Society of Pediatric Psychology Presidential Address: Opportunities for Health Promotion in Primary Care

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Objective: To set an agenda for health promotion in primary care settings.

Methods: This is a review of the scientific bases of child development as applied to pediatric psychology and health promotion.

Results: Primary care is an ideal setting for health promotion because there is a “hidden morbidity” of children with unrecognized and untreated behavioral and developmental problems that, if unresolved, may lead to psychiatric and physical disorders and increased use of the health care system. Although pediatric psychologists endorse the importance of health promotion, there are few examples in the literature involving pediatric psychologists. Recommendations are provided for a proactive agenda for health promotion programs involving pediatric psychologists in primary care.

Conclusions: With conceptual homes in clinical and developmental psychology, expertise in theories of clinical and child development, scientific methods, and collaborative relationships with pediatricians, pediatric psychologists are in a unique position to develop and evaluate health promotion programs for use in primary care.

Key words: child development; health promotion; primary care; ecological theory.

In the 1960s both pediatricians and psychologists recognized the merits of collaboration between the two disciplines and the beneficial impact on children’s health and development (Kagan, 1965; Wilson, 1964). With origins in both clinical and developmental psychology, pediatric psychology emerged as a discipline dedicated to the scientist-practitioner model and the examination of how conditions of health, illness, and disability are related to children’s behavior and development (Routh, 1982; Wright, 1967). Collaboration with pediatricians has been a central component of pediatric psychology and a hallmark of the profession’s contributions in research, training, program development, and clinical practice.

Health promotion refers to a wide range of activities designed to enhance individual and family functioning. Building on recent advances in public health, epidemiology, behavioral sciences, and statistics, health promotion and disease prevention programs use behavioral and environmental factors to advance physical and mental functioning (Coie et al., 1993).

In the past, prevention programs were classified as primary, secondary, and tertiary (Commission on...
Chronic Illness, 1957), depending on where they occurred in the disease process. Primary prevention occurred prior to the manifestation of the disease, secondary prevention occurred among those at risk for developing the disease, and tertiary prevention occurred after the disease had been diagnosed. In 1994, the Institute of Medicine (IOM) recommended the adoption of a typology that was more representative of the public health/promotion nature of prevention programs (Mrazek & Haggerty, 1994). Under a framework developed by Gordon (1983), programs were classified according to the target population as universal, selective, and indicated.

Universal programs are directed toward the entire population and are designed to promote healthy functioning or to decrease the likelihood of specific disorders. Public service announcements or campaigns to reduce smoking, use condoms, or increase physical exercise are examples of universal prevention programs, as are laws (e.g., gun control, bans on drug use). Universal programs are available to all and are often sanctioned by the community, but they are not individualized and are unlikely to be successful in the remediation of specific problems.

Selective programs are targeted at specific groups that are at risk for developing a disorder or have very early signs of an emerging disorder. Programs such as WIC (Supplemental Nutritional Services for Women, Infant, and Children), the Food Stamp Program, or the School Breakfast/Lunch Program, all of which have income eligibility, are designed to promote healthy functioning among children of low-income families who are at risk for nutritional problems that may interfere with their development or academic performance. By decreasing risk (e.g., hunger or lack of healthy food in this example) and bolstering protective factors, selective interventions attempt to reduce the likelihood of disorders and promote healthy development.

Indicated programs are designed to prevent the progression of pathologial processes and the emergence of secondary symptoms among those who have symptoms of the disorder (Hyman, 1999). In addition, indicated programs often include health promotion, as therapists help children and families build strategies not only to avoid problems but also to advance healthy development. Indicated programs are often individualized and characterize many of the activities implemented by pediatric psychologists.

Although pediatric psychologists have endorsed the importance of prevention and health promotion (Kaufman, Holden, & Walker, 1989), there are few examples of either prevention or health promotion in the pediatric psychology literature, particularly in primary care (Roberts, 1994). Yet primary care is an excellent venue for health promotion, particularly with pediatricians’ commitment to anticipatory guidance and early intervention (Slaby & Stringham, 1994; Zuckerman & Parker, 1995). Not only is pediatric psychology in a unique position to collaborate with pediatricians, but prevention and health promotion should be well received by managed care companies with their emphases on cost containment and accountability (Roberts & Hurley, 1997).

This article has three objectives: (1) to highlight the scientific base that underlies children’s development, (2) to examine how principles from developmental science can be applied to health promotion, and (3) to provide recommendations for the incorporation of pediatric psychology into health promotion programs in primary care.

Ecological Conceptualization of Children’s Development

Child development refers to the adaptational processes that occur as children acquire increasingly complex skills and are socialized into the roles, rights, and responsibilities of their society. Development is a reciprocal process, guided by a complex multidimensional care system that includes the child and extends to the caregiver, family, community, and society (see Figure 1) (Bronfenbrenner, 1993). Children contribute to their own development through the integration of three processes: (1) a neuromaturational unfolding of increasing differentiation, (2) temperament, and (3) interactions they elicit from others. For example, as children increase in size and demonstrate more skills, their caregivers respond with expectations for increasingly complex behavior. In addition, children who are perceived by their caregivers as having easy or pleasant temperaments are seen as more rewarding and are more likely to elicit positive caregiving interactions. In contrast, caregivers tend to become less involved with children whom they perceive to be difficult (Maccoby, Snow, & Jacklin, 1984). The introduction of an illness or disability can disrupt this process, particularly if it interferes with a child’s ability to learn, upsets his or her temperament, or imposes restrictions on his or her activities or interactions with others.

Caregivers play central roles in children’s development. For example, children tend to have better developmental skills when their primary caregivers
are well educated and emotionally healthy, probably because when caregivers' needs are met, they can direct more care and positive attention to their children. In contrast, children of caregivers who lack education, have mental health problems (e.g., depression), or are burdened by stress and multiple demands are more likely to experience behavioral or developmental problems, presumably because their caregivers have limited time and energy with which to listen or to respond to them (Rutter, 1989). Caregivers of children with an illness or disability may experience additional challenges associated with the financial, emotional, and time demands of caring for a child who may not feel well or who requires extra attention. Children's illness or disability can lead caregivers to alter their expectations for their children. In some cases, caregivers try to protect children with an illness or disability from the seemingly unnecessary challenges of daily life, and, in other cases, caregivers try to ensure that children with an illness or disability are able to handle the challenges of daily life as independently as possible.

At the family level, children's development is influenced by the resources and child-centered quality of the household. Children benefit from households that are nurturant, include regular caregiving routines (e.g., predictable times for meals), and provide opportunities for interactive play (Yoos, Kitzman, & Cole, 1999). Again, these interactions may be altered by the demands that an illness or disability places on family routines or resources.

Communities also influence children's development through the resources they provide. Some resources benefit children directly, such as health care services, day care centers, schools, and playgrounds. Other resources benefit children indirectly by providing services to their families, such as jobs, transportation, neighborhood security, and opportunities for family support. In recent years, federal legislation, such as the Individuals with Disabilities Education Act, has mandated that schools adopt inclusionary policies, whereby children with illnesses or disabilities are included in educational activities as much as possible. These policies not only facilitate the development of children with illnesses or disabilities but also increase the sensitivity of children without illnesses or disabilities.

At the society level, laws and policies protect children and provide opportunities for them, thereby promoting their development. For example, policies such as the Family and Medical Leave Act of 1993 ensure that families can care for their children in times of illness without fear of losing their employment positions.

Pediatric psychology fits into this process at every level. Although most pediatric psychologists are involved in individually oriented programs with children and caregivers, there are excellent examples of community-oriented programs involving pediatric psychologists (Black & Krishnakumar, 1998).

**Transactional Care System**

The ecological model is often applied to children's development through a transactional care system (see Figure 1) (Sameroff & Chandler, 1975). This model illustrates the dynamic nature of children's development and emphasizes the reciprocal interactions between children and their caregivers. The transactional care system operates over time; as in any systems model, changes in one component are reflected throughout the system. In addition, the effects are cu-
mulative, such that interactions that occur early in the system continue their influence over time. The process becomes clear when applied to problems associated with children’s growth.

As Figure 2 illustrates, a woman who is undernourished during her pregnancy and does not receive prenatal care is more likely to give birth to a child with low birthweight (LBW) (< 2500 g). In comparison with full-term infants, infants born with LBW are smaller and often have weaker cries and sucking skills (Hack & Taylor, 2000). These characteristics make infants with LBW more difficult to feed, particularly for mothers who are undernourished themselves. A cycle emerges whereby the small and weak infant is difficult to feed, does not grow well, may be vulnerable to illnesses or disabilities, and lags behind in developmental skills. Mothers often feel frustrated or frightened by infants who are small and sickly and may limit their caregiving to holding (Graves, 1976). This process results in a negative cycle whereby infants do not elicit or receive the care and attention they need to promote optimal development.

Intervention can occur at multiple points. For example, intervention could be directed to the infant with LBW, perhaps through nutritional and developmental intervention that might be available through community nutrition programs, such as WIC, or through early intervention programs sponsored through the Individuals with Disabilities Education Act. If the child’s growth and development improve, the child will be more likely to elicit and receive age-appropriate care and interaction from the caregiver.

In another example, intervention could be directed toward the caregiver and the interaction between the caregiver and the child. Children’s cues are analyzed (e.g., how does a child express happiness or distress?), and caregivers learn how to read and respond to children’s cues. For example, helping a caregiver recognize that an infant turns toward sound as early as the first day of life increases the likelihood that the caregiver will talk to the child, thereby increasing the interactions between the caregiver and child. Videotaping the child and caregiver during mealtime or playtime is another strategy that can help caregivers view themselves through the eyes of their children and learn to be more responsive to their children’s cues (Black, Cureton, & Berenson-Howard, 1999; Webster-Stratton, 1994). Several examples of successful randomized controlled trials utilize components of the ecological model to promote the development of undernourished children (Black, Dubowitz, Hutcheson, Berenson-Howard, & Starr, 1995; Grantham-McGregor, Powell, Walker, & Himes, 1991; Infant Health and Development Project, 1990).

Returning to the example of the child born with LBW, if LBW were prevented, perhaps by a health promotion program directed toward improving the nutritional status of pregnant women and providing access to prenatal care, the cycle could be interrupted at the beginning. The infant would grow and develop at an expected rate, thus eliciting and receiving age-appropriate care and interactions from the caregiver and family, and the developmental problems associated with LBW would be avoided. There would be no need for extensive community interventions and resources could be spent on other issues.

**Evaluation of Health Promotion Programs**

Evaluation of health promotion programs occurs at three levels (Feinstein, 1977). The first level, efficacy, refers to optimal conditions. For example, university-based health promotion trials are usually highly controlled and supervised, and therefore serve as efficacy trials. The second level, effectiveness, refers to trials conducted under field conditions. Most children receive services in community or school-based programs, not in university centers. Thus, effectiveness evaluations are necessary to determine whether procedures efficacious under optimal conditions will work once they are integrated into existing systems. The third level, efficiency, refers to the costs associated with the health promotion program. Policy makers and managed care administrators, who are responsible for the fiscal management of services, want to be sure not only that programs are effective in promoting health but also that the costs associated with the program are manageable.
Health Promotion Applied to Primary Care

The model proposed by Reiss and Price (1996) for the promotion of mental health can be applied to health promotion programs relevant to pediatric psychology in primary care. These principles include (1) identification of the risk and protective factors and mechanisms that underlie threats to optimal health, (2) implementation of the strategies for health promotion through rigorous methods, such as randomized clinical trials, and (3) development of community partnerships to ensure that health promotion programs are consistent with the community context and therefore likely to be sustained.

For example, we conducted a short-term health promotion project among low-income adolescent African American mothers (Black, Siegel, Abel, & Bentley, 2001). Despite recommendations from the American Academy of Pediatrics (AAP) and WIC that infants should receive only breast milk or formula for the first 4 to 6 months of life, many mothers introduced complementary foods (e.g., cereal in the bottle) as early as 2 weeks of age (Bentley, Gavin, Black, & Tett, 1999). Ethnographic research indicated that the mothers’ reasoning (and that of the grandmothers) was that infants’ cries and behavior usually signaled hunger. The home-based intervention, which was guided by the ethnographic research and ecological theory, extended the information provided by pediatric providers by helping mothers interpret their infants’ cues. Mothers in the intervention group were more likely to adhere to the AAP recommendations and to delay the premature introduction of complementary feeding, compared to mothers in the control group. This example illustrates that relatively brief, developmentally and culturally sensitive prevention programs, implemented through primary care settings before problems have been identified, can be effective in promoting caregiving recommendations. Such programs enable providers to meet the increasing demands from parents for advice regarding children’s early growth and development (Young, Davis, Schoen, & Parker, 1998) and to prevent health, behavioral, and developmental problems.

Behavioral and Developmental Problems Among Children in Primary Care

In the 1970s, Haggerty introduced the term “new morbidity,” representing the social challenges to children’s well-being, including problems associated with poverty, disparities, child abuse, parental mental illness or disability, and other areas (Haggerty, Roghmann, & Pless, 1975). As pediatricians expanded their services to embrace this expanded mandate, they discovered that 25% of children in primary care were experiencing psychosocial problems, often referred to as the “hidden morbidity” (Costello et al., 1988; Haggerty, 1995; Kelleher, McInernt, Gardner, Childs, & Wasserman, 2000). Unfortunately, many children with psychosocial problems are not identified and therefore do not receive intervention (Reiger, Goldberg, & Taube, 1978). The “hidden morbidity” has serious national implications because children with behavioral and developmental problems are less able to benefit from educational programs and other community services and are at increased risk for serious psychiatric illness (Szilagyi & Schor, 1998) and for becoming high users of the health care system (Janicke & Finney, 2000).

Behavioral factors are closely linked to physical health outcomes and to the etiology and management of most acute and chronic illness or disabilities. For example, obesity—a major public health problem among children and adolescents in the United States—increases the risk for lifelong psychosocial and medical problems, including cardiovascular disease and type 2 diabetes (Dietz, 1998; Trojano & Flegal, 1998). Dietary patterns and physical activity are two important determinants of obesity that are largely under behavioral control (Birch & Fisher, 1998; Kohl & Hobbs, 1998). Thus, there is an urgent need for programs to promote healthy patterns of dietary behavior and physical activity that could be incorporated into primary care.

Health Promotion Agenda for Primary Care

The recommendations for a health promotion agenda in primary care are built on the structure provided by the scientist-practitioner model underlying the profession of pediatric psychology. Health promotion programs should be guided by a sound theory that incorporates the child’s ecological context. Evaluative criteria should be considered at the time the health promotion program is implemented so the impact can be measured. Since program sustainability is always a concern, advocacy for reimbursement should be a priority. Finally, training and dissemination will ensure that future pediatric psychologists learn from their mentors and can advance the field toward health promotion in primary care.
Theory
There is a need for health promotion programs based on sound theoretical principles and empirically validated strategies to guide the selection of variables, strategies for implementation, and processes responsible for behavioral change and maintenance.

Context
Health promotion programs should target multiple caregiving levels. Child development results from an interactive, reciprocal caregiving process that extends from children through family, community, and societal levels (Bronfenbrenner, 1993). As illustrated by the Jamaican intervention that included both nutritional supplementation and developmental intervention (Grantham-McGregor et al., 1991), successful health promotion programs are integrated and address multiple caregiving levels of the system.

Health promotion programs should be developmentally relevant. Although it can be difficult to assemble a disease-specific group of children at the same developmental level, it is not realistic to expect that a program designed for one developmental level is necessarily appropriate for children at other levels. For example, adherence to medical regimes is particularly salient among adolescents, who are often struggling with issues of identity and independence (Johnson, Perwien, & Silverstein, 2000).

We need health promotion programs developed in collaboration with interdisciplinary and community partners, including families, so they are culturally relevant and can be incorporated into existing systems. The health problems confronting children in this century are vastly different from those confronting previous generations of children (Haggerty, 1995). Not only have social problems replaced many of the infectious diseases as major contributors to children's morbidity but families have also changed. In some communities, single-parent and multigenerational families have replaced the traditional two-parent mother and father families. In addition, diversity in ethnicity, gender roles, education, and economic resources contribute to the confusion frequently confronting the role of families in children's health care (Knitzer, 1993; Sue, 1992). Families need to be involved as partners in treating children's problems (Epstein et al., 1993), and evaluations should include satisfaction and quality of life, particularly for relatively mild forms of behavioral and developmental problems (Simpson & Fraser, 1999). The large databases maintained by many managed care organizations provide opportunities for psychologists to develop and evaluate quality of life measures.

Evaluation
Health promotion programs should incorporate evaluation into the design of the program. Rigorous designs, such as randomized controlled trials in which evaluators are not aware of group assignment and systematic evaluation procedures are used to examine change, provide relatively unbiased evidence regarding the efficacy or effectiveness of the prevention (Black & Holden, 1995).

Evaluation should extend beyond main effect models. It is not unusual for prevention trials to have differential effects based on individual risk and protective factors (Rutter, 1987). Individuals with a stronger sense of well-being and connectedness (higher levels of self-esteem, self-efficacy, and support) are often more able to take advantage of interventions (Bronfenbrenner, 1993). For example, when we evaluated the long-term effects of a home-based intervention on the developmental skills of children with failure-to-thrive, we found that benefits of the intervention were limited to children whose mothers were not burdened by the negative affect associated with depression, anxiety, or hostility (Hutcheson et al., 1997). Presumably mothers with a negative affect were wrapped up in their own issues and unable to benefit from the home intervention.

We need evaluations that focus on skills and behavior, rather than only on knowledge and attitudes. The link between knowledge and behavior is often indirect (Sigel, 1992), and programs that change knowledge or attitudes have not gone far enough in demonstrating a convincing impact. For example, Fisher and Fisher (1992) found that early programs to prevent HIV-risk behaviors were successful in promoting knowledge but had no impact on risk behaviors. Once HIV prevention programs focused on skill development, they were more successful in preventing risk behaviors (Rotheram-Borus, O'Keefe, Kracker, & Foo, 2000).

Health promotion programs should take a long-term perspective and examine the impact of programs over time. For example, in a 15-year follow-up of a randomized trial of home intervention among
low-income mothers and children in Elmira, New York, Olds and colleagues (1997) found that families in the intervention group had lower rates of child abuse and neglect, crime, welfare use, and substance abuse, along with increased workforce participation.

**Reimbursement**

Innovative models of reimbursement for health promotion, particularly those that move beyond the need to rely on DMS-IV diagnostic codes to bill for services, are needed. If psychologists have no way to bill for health promotion services, children with chronic illnesses and disabilities will be denied critical services unless they have a psychiatric diagnosis. This restrictive reimbursement practice has dismantled many interdisciplinary teams and replaced the provision of services to children with chronic illnesses or disabilities with a less effective, though financially viable, single provider model of care.

The Diagnostic and Statistical Manual for Primary Care (DSM-PC), Child and Adolescent Version (Wolraich, Felice, & Drotar, 1996), provides an opportunity for pediatric psychologists to collaborate with pediatricians in the identification and treatment of children with behavioral and developmental problems that have not reached the threshold necessary for a psychiatric diagnosis. The DSM-PC was developed with the philosophy that the quality of children's environments should be incorporated into an assessment of their symptoms because the environment could alter a child's vulnerability to behavioral and developmental problems. In addition to 12 Situation Codes, providers are encouraged to include risk and protective factors in their assessments of the impact of environmental conditions on children's behavior and development. Although the DSM-PC has been presented to pediatricians in national meetings and in training sessions, it has not been adopted by most pediatric practices and there are many unanswered questions regarding training and implementation (Drotar, 1999). In addition, it is unclear how managed care companies will view the DSM-PC codes because the increased number of diagnostic classifications for children in the DSM-PC will make it easier to identify children, thus leading to more requests for reimbursement.

**Training**

Training pediatricians to screen for behavioral and developmental problems is another potential role for pediatric psychologists. Although some psychologists may fear that pediatricians will use these skills to provide behavioral services themselves, Drotar (1999) has argued that given the existing demands on pediatricians and the large number of children with unrecognized behavioral and developmental problems, most pediatricians will refer children with behavioral problems to psychologists. Pediatricians who have been trained by psychologists are likely to be more familiar with the contributions of psychologists, thus facilitating collaboration.

Pediatric psychologists should incorporate trainees into health promotion programs so future generations of pediatric psychologists are prepared to implement and evaluate health promotion programs. Although training in health promotion is incorporated into many pediatric psychology doctoral programs, trainees will be more conversant with principles of health promotion if they also have training in public health and epidemiology (Winett, 1995). Training models should be extended beyond mental health disorders to include general health issues of relevance to children in primary care, such as nutrition, injuries, child maltreatment, and risk-taking practices.

**Dissemination**

Findings should be published, whether they are positive or negative. For example, the Fort Bragg continuum of care demonstration project is an example of a trial conducted within the Army that was not effective in reducing mental health diagnoses (Bickman, Lambert, Andrade, & Penaloza, 2000). Future research can benefit from the publication of these findings and should examine subgroup effects and specific services of care.

Health promotion programs should include information on the costs of the program, so estimates can be made on the efficiency of the program. For example, Olds and Kitzman (1993) estimated that the cost of the 2½-year program ($3,300 in 1980 dollars) was recovered for low-SES families before the child reached 4 years of age.

Pediatric psychologists should advocate for the sustainability of successful programs. Although the advocacy or political process is not familiar to most pediatric psychologists, the scientific background of the profession prepares us to examine the efficacy, effectiveness, and efficiency of programs, together with community, interdisciplinary, and consumer partnerships. Thus, we can follow the guidelines posed by Wright (1967) when he wrote about the im-
portance of taking a militant stand regarding programs that make a difference in the lives of children.

Conclusions

Primary care is an ideal setting for health promotion because there is a “hidden morbidity” of children with unrecognized and untreated behavioral and developmental problems likely to lead to psychiatric and physical disorders and increased use of the health care system. Pediatric psychologists, with expertise in theories of clinical and child development, scientific methods, and collaborative relationships with pediatricians, are in a unique position to develop and evaluate health promotion programs for use in primary care.

Acknowledgments

Portions of this manuscript were presented in the presidential address of the Society of Pediatric Psychology, at the annual meeting of the American Psychological Association in San Francisco, August 1998. Preparation of this manuscript was partially supported by grant MCJ-240301 from the Maternal and Child Health Research Program, U.S. Department of Health and Human Services and by the Lanata-Piazzon Partnership.

Received March 28, 2001; revisions received September 4, 2001; accepted November 16, 2001

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