-risk sexual behaviors. In these situations disclosures to school counselors or child protection agencies regarding risk behaviors may harm participants or their families if those informed react punitively, react incompetently, or entangle the family in criminal proceedings. In these situations routine procedures for assuring confidentiality may not be sufficient to protect participants from subpoena stemming from

criminal investigations or custody disputes. An applied developmental scientist can apply for a certificate of confidentiality under 301(d) of the Public Health Service Act, which provides immunity from any government or civil order to disclose identifying information contained in research records (Hoagwood, 1994; Melton, 1990).

The extent to which keeping information about participant risk confidential or disclosing it to others is further clouded by emerging evidence that a significant proportion of teenagers and their parents want investigators to actively assist them in obtaining help for problems revealed during the course of research (Fisher, 2002; Fisher, Higgins-D'Alessandro, et al., 1996; O'Sullivan & Fisher, 1997). Ethical decision making in such circumstances requires that the applied developmental scientist (a) consider the possible risks that might be uncovered during the course of a study or intervention, the legal obligations, and the reporting expectations of prospective participants; (b) clarify the extent to which information obtained is derived from reliable and valid measures of risk; (c) identify resources that can best serve the interests of participants in need of referral or direct intervention; (d) based on the prior considerations, determine an appropriate confidentiality and disclosure policy; and (e) during informed consent, share with prospective participants and their guardians the policy that the investigator will follow (Fisher, 2000, 2002).

Design of Social Policies for Children and Families

It is essential that psychologists be present at the policy-making table. Much policy is oriented toward changing human behavior—reducing high-risk sexual behavior, preventing teenage pregnancy, improving school performance, or reducing substance abuse. Hence, it is unfortunate that America's policy making has been disproportionately driven by economists and scholars other than psychologists who study behavior. Not only is it appropriate for psychologists to be involved in policy making, but they also have an important contribution to make. Their knowledge of human behavior and development is indispensable. If we are to design policies that improve the lives of people, it is critical that psychologists who understand behavior and developmentalists who study children and families be involved (Sherrod, 2002).

Furthermore, policies and programs are part of the ecology in which people live and hence are critical areas for psychological research. As we have already noted, it is important to study programs as contexts for youth development (Sherrod, 1997). Bronfenbrenner and Morris (1998) have provided psychologists with the critically important ideas derived from ecological systems theory that describe the importance of different levels of this policy context. For example, there are macrosystem variables of culture and social norms, exosystem variables involving social institutions, mesosystem variables involving family and schools, and microsystem variables reflecting the world of the individual child.

Psychological research, because of its focus on individual behavior, has disproportionately concerned itself with proximal rather than distal variables, with the microsystem and mesosystem in Bronfenbrenner's scheme. That focus has changed to some extent during the past decade as attention to context and culture has increased. However, it is time that policies and programs be included as part of the mesosystem and

macrosystem studied by developmentalists, along with families and schools as social institutions that have an important influence on socialization and development.

From this perspective, policy work is not substantially different from clinical attention; it is just focused at a macrolevel rather than trying to solve individual problems. It might be viewed as a developmental extension of community psychology. Hence, it is logical and perfectly consistent with its field goals that psychology include policy making in the areas to which it attends. Psychology programs such as the applied developmental program at Fordham University includes such curricula as part of their mission, but the importance is too great to be limited to a few select programs. Policy making should be as core to the field as are research methods and statistics. If policy makers are to develop effective policies and programs, it is essential that psychologists be involved, and policies and programs provide important areas for psychological research.

To some extent, it is easier to involve psychology in the policy making process than it is to include research. Although psychology is a science, it also has a practitioner element, which increases its relevance to policy. Clinical psychology, forensics, and industrial-organizational psychology are applied branches of psychology, although they tend to function at an individual rather than a systems level. However, theoretically, there is no substantive reason that policy making should not be added to this array (Sherrod, 1997).

Although it should be obvious that information from research should be useful to policy making, that usefulness is in fact too frequently not recognized. First, other factors such as ideology or cost outweigh information. Second, it is frequently difficult for research to provide the clear, direct singular-answer type of guidance that is needed for policy making. Third, we have noted that social problems change faster than our ability to generate information to address them (Prewitt, 1995). Hence, pressure is relatively constant against using research to guide policy; thus, the need to base policy making in research must be always on the agenda of the applied researcher (Zigler & Hall, 2000; Zigler, Kagan, & Hall, 1996).

Perhaps at no point in the history of the United States has it been more important to direct effective policy solutions to such problems. There are a variety of serious social problems confronting children, youth, and families today that require our immediate and concerted efforts. Too often, however, policies and programs are based on ideology, misguided efforts, or solutions designed with too little information. Therefore, the importance of building and maintaining substantial connections between research and policy has never been more important.

Elsewhere, Sherrod (2002) outlined and elaborated seven points about developing and maintaining a close interaction between research and policy. These points included the following:

1. It is necessary to use both demographic information summarizing the problem and research study findings that address the underlying causes and consequences of the problem. Both basic and applied research are needed.
2. Developmental appropriateness and developmental continuity are crucial considerations; that is, interventions must be designed to target the developmental needs of the age period for which they are focused, and it is also important to at-

tend to the developmental mechanisms by which interventions may generate effects that would be expected to last long beyond the end of the program. Furthermore, it would be interesting to ask about the cumulative impact across the life span of interventions experienced at different ages.

3. There are no magic bullets; that is, there are no interventions that are going to solve all the problems faced by disadvantaged children and youth. Short-lived interventions can be expected to help, not to fix lives. Sustained social commitment is required to help those children and families with needs.
4. It is essential that we adopt a diverse approach to the design of policies and to their assessment and evaluation. We have to be creative about solutions to social problems and open to different forms of evaluative research so that the method suits the question.
5. Dissemination is also a key ingredient of the research-policy interaction, but the target of dissemination must be clear and varies by both the problem being addressed and the policy being proposed.
6. Cost-benefit analyses and recommended means of achieving costs have to be part of the efforts to help children and families; otherwise, failure is assured.
7. Regardless of how well one pursues the goal of using research to guide policy formation, even while attending to all the points made herein, research will be only one of many factors driving policy. The research practitioner has to recognize this fact, do the best he or she can, and not despair.

Most researchers today who are interested in policy found their interest through some indirect route because psychology programs do not currently devote much attention to policy. The younger generation of researchers is, however, very interested in research-policy connections; there is, for example, an SRCD social policy network for students (Susman-Stillman and Brown, 1997). We must exploit this interest by developing institutional mechanisms for young scholars to follow a career path that allows them to use research to guide policy. One such route is fellowships such as the Congressional Science Fellowships of SRCD. ADS and training programs such as the one at Fordham University offer another such mechanism. Attention to the prevention of problems and the promotion of development (covered in the next section) offers one avenue for eliciting the interest of developmental scientists seeking an applied orientation.

Prevention and Promotion

In recent years, a new approach has arisen in the youth development field. This approach moves beyond treatment and even beyond prevention to the promotion of development. This focus on the positive development of youth moves beyond fixing problems or eliminating defects. For several decades, research and policy have been devoted to identifying and correcting problems of youth: high-risk sexual behavior, teenage pregnancy, school failure and dropout, substance use and abuse, violence, and crime. It was from this focus that the emphasis on risk factors became prominent. Because not all youth succumb equally to risks, the concept of resiliency emerged, and prevention

efforts were developed. Although these efforts have enjoyed some success in reducing risks and health-compromising behaviors, their achievement is constrained by limited funding and by the limited evidence of sustained behavior change after the program has ended (Benson, Scales, Leffert, & Roehlkepartain, 1999; Scales et al., 2000).

A focus on promoting the positive development of youth rather than on fixing problems leads to the development-promoting qualities of families and communities and to policies that make up for the shortfalls of the environments. If we provide the supports that youth need, all have the potential to beat the odds (Larsen, 2000).

This approach is based on the contributions of several groups such as the Search Institute, the International Youth Foundation, and the Youth Policy Forum (Benson, Leffert, Scales, & Blyth, 1998). Both external and internal assets of youth have been identified and correlated with environmental and individual resiliency factors. Internal factors include commitment to learning, positive values, social competencies, and positive identity. Broad categories of external factors include family and community supports, empowerment, boundaries and expectations, and constructive use of time. The presence of risk behaviors is inversely correlated with assets. These assets, of course, interact in complex ways and vary substantially by community (Benson et al., 1998; Scales et al., 2000). However, this approach demonstrates how providing the means to meet youth's multiple developmental needs by ensuring protection, support, and opportunities across these important contexts is a preferred focus for intervention.

The interest in positive youth development has focused primarily on adolescents. The National Research Council of the Institute of Medicine (2000) recently outlined a set of the key ingredients in strengths-based programs that promote effective development and support family coping (Tolan, Sherrod, Gorman-Smith, & Henry, 2003):

1. Programs must have clear goals and intended outcomes.
2. The content or focus is age appropriate but challenging.
3. The involvement is based on active learning processes.
4. The program provides a positive and safe environment.
5. There are adequate materials and facilities to conduct the program.
6. The staff is well prepared, supported, and stable.
7. The staff is culturally competent and conducts outreach to diverse groups.
8. The program or approach should be related to and work with parents and existing community groups and organizations.
9. The program elicits, supports, and promotes parental involvement and does not separate youth needs from family or parental needs but rather integrates them.
10. The program or approach is conducted within a learning organization; the organization is willing to adapt, improve, and develop as the setting, youth needs, and opportunities shift.

This focus on the promotion of positive development is, however, relevant to all periods of the life span. ADS applies it equally from conception to the end of life (e.g., see Baltes et al., 1998).

Another critical aspect of the ADS vision is university-community partnerships,

which have arisen in recent years to promote a new kind of relationship between researchers, their study participants, and the communities that may benefit from research.

University-Community Partnerships

In recent years, resulting in part from perspectives and principles inherent in ADS, a new approach to research has arisen. In this approach, researchers do not set themselves up as experts to study subjects in the form of community residents, schoolchildren, or participants in youth programs. Instead, the research project is established as a partnership between the researcher and the participants in his or her study. In fact, certain universities, especially the land-grant ones, have established partnerships with the communities in which they reside (Kellogg Commission, 1999). Individual research projects then exist in the context of these partnerships. Universities share their expertise and other resources, and community institutions and residents share their perspectives, their local wisdom, and their willingness to cooperate with research (Fisher, 2002; Lerner & Fisher, 1994; Lerner & Simon, 1998a, b; Sherrod, 1998a). These partnerships between typical academic institutions and community organizations and community residents carry many implications for research and for the functioning of the university. Universities adopting this stance to their communities have been described as outreach universities (Lerner & Simon, 1998a).

These outreach universities carry the full array of characteristics of ADS. They blur the distinction between basic and applied research. They bring a new perspective on evaluation research, one that uses programs and policies to generate new information about children and youth. They contribute to the dissemination of science, thereby increasing its usefulness to policy and programs. Finally—and perhaps most important—these university-community collaborations contribute to the reciprocity of communication between academics and others; too often academics have assumed a unidirectional flow of information from them to others. A bidirectional flow increases the chances that anyone will listen to academics and increases the usefulness of the communication to them. It becomes a learning endeavor for all involved parties (Sherrod, 1998b).

The outreach university orientation carries an equal number of implications for the nature of institutions of higher learning. First, by reaching out to precollegiate schools in their communities, universities can contribute to the reform of precollegiate education. Mentorship and internship programs are one vehicle, for example. Second, it can contribute to the reform of higher education. Although most of our attention to educational reform has been at the precollegiate level, collegiate education is also in need of review and revision. For example, compared to the widespread concern for high school dropout, almost no attention has been paid to dropout from college. Yet dropping out of college can have equally serious consequences for the dropout, and minorities are at particularly high risk for dropout. Third, in this historical moment of rapid and extensive social change in technology, medicine, and most other domains, lifelong learning becomes essential. Certainly, universities are the vehicle to lifelong learning, beginning with their approach to collegiate education. Finally, universities can extend their reach to serve community residents such as individuals now required to move off welfare, as well as the more typical young adult college student population (Sherrod, 1998a).

We have also previously argued that the outreach university provides a means of re-

connecting philanthropy and science (Sherrod, 1998a). When philanthropy originated early in this century, science was seen as a means of identifying the core causes of social problems so that appropriate strategies could be devised to effectively address such problems. As philanthropy has increasingly turned its attention to systematic social reform during the latter half of the century (Wisely, 1998), science has been viewed to be less relevant, and a broad chiasm has developed between philanthropy and research. The outreach university has the potential to readdress this relationship and reforge connections that could prove useful to both constituencies (Sherrod, 1998a).

Thus, the potential contributions and impacts of the university partnerships are many and varied. The number of such efforts has increased substantially in recent years; they are a core ingredient of ADS.

CONCLUSIONS

In this chapter we have used descriptions of the methods, values, and vision of ADS to illustrate its unique contributions to developmental science. Although all developmental science need not be applied, we believe that ADS has a very important and original contribution to make; that is why we have devoted our program at Fordham University to it and why we have devoted our research careers to its furtherance.

The methods of ADS—assessment and early intervention, evaluation research, multiculturalism, and dissemination—provide tools as important and as generally useful as research methods and statistics in the broader field of psychology. These methods lead to concerns for ethics in research, to the design of social policies, to prevention and promotion, and to university-community partnerships, which when taken together define values and create a vision that define a truly unique new approach to developmental science. The implications for training are of course profound, but the existence of an applied developmental training program at Fordham University for now more than 10 years demonstrate that it is doable.

Furthermore, developmental science has a place for many approaches; basic research is needed as well as policy-relevant research and policy analysis. But it is fully possible that programs could devote a track to ADS without reorienting their whole program, and we believe the younger generation of researchers are ripe for this approach. We are committed to the field and believe that the future of developmental research will be significantly enhanced by the relatively new approach represented in ADS.

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