Toward an Integrated Science of Research on Families: Workshop Report

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Toward an INTEGRATED SCIENCE OF RESEARCH ON FAMILIES

WORKSHOP REPORT

Steve Olson, *Editor*

Committee on the Science of Research on Families

Board on Children, Youth, and Families

INSTITUTE OF MEDICINE *AND*
NATIONAL RESEARCH COUNCIL
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This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the NRC's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the process. We wish to thank the following individuals for their review of this report:

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Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the final draft of the report before its release. The review of this report was overseen by Jeanne Brooks-Gunn, Columbia University. Appointed by the National Research Council and Institute of Medicine, she was responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the authors and the institution.

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Introduction

The American family is a complicated institution, and it is rapidly becoming more so. Demographic changes, immigration, economic upheavals, and changing societal mores are creating new and altered structures, processes, and relationships in families. As a result, the lives of infants, children, and adolescents differ in fundamental ways from those of past generations.

As families undergo rapid change, family science is at the brink of a new and exciting integration across methods, disciplines, and epistemological perspectives. The methods used to study families are becoming more wide-ranging, and both senior and junior scientists are combining approaches from a variety of disciplines. No single research methodology can master the complexity of the family. Demographic data are invaluable, but they can be limited by a lack of understanding of new family processes. Qualitative data can provide an essential complement to quantitative data, but they can be limited in estimating large-scale patterns. Assessment of physiological, biological, and epigenetic processes are increasingly being integrated into family research, but these multidisciplinary and multimethod studies require greater emphasis on team-building and long-term approaches. A strong interest in better understanding how scientific research on the family can be used to improve the health and well-being of children has spawned a large and growing body of findings from various disciplines. The science of family research cuts across demography, anthropology, psychology, sociology, economics, education, genetics, neuroscience, and developmental biology. Research-

ers from these fields use case studies, ethnographies, longitudinal studies, diary and time-use records, assessments, administrative records, biological and genetic assessments, and many other methodologies. The results are theories and hypotheses that reflect many different disciplinary perspectives. Sometimes the conclusions from this research mesh, and sometimes they conflict.

The multiplicity of approaches used to study the family offers an opportunity for new scientific breakthroughs. Studies that combine multiple approaches can reveal fundamental relationships or interactions and create opportunities to bridge boundaries between disciplines and methods. But this multiplicity of approaches also creates challenges. Investigators can disagree on definitional issues, the best way to study families, the most productive research topics, or even the language used to discuss families.

The purpose of The Science of Research on Families: A Workshop, held in Washington, DC, on July 13-14, 2010, was to examine the broad array of methodologies used to understand the impact of families on children's health and development. It sought to explore individual disciplinary contributions and the ways in which different methodologies and disciplinary perspectives could be combined in the study of families. Specifically, the workshop was designed to investigate:

1. Recent research studies that offer significant contributions to understanding the social determinants of child health and developmental outcomes and health disparities.
2. Illustrations of quantitative and qualitative methods and approaches associated with research on the diverse structure and dynamic qualities of family environments.
3. The relative contributions of selected study approaches and methodologies, including studies of marriage and family structure; life-course research studies; studies of human development; methodological research involving experimental, quasi-experimental, longitudinal, observational, survey, and time-use studies; and studies of selected cultural, ethnic, or immigrant populations.
4. Opportunities for collaboration among federal agencies to improve the quality of research and training in this field and the application of this knowledge base to understanding interactions among family environments and children's health outcomes.

The workshop brought together about 70 researchers, funders, and users of research results on families for a day and a half of presentations and intensive discussions. A major subject of the workshop—and the organizing principle behind this summary of the workshop's presen-

tations and discussions—was the integration of content and methods in family research. How do theory, study approach, and methodology matter from behavioral as well as biobehavioral perspectives? How are qualitative and quantitative approaches best combined in the study of the family? What are the challenges and advantages of a more integrated approach to family research for training and funding?

In discussing the presentations, the planning committee identified seven major themes. These themes—three derived from prior studies, four looking to the future—appear in the final chapter of this summary. Together, these themes provide both a milestone and a roadmap for the transdisciplinary field of family research.

The organization of this summary reflects the theme of integration. Chapter 2 sets the context for the study of the American family by summarizing five studies that were presented from the demographic perspective. Both changes within families and broad population-based change are considered in these studies, which track the leading edge of demographic trends in the United States.

The day-to-day struggles of families with poverty and economic stress remain central to the policy, practice, and research domains of American life. Chapter 3 summarizes presentations from four studies on United States families coping with poverty and economic stress as a way of exploring how quantitative and qualitative data can be combined in family research. Each form of research offers different contributions; together they can present a more complete and accurate picture of family processes.

Researchers in the clinical and prevention sciences, no less than others who study normative processes, are increasingly relying on multiple methods and disciplines to enrich their work on reducing and preventing psychopathology. Chapter 4 features three presentations that looked at specific clinical or problem areas in family research: trauma in young children and its clinical consequences, trauma and depression in parents, and substance abuse among fathers. The integration of disciplinary and methodological approaches in the study of psychopathology and its prevention has much to offer the clinical sciences. Family research draws from many different disciplines, each with its own conceptual models and methodological approaches, and the combination of disciplines can yield results that could not be achieved within a single disciplinary tradition.

Some single research approaches were presented in depth at the workshop. For example, although the full range of biobehavioral approaches was beyond the scope of a workshop of this length (e.g., recent developments in gene-environment interaction or developmental neuroscience were not represented), one presentation focused in depth on biomarker methods related to the hypothalamic-pituitary-adrenal (HPA) axis, as this

area of work has transformed family research in particular. Chapter 5 thus has a methodological orientation, examining three studies from the workshop with distinct research methodologies, using examples from research on biomarkers, child health, and econometric methods. The presentations delved deeply into the strengths and limitations of particular disciplinary and methodological approaches. These studies share concerns and approaches that can form the basis for valuable multidisciplinary initiatives.

The next generation of scientists in family research will have a wider arsenal of methods to bring to bear on the study of children and families. The greater interest in diverse and integrated research strategies will also require innovation in the funding and training institutions for family science in the United States. Chapter 6 addresses the challenges of integration of funding and training opportunities in the new science of family research. It points to the great potential available to funding and research organizations in supporting and conducting research on how families influence child development.

Family research is both basic and applied. It offers opportunities for learning as well as intervention. As several workshop participants pointed out, it is most successful when organized around particular problems. In that sense, the approach taken in the workshop could be applied to the role of family structures, processes, and relationships in addressing a range of difficult issues, such as obesity or injury prevention. This problem-oriented approach could guide a broad-based research program that extends across funders, institutions, and scientific disciplines.

The workshop and this publication were sponsored by the Office of Behavioral and Social Sciences Research at the National Institutes of Health, the National Institute on Drug Abuse, and the Administration for Children and Families. Many of the workshop participants were people with experience combining multiple disciplines to study complex family processes. The workshop thus offered an opportunity for researchers and funders to talk together about the most productive approaches and about needed changes. Although the workshop was a self-contained activity, the hope is that it will lead to further initiatives to improve the infrastructure of family research.

The workshop was organized and hosted by the Institute of Medicine (IOM) and the National Research Council (NRC) through the Committee on the Science of Research on Families within the IOM-NRC Board on Children, Youth, and Families. The board brings the multidisciplinary knowledge and analytic tools of the behavioral, health, and social sciences to bear on the development of policies, programs, and services for children, youth, and families. It informs deliberations about some of the most critical issues facing communities, states, and the nation, including

child health and health care services, family support, child care, and early child development; biological and behavioral changes among children and youth; preschool education, school engagement, and youth development; child abuse, family violence, and child welfare; and the prevention of underage drinking and other risky and dangerous behaviors. Many of these topics arose over the course of the workshop, and workshop speakers and participants commented frequently on the potential of family research to make contributions to many of the topics of interest to the Board.

It is important to be specific about the nature of this report, which documents the information presented in the workshop presentations and discussions. Its purpose is to lay out the key ideas that emerged from the workshop and should be viewed as an initial step in examining the research and applying it in specific policy circumstances. The report is confined to the material presented by the workshop speakers and participants. The presentations and discussions were limited by the time available for the workshop. Neither the workshop nor this summary is intended as a comprehensive review of what is known about the topic, although it is a general reflection of the field. Given the constraints of a two-day meeting, the presentations and discussions of the workshop were illustrative rather than definitive. For example, research on family systems was not explored within the workshop, and most of the presentations focused on dyadic relationships

This report was prepared by a rapporteur and summarizes views expressed by workshop participants. The committee reviewed key highlights from the presentations and synthesized discussions for the summary report but the report does not represent findings or recommendations that can be attributed to the planning committee. Indeed, the committee is responsible only for its overall quality and accuracy as a record of what transpired at the workshop. Also, the workshop was not designed to generate consensus conclusions or recommendations but focused instead on the identification of ideas, themes, and considerations that contribute to understanding the topic. Despite these restrictions, the material summarized here points to productive directions. A more comprehensive review and synthesis of relevant research knowledge will have to await further development.

2

Demographic Perspectives on Family Change

The task of integrating family research needs to start with defining the family itself. Families consist of members with very different perspectives, needs, obligations, and resources. The characteristics of individual family members change over time—within life spans and across generations. Families exist in a broader economic, social, and cultural context that itself changes over time.

United States households and families are undergoing unprecedented changes that are shaping the health and well-being of the nation. Fundamental and rapid changes in family structure, immigration, and work and family, for example, have transformed the daily lives and developmental trajectories of Americans in recent years. This chapter summarizes four presentations, including three studies that examine family change largely from a demographic perspective and one that drew on qualitative methods to identify specific groups in a larger quantitative study. Demographic indicators provide a baseline of information for many other kinds of family research.

A particular focus in this chapter is the set of measures used to identify and track consistency and change in family structure. New and rapidly changing family forms require the development of new measures and their incorporation into existing and new instruments. New measures also need to recognize the tremendous diversity among groups that can be hidden in nationally representative averages of such family characteristics as cohabitation, marriage, family disruption, and fertility levels. As economic and cultural shifts, such as immigration, continue to diversify

family structure and dynamics, researchers need to explore new ways of conceptualizing and measuring household characteristics.

MEASURING FAMILY STRUCTURE AND STABILITY: EMERGING TRENDS AND MEASUREMENT CHALLENGES

Family living arrangements and trajectories are increasingly varied and complex in the United States. Age of marriage is at an all-time high. Cohabitation, not marriage, is the typical first type of union in U.S. society. Divorce and remarriage remain common, and births to unmarried women have accelerated rapidly, from 5 percent in 1960 to about 40 percent today.

These changing family dynamics have major implications for the living arrangements of children, said Susan Brown, professor of sociology at Bowling Green State University and codirector of the National Center for Family and Marriage Research. Furthermore, these living arrangements can have major consequences for children's health and well-being, since children in unmarried families experience greater family instability, on average. Drawing on a recent review (Brown, 2010a) of the literature on family structure, instability, and child well-being, Brown discussed current measurement approaches and challenges.

The diversity of children's family experiences begins at birth. Of the 40 percent of births occurring outside marriage, half are to unmarried cohabiting couples (Martin et al., 2009). The fertility rates of cohabiting and married women are actually today about equal. As a result, children are spending less time in married-parent families and more time in families that are formed outside marriage.

Table 2-1 shows the distribution of children's living arrangements according to a recent census report. The majority of children—60 percent—still reside in traditional families with two biological married parents. The second most common family form for children is the single-mother family, in which about 20 percent of all children reside, followed by the married stepfamily category. Less common family forms for children include two biological cohabiting-parent families, cohabiting stepfamilies similar to the married stepfamily, single-father families, and children who live without either biological parent.

Demographers have developed innovative ways of conceptualizing and measuring family structure. These new approaches consider heterogeneity among two-parent families, the definition of family membership, some emerging family forms, how and when family structure is measured, and ambiguous family boundaries.

These new ways of thinking about two-parent families also make it possible to begin examining how children who live in traditional married biological two-parent families compare with those in other family

TABLE 2-1 Children's Living Arrangements

Family Structure, Children Ages 0-17 in 2004	Percentage
Two-parent biological married family	60.1
Two-parent biological cohabiting family	2.5
Married stepfamily	7.4
Cohabiting stepfamily	2.7
Single-mother family	20.5
Single-father family	2.6
No-parent family	4.2
Total	100.0

SOURCE: Brown (2010b). Based on data from Kreider (2007).

arrangements. What about children who live with both biological parents but the parents are unmarried? What about children who live in a stepparent family or with one biological parent and an unmarried parent? What about children who live with same-sex parents?

Traditional measures of family structure often ignore the presence of other family members, even though these individuals can be consequential for child well-being. For example, siblings can be whole siblings, half-siblings, or step-siblings. For 6 to 11 percent of children who reside with two biological married parents, half- or step-siblings are also in the family (Ginther and Pollak, 2004; Halpern-Meekin and Tach, 2008). Step- and half-siblings can also reside in other households, reflecting multiple partner fertility. "Some researchers argue that it is not enough to measure co-residential unions such as marriage and cohabitation, but that we also need to be addressing non-co-residential dating types of relationships that parents may be involved in," said Brown. Not surprising, these "visiting relationships" are frequently less stable than cohabiting and married ones.

The language has not kept pace with new family forms, Brown observed. For example, with cohabiting relationships, researchers do not have shared understandings of how to describe these families or refer to family members. Some surveys use the term "unmarried partner," but qualitative research has demonstrated that this term is not particularly meaningful for individuals who are involved in these relationships. They tend to think of their unmarried partner as a "boyfriend" or a "girlfriend." And to the extent that response categories are not meaningful to survey

respondents, the prevalence and significance of cohabiting relationships may be underestimated.

This is even more the case for living apart together (LAT) relationships, which have attracted considerable attention in the European context but have been largely overlooked in the United States. LAT relationships consist of married or unmarried couples who live in separate households but otherwise are like cohabiting couples. The definition and the measurement of LAT relationships are muddy, particularly in distinguishing them from dating relationships.

The timing of when people are asked about family structure also can influence their responses. For example, in a survey conducted as part of the Fragile Families study—which is following a cohort of about 5,000 children in large cities born between 1998 and 2000, three-quarters of whom were born to unmarried parents—mothers were asked when a child was born whether they were married, cohabiting, or single. A year later they were asked again whether they were married, cohabiting, or single when the child was born. Among women married at the time of birth, 97 percent said a year later that they were married at the time of birth. But for women who said they were cohabiting, just 89 percent gave the same response a year later. And for women who said they were single, just 67 percent said they had been single a year later, with the others saying they were either cohabiting or married (Teitler et al., 2006). These retrospective discrepancies are consequential "for the subsequent relationship trajectories that the mothers and hence their children experience," Brown said.

Research has demonstrated that family structure is more subjective than researchers might assume. In the National Longitudinal Study of Adolescent Health—known as Add Health, a nationally representative study of how social contexts affect the health and risk behaviors of teens and young adults—adolescents and their mothers were asked about family structure (Harris, 2009). In families with two biological parents, 99 percent of the responses were the same. But in families with single mothers, married stepparents, or cohabiting stepparents, 11.6 percent, 30.2 percent, and 65.9 percent of the responses, respectively, were different (Brown and Manning, 2009). "The more complex the family form, the greater the family boundary ambiguity," Brown said. This ambiguity can affect even estimates of family structure, depending on which person in a family is asked about the structure.

Future data collection efforts need to accommodate these complexities by emphasizing longitudinal designs, by incorporating multiple family members across households whenever possible, and by using more nuanced measures of family configurations. These more nuanced configurations will need to be validated through qualitative research to deter-

mine whether the categories are meaningful for individuals. In addition, the increasingly diverse living arrangements of children demonstrate the importance of moving beyond these static comparisons to look at family dynamics and instability.

Family structure determinations provide a snapshot of children's living arrangements. But as children experience more diverse living arrangements, they are also experiencing less stable ones. Some family forms are more stable than others, so that family structure is confounded with family instability.

Using Add Health data, Brown (2006) determined that, during a one-year period, 7 percent of adolescents reported a family structure change. For teens who were not residing in two biological parent families, this figure was nearly twice as high—15 percent. "The structure you start out with is setting you on a trajectory for subsequent stability or instability," she observed.

Birth contexts also set the stage for family trajectories. One study (Raley and Wildsmith, 2004) found that a majority of children born to married parents experience no family living arrangement transitions by age 12, whereas most children who are born to either single or cohabiting mothers experience at least one transition by that age. If cohabitation transitions are included in the measure of family instability, the levels of family transitions increase 30 percent for white families and 100 percent for black families.

Marital transitions, whether divorce or remarriage, on average have cumulative negative effects on child well-being (Cavanagh and Huston, 2008; Fomby and Cherlin, 2007). However, cohabitation transitions operate differently. Transitions from a cohabiting family into a single-mother family have been linked to gains in well-being, or at least no change (Brown, 2006). Stable cohabiting families appear to be detrimental to child well-being on some dimensions relative to stable single-mother families and stable married stepfamilies. Thus, different types of transitions can have different effects on child outcomes.

A range of measures can capture family instability, including the number of transitions, the types of transitions, the timing of transitions, and the exposure to different family forms. For example, research[1] has examined whether transitions that occur early in children's lives are the most detrimental (Cavanagh and Huston, 2008; Heard, 2007). Other studies have examined the duration or proportion of time spent in a given

[1]The Board on Children, Youth, and Families convened a workshop on student mobility in 2008. The workshop report, *Student Mobility: Exploring the Impact of Frequent Moves on Mobility: Summary of a Workshop*, is available from the National Academies Press, http://www.nap.edu.

family form (Dunifon and Kowaleski-Jones, 2002; Magnuson and Berger, 2009). "There is no consensus in the literature on how to operationalize family instability," said Brown. Sometimes researchers will use more than one indicator. Sometimes they will control for current family structure or structure at birth. "This is a situation in which our data have outpaced our theory."

Family scholars need to revisit and expand existing theories related to family instability, Brown said. They also need to develop new theoretical frameworks for understanding how, why, and when family instability shapes children's outcomes. Some of this theory development could be informed by a systematic review of these empirical findings, which are extensive and complex.

Researchers need to strive for greater consistency across studies in the measurement of family instability. Also, they need to pay more attention to various groups for whom family instability might have differential effects. These groups include disadvantaged populations, such as children who are born to unmarried mothers, and different racial and ethnic groups. In particular, few studies have been conducted on Latino families. Gay and lesbian families have also been understudied.

The broad array of diverse living arrangements has generated considerable interest in family instability, but there is no consensus on how to conceptualize or measure it. "Innovative measurement will require new concepts and theories that reflect these very rapid changes that are occurring in U.S. families," Brown observed.

THE COMPLEXITY OF LIVING ARRANGEMENTS: COHABITATION AND FLUIDITY

R. Kelly Raley, professor of sociology and training director at the Population Research Center at the University of Texas at Austin, explored the issues of cohabitation more deeply. In most research, cohabitation means sharing a household with a sexual or romantic partner. Roommates who are not sexually involved therefore are not usually considered cohabiting couples, nor are sexual partners who are not living together. Cohabitation is generally applied to both heterosexual and homosexual unions, although by far the majority of the research in this area has focused on heterosexual partnerships. Levels of commitment in cohabiting relationships range from extended hookups or casual sexual relationships to couples who are engaged to be married within a few days. Some have a residence elsewhere but sleep over most of the time, perhaps to hide from parents that they are cohabiting.

Demographers often use a three-category grouping for cohabitation. The first group consists of cohabiters who may be experimenting with a

married living arrangement. They may be engaged to marry or plan to marry eventually. A second group, known as the "alternative to being single" group, may not intend to stay together for the long term but enjoy the convenience and the economies of scale of living with a romantic partner. A third group, the "alternative to marriage" group includes people who view traditional marriage critically and choose not to marry, although in most other ways the relationship resembles marriage.

Within the group that is treating cohabitation as a trial marriage, there is substantial heterogeneity. Some have a marriage date, and others would like to marry someday but face many barriers, such as unstable employment or drug and alcohol abuse. For this latter group, these barriers will probably contribute to the end of their cohabiting union before they get married.

One way to view cohabitation is as a signal or a symptom of growing female autonomy. From this perspective, much family change has been generated by long-term shifts in ideology that undermine old patriarchal family arrangements. For example, increases in women's labor force opportunities have made them less dependent on marriage. Since people still enjoy companionship, cohabitation serves as an alternative, less committed, and less patriarchal arrangement.

An alternative way to view cohabitation is as a response to uncertainty, particularly economic uncertainty. Difficult transitions into a career, with spells of unemployment or underemployment following the completion of education, strongly predict cohabitation.

Today about half of all marriages dissolve. However, divorce rates are declining among the college educated, although they remain high and are maybe even growing among the less well educated. People with less education rightly believe that marriage is uncertain, particularly when steady employment is in short supply. Cohabitation is a response to this uncertainty both about marriage and about their future economic prospects.

Demographers started to track cohabitation closely as family structures changed substantially over the 1970s and 1980s. Important trends include the rising age at marriage, increases in divorce, and rapid growth in single-parent families. As shown in Figure 2-1, the proportion of women married by age 25 has declined substantially by birth cohort. The proportion of women having a first union by age 25 also declined during that period, though not nearly as much as the rate of marriage. The increasing gap between percentages of first union and marriage before age 25 points to a rise of cohabitation. Raley also pointed out that cohabitation is increasingly common after a divorce, but much less is known about the repartnering process and postmarital cohabitation.

Cohabitation has become an increasingly common feature of childhood. Most of the increase in nonmarital fertility in recent decades has

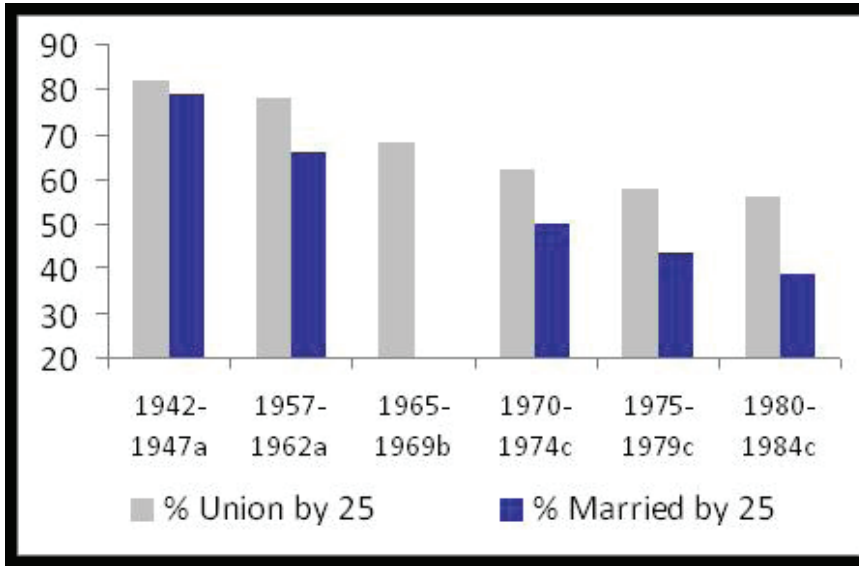

FIGURE 2-1 Trends in the percentage of women ever in union by age 25.
SOURCE: Raley (2010), based on data from, (a) Bumpass et al. (1991); (b) Raley (2001); and (c) CDC/NCHS, National Survey of Family Growth (NSFG) Cycle 6 (2006-2008).

come from births to cohabiting women (see Figure 2-2). Consequently, an increasing proportion of children—perhaps as many as half—live at some point in their life with a cohabiting mother. Tracking cohabitation can improve measurements of family stability. Fewer cohabiting unions now result in marriage than in the past. After about five years, only about half such couples are married, and 37 percent have split (Bumpass and Lu, 2000). By this measure, even though levels of divorce have been roughly stable since 1980, the probability that a child experiences a union dissolution is increasing.

Rates of cohabitation vary across population groups. For example, many previous studies have shown that cohabitation is more common among less educated groups. However, if cohabitation is measured in the first three years after leaving school, it is seen to be a common feature of the life course for all education groups (Daniels and Raley, 2010). It is the most common family formation event in the first three years after leaving school. What is different across groups with different levels of education is that the more highly educated women are more likely to marry. More educated women are also less likely to have a premarital birth (Daniels

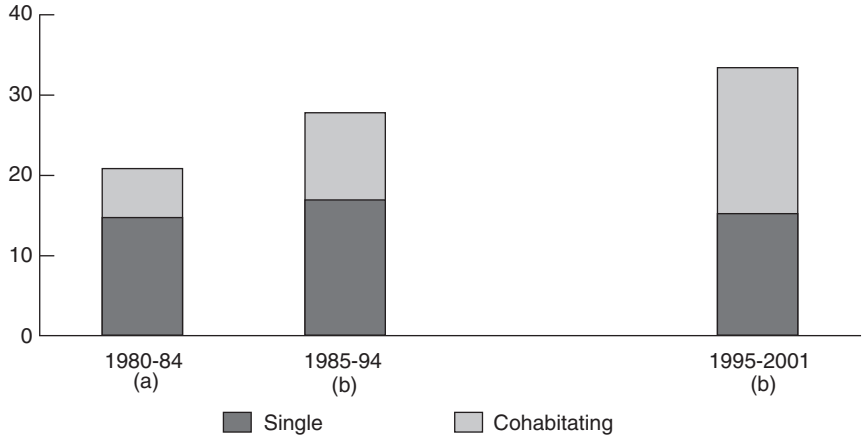

FIGURE 2-2 Trends in the percentage of births that are nonmarital.
SOURCE: Raley (2010), based on data from (a) Bumpass and Lu (2000); and (b) Kennedy and Bumpass (2008).

and Raley, 2010). Thus, there is substantial variation by socioeconomic status in family formation patterns.

These observations relate to the underlying meaning of cohabitation. Whether cohabitation signals changes due to growing autonomy or growing uncertainty depends in part on class. For more highly educated women, it may well indicate growing autonomy and increasing choices. For less educated women, it appears that cohabitation is likely more a response to uncertainty. Qualitative research suggests that many women who want eventually to have a child and who realistically are unlikely to marry soon may stop using contraceptives in a cohabiting relationship. Raley stated, "They often become pregnant, maybe sooner than expected, but it isn't a concern. It is just something that happens sooner. It is not exactly planned, but it is not exactly something that they were trying to avoid."

Cohabitation is not institutionalized. No broadly shared understandings of privileges or obligations are associated with this status. This limits the usefulness of cohabitation as an indicator of family structure in two ways, said Raley. By covering a diverse range of relationship types, this ambiguity creates a problem for the development of survey questions to measure cohabitation. For example, if people are asked about their relationship to the householder and "unmarried partner" is one of the response choices, they often do not check that response even if they

meet the definition of that term. Starting in 1990, the census measured cohabitation by including unmarried partner as a type of relationship to householder (Kreider, 2007). Then, in 2007, the census began asking, "Is there somebody in the household who is your boyfriend, girlfriend, or partner?" This new question resulted in an increase of 17 percentage points in the number of people in cohabiting relationships (Kreider, 2008).

Another way in which cohabitation is limited as an indication of family structure is related to its diversity. Some cohabiters are engaged to be married, and others have no intention to marry. For studies that aim to understand the limitations of cohabitation for children's or adults' well-being, this variability is potentially as great as the difference between being married and being single. For this reason, it is important to measure not only household structure but also the quality and the commitment of relationships.

Cohabitation or marriage is not the only important aspect of household structure. A small literature indicates that child well-being may be influenced by the presence of half- or step-siblings, even when they are living with both biological parents. One approach to measuring these relationships involves the use of a matrix in which each person in a household is asked about the relationship of each person in the household to each other person in the household. "It can be kind of burdensome, but it will be thorough in capturing all the children's relationships to all other children in the household," Raley said.

The Current Population Survey has taken a less burdensome alternative. It is asking about all the parent figures for a child in a household, whether a biological parent, a stepparent, or an adoptive parent. "Hopefully this new resource will help us better measure the additional important aspects of children's household structure," Raley said.

The final limitation of cohabitation measures is that they do not capture nonhousehold family relationships. For example, parents transitioning into and out of visiting relationships may introduce important aspects of change and instability into children's lives. Similarly, research shows that half-siblings, former spouses, and extended kin living elsewhere can influence family functioning.

If the diversity in cohabiting households is great, the variability in noncohabiting single-parent households is even broader and more ambiguous. Some mothers are raising children on their own with little help or interference from the child's father, extended kin, or current boyfriends. Others are maintaining a complex network of relationships with fathers of their children. These external household members can bear on family processes in the household.

Despite the limitations of cohabitation as a measure of family structure, it should not be abandoned, Raley said. Cohabitation is a common

experience and a useful indicator of instability. However, as family structure continues to change and diversify, innovative ways of capturing change and variability must be developed. In particular, it is important to measure levels of commitment and the quality of relationships and to distinguish variability among cohabiting unions.

INTERGENERATIONAL ASPECTS OF CHANGE IN FAMILY PATTERNS

Research on family structures usually begins with static measures, which have been used in recent years to capture an increasing diversity of family forms. But dynamic measures of family structure change also have shown tremendous improvement, as have measures of family and social networks. These developments have made it possible to study family structure across generations, said Kathleen Mullan Harris, professor of sociology at the University of North Carolina at Chapel Hill and director of the National Longitudinal Study of Adolescent Health (Harris, 2009; Harris et al., 2009).

Since 1994, Add Health has collected data on four waves of study participants to explore the causes of health and health-related behaviors of adolescents and their outcomes in young adulthood (Harris, 2009). The participants in wave I were in grades 7-12 when the study began. Among these adolescents, 74 percent lived in two-parent families and 26 percent lived in single-parent families. The majority of adolescents lived with two biological or adoptive parents (54 percent). Approximately 20 percent lived with a single mother, 14 percent lived with a biological mother and stepfather, 6 percent lived with surrogate parents (including grandparents, uncles, older siblings, foster parents, in group homes, and so on), 3 percent lived with a single father, and 3 percent lived with a biological father and stepmother. As these numbers demonstrate, there is tremendous heterogeneity of families and some fuzziness between categories, said Harris.

The Add Health study also gathered data on parents' relationship histories and on a child's coresidence history, which can be mapped with his or her age. Thus, measures of family structure are available each year, making it possible to construct indicators or trajectories of family structure over time. Family structure transitions also can be measured dynamically and added up over a child's life.

These changes in family structure can be quite complex, Harris observed. Children can experience many parents in their lives. Gathering this information also can be costly in terms of survey time and taxing for respondents. Despite these difficulties, the available data show that family change at the level of parents affects family formation in a child's generation. The data from Add Health have supported other studies in concluding that growing

up in a nonintact family form is associated with teenage parenthood, early marriage, nonmarital childbearing, and life-course trajectories of family instability. These intergenerational effects were consistent across numerous studies in the 1980s and 1990s.

The intergenerational effects of family change can operate in multiple contexts in a child's life. Children spend time with their friends, their classmates, the families of their friends and classmates, and families in their neighborhoods. The family patterns encountered during a child's life may be especially influential during adolescence, when young people begin to look to the future and form expectations about the kinds of families that they will form. They undergo a collective socialization toward family forms by observing them in the social contexts of their lives. Members of a parent's generation serve as role models, especially when romantic relationships become salient during adolescence. The social control of youth through monitoring and supervision is also important, and this is related to the number of adults in the social context of an adolescent's life.

This collective socialization can be difficult to study because of a lack of data. But the design of Add Health provides an opportunity to study intergenerational effects by looking at collective socialization at the peer, the school, and the neighborhood levels (Harris et al., 2009). For example, data from both wave I and wave II capture youth in the transition to adulthood to age 26 (Harris, 2009). Peer data are obtained by getting information from the adolescent's five best male and five best female friends. Family data come from both parent and adolescent interviews, and neighborhood data come from geocoded residence addresses. The family structure of friends, families in schools, and families in the neighborhood can be measured through the percentage of two-parent families, single-parent families, and other family forms.

Add Health data reveal the cumulative probabilities of first nonmarital births by the structure of the family of origin (Figure 2-3). The lowest probabilities of first nonmarital birth are to youth who grew up in a biological two-parent family. The highest probability is for youth who grew up in a surrogate family or other family type.

The same analysis can be done by looking at the percentage of a person's friends from two-parent families. The lowest probabilities of nonmarital births are among individuals all of whose friends are in two-parent families (Figure 2-4). When measured by the percentage of students at a school from single-parent families, the highest risks are for individuals with high percentages of schoolmates from single-parent families. And when measured by the percentage of female-headed households with children, the risk is also higher in neighborhoods with large numbers of single mothers.

Modeling of these results has shown that the influences on nonmarital births act independently and are additive, said Harris. Youths who grow

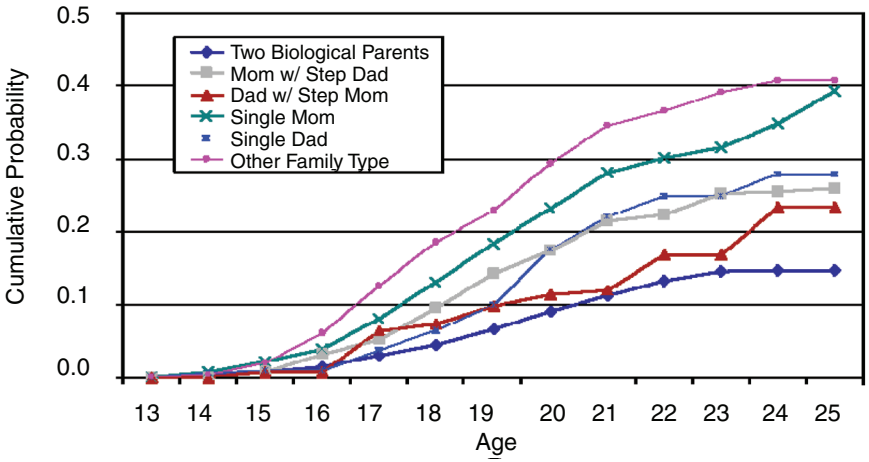

FIGURE 2-3 The cumulative probabilities of first nonmarital birth vary by the structure of the family of origin.
SOURCE: Harris (2010), based on data from Harris and Cheng (2005).

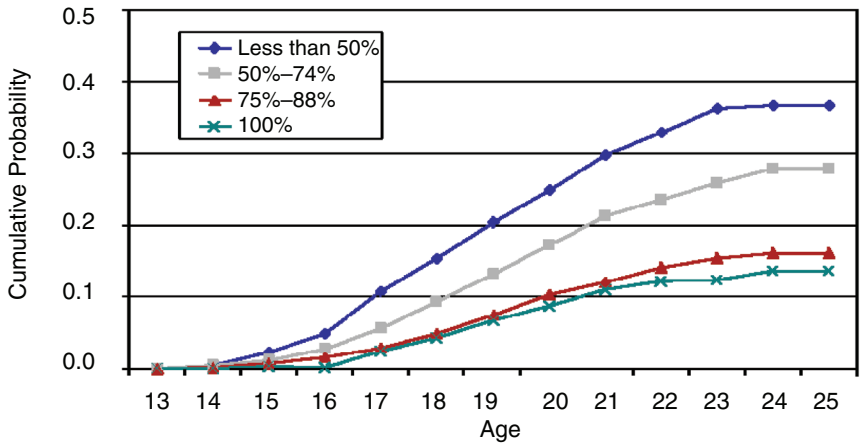

FIGURE 2-4 Cumulative probabilities of first nonmarital birth vary by the percentage of friends from two-parent families.
SOURCE: Harris (2010), based on data from Harris and Cheng (2005).

up with two biological parents but live in a neighborhood in which single-parent households are prevalent face higher probabilities of nontraditional family formation.

Some researchers have begun to think about creating family histories of instability or stability across generations, Harris observed. The Add Health study plans to reinterview parents in the next wave of data collection. It also plans to interview the children of the adult respondents, generating data that spans three generations. Additional questions are whether there are patterns that occur across more than one generation and whether effects on family structure extend beyond a child's family. But family change patterns across multiple generations are difficult to study.

Some innovative designs and current research are under way. For example, genetic data could help sort out shared and unshared genetic and environmental sources of variation in family formation patterns across generations.

MEASURING THE IMPACT OF RACE, CLASS, AND IMMIGRATION STATUS ON FAMILY STABILITY

Study of family structure began with mostly white scholars concerned about issues that affected mostly white, middle class, native-born Americans. But American society is much different today, observed demographer Daniel Lichter, professor of policy analysis and management and sociology and director of the Bronfenbrenner Life Course Center at Cornell University. Immigration has driven racial, ethnic, and class variation in the United States by creating rapid growth in the non-European immigrant population. Among Asians and Pacific Islanders, for example, almost 90 percent of children have a foreign-born parent. Among Hispanics, it is about two-thirds. These two groups are changing the ethnic and racial composition of U.S. society. The fact that America's new immigrant groups are mostly young adults means that their growing children will have a substantial effect on family change for the foreseeable future. As recent trends demonstrate, family science must include the immigrant experience and how immigrant children are being raised in society.

As shown in Figure 2-5, there has been a tremendous increase in the volume of immigration in the United States over the last 10 years. Until the recent recession, about a million new legal immigrants were arriving in the United States every year (Martin and Midgley, 2006). Much of this immigration is from Asia and Latin America. In addition, another 12 to 13 million immigrants are undocumented, and the future of this group will have major implications for the country's future.

Roughly half of the growth in the U.S. population since 2000 has come from Hispanics, both through immigration and through the fertility of the

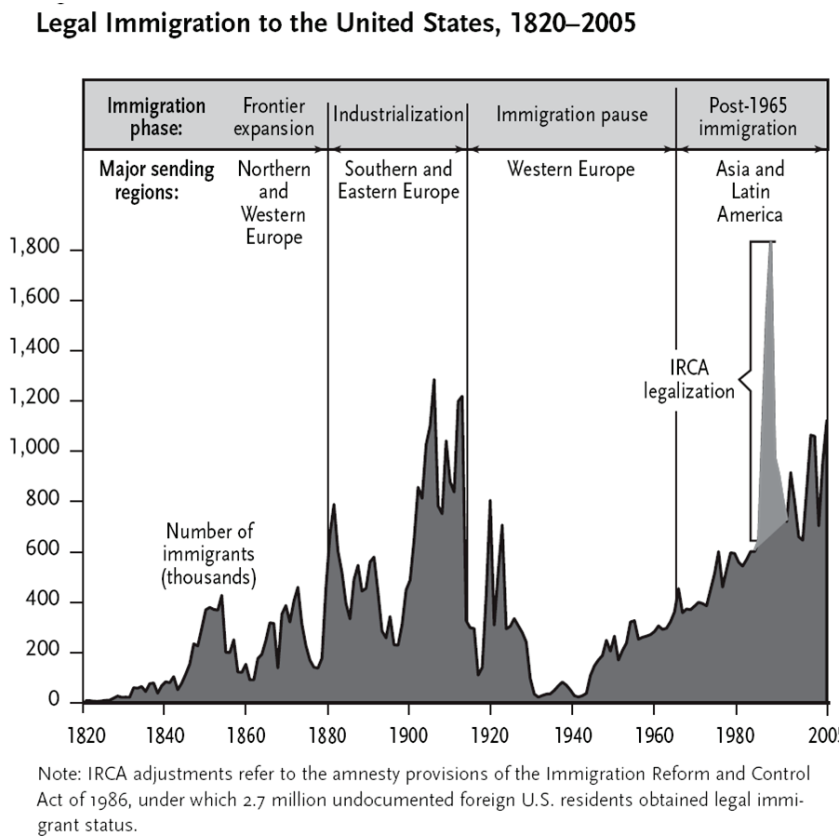

FIGURE 2-5 Legal immigration to the United States was high around the turn of the century, declined during the Great Depression, and has risen steadily since the end of World War II.
SOURCE: Martin and Midgley (2006). Reprinted with permission. Copyright 2006 by Population Reference Bureau. Based on data from Yearbook of Immigration Statistics: 2005.

new immigrant populations. This has created a large built-in demographic momentum for the future population growth of this group (Martin and Midgley, 2006).

The U.S. Census Bureau (2010a) is projecting that by 2042 the United States will be a "majority minority" society—where the minority population exceeds the non-Hispanic white population. But for America's children, the future is now. About half of all births in the United States are now to groups other than non-Hispanic whites. Already, the absolute

numbers of white and black Americans are declining. "Over the next 20 years, the racial and ethnic composition of scholars studying family changes is going to be much different than we see in this room today," Lichter said.

Immigrants are more widely dispersed in the United States than they have been in the past. Hispanic populations are growing rapidly in many parts of the United States, often drawn to specific occupations. This growth is occurring in many locations that are different from traditional Hispanic gateway locations. Lichter observed, "I grew up in South Dakota. For a while when I was in college, I lived in a working class neighborhood in Sioux Falls, South Dakota. It was a Catholic church that I attended. I went back there recently to this working class neighborhood. Now that neighborhood is mostly Hispanic. The church is Our Lady of Guadalupe. They have Spanish-speaking masses. It is four blocks away from the Morrill meat packing plant." These new immigration patterns will have implications for schooling, neighborhood segregation, the use of English, and many other issues, said Lichter.

From the perspective of family structure, an important observation is that family structure and change are not the sole determinants of racial and ethnic variation in poverty. Family structure will certainly have some effect on the poverty rates of children when they become adults, but it is not the sole factor.

Population-based, nationally representative studies have focused on marriage patterns, cohabitation, family disruption, and fertility. But most of this research is focused on a single point in time and does not capture the dynamics of family instability, particularly for different immigrant groups or for different immigrant experiences. National averages hide tremendous diversity across different racial and ethnic groups.

For example, research by D. J. Hernandez (2004) has demonstrated differences between native-born and immigrant children in U.S. households. Immigrant children are more likely to live in households with nonparents and to be in crowded households, and they are at greater risk of a variety of negative experiences that may have certain developmental consequences (see Figure 2-6) (Hernandez, 2004).

Many immigrant children live with extended families, a situation known in some groups as "doubling up." Some groups also have very different experiences with transnational families that are linked in fundamental ways to families in other countries. Partners, spouses, and children may not be living with their parents but going back and forth between different countries.

Another issue that deserves consideration is interracial and intraracial marriage. When children have parents of mixed racial and ethnic groups, or if they have one native parent and one foreign-born parent, these factors have implications for issues of racial identity and assimilation.

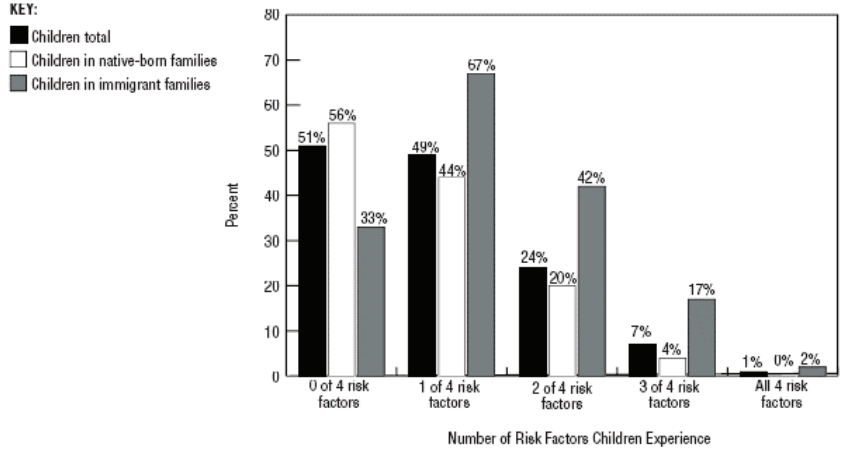

FIGURE 2-6 Immigrant children have more risk factors than do native-born children. NOTE: The four risk factors are (1) having a mother who has not graduated from high school; (2) living in economic deprivation (based on the 2x-poverty measure); (3) living in a linguistically isolated household; and (4) living in a one-parent family SOURCE: Hernandez (2004). Reprinted with permission. Copyright 2004 by The Future of Children, a publication of the David and Lucile Packard Foundation.

Structural and cultural variations in family structure, parenting practices, and child outcomes are other key issues, as are school and neighborhood contexts, including neighborhood segregation of immigrants. In the past, geographic and social mobility have tended to go hand in hand. But with the new movement of Hispanic groups into new destinations, that is changing. Many are less educated and have higher rather than lower rates of fertility, which is driving population change in these communities. "We don't know very much about the white response in these areas, whether there is going to be a new kind of spatial patterning of out-migration or white flight from these rural areas. These are all issues that have implications for the future well-being of children generally but immigrant children in particular," said Lichter.

Several critical kinds of data are lacking. Large national longitudinal survey samples often lack enough immigrants to drawn meaningful conclusions. Cross-sectional studies and the census tend to emphasize the prevalence of demographic characteristics rather than behavioral changes. Retrospective data do not enable much modeling because not enough data are available on such factors as economic conditions, employment, or migration. For these and other reasons, research on immigration is not particularly nuanced or cumulative. Lichter observed, "it is very hard to link

one discrete piece of research on a particular population of Vietnamese or Asians or Koreans or other groups with a broader theoretical or conceptual perspective. It is very hard to get a handle about what is important or what is needed next."

A critical need in surveys is to distinguish second-generation Americans from higher generation Americans. It would be useful for more surveys to include a question on the country of origin of each parent. Lichter said, "I wish we had that in our census data, but we don't. We have it in the Current Population Survey, so you can do some things that make sense, but not in the decennial census or American Community Survey."

Other data needs include the relationship of each person to everyone else in a household, income transfers and social support, mode of entry, migration histories, and connections to the ancestral country or country of origin.

Changes to the American Community Survey have made it possible to examine issues in ways that could not be done in the past (U. S. Census Bureau, 2010b). For example, a new question beginning in 2008 asks whether a respondent had a birth in the past year. This can be linked to marital status, yielding insights into fertility among cohabiting partners. Another series of question asks whether, during the past 12 months, a respondent was married, widowed, or divorced and how many times a person has been married. With this information, researchers can investigate marriage, remarriage, and other dynamic family processes.

Immigration is becoming an increasingly important issue in U.S. society. Lichter also observed, "A growing racial and ethnic diversity is here to stay, even with highly restrictive immigration policy, in part because of the high rates of fertility that we have seen in the recent past." Assimilation does not amount to cultural genocide, Lichter observed. Groups equilibrate over time and continually affect each other.

THE USE OF MIXED METHODS IN THE STUDY OF THE HURRIED CHILD

Another striking characteristic of modern families is the extent to which children are involved in multiple activities in addition to their time in school and at home. Sandra Hofferth, professor of family science and director of the Maryland Population Research Center at the University of Maryland, gave an example of a mixed quantitative-qualitative study conducted when she was a member of the Center for the Ethnography of Everyday Life at the University of Michigan. The question she addressed is whether busy children are overly stressed and pressured. One challenge was to define and measure "busy-ness."

She and her colleagues conducted qualitative interviews of parents

and children ages 9 to 12 in 43 Michigan families (Hofferth, 2009). There was some variation in family structure, but these interviews were limited to white families with a mother who had at least a high school education. Parents and children were asked about the children's activities, whether there were too many, whether they wanted to change, and what allowed them to manage their lives. This approach allowed the researchers to determine what parents meant by saying that their child had too many activities and too little time.

The results indicated that both the number and time spent in activities mattered. The researchers also needed to define and measure stress. They found that parents mentioned the child crying or being sick, tired, and not wanting to participate in an activity as signs of stress. To obtain comparable measures of activities and the time spent in them in a large quantitative study, the researchers used data from time-diary interviews with a nationally representative sample of children ages 9 to 12 across the United States. Based on the distinct groups that arose from the qualitative study, they created four categories—hurried, balanced, focused, and inactive—using the amount of time and number of activities in which the child participated. They also used a standard scale of internalizing behavior problems to measure stress, which included such attributes as high-strung, nervous, fearful, anxious, unhappy, sad, and depressed. They then associated the activity categories with measures of stress using multivariate methods.

They found, counterintuitively, that the more inactive children had higher levels of stress than the more active children. Parents have a tendency to seek equilibria, said Hofferth. Parents had made changes in the schedules of children who were overly stressed; therefore, children were not currently stressed. The inactive children were a greater challenge to parents, who wanted their children to become more involved with activities. This was a source of tension and stress in the parent-child relationship. Parents reported that when less involved children became involved in activities, children's stress symptoms declined. "The results strike at strongly held stereotypes and beliefs," said Hofferth. "Many refuse to believe the results in spite of the fact that parental interviews confirm them."

Quantitative research is a largely deductive process, she said. It allows researchers to weed through hypotheses, throwing out some and keeping others, at least temporarily. Qualitative research is inductive. It starts with data, develops and improves constructs, questions, and measures, and often results in unanticipated findings. This research can produce important insights—but it also raises challenges. It generates enormous amounts of data, and it can be difficult to distill the results into concise conclusions. Coordinating this research may always be difficult. And

it can also be difficult to find journals willing to publish this kind of research, since journals prefer short, focused articles on narrowly defined topics. Hofferth's work on the hurried child, for example, eventually was published in an edited volume (Hofferth, 2009).

DISCUSSION

During the discussion period, Jane Guyer pointed out that families were unstable in the earlier part of the century because of a high rate of adult mortality, which was followed by a period of relative stability before the modern period of increased instability. She then asked whether certain forms of family instability today, such as incarceration, are the equivalent of death, because an adult can suddenly disappear from a child's life and not return. Kathleen Mullan Harris pointed out that if a single-parent household is formed as a result of parental death, child outcomes do not differ that much from two-parent families in comparison to families that undergo divorce, separation, or abandonment. She speculated that a divorce or separation may be accompanied by conflict that has a negative effect on a child. Also, the children of a deceased parent can remain in contact with the deceased parent's family, grandparents, and extended social network, so there is not as great a loss of social capital.

Susan Brown noted that one in four black children who were born in 1990 had a parent in prison by the age of 14 (Wildeman, 2009). "For particular subpopulations, imprisonment really is a significant factor that only now is getting some attention."

Hirokazu Yoshikawa asked whether surveys are being modified to capture diversity in family structure. Brown responded that working groups are dealing with the issues and that progress is under way. For example, the National Center for Family and Marriage Research at Bowling Green State University is compiling data on cohabitation. This will be particularly helpful in refining the terminology used to discuss family forms.

Jere Behrman asked about family structure in other parts of the world, and Kelly Raley briefly discussed work in Western Europe. There is considerable geographic and population variation in family structure even in Western Europe, she noted. Similarly, in Latin America, both overall and detailed patterns differ from other parts of the world. "We need to move toward capturing some of this variability," she said. "Just using the umbrella term of 'cohabitation' is obscuring some important variations across racial and ethnic groups."

3

Studying How Families Cope with Poverty and Economic Stress: The Role of Quantitative and Qualitative Methods

Demographic research is essential in understanding rapidly changing family forms and dynamics, but demographic research alone cannot capture the full and rich complexity of the family. Other kinds of research are needed to understand such issues as the relationships in families or family influences on child health and well-being.

Poverty and economic stress remain realities of daily life for a substantial proportion of American families and children. Recent increases in the number and proportions of families in poverty make imperative the need to understand how these families adapt to adversity. All four presentations described in this chapter examined families that are under economic stress. Also, individual families and families in certain populations react in different ways, generating considerable variation within broader trends.

Studies of families under stress are a particularly good example of the ways in which qualitative and quantitative approaches can be combined to provide a better understanding of developmental processes than can either approach on its own (Yoshikawa et al., 2008). Quantitative research involves the collection or analysis of numeric representations of the world. Survey and questionnaire data as well as biological or physiological data are often analyzed in quantitative units that serve as proxies for phenomena that are often quite complex. Qualitative methods rely on nonnumeric representations of the world—words, texts, narratives, pictures, and observations. As a holistic enterprise that includes the social, neurological, and biological sciences, family research relies on both kinds

of data, although particular disciplines may emphasize one form of data collection and analysis over another.

Quantitative and qualitative approaches do not simply offer alternative ways of measuring and understanding reality. Rather, their combination provides a more complete picture of family structures, processes, and relationships. Furthermore, each approach can inform and complement the other through the examination of basic assumptions, theoretical models, and new constructs.

MIXED-METHOD APPROACHES TO STUDYING FAMILY CONTEXTUAL FACTORS AND CHILD COMPETENCIES

The New Hope Program was a three-year antipoverty demonstration program implemented in Milwaukee, Wisconsin, in the mid-1990s (Duncan et al., 2007; Mistry et al., 2008; Yoshikawa et al., 2006). New Hope offered an alternative approach to the issue of welfare reform, focusing on work-based supports designed to "make work pay" (Duncan et al., 2007). The program's premise was that, if people were working, they should not be poor. It provided income supplements for people working 30 hours or more a week, subsidies for purchase of private health insurance if benefits were not available through employment, child care assistance and subsidies if required, community service job placement, and individualized assistance from program representatives to help find jobs or deal with specific issues. In this way, the program sought to ensure that take-home income was above the poverty line.

The context of low-wage work and its impacts on family functioning and child outcomes are particularly amenable to an approach that mixes quantitative and qualitative methods, said Rashmita Mistry, associate professor of education at the University of California, Los Angeles. She described the Child and Family Study component of the evaluation of the New Hope Program. Funding for the evaluation was provided by several funding agencies, including the MacArthur Foundation's Research Network on Successful Pathways Through Middle Childhood and the National Institute of Child Health and Human Development (NICHD). The interdisciplinary team included an economist, two developmental psychologists, and a cultural anthropologist, and their evaluation drew on three sources of data. The first was administrative records data, such as earnings, earning supplements, welfare assistance (Aid to Families with Dependent Children and Temporary Assistance for Needy Families), food stamps, and Earned Income Tax Credit assistance. The second was survey data from parents of children ages 6 and older and teachers, encompassing 550 families and approximately 900 children, ages 1 to 10 at baseline. The third was an embedded longitudinal qualitative study, covering three

years, of 40 randomly selected families with the participants interviewed multiple times per year. "The approach to conducting the interviews was, no tape recorders, no note taking," said Mistry. "It was engaging the participants in a conversation about a variety of topics."

The studies presented by Mistry were based on secondary (nonexperimental) analysis of data collected as part of the New Hope evaluation and were informed by a family economic stress perspective (Conger and Elder, 1994; McLoyd, 1990). The essential idea of this perspective is that economic hardship is an important pathway through which poverty harms children's development. The subjective experience of dealing with financial adversity on a continual basis or the sudden loss of income due to unemployment influences a parent's mental health, provoking stress and depression. This can affect parenting practices, such as nurturance, warmth, and discipline strategies, which in turn influence children's well-being and learning.

The first study Mistry described looked at patterns of income change and related those patterns to indicators of material and psychological well-being assessed at baseline and five years later; quarterly income data were available from 1995 to 2000, along with survey data. One important finding from the quantitative data analysis was that average total income changed little over those five years. However, this overall trend masked important differences in trajectories by sources of income. For example, as welfare assistance dropped, income and other forms of assistance grew. Impacts on material and psychological well-being were measured through such indicators as disruptions of heat or electricity, difficulty paying the rent, having a checking account or a credit card, and the amount of time spent worrying about how to make ends meet.

Parents who reported higher incomes at the start of the study or whose income increased significantly across the five-year period showed lower levels of material hardship and financial worry at the end of the five-year period. However, measures of psychological well-being showed little or no improvement. "You find that there is very little evidence of direct effects of changes in income over the five-year period on these indicators of psychological well-being," Mistry said. Many of these families were still poor by objective definitions. For many of them, the money they brought home was never enough to meet all their needs.

The aim of the second study was to explore relationships among low-income mothers' management of finances and expenditure demands, family processes, and child well-being. The embedded qualitative analysis involved two primary research questions. First, how do low-income mothers meaningfully distinguish among categories of expenditures? Second, what are the consequences of managing expenditure demands for mothers' psychological well-being?

"My natural tendency in looking at these data, which are all narrative and interview based, was to find some kind of coding scheme, apply that coding scheme to the data, and then quantify the data," said Mistry. "It is about epistemology. It is the way I was trained to work with data, even when it is open-ended data. But at the end of the day, I looked at our results and realized that this doesn't tell a story. What got lost were these women's experiences. What got lost was humanizing this experience and being able to tell the story as they saw it."

Mistry and her colleagues started again. They received training in how to work with qualitative data. The reanalysis of the data led to a stronger telling of the story, from the women themselves, of the impact of economic pressure. Mistry also expressed her preference to work with collaborators for whom qualitative research was their principal form of training (her chief collaborator on this project was a cultural anthropologist).

One theme that became quickly salient was the distinction that women were making between the pressure to meet basic needs, things like paying rent and putting food on the table, and having a little money to engage in "extras" that had important psychological consequence for them. These might seem small and insignificant to others but were important to these families, such as taking their kids to McDonald's for a meal or, for mothers, getting their nails done occasionally. This was tied explicitly to these women's concept of what it means to be a mother. "It wasn't just about the income they brought in through government supports and earnings. It was really about being able to utilize their resource pools." Falling behind was a constant source of worry and anxiety. Affording modest extras provided a sense of fulfillment and happiness. Women also talked about taking on additional jobs, cutting back on expenditures, and relying heavily on kinship and friendship networks to meet their children's needs.

In closing, Mistry asserted that the value of a mixed-methods approach in the studies she described is the ability to cross-validate findings and reduce bias. A mixed-methods approach also can help to identify processes of transmission and link processes to outcomes. A final advantage of mixed-methods approaches is that they can help to replicate and generalize findings, helping to make research more amenable to policy makers. However, such approaches are also resource-intensive, requiring extra training, finances, and time.

LESSONS LEARNED FROM DIFFERENT APPROACHES TO STUDYING FAMILY PROCESSES AND CHILD OUTCOMES

Rebekah Levine Coley, associate professor of applied and developmental psychology at Boston College, discussed the Three City Study, begun in the late 1990s to assess the well-being of children and families following

welfare reform in Boston, Chicago, and San Antonio. This multidisciplinary, multimethods study was led by a team of scholars from multiple disciplines, including developmental psychologists, urban health and family sociologists, and labor economists. The Three City Study had multiple components, including surveys, direct assessments, structured observations, participant observation ethnographies, and collection of administrative data. The team selected one focal child per family and studied two cohorts of children, with three waves of survey data spread over six years (Angel et al., 2009).

Coley described several lessons from the study that relate to the use of multimethod studies in family research. First, in choosing which ages to study, the priorities for the team were to focus on the developmental stages that are most responsive to environmental influences or insults and stages in which developmental contexts can be measured. They decided that if they tried to select children from birth to age 18, both the sample and the methods would be diluted. Also, if trying to assess all children from birth to 18, it would be difficult to train interviewers and to make a coherent survey instrument that is developmentally appropriate over all those ages (Angel et al., 2009).

Ultimately, the team decided to focus on two separate cohorts: zero to 4-year-olds and 10- to 14-year-olds. These cohorts were followed for six years, so ultimately the entire span of childhood from birth to age 20 was covered. But by focusing on a narrower age range, developmentally appropriate measures could be targeted toward particular age groups. Also, focusing on adolescents allowed the team to rely on considerable self-reporting.

An important component of the Three City Study was the Embedded Developmental Study (EDS). It was conducted with all the 2- to 4-year-old children and their families from the main survey sample. The project team decided that this age group was particularly important in considering welfare reform, since it is an age at which parents can have particular difficulties combining parenting and employment.

Very young children cannot report on their own well-being, so the EDS included four separate components: additional interviews with mothers, videotaped child-mother activities, interviews with biological fathers, and observations of child care practices and interviews with child care providers. The study generated "a huge amount of information," according to Coley.

The first wave of the EDS was conducted when the children in this sample were 2 to 4 years old, and the second wave when they were about 3 and a half to 6. In the third wave, when the children were in elementary school, some of these components were less appropriate, so the study conducted interviews with teachers and collected school administrative data.

Another major component of the Three City Study was a participant

ethnography with 256 families over a three-year period. In contrast to the New Hope Study, the ethnography was not conducted with a subset of the survey families. The ethnography families were selected from a different sample of families in the same neighborhoods and from the same racial and ethnic groups as the survey families. One reason for this strategy was to reduce the burden on respondents. Another reason was to avoid cross-contamination between the ethnography and the survey.

The ethnography was connected to the survey in numerous ways. Like the EDS, it focused specifically on families with preschool-age children. It also developed modules that mimicked or paralleled the modules or the topics covered in the survey, creating opportunities for coordination between the ethnography and the survey.

The separation of the ethnography from the survey had both pluses and minuses. It successfully lowered respondent burden for the ethnography families and for the survey families, but it also reduced the potential for coordination between the ethnographies and the surveys. However, it led to different types of mutual influence between the research teams (Angel et al., 2009).

The sources of information about family members varied by developmental period and by role in the family. For young children, information was obtained from such sources as direct assessments, structured observations, and parent and child care provider interviews. Adolescents were able to provide considerable information themselves, and the project interviewed adolescents directly as well as their caregivers. Also, for such topics as adolescent sexual risk behaviors, it is reasonable to presume that adolescents themselves would be better reporters than their parents. Similarly, there is agreement in the field that fathers' reports of their own parenting behavior are preferable to relying solely on mothers' reports. But this approach has strengths and weaknesses. Response rates for fathers are lower, which means that relying on fathers' reports will produce a smaller sample and introduce selection bias into the sample (Angel et al., 2009).

Conceptual considerations also can dictate whom to ask about different concepts. For example, for parental monitoring and knowledge about adolescents' activities, parents and youth are likely to have different perspectives. The Three City Study and other studies have found correlations in the range of .2 or .3 between parent and youth reports on measures of adolescent externalizing behaviors or parenting behaviors, which is not very high. Some people interpret that to mean that the validity of the measures is poor. Another perspective is that taking different perspectives into account is important. With behaviors like parental monitoring and knowledge, it might be more important to look at what youth *think* their parents know about their actions and behaviors than to consider what parents think

they know, since perceptions have a stronger influence on a young person's behavior.

A third way to think about choices among sources of family research data is to test their validity. Which measure has better predictive validity to behaviors or outcomes of interest? For example, when mothers' and fathers' reports on fathers' parenting behaviors were compared, the fathers' reports were slightly more strongly related to children's cognitive skills (Hernandez and Coley, 2007). Moreover, a composite of fathers' and mothers' reports had the strongest predictive validity to children's outcomes.

Triangulating information across different sources of reports in a family has other strengths. Obtaining different perspectives from different people provides increased reliability of measurement and potentially increased predictive validity. However, there are clear weaknesses. Information may conflict among reporters and over time. "If you ask multiple people in a household what the family structure is, you will get multiple answers," Coley said. For example, when mothers and fathers were asked whether the father lived in the household with the child, there was an 11 percent discrepancy rate in the responses.

As another example, when adolescents and mothers were asked to report on the father's involvement with the adolescent, discrepancies arose about whether the father was alive or dead. Coley observed: "Some fathers who in the first wave were reported to be deceased in the second wave had come back to life."

Composites may increase reliability and validity but may also mask real relationships. For example, if adolescents' and parents' reports of monitoring are combined, a relationship between adolescent reports and their own outcomes can be missed.

A third issue is choosing measures. Developmental appropriateness involved choosing measures that were appropriate for the age of the child at the time and could also be used over time. To look at growth over time, measures need to be consistent over time. They also should be applicable over social status. For example, measures should be appropriate for both resident and nonresident fathers. With low-income families, there is a lot of fluidity in family structures. Parents move in and out of the household and move in and out of relationships. If the questions about resident and nonresident fathers are different, change cannot be studied over time.

Measures also need to be culturally appropriate. The Three City Study looked primarily at black and Hispanic families, but most measures in developmental psychology and related fields were developed for middle-class white families. The team spent more than a year piloting survey measures and structured observational measures to make sure that the measures were culturally appropriate and would work in the settings in which they were used.

The time between waves also proved to be important. One of the goals of the study was to make adjustments and improvements with each wave. With only about a year and a half between the first and second wave, there was not enough time to make adjustments in the interview protocols. "You really need a big chunk of time between waves to make adjustments," said Coley.

The iterative process between the ethnography and the survey—allowing each method to inform the other—did not occur as much as hoped until the third wave. However, making adjustments in instruments can raise issues, since changing measures makes it difficult to assess change over time.

Several innovative methods incorporated into the study had great benefits. All of the survey instruments were preloaded into computers to support validity checks. Information from previous interviews and basic information about the people in a household were preloaded so that conflicts could be detected and inform cross-checks. In addition, respondents were trained for sensitive topics. They worked with headsets and laptop computers, heard the questions through the headsets, and answered the questions on the laptops. This approach has been shown to increase the validity of reporting on sensitive topics, such as sexual activity and substance use.

Areas that still need work include the issue of child elicitation (drawing out responses from children in research interviews or surveys) and bidirectionality. Children influence their families, not just the other way around, and investigations of families need to take these interactions into account. More attention needs to be given to the complexity and instability of family systems and how to access fathers, especially in low-income families. Better measures of positive child functioning and family processes are needed. Coley observed, "We are pretty good these days at measuring problems and risks, but our measures are much less valid for measuring positive productive behaviors. The measures we had in our survey of positive youth behaviors and positive parenting had such limited range that they are really not useful." Finally, there is a need for opportunities for more mutual influence among the components of a study. Coley suggested that program directors need to "try to increase as much as we can the mutual influence and communication between these components in a timely fashion."

STRESS AND TRAUMA IN AMERICAN INDIAN FAMILIES

Questions of meaning infuse research on families, said Paul Spicer, professor of anthropology at the University of Oklahoma. Instability in families does not just produce new family forms. It also produces cognitive instability as people struggle to make sense of their experiences.

The methods of anthropological research differ from those used by

demographers, who work with national data sets. Yet some of the issues raised by demographers who study family structure echo those studied by anthropologists seeking to examine psychiatric distress in American Indian communities.

Stress and trauma are endemic in American Indian families. In recent epidemiological work by Spicer and his colleagues, rates of poverty in tribes were about 50 percent in the southwestern United States and about 60 percent among the Northern Plains tribes (Beals et al., 2005). This compares with a poverty rate of about 10 percent found in the National Comorbidity Survey (NCS), a nationally representative household survey of the prevalence of mental disorders in the United States. Social and health services for these tribes—and particularly mental health services—are severely underdeveloped or nonexistent. Health literacy levels are also likely to be quite low. Spicer said, "Our attempts to develop messaging campaigns and to think about home visiting and educational interventions suggest that there are fundamental difficulties in translating some of the most basic constructs we take for granted into terms that families can understand."

Rates of alcohol dependence can be high, although these rates are not uniform and do not necessarily conform to the stereotypes common in the broader society. Spicer's epidemiological research suggests that they are about 50 percent higher for men and twice as high for women in the samples he studies than the rates found in the NCS.

Rates of posttraumatic stress disorder are also about 50 to 60 percent higher than in the NCS. But the measured rates of depression are lower than would be expected—about half the U.S. rate. In part, this was due to the instrument used to measure depression, which elicited evidence of both depressive episodes and other symptoms of depression separately rather than in the context of a discrete episode of major depression (Beals et al., 2005). "The way we ask these questions matters intensely for the findings we have," observed Spicer.

Patterns that exist in stories and discourse may reveal as much—or more—than they do in survey data, Spicer said. People cannot always make sense of their experiences. "Indeed, one of the hallmarks of the experience of trauma and dislocation and loss is that it can be so disorienting that you can't find coherence in your experiences." But the investigation of how people construct meaning in the midst of chaos is critically important. Open-ended, narrative approaches provide a way of understanding these processes in ways that responses to survey questions do not.

Finally, even open-ended narrative approaches cannot describe the reality of people's existence. Much that is of interest may not be explicitly

understood. Explicit observational research is therefore important to help understand what is not fully comprehended.

With support from the Administration for Children and Families and the National Institute of Child Health and Human Development, Spicer has worked on embedding ethnography in psychological research. He and his colleagues have developed new tools to understand neighborhoods in reservations, to explore areas for which good measurement may be lacking, and to move beyond self-reports.

Part of this work involved coming to a new understanding of "neighborhoods." Native communities are very different, both within and among reservations. In looking at these differences among communities, the researchers uncovered new factors of interest, including the risks posed by chemical contamination, primarily agricultural contamination, and problems with animals, most notably with dogs. Where dogs are treated poorly, children also seem to have great difficulties.

Community engagement has become a core requirement of doing research with American Indians. Research in tribal contexts has always required explicit tribal approval. The process of gaining this approval can lead researchers in different directions than they anticipated. "We have come to see community consultation as the centerpiece of doing the kind of research that can inform work on health disparities," Spicer said. For example, in research on stress and young children's development, discussion of the social dynamics in reservation communities led to the addition of chemical contamination and problems with animals as factors to be considered.

A particular challenge in this research is the critical significance of historical trauma. People in tribal communities talk about the impact of history on the way they interact with children or about the predicaments they see in the current and future generations. Parents relate their desire to do differently for their children than what was done for them and about their concerns that they were producing the same circumstances for their children that they had explicitly hoped to avoid. Furthermore, much of what is hypothesized to be significant about historical trauma cannot be spoken, at least initially, so it is not amenable to survey approaches. "Existing measurement approaches are inadequate to get at this," Spicer said.

Spicer's research has looked at cognitive development, school readiness, and differences in language development. Two visitors, an ethnographer and a clinician, were sent to 40 of 120 homes in one sample, one as an observer and one as the lead interviewer. Following the visit, the observer dictated reflections of parent-child interactions and the environment, "so we have very detailed records of our impressions of what was

going on, both in terms of the interpersonal environment as well as the physical environment."

Open-ended interviews make it possible to elicit accounts in ways impossible to do with survey tools. Especially when ethnographers were paired with clinicians in interviews, "we were struck by how much more powerfully emotive the discourse was in this open-ended context than it was in the survey, where people are saying yes-no or rating things one to seven."

One notable observation Spicer and his colleagues have made involves an observed lag in language development early in life in the Northern Plains tribe with which they have conducted their research. Clinicians were struck by a lack of engagement and interaction between parents and children. Yet the ethnographers were struck as well by the potentially inappropriate cultural lens that clinicians were using in evaluating the lack of verbal interaction, since children's development can be supported nonverbally. These paired observations suggest disengagement in the context of stress and parents' experiences with poverty, substance abuse, mental health issues, and trauma but also emphasize the importance of developing messages that are consistent with cultural norms and expectations of infant care.

Spicer and his colleagues regularly capture their visits on videotape and audiotape, even in the homes of families with very complex needs. "It is quite possible if you take the time to build the rapport and if you staff your project locally as much as possible," he said. Surveys and coding schemes may change, but the interaction archived in a video is permanent and can be coded in many different ways.

Observations in real-life contexts provide important information for understanding the impact of trauma and loss in the context of persistent cultural values. This information is essential in constructing public health messages to engage parents more fully in their children's development. Explicit measurement certainly is needed, but it is not often available. And even if a measure is available, it may not always be easily interpreted or understood. "A large national survey is going to be relatively silent on a lot of the processes that the ethnographer might want to hear about," Spicer commented.

The tribes are interested in Spicer's research only insofar as it offers the prospect of improving the lives of their members. At the front end of their research, the researchers make a commitment to translate their findings into interventions. That means understanding parents' experiences in ways that are respectful of where they have come from, what they want, and how they can be sustained. Approaches to research based on discourse analysis allow scientists to understand how meaning can

emerge from trauma and loss. Approaches to meaning also are central in thinking about what messages may resonate in particular communities. "There is a lot of room for sensitivity to meaning in the kinds of work we do in public health campaigns."

A final issue Spicer raised is how questions of spirituality or religion enter into daily life in native communities. The parents in his research study uniformly feel estranged from their household traditions. Many turn to spiritual practices, and research has underscored the vital role that spiritual involvement can play. "When you look at what distinguishes people who are able to quit drinking and construct sober lives for themselves and the lives of people who are not, involvement in spiritual traditions of all sorts—be they Christian or tribal—appears to make a crucial difference. It is probably the one thing that does make a crucial difference. All people with alcohol dependence have tried to quit drinking—that is one of the hallmark symptoms. But what distinguishes those who are able to stay quit from those who go back to drinking appears, in both the quantitative and qualitative work we have done, to be largely driven by involvement in spiritual traditions."

KEY MEASUREMENT ISSUES IN THE STUDY OF LOW-INCOME FAMILIES AND SCHOOL READINESS

Economic, psychological, and cognitive studies of reading have all demonstrated that early skills are extremely important for later achievement. In particular, the skills with which children begin kindergarten or first grade are highly predictive of their rates of growth over time and their acquisition of more advanced and sophisticated skills.

This finding has special relevance for the study of achievement gaps among socioeconomic, racial, and ethnic groups, said Heather Bachman, assistant professor in education at the University of Pittsburgh. Studies of academic trajectories from kindergarten through fifth grade indicate a persistence of achievement gaps (Bachman and Mohan, 2007) or a widening of gaps (Votruba-Drzal et al., 2009; Bornstein and Bruner, 1989) over time. Even in the midst of education reforms, such as the No Child Left Behind Act of 2001, these gaps are relatively stable or in some cases may be widening.

Bachman and her colleagues study the processes behind these disparities and ways to promote competence and resilience for children. A variety of theoretical frameworks guides this work. For example, Bornstein and Bruner divide the differences in parenting for school readiness along two primary dimensions: socialization practices and more didactic practices (Bornstein and Bruner, 1989). Other theoretical frameworks for understanding parental teaching of early literacy skills emphasize the

resources and investment of time and money (Becker, 1991; Foster, 2002) or the psychological distress associated with less stimulating and responsive parenting (Conger et al., 2002; McLoyd, 1990).

An important task is to identify emergent literacy skills. According to the National Early Literacy Panel (National Institute for Literacy, 2008), precursor skills include alphabet knowledge, phonological awareness, writing letters or one's own name, oral and receptive language, phonological memory, and the use of colors. Conventional reading skills are generally measured using standardized reading tests. However, it is not always clear why disparities in early reading occur, said Bachman. Do children recognize the letters of the alphabet? Do they know the phonological correspondences between letters and sounds?

Quantitative measures of parental teaching practices rely on a variety of assessments, such as the Home Literacy Environment (HLE) scales or the HOME-Cognitive Stimulation subscale (Bradley and Caldwell, 1984). These measures tend to have two major components. They measure resources, such as the number of books, magazines, newspapers, computers, and educational videos in a house. Or they monitor parents' behaviors, such as teaching letters, reading to a child, taking a child on educational outings, or limiting TV watching. One important item is how much parents read to themselves to model literate behaviors and limit TV watching, which is positively associated with reading acquisition.

These quantitative measures have several limitations. One is that it is sometimes hard to track change in these measures over time. Parents who provide books and read to younger children are also quite likely to do that after children go to school. To draw causal inferences, it would be informative to see if these processes change over time and measure the differences in functioning among children. Instead, these measures tend to sample one point in time or average longitudinal data. "They are very good at discriminating between child differences and achievement and less useful in predicting change over time," said Bachman. Also, these measures tend to be global composites that are used to predict many kinds of academic skills. But parenting practices tend to be more specific to selected domains.

As an example of multidisciplinary research, Bachman cited a study of parental involvement in education (El Nokali et al., 2010). She and her colleagues used the NICHD study of early child care and youth development to examine within-child changes in parental communication with teachers and home-based involvement with child trajectories. They found few links between increases in parental involvement and improved academic outcomes. Instead, increased efforts at parent involvement led to declines in behavior problems and increases in prosocial skills among children. "It was a very unexpected finding that could lead to a number

of exciting conclusions later on when applied to other kinds of parenting practices," she said.

Reading researchers have found similar effects when working with parents on shared book reading activities. Whitehurst and colleagues trained parents to label the pictures in a book, to talk to children about some of the illustrations, and otherwise provide more engaged reading. Such reading has promoted receptive vocabularies among children, so they are learning more vocabulary words, but it has not transferred to early reading acquisition (Whitehurst et al., 1994). Again, the effects are domain specific, and the use of global measures of parenting could be masking more domain-specific causal mechanisms.

In general, said Bachman, the take-home message from the past several decades of research is that researchers commonly face restriction-of-range issues in observations and reports of HLE practices in low-income families, as well as for some minority groups. The parents of children from lower income backgrounds tend to score much lower on measures of home literacy promotion. But it is not clear if these lower scores are driven by fewer resources, by parenting behaviors, or by both. Additional literacy socialization practices may be operating among low-income families that are not adequately captured by traditional quantitative scales.

Bachman also highlighted some of the qualitative and mixed-methods research that has identified socialization practices associated with high achievement among children from low-income backgrounds. For example, the Baltimore Early Childhood Project, which started in the early 1990s, followed 80 children and families either from their prekindergarten year to third grade or from first grade to third grade and periodically collected parent diaries, ecological inventories, interview data, and standardized child assessments. Two major themes seemed to distinguish lower- and middle-income families' approaches to teaching literacy. When reading was viewed as entertainment, the themes that emerged were that reading is fun and enjoyable and that parents and children should choose books and topics in which they're interested. Middle-income parents more frequently endorse these kinds of practices, and there are few racial differences in income groups.

The other approach is that reading is meant to acquire skills. Children were encouraged to acquire the letter names and the letter-sound correspondences and practice these skills. There was less emphasis on reading for enjoyment or entertainment.

When parents in either the middle- or low-income groups endorsed reading as entertainment, children tended to benefit over time, with higher reading scores on different standardized assessments. The orientations for entertainment versus skill predicted differences in third grade reading over and above the effect of help with homework and other more

common HLE perspectives. This work also raised interesting questions about how children not only acquire basic skills but also become engaged learners inside and outside school.

In another study, Reginald Clark followed black, low-income families and identified high-achieving and low-achieving high school students. He conducted interviews to ask about parenting practices and used participant observation in homes to look at routines and practices. Differences emerged not only in the involvement of parents and their support of achievement but also in their attributions of why their children were succeeding or failing in school (Clark, 1983). The parents of high-achieving students felt personal responsibility for their child's achievement when academic difficulties were encountered. They were proactive in talking to teachers or trying to find other kinds of assistance, and they created some routines and rituals at home that supported children's learning and achievement (Clark, 1983).

The parents of low-achieving students had a sense that their children were struggling but did not know how to improve the situation. They tended to blame the children for academic difficulties—for example, by saying that the students were not working hard enough. These parents also were less proactive in resolving issues with teachers.

Finally, recent research studies have examined the effects of "coparents" in low-income children's lives. These include coresiding grandparents of young mothers, custodial grandparents, social or cohabiting fathers, or older siblings who might be taking on some teaching responsibilities. Particularly in some low-income or immigrant families, the teaching role traditionally ascribed to parents could actually be delegated to other members of the family.

For example, one study looked at Indo-Chinese refugees with very low incomes and very low English fluency among parents or children when they moved to the United States (Caplan et al., 1992). Many of the children had missed several months or even years of formal schooling while in relocation camps. Yet many of these children adapted relatively quickly to school and performed well in school. In a subsample of 200 families for which in-depth interviews were conducted, the researchers found that although parents lacked education and facility with English, they took on more housework and other responsibilities to free up older siblings who could help the younger children with their homework after dinner. There were clear routines and rituals following the evening meal. The older siblings taught the younger siblings not only the content but also the skills, habits, and attitudes to become literate and engaged learners. Using conventional theoretical perspectives, it would be hard to measure this assistance in terms of time and money. The parents were not increasing their time in teaching; they were increasing their time in

other household responsibilities to free up other family members' time to teach.

Multidisciplinary research has started to uncover the rituals and routines that support learning even in disadvantaged environments. These practices support not only the acquisition of skills but also the attributional and motivational characteristics of young learners. These qualitative and mixed methods could inform future survey research as well.

DISCUSSION

During the discussion session, Rebekah Levine Coley was asked what the Three City Project would do if a substantial addition of money was available. She responded that the funds should be used to do more analysis rather than expand data collection. "With huge studies like the Three City Study, we have a vast amount of data that hasn't been analyzed. Particularly if you look at the mixed-methods piece, the ethnography and survey and other components, we have done far too little real mixed-methods analysis with these data."

Coley also pointed out that the biggest lost opportunity was the lack of enough time to do multidisciplinary communication and collaboration. "Partly it was the scale of the Three City study. It was so large, and each component was so large. Even though we had three years before we went into the field, for a study of this size and complexity there wasn't enough time and resources to have adequate communication and meetings." The ethnographic team and the survey team started from very different places with very different assumptions and very different norms. There were also some inequalities. There was one senior ethnographer and five senior people who were more quantitative. Even for a 10-year study with $20 million in funding, there was not adequate time and resources to do the optimal level of collaborative planning. Very few people, prior to the most recent cohort of scholars, have the necessary multidisciplinary training for mixed-methods research and for coherently merging different theoretical models and perspectives.

Some of the groups also had somewhat different concerns. For example, the ethnographers had greater concerns about confidentiality and about fulfilling their obligations to respondents. Many of their sample participants were recruited through personal contacts and snowballing, where people involved in the study recommend others for recruitment into the study. There was also a concern about identifying people. For example, in the work on early childhood education, there was a concern about breaking down children's child care arrangements by Head Start centers versus other centers, because in many of the cities only a few Head Start centers participated in the ethnography. The ethnographers were

concerned that if children were identified as being in Head Start versus other centers, the Head Start centers that participated in ethnography would feel singled out or that their confidentiality had been broken.

In response to the same question about how she would use additional funds for evaluation of the New Hope Program, Rashmita Mistry said that she would investigate how children spend their time outside the home and school. "It would have been nice to have some money to spend some time in those other settings that children were spending time in." She was also interested in children's conceptions of their economic status. "One of the things that I don't think we did as well is to get a lot of this information from the child's perspective. . . . I would love to be able to go in there and in the qualitative piece do some very in-depth interviews with kids, . . . being able to see how this unfolds for kids parallel to the information that we have from parents."

When asked what additional research she would do with additional funds, Bachman said that she was particularly intrigued by variations in socialization procedures across ethnic and racial groups. Some groups have gained more education, and attempts to disaggregate class and race could be fruitful, especially given the number of immigrant families in the United States. She was also interested in adding a qualitative dimension to her research, given that longitudinal surveys have generated lots of quantitative data. "Issues in parenting for early achievement have undergone so much research over the last 20 or 30 years," she said. "Now is the time to get back into more qualitative work."

4

Studying Family Processes in the Clinical and Prevention Sciences

The clinical and prevention sciences address the treatment and early roots of psychopathology. These areas of research, no less than others, are being transformed by the recent developments in methods and disciplines in family research. This chapter focuses on clinical and prevention research addressing three problems: trauma in young children, depression in parents, and substance abuse among fathers.

Different disciplines tend to approach psychopathology and its relationship to normative processes and development in different ways. Family research is central to much of this research. For example, the family roots of child, adolescent, and adult psychopathology have been central to mental health research for over a century. As family research methods have diversified, so has the richness of this work. Research on trauma presents an excellent example of such family and contextual influences. In prevention science, many of the recent advances have been driven by new ways to examine the risk and protective processes in families that represent productive targets of programs to prevent psychopathology and promote wellness and health.

By examining three different types of psychopathology and influences on it from varying disciplinary perspectives, this chapter points toward the benefits that can accrue by building bridges between disciplines. By taking advantage of complementary expertise, multidisciplinary work can yield results that could not be achieved through research in a single disciplinary tradition.

RESEARCH WITH FAMILIES INVOLVED WITH CHILD TRAUMA: CHALLENGES AND STRATEGIES

At San Francisco General Hospital, Chandra Ghosh Ippen, associate research director of the Child Trauma Research Program at the University of California, San Francisco, works with children ages zero to 6 who have experienced severe trauma. Her specialty is working with children whose parents have been murdered and with children who have been the victims of sexual abuse. At the workshop, she told the story of one young boy named Armando. At 5 years of age, Armando has serious speech and language delays. His mother says he was always an odd kid, and his teacher echoes that. She says she is worried about whether she can keep him in the classroom. He seems very tangential. More important, he does disturbing things with scissors, trying to cut himself or other people.

When Armando was less than a year old, he was left in the care of some relatives and was burned severely on his fingertips while they were drinking. When Child Protective Services became involved, the caseworkers found that his mother had a history of drinking, and he was removed from the home and placed in foster care. As more was learned about his history, it became clear that he had witnessed domestic violence between his parents. Ultimately, his mother returned and went into treatment, wanting to reunite with her son. She is an immigrant from Nicaragua and lived through the conflict there. She saw her own mother killed with a machete and then cared for her brother when he was young. "You can imagine these clinical processes affecting what we are seeing today," said Ghosh Ippen. "The mother who perhaps does not care so well for the child. The child who triggers her because he reminds her of her brother whom she was caring for. This little boy who is carrying around this story. . . . This is the clinical reality that underlies the research picture that we have all been trying to study."

Childhood trauma is an epidemic in the United States, especially in the age range from zero to 6. According to recent studies, 15.5 million children in the United States—1 in 5—live in families with partner violence (McDonald et al., 2006). Certain populations, including some ethnic minorities and people living in poverty, are more highly affected.

Younger children are more likely to be exposed to domestic violence than older children (Fantuzzo and Fusco, 2007). In the Minnesota Parent-Child Project, a 25-year longitudinal study of mothers and children in poverty, 12 percent of mothers reported mild partner violence and 25 percent reported severe partner violence when children were ages 18 to 64 months (Yates et al., 2003). In 2008, 3.7 million children were investigated for exposure to maltreatment, and 772,000 were considered to be victims of maltreatment (U.S. Department of Health and Human Services, 2010). More than half of these maltreated children are less than 7 years old.

Young children are also exposed to violence in the community. In a study conducted in Boston of nonreferred children ages 3 to 5 years, 42 percent had seen at least one violent event, 21 percent had seen three or more, and 12 percent had seen eight or more (Linares et al., 2001). In a Washington, DC, study of Head Start, 67 percent of parents and 78 percent of children reported that they had witnessed or had been a victim of at least one incident of violence (Shahinfar et al., 2000). "Young children are often victims in this epidemic," said Ghosh Ippen. "We know that their physiology is being rampantly affected. We know that this is affecting brain development during a period of rapid brain development, at a time when the [hypothalamic-pituitary-adrenal] axis and stress response are being formed."

To address this problem, the origins and consequences of violence need to be understood on multiple levels, said Ghosh Ippen. The effects of violence on the developmental trajectory of children need to be studied and understood, as does the role of a child's temperament. In addition, violence needs to be understood across generations and over the course of history.

"Little kids always walk in the presence of big feet," said Ghosh Ippen. The best predictor of children's functioning across multiple studies in multiple cultures is parents' functioning, she said. For example, when a stressful event occurs, is a mother able to soothe an infant, or is she incapable of doing so? "The way the parent interprets what is happening, the way that they can soothe the child, that relationship is what affects the child."

In conducting clinical work and research with trauma-exposed children, Ghosh Ippen considers primary risk factors, protective factors, change agents, and outcomes in the context of the child, the primary caregiver, and the social environment. The primary risk factor is the history of trauma, and the primary protective factor is the parent-child relationship. To assess for trauma, relevant factors include the type of event, the age at trauma, the severity of trauma, whether the trauma is acute or chronic, the relationship of the victim to the perpetrator, the reminders of the trauma, and protective factors.

From a clinical perspective, an important consideration is how the caregiver talks about the experience. Does the caregiver believe that the child remembers what happened? What is the caregiver's affect? Or is the caregiver somehow disconnected from the experience?

Symptoms to be assessed include those of posttraumatic stress disorder (although this can be difficult to interpret in young children), oppositional defiant disorder, separation anxiety disorder, attention deficit hyperactivity disorder, depression, or anxiety. Again, an important clini-

cal focus is why the caregiver thinks the child has these symptoms and the caregiver's response to those symptoms.

Examples of traditional relationship constructs include warmth, responsiveness, affect (such as anger or frustration), limit setting, and the level of stress in a relationship. But there are also examples of newer, clinically based constructs, such as the caregiver as a protective shield, the ability to make meaning jointly about what has happened, or dyadic affect regulation.

To assess the trauma history, the functioning of the child, and relationships, Ghosh Ippen and her colleagues use a variety of measures, none of which is perfect. One challenge in the use of these measures is inaccurate responding. A caregiver may not trust a clinician, or a caregiver may have a reduced capacity to see a child's perspective. "Armando's mom has had over 13 traumatic and stressful life events," said Ghosh Ippen. "She is an immigrant woman coming to see us. Does she view it as safe to tell us her history? Does she view it as safe to say that Armando has problems? Does she view it as safe to get help? These are some of the questions that might come up."

In another case, a child could not even pick up a toy at the end of an assessment, saying that the stuffed lion would bite him, that the car would run over him, and that the balloon would float him away to heaven. It was clear, said Ghosh Ippen, that this mother could not focus on his symptoms because she was so focused on her own. "She had numbed out."

Also, caregivers with multiple traumas sometimes can have affect charged, for example, by intrusive memories of the trauma. To overcome these barriers, it is essential to establish rapport—but rapid assessments make it difficult to do so. "From either a clinical perspective or a research perspective, you have got to have a relationship with this person to get an accurate read."

Another challenge is that questionnaires can be long and burdensome. They need to balance internal consistency with the threat to validity from the burden. Many instruments, in order to maximize internal consistency, ask about a symptom in many different ways. This is a problem, especially with low-education immigrant families. With these families, clinicians have to read the instruments, and it can be awkward to ask the same question over and over. Caregivers also may have trauma symptoms that interfere with their responses. For example, avoidance is a core aspect of posttraumatic stress disorder.

To manage this burden, questionnaires need to be developed with input from a clinical perspective. Often, research questionnaires are applied to clinical work. It would be helpful to have measures developed for clinical use that also provide research data. Helpful modifications include the use of gating questions succeeded by follow-up

questions when appropriate. It also would be helpful to think about balancing the need for multiple items to obtain internal consistency with reducing the level of burden. It may be better clinically to organize items around the way people think, not according to diagnostic criteria. With measures of posttraumatic stress disorder, for example, the sleep items are separate rather than clumped together; it would make much more sense to ask people about similar behaviors at the same time.

Some items need to be worded more colloquially. A question such as whether a child has any re-experiencing symptoms is hard for most people to understand. Of course, most interviewers train clinicians to ask it a different way if the person does not understand the item, but it would be better if items were worded in ways that maximize the likelihood that people will understand them.

Researchers and clinicians need to think creatively about using physical objects that can be manipulated. People who have experienced trauma may be able to track and respond better when they are not only responding verbally.

Development challenges include how adults perceive young children and their behavior given different ages, cultures, and contexts. For example, a measure may not cut across age ranges, requiring different measures for different developmental stages. As a child develops, the capacity to process what happened and to communicate distress changes. How does this affect research? And how can distress be measured in babies and toddlers to determine whether they need treatment?

Research is done to affect clinical practice, but clinicians need to be able to use the tools that are developed. For example, it would be helpful for trauma screening to be more procedural, allow for consistency in how trauma history is assessed, and provide wording that allows for more valid responses. At the same time, many clinicians are not comfortable talking about trauma. Instruments need to be developed that they are comfortable using, and they need training to be able to use those instruments comfortably. "We need to think of the needs of clinicians and families along with the needs of research. We need contextually informed scientist-practitioner assessment tools."

CONDUCTING RESEARCH WITH FAMILIES WITH MENTAL HEALTH ISSUES FROM A PREVENTIVE AND RESILIENCE-BASED PERSPECTIVE

A strong knowledge base exists for family-centered strength-based preventive intervention across a wide array of conditions, said William Beardslee, professor of child psychiatry at Harvard Medical School and director of the Baer Prevention Initiatives in the Department of Psychia-

try at Children's Hospital of Boston. The best way to understand mental health processes is to identify ways to enhance resilience factors and diminish risk factors to test conceptual models. "All of us who engage in risk research are ultimately interested in doing interventions that will better the lives of children, and preventive interventions are usually the most effective," he said.

Beardslee summarized the conclusions of two recent reports from the National Research Council–Institute of Medicine: one on depression among parents (National Research Council and Institute of Medicine, 2009a) and one on preventing mental, emotional, and behavioral disorders among young people (National Research Council and Institute of Medicine, 2009b). Depression is a highly prevalent and impairing problem that affects 20 percent of adults in their lifetimes. Rates of depression vary by age, ethnicity, sex, and marital status, but many adults who suffer from depression are parents. According to estimates made by the committee that produced the report, 7.5 million parents in the United States are affected by depression each year.

Probably the best treatments in mental health are available for depression. Yet 40 to 70 percent of the adults who experience depression do not get treatment. "If I were standing here today and said we have 40 to 70 percent of adults not getting treatment for cancer, that would not be tolerated. So we need to attend to that issue," Beardslee commented.

Depression among parents leads to sustained individual, family, and societal costs. For parents, depression can interfere with parenting quality and put children at risk for impaired health and poor development at all ages. Depression among parents affects employment, human capital, household production, parenting, and social capital, all of which have effects on children. And in the past year in the United States, at least 15.6 million children lived with an adult who had major depression.

Effective screening tools are available to identify adults with depression, and the U.S. Preventive Services Task Force has recommended screening for all adults once a year for depression. However, current screening programs in adults generally do not consider whether the adult is a parent, consider the impact of a parent's mental health status on the health and development of their children, or integrate screening with further evaluation and treatment. Also, settings that serve parents at higher risk for depression do not routinely screen for prevention.

In terms of treatment, a variety of safe and effective tools exist for treating adults with elevated symptoms or major depression. Medications are useful for some people. There is strong evidence base about the talking therapies, cognitive-behavioral therapy, and interpersonal therapy. There is a fairly strong evidence base about alternative treatments, such as meditation; however, evidence on the safety and efficacy of treatment

tools and strategies generally do not target parents or measure impact on parent functioning or child outcomes (except for pregnancy and for mothers postpartum), Beardslee said. "I would go further than that. I think that the best way to reach parents who are depressed is not so much around their depression but around helping them to be more effective parents. That is what they care most about. I think if we oriented our health care that way, we would be more effective."

Treatments need to be flexible, efficient, inexpensive, and acceptable to the participants in a wide variety of clinical and community settings. For a disorder with a 20 percent lifetime prevalence, treatments are needed in many different languages and in many different settings.

A wide variety of prevention options exist across the life span (Figure 4-1). In addition, three areas need attention across the life span: tools to cope with specific family adversities, community interventions, and policy. Considerable promise surrounds several different strategies, including preventing or improving depression in parents, targeting the vulnerabilities or strengths of depressed parents, improving parent-child relationships, and using a two-generation approach. In addition, depression is overrepresented in high-risk populations, so programs for those populations need to be augmented with depression prevention.

The key challenge now is to take effective interventions to scale through community, state, federal, and international initiatives. Families

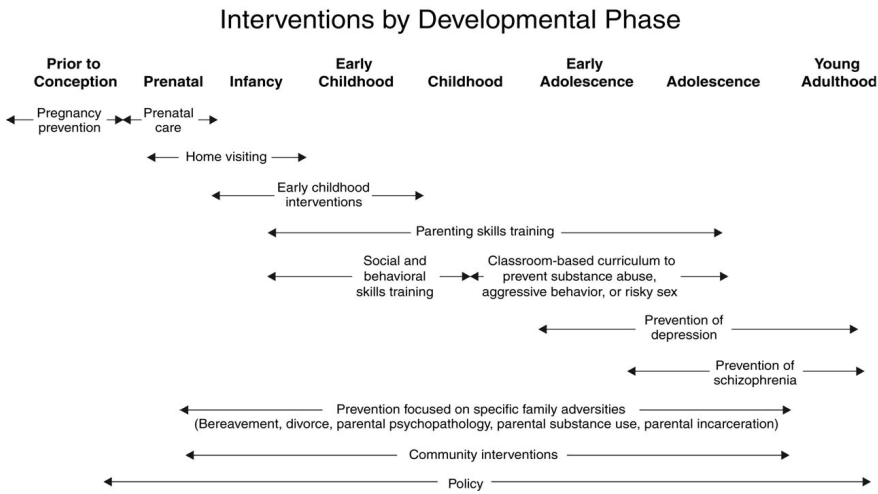

FIGURE 4-1 Many opportunities for preventive interventions differ by developmental phase.
SOURCE: National Research Council and Institute of Medicine (2009b).

need to be engaged in multiple ways, and systematic barriers need to be removed to include prevention in interventions. One strategy would be to gather data about children when assessing parents. Another would be to embed strategies to help parents who are struggling in existing programs like Head Start, with prevention services delivered to the family rather than just the individual.

More than three-quarters of the major mental illnesses in adulthood have their origins in childhood, so prevention needs to begin early in life. "If we have a choice, we should intervene most intensively in the first five years of life, because that is when, if things go well, it sets the stage for success later on, and if they go badly, it costs a great deal more to remedy them," Beardslee said. Successful prevention is inherently interdisciplinary. It has mental, emotional, behavioral, and physical dimensions. Prevention is very different from treatment. It requires a new paradigm about what a child needs one, three, and five years in the future. Coordinated community-level systems are needed to support young people before the age of highest risk, at the age when prevention is likely to have the largest impact.

STUDYING SUBSTANCE-ABUSING FATHERS: CAN EVOLUTIONARY CONCEPTS HELP?

Can concepts adopted from evolutionary theory explain the reproductive history of substance-abusing men who are assumed to be at risk for socially irresponsible fathering? Thomas McMahon, associate professor of psychiatry and child study at the Yale University School of Medicine, explored this question using data from a study of such men in New Haven, Connecticut.

Following the passage of the Welfare Reform Act of 1996 and the Adoption and Safe Families Act of 1997, the federal government convened a working group on the status of fatherhood. The group highlighted the pressing need for more information about the ways that men go about producing and parenting children, particularly men who were likely to be affected by changes in federal policy and programs.

McMahon has been interested in whether life history theory can explain individual differences in the reproductive behavior of humans. Life history theory is a broad conceptual framework borrowed from evolutionary biology that focuses on the way organisms balance or negotiate competing life functions. Life history scholars distinguish between somatic effort, which represents the energy that the organism devotes to growth and survival as an individual, and reproductive effort, which is the effort that the organism devotes to supporting the growth and survival of the species. At the *r* end of what life history theorists term the *r/K* continuum, reproductive

effort takes precedence over somatic effort. (The terms *r* and *K* come from a standard equation used to describe population dynamics.) Species mature very quickly, produce large litters of offspring relatively few times over the course of a life span, and devote less energy to parenting or to caretaking, in part because the organism has a shorter life span and a high risk of early mortality in the ecological niche in which it lives. In the world of mammals, mice and rabbits tend to be at this end of the continuum. At the *K* end of the continuum, somatic effort takes precedence over reproductive effort. Species mature very slowly, produce smaller litters of offspring over a more extended period, and devote more energy to caretaking, in part because they have a longer life span and they live in environments in which risk of early mortality is more limited. Elephants, whales, and humans tend to fall at this end of the continuum.

This theory was originally developed to highlight differences across species, but some have extended it to look at the differences within species. In humans, it has been used to account for individual differences in reproductive behavior. When children live in unstable, stressful early family environments in which caretaking is inconsistent or insensitive and family resources are limited, they may develop insecure attachments, a negative view of the future, and a short-term orientation to life. As these children enter adolescence, life history theorists argue, they are at risk of pursuing a short-term or low-*K* approach to reproduction characterized by early puberty, early first sexual intercourse, less stable sexual partnerships, early birth of a first child, more children spaced closer together conceived with more partners, and less investment in parenting. This approach to reproduction is adaptive for individuals given the ecological niche that they had to negotiate as a child. However, social policy labels these actions as socially irresponsible, because they typically leave children without the skills or resources needed to support their positive development in a modern technologically oriented culture.

In contrast, when children live in stable, supportive early family environments characterized by consistent, sensitive caretaking and adequate family resources, they typically develop secure attachments, a positive view of the future, and a longer term orientation to life. As they enter adolescence, these children are thought to be more likely to pursue what life history scholars call a high-K or long-term approach to reproduction, characterized by later onset of puberty, later first sexual intercourse, stable sexual partnerships, and later first birth of a child. They typically have fewer children spaced farther apart, conceived with the same sexual partner, with more investment in parenting. Again, from the perspective of the individual, this is generally viewed as adaptive, given the ecological niche negotiated as a child. Society labels this behavior as socially responsible.

McMahon and his colleagues studied 106 opiate-dependent fathers

enrolled in methadone maintenance treatment and 118 demographically matched fathers living in the same community with no history of alcohol or drug abuse. The men were an average of about 40 years of age and included white, black, and Hispanic men. As a group they had an average of about 13 years of education.

The researchers found that there was no significant difference between the substance-abusing men and the control group in whether or not the parents of these men were legally married at some point during their childhood. They also found that there was no significant difference in whether or not the men had lived with their biological father at some point before their 18th birthday. However, the drug-abusing fathers were more likely to have experienced the separation of their parents sometime before their 18th birthday.

There was no difference in self-report of the quality of early relationships with mothers, but the drug-abusing fathers were less likely to report that they had ever been close with their biological father during childhood. The drug-abusing fathers also reported more exposure to emotional, physical, and sexual abuse and emotional and physical neglect as a child.

The two groups had significant differences in the pattern of legal marriage. The drug-abusing fathers were more likely to never have been married, less likely to have been married once, and more likely to have been married three times. There were also significant differences in patterns of cohabitation. The drug-abusing fathers were less likely to have never cohabitated or only have been involved in one live-in relationship. They were more likely to have been involved in three, four, five, or more live-in relationships.

The drug-abusing fathers were more likely to have had a first child when they were younger than 25. They were also less likely to have one or two biological children, and they were more likely to have had three, four, five, or more biological children.

Finally, the drug-abusing fathers were less likely to have had children with only one sexual partner. They were more likely to have had children with two, three, four, or more different women.

McMahon concluded that modern evolutionary theory may help explain high-risk fathering in the context of chronic substance abuse. It provides a framework in which to examine both substance abuse and the family careers of men who are assumed to be at risk of behaving in a socially irresponsible way. It moves beyond looking at parenting behavior to the ways that men produce and parent children over the course of their lifetimes. In this way, it allows for the integration of both biological and psychosocial influences.

Both genetic predispositions and early developmental experiences may play a role in choices about reproduction. Personality and attachment style

may be mediating influences, and contextual factors, particularly incarceration, may be an important moderator in this process.

This research has challenges, McMahon acknowledged. Many negative stereotypes surround this population of men, even though they are more involved with their children than most people assume, despite common stereotypes.

Response burden on participants has been a problem. When working with special populations, there are challenges measuring the three multidimensional constructs: (1) substance abuse, (2) family process, and (3) child development. There are also particular challenges associated in reliably measuring these constructs with subjects who may have limited verbal or reading skills.

The construct of reproductive strategies is another area of potential interest when examining family process, but it too must be clearly defined and there must be a strategy to measure it. One question is, "Who speaks for Dad?" McMahon and his colleagues have insisted that men be the primary informants about their reproductive history, but that approach has generated skepticism about the accuracy of their responses. Some researchers remain skeptical about whether men, especially socially and economically disenfranchised populations of men like substance-abusing men, can reliably provide information about their reproduction and parenting of children because of gender bias among researchers who assume mothers are better informants about family life.

In addition, there has been difficulty recruiting mothers and children to serve as collateral informants, which is a standard practice in family research. Requiring collateral informants when studying drug-abusing fathers may skew samples toward men pursuing a more socially responsible approach to reproduction, when family relations have been preserved despite the presence of ongoing drug abuse. This approach may omit cases where men are estranged from their children and the mother of their children because of the impact their substance abuse has had on family relationships. This is a particularly important challenge, because when a researcher is required to secure a collateral informant in order for a father to enroll in a study, the sample may be skewed toward the inclusion of fathers with less disruption of family and the exclusion of those fathers with disrupted relationships, who may be the central focus of the study.

McMahon also speculated that there might be two clusters of fathers in this population being studied. One cluster would be pursuing a socially responsible approach to reproduction that has been disrupted or derailed by substance abuse. A smaller cluster of fathers may be pursuing a short-term, socially irresponsible approach to reproduction that evolved concurrently with the substance abuse and is undoubtedly associated with other social problems.

These results have implications for interventions, said McMahon. In particular, if the two-cluster approach is valid, interventions may need to be adapted to the needs of men with different reproductive strategies.

DISCUSSION

In response to a question about how he might use additional funding for his research, Thomas McMahon indicated that he would like to see qualitative measures integrated into clinical trials research. He also would try to integrate measures of genetic risk into his research. "The behavioral genetics literature suggests that . . . somewhere between 40 and 60 percent of most markers of reproductive history have some kind of a genetic component. The molecular community has begun to show that there are some links between specific genes and different dimensions of sexual and parenting behavior." No one gene will ever account for a complex behavior, he acknowledged, but multidimensional measures of genetic risk may be possible for some of the reproductive behaviors labeled socially irresponsible.

5

Family Research Methods and Frameworks: Examples from the Study of Biomarkers, Child Health, and Econometric Methods

A major objective of the workshop was to examine methodologies used in family research to explore how different kinds of studies could be combined to yield a deeper and more accurate picture of family structures, processes, and relationships. In family research, biological and behavioral processes are often inseparable, but significant advances have recently emerged that offer new opportunities for distinguishing and measuring these processes with greater precision. The presentations summarized in this chapter demonstrate both the great potential of incorporating biological measures into family research and the considerable challenges in doing so.

Yet the integration of biological measures into family research can be difficult. The relationships between biological mechanisms and specific behaviors (such as parenting practices) are typically complex. In addition, integrating biological and behavioral research typically requires close collaboration among investigators with different backgrounds, training, and methodological perspectives.

It is important to note here that some domains of family research were beyond the scope of this single workshop. For example, the full range of biobehavioral approaches—including developmental epigenetics, gene-environment interaction, and developmental neuroscience—have all produced large new fields of research with relevance to the study of families in recent years. These are worth more attention, but it was not possible to integrate them into this workshop.

The presentations did review some focused sets of methodologies and

concerns. This chapter looks at three research approaches: family research on the biological stress response system, the effects of family life on child health, and the contributions of econometric studies to causal inference in family research. The research methodologies used in each of these areas are distinct, yet they share certain concerns and approaches that may offer a way of linking disciplines into multidisciplinary efforts.

ASSESSING THE BIOLOGICAL STRESS SYSTEM: CONSIDERATIONS FOR FAMILY RESEARCH

Environmental factors and life experiences affect human development, behavior, and health through their impact on physiological processes, such as activity of the biological stress response system. The activity of one component of this system—known as the hypothalamic-pituitary-adrenocortical (HPA) axis—affects nearly every organ system in the body, with impacts on cognition, emotion, memory, behavior, and health. Darlene Kertes, assistant professor of psychology at the University of Florida, described some of the strategies and challenges in examining the HPA axis in family research. She highlighted the need for methodological development to facilitate integration of multiple levels of analysis, from genes to the social environment.

The activity of the HPA axis is critical to maintaining homeostatic processes and facilitating adaptation to physical and psychological stressors. Two streams of input relay information about both systemic stressors, such as pain and inflammation, and psychogenic stressors, including actual and perceived threats in the environment. Both inputs act on the hypothalamus to trigger the release of corticotropin-releasing hormone. This initiates a biological cascade resulting in the release of glucocorticoids (cortisol in humans) into general circulation. Via feedback loops, cortisol acts to terminate the stress response as well as to sensitize brain regions involved in fear to shape an individual's future behavioral and physiological responses to threat. Long-term effects of cortisol are achieved by its action as a transcription factor regulating gene expression in target tissues. Thus, the HPA axis is an adaptive system in which life experiences affect responses to future events, with potentially widespread consequences for behavior and health.

Whereas activity of the biological stress system is essential for life, chronic or repeated elevations may have deleterious effects. Disturbances in the HPA axis are linked with impaired growth in children, disturbed immune functioning, altered memory and attentional processes, and altered fear circuits in the brain. Altered activity of this system is also associated with a variety of disorders—psychiatric, gastrointestinal, and cardiovascular, among others (De Kloet et al., 2005).

Because cortisol can be used in both experimental and naturalistic settings, it is studied in a wide variety of family research contexts, Kertes observed. For example, research has shown that cortisol reactivity to a psychosocial stressor differs in the presence of a personal friend or spouse (Kirschbaum et al., 1995). Among girls exposed to maternal postnatal depression, basal cortisol levels at the transition to adolescence predicted future depressive symptoms (Halligan et al., 2007). Children of an alcohol-abusing parent showed altered cortisol reactivity in ways that are consistent with disturbances that predate alcohol dependence (Lovallo, 2006).

Kertes described two studies that document effects of early life experiences on HPA axis activity to illustrate strategies and challenges of studying the biological stress system in family research. The first study described long-term effects of early life adversity on basal cortisol levels in children. This study involved measuring cortisol levels among internationally adopted children, many of whom came from orphanages or other types of institutional care in which there was little opportunity to form relationships with stable caregivers (Kertes et al., 2008). Severe relationship deprivation early in life is known to lead to a pattern of growth delay in which linear growth (i.e., height) is primarily affected. This study showed that deprived care severe enough to impact children's linear growth predicted subtle alterations in basal cortisol levels years after adoption into low-stress homes. Elevated cortisol levels were most evident in the early morning, at the peak of the diurnal rhythm, with no effect of deprivation-induced growth delay on cortisol levels observed at bedtime.

A second study described cortisol reactivity to a variety of novel social and nonsocial events among typically developing preschool-age children. This study tested a potential buffering effect of parenting quality on young children's HPA axis reactivity (Kertes et al., 2009). There was evidence that children showed heightened cortisol reactivity to social or nonsocial challenges if they had a temperamental (behavioral) vulnerability to reacting to these types of events with fear and inhibition. For children very fearful of social interactions, having a sensitive, responsive parent—even though the parent was not present—buffered their biological responses to novel social events.

Whereas these studies document the impact of early experiences on children's HPA axis activity, they also illustrate some of the challenges of detecting effects in biomarker data. It is actually quite difficult to elicit a biological stress response among children in an experimental context, Kertes pointed out. Ethical constraints limit the intensity of stressors that can be used, and experiments are terminated if a participant exhibits distress. One immediate and pragmatic solution is to target research ques-

tions aimed at identifying subgroups of individuals for whom particular kinds of stressors are likely to elicit a biological stress response. The study of typically developing children described above illustrates this point. In that study, Kertes et al. (2009) subjected 4-year-olds to a battery of mildly stressful events, including being separated from the parent, interacting with an experimenter that included some body contact, being asked to interact with strange, novel objects, and being approached in a conversation by a stranger. There was no evidence for an overall HPA axis activation among most children to this series of events. Rather, some children showed stressor-specific biological responses that directly related to their individual temperamental vulnerabilities. Children high in social fear showed biological stress responses to the social challenges but not nonsocial ones, and the opposite was true for children high in nonsocial fear. Thus, said Kertes, research questions can be tailored to detect stress responses within the ethical constraints of mimicking children's everyday experiences.

"Targeted research questions are a pragmatic but limited solution," said Kertes. The inherent challenge of ethically eliciting a stress response in children has resulted in the development of a large number of protocols with limited or varied effectiveness. Protocols that activate the biological stress response system that are both effective and ethical for use with children or across the developmental spectrum are particularly lacking. Basic science research is needed for standard methods of eliciting and assessing stress responses in research with children and families, with attention to the factors that most consistently elicit a biological stress response (for a discussion, see Dickerson and Kemeny, 2004; Gunnar et al., 2009).

Detecting associations between life experiences and biological measures is further challenged by the varied factors that impact the activity of biological systems. Cortisol levels, for example, are affected by digestion, sleep, exercise, systemic stressors (such as inflammation or pain), caffeine, alcohol, tobacco, endogenously regulated basal activity, and perceived or actual psychosocial stress. Typically, researchers interested in psychosocial influences impose sampling constraints (e.g., on food or drink consumption or sampling days) to minimize the impact of these factors. However, there may be physical or psychosocial stressors specific to certain populations or age groups that may confound results. For example, in grade-school children (particularly boys), cortisol levels differ on days that children participate in structured extracurricular activities like sports, compared with days when they are just in and around the home (Kertes and Gunnar, 2004). "This cautions us against erroneously attributing differences in children's cortisol to some other variable if we don't assess or control for it," Kertes said. In the study described earlier on internationally adopted children (Kertes et al., 2008), elevated evening cortisol levels

previously reported among this population were not apparent when sampling was restricted to exclude days that children participated in sports.

Since limiting sampling for every possible known and unknown confound is impractical, another strategy is to refine statistical methods to disentangle variance that is stable in individuals or is due to some predictor of interest. For example, a structural equation modeling technique termed latent state trait modeling distinguishes variance in a phenotype that is due to stable, trait-like factors from the variance due to situational or state factors. As applied to basal cortisol data, approximately half of the variance in children's cortisol can be explained by trait factors at both the peak and the nadir of the diurnal cycle (Kertes and van Dulmen, 2010). "This method might potentially allow us to improve our ability to detect subtle relations between environmental or behavioral factors and the stable trait-like component of cortisol in individuals while parceling out other factors that affect day-to-day fluctuations."

Refining methods that facilitate the detection of family effects on HPA axis activity is likely to be of growing interest because of the impact of HPA axis activity on emotional and physical health. However, methodological innovation and statistical advances to facilitate analysis of environment-behavior-biological relations need to focus on the array of biological measures of interest to family research. At the physiological level, these include activity of the sympathetic adrenomedullary system, the immune system, and other steroids and peptide hormones as well as sleep disturbance/circadian rhythmicity and indices of brain functioning. All of these interact with the HPA axis in influencing behavioral and health outcomes. Advanced analytic techniques, refinement or standardization of protocols assessing momentary changes or basal activity, and growth of technologies capturing long-term activity with minimally invasive procedures are needed to foster this work. These methodological advances would facilitate the study of family effects on biological changes that influence risk for physical and mental disorders.

Another important conceptual and methodological issue in stress research is that stress biomarkers are often not correlated highly or even at all with behavioral measures of stressful life events or perceived stress. "Researchers are often very frustrated when they start to collect stress biomarkers and discover this fact," Kertes said. From a methodological perspective, part of the reason for this uncoupling may be measurement concerns with the behavioral measures themselves (Monroe, 2008). Interactions with sex steroid or other peptide hormones may also play a role.

From a conceptual perspective, however, the uncoupling of behavioral and biological measures of stress to some degree is to be expected. When combined, they provide a more complete view of exposure and response. "Biological measures do not replace the need for behavioral

measures," she said. "Both help us to disentangle stressors or even the same stressor acting on the biological stress pathway in different ways. For example, poverty might impact children's cortisol via its effect on family stress, but it might also disrupt endocrine systems via the effects of environmental toxins. We need both levels of assessment to identify the mechanism of action."

As Gilbert Gottlieb argued, events at various levels—environmental, behavioral, physiological, and genetic—constantly interact with one another in a multidirectional way over the life course. As applied to stress research, a stressor in the environment might elicit a change at the behavioral level (Gottlieb, 1992). If it does not sufficiently meet the challenge, it may also elicit a change at the fast-acting physiological level (including the HPA axis). If the immediate physiological response does not meet the challenge, it in turn elicits a change at the genetic level—that is, in gene expression. This suggests that coping resources at one level may prevent a stressor from impacting the individual at other levels. The results from the cortisol study with preschoolers illustrate this point. The 4-year-old children who were behaviorally fearful of social challenges did not show cortisol elevations in response to those challenges if they had a history of exposure to sensitive, high-quality parenting. "This speaks to the need for multiple levels of analysis," said Kertes.

Methodological advances that promote multilevel research are also needed because family effects on emotional and physical health have multiple modes of transmission. These include direct genetic effects and gene-environment interplay, changes in gene expression initiated by the HPA axis or epigenetic mechanisms, and direct cultural or social modes of transmission. Capturing the joint and interactive effects occurring via multiple modes of transmission will require both collaboration across disciplines and cross-training of individual researchers, Kertes said.

One major methodological challenge to integrating across multiple levels of analysis, particularly when bridging biological and behavioral data, is balancing the need for deep phenotyping of behavior and the environment with the need for sufficiently large sample sizes to detect interactions among the environment, behavior, and biology. This is particularly true for research involving genetics, in which the effect of any given genetic variant is small for complex traits. Although comprehensive genotypic and phenotypic assessment is ideal, another strategy is to balance these various priorities across a program of research rather than an individual research study. For example, HPA axis disturbances are believed to play a role in stress-related mental health problems, including alcohol dependence and major depression. Family and life stress may in part promote these biological changes and emergence of disorder, but genetic risks are also likely to be involved. Gene-identification studies with large sample sizes but limited

phenotyping can identify potential genes of interest, such as those involved in neurotransmission or the biological stress response (Kertes et al., 2011). Top candidates then can be integrated in studies with family, developmental, and/or physiological data to ask meaningful questions about the interplay of genetic risks with psychosocial factors on behavioral or biological functioning.

Methodological development that supports integration across multiple levels of analysis has two key benefits. First, resolving the challenges inherent to integration across disciplines can fuel conceptual and methodological innovation in the disciplines from which they draw. Second, integration of biological data in family research has the potential to personalize preventive interventions, in which modifiable environmental conditions can buffer individuals' risks for poor outcomes in the face of biologically influenced vulnerabilities.

In sum, integration of physiological processes in family research is important because they serve as mechanisms by which family experiences impact an individual's response to future events as well as their emotional and physical well-being. Implementation, however, requires careful attention to methodology, and challenges remain. Nevertheless, because family effects are transmitted through physiological and genetic routes as well as through social and cultural routes, multiple levels of analysis are needed to adequately capture the effects of family life on individual behavioral and health outcomes.

INSIDE FAMILY LIFE: MULTIPLE LAYERS OF INFLUENCE ON CHILDREN'S HEALTH AND WELL-BEING

Children's health is rarely if ever the result of a single factor, said Barbara Fiese, professor of human development and family studies and director of the Family Resiliency Center at the University of Illinois at Urbana-Champaign. It is embedded in a familial, social, and cultural context that changes over time, including parents' beliefs and practices, neighborhoods, and access to health care, among others. Even something as straightforward as feeding a child becomes subject to the effects of income, media, and peers as a child grows up.

Many daily activities support the health of children, including routines created to support eating, sleeping, and physical activity. More broadly, family health is sustained through planning, open and direct communication, a sense of order and routines, and a belief that challenges in everyday life are manageable (Fiese, 2006). Family health is compromised when planning is absent or thwarted, routines are disrupted, communication is strained, and everyday life challenges consume personal energy.

Multiple factors can be combined in a cumulative risk model to predict childhood health problems. These factors include such things as poverty, parents' perceptions of discrimination, neighborhood factors, and cultural stress. However, these factors do not reveal much about what happens in a family over time. Also, the focus on a single disease state does not reflect what often happens in real life.

Fiese described several studies involving family life and asthma. The studies were conducted in upstate New York and in Denver, Colorado. They involved approximately 400 Hispanic, black, and white families with a child between ages 5 and 12 with persistent asthma. About 58 percent of the families had two or more adults in the household, and 30 percent of the mothers had a high school education or less.

Asthma is the most common chronic illness of childhood. In any given classroom, 1 child in 10 is likely to have a diagnosis of persistent asthma. It is an expensive disease to treat, but it is treatable. Comorbidities include anxiety, sleep disturbances, and overweight conditions.

The household routines needed to manage asthma include taking medication twice a day, avoiding such environmental allergens as tobacco smoke and pet allergens, engaging in daily physical activity, and getting a good night's sleep. At the same time, families with asthmatic children have to juggle home and work life, they move and experience job loss, they have babies and get divorced, they have to care for their elders, they experience domestic violence, they have psychiatric illnesses and suicidal ideation, they are involved in gang killings, and sometimes their children die. "All of these experiences have happened to members of the families in our studies," she said.

Fiese examined three questions during her presentation:

- Are routines associated with children's health and well-being?
- Are different aspects of routines associated with different health outcomes?
- How can the study of household routines inform the study of health comorbidities?

Lung functioning was ascertained through spirometry tests. The study also gathered parent and child reports of functional severity, such as how much the child was wheezing and coughing or waking up in the middle of the night. Daily diary reports included information on nighttime waking. The quality of life of the child and the parent were measured through such factors as how activities were disrupted by symptoms. Comorbidities, such as anxiety symptoms of the child, were ascertained through a structured diagnostic interview, and the study also looked at obesity.

Routines were measured through self-reports, semistructured interviews, questionnaires, and videotapes of family mealtimes. The families ranged considerably in terms of their level of organization and their commitment to routines.

The most basic routine was whether a child had taken his or her medicine. Less than half of the children Fiese studied took their medicine as prescribed. Taking medication can be measured through recall, reports to physicians, or a computerized chip on the bottom of an inhaler that measures not only whether a child took the medicine, but whether it was taken appropriately.

A simple eight-item questionnaire measured the likelihood that parents have routines around taking medication and the amount of burden that they feel in carrying out these medication routines. Results showed that if families have such routines, children are more likely to take their medication (Fiese et al., 2005). The factor most related to quality of life for both the caregiver and the child was whether caregivers reported these routines as burdensome. This was true both for caregivers and children. Children who reported that they worry more about their symptoms and that their symptoms get in the way of having a relatively normal life were more likely to have parents who reported that carrying out routines was difficult.

To examine sleep patterns, the researchers conducted telephone diaries. They called the parents three times during the week and once on the weekend during selected times over the course of a year, gathering a collection of about 500 observations. They looked at four things in collecting the telephone diaries: (1) whether a parent had a negative mood that day, (2) whether a parent was hassled by kids not listening, (3) whether a parent was hassled because plans had to be changed, and (4) whether a disruption occurred in their bedtime routines. Each of these factors was significant in predicting the likelihood that the child would wake up at night (Fiese et al., 2007). The elevated likelihood is not overwhelming, although it is statistically significant. But it is as large as the odds ratios for biological indicators for nighttime waking in response to environmental allergens (such as cockroaches, dust mites, cats).

The researchers also constructed an asthma impact interview to understand how this condition affects family life. In an open-ended interview format, they asked families to tell the story of when their child was diagnosed with asthma and how it affected the child and family life. "We don't want to hear the story they tell their pediatrician. We want to hear the story that they would tell a neighbor over a cup of coffee. Usually what we get at this point is what we call the head nodding response. Parents say, 'We know which story you want to hear.'"

The researchers have identified three categories of ways in which

families manage asthma in their daily life: reactive care, coordinated care, and family partnership. In the reactive category, anxiety leads the family to action. The family has not established clear and consistent strategies. In the coordinated care category, a single way to handle all situations has been identified. Typically one or two people are responsible for carrying out doctor's orders. In the family partnership category, plans are based on multiple sources of information and a shared philosophy, and multiple family members are involved in planning.

These different strategies predicted emergency room use one year after the interview was conducted (Fiese and Wamboldt, 2003). Families in the reactive category were about four times more likely to use emergency room care for their children's symptoms than families in the coordinated care category and eight times more likely than those in the family partnership category. Families that have less burden in carrying out daily routines and have better medical adherence were less likely to use emergency room care, and they had better quality of life overall for both children and caregivers.

One common comorbid feature of asthma is separation anxiety. When people are anxious or panicked, they can have trouble breathing, and children with asthma are almost three times more likely to have separation anxiety symptoms than those without asthma. Fiese and her colleagues hypothesized that the way in which families interact with each other on a daily basis may mediate this relationship. They looked at interactions during meals, providing a basis for measuring such factors as communication and involvement of parents in children's lives. They found that families that were able to be responsive during mealtimes, show genuine concern about their child's daily activities, and manage affect in a positive way were less likely to have children with separation anxiety symptoms (Fiese et al., 2010). In contrast, families who have a child with separation anxiety symptoms have more difficulty getting tasks done during mealtimes, have more problems managing affect, and are less involved with their children.

They found the same relationship when looking at obesity in children (Jacobs and Fiese, 2007). Families that were more organized, regularly managed affect, assigned roles, and showed genuine concern about their children's activities were less likely to have overweight children. The researchers also made mealtime observations on a second-by-second basis—"which we are calling our DNA prototype of family mealtime"—looking at activity levels, behavior management, and communication, expressed by every family member during a meal. They found that time spent at the meal distinguished families that have a child of healthy weight versus overweight. Children who are overweight spent less time at meals. When these observations were put into a cumulative risk model

that included census tract data, poverty, communication, time spent at the meal, and the scheduling and importance of mealtime, the model demonstrated associations between risk factors and a child's body mass index and nighttime waking.

Fiese and her colleagues are now translating this work into interventions to promote the relationship between medical adherence and family routines. Targets of the intervention include quality of life, lung functioning, weight status, behavior problems, and health care utilization. For example, public service announcements around the topic of "mealtime minutes" remind families of the importance of mealtime routines, interactions, and time.

This research poses several methodological challenges, Fiese observed. The resources to transcribe, code, and analyze observations and narratives can be in short supply. There can be important differences among families across cultures, socioeconomic status, and life stage. It also can be difficult to capture differences among ages, which is especially challenging with large families. Family size is not necessarily static, with multiple players in a family, including neighbors, cousins, uncles, aunts, grandparents, and babysitters. Disease status may not be clear, and more attention needs to be devoted to comorbidities.

ECONOMIC PERSPECTIVES ON UNDERSTANDING THE IMPACT OF FAMILIES ON CHILD WELL-BEING

One recent example of multidisciplinarity in family science is the increased attention across disciplines to causal inference in estimating family influences. Approaches from economics to estimate unbiased causal estimates in research have been influential in other disciplines. To estimate causal effects using observational data, economists use four main approaches, said Betsey Stevenson of the University of Pennsylvania's Wharton School.

The "first and easiest" thing is to apply a cross-sectional regression analysis, she said. This approach examines the differences among people and tries to identify the causal effects of a single difference while controlling for other differences. This approach has a major limitation because there are often unobserved differences among individuals or groups that interfere with isolating the effects of a single variable.

The second approach is to do a time-series analysis. This technique documents a correlation between variables of interest over time. It works particularly well if there are sharp changes in variables over time, such as a change in policy. However, many things can change at the same time, which is a limitation of this approach.

A third approach is what is called a quasi-experiment. This approach

uses changes in the environment that create roughly identical treatment and control groups for studying the effects of that change. Quasi-experiments can provide estimates of the causal impacts of a particular treatment, but they are better at telling how outcomes change rather than why they change, which can create ambiguity in extending or applying an analysis.

The fourth approach is to use structural modeling. These models use the same data as a regression analysis, but they use theory to constrain the data in an effort to derive understanding from them. The limitations of this approach are that causal impacts can be difficult to estimate and the results are only as good as the theoretical assumptions contained in the model.

Stevenson illustrated two of these approaches—regression analysis and quasi-experiments—in her analysis of the effects of girls' participation in high school sports on years of schooling completed (Stevenson, 2010). (Her research on Title IX examines, in addition to education, labor force participation, wages, and occupational choice, but for the purposes of the example she limited her discussion to years of education completed.) Students who participate in sports complete more years of schooling. The relevant questions are whether the correlation between sports and schooling is because of the types of people who choose to play sports or whether this is something that occurs because of sports. Answering this question is necessary to consider whether increasing the opportunities for students to play sports would increase their educational attainments.

Stevenson started with data from the National Longitudinal Survey of Youth (NLSY), which has been tracking a cohort of more than 12,000 young people who were between the ages of 14 and 22 in 1979, when they were first interviewed. Her regression analysis included a wide range of independent variables, including personal characteristics, like race, age, IQ, and self-confidence; family characteristics, such as parents' education and family income; community characteristics; and school characteristics. Some of these independent factors are easier to measure than others, and the ones that cannot be measured can cause bias in the causal estimates if they are correlated with the variable of interest.

After controlling for the race and age of students along with state and urban status, the regression analysis shows that girls who participate in sports acquire about a year's more education than girls who do not. "That is huge," Stevenson said. "If we thought that was a causal effect, you should all run out of this room and start sponsoring sports programs." The effect is about the same for boys who participate in high school sports.

However, as more independent variables are added as controls, the size of the effect shrinks. Adding family characteristics and school charac-

teristics cuts the estimated years of additional education by about a third. Adding student ability and achievement measures, such as student IQ, cuts the effect another third, so that it is now less than half a year. "It turns out smarter kids play sports. For those of you who thought of the dumb jock, that is not true. Smarter kids play sports, smarter kids get more education. Without controlling for IQ, I get big estimates. When I control for IQ they shrink, and now they are at about 0.4 of a year's schooling."

Nevertheless, the effects of participating in high school sports never shrink to zero as more and more controls are added. "Every cross sectional regression that has been run, no matter what you control for, you see that kids who participate in sports do better than kids who don't."

The question remains whether students who participate in sports are different in ways that cannot be determined from the available data. For example, perhaps those who participate in sports are the type of people who would have stayed in school longer because of an unmeasured factor, such as ambition or energy, that is not contained in the control variables. All possible source of bias cannot be eliminated. But another source of information on the effects of sports on education is available: the quasi-experiment afforded by the passage of Title IX in 1972.

Title IX of the Education Amendments to the 1964 Civil Rights Act declared that "no person in the United Sates shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any educational program or activity receiving financial assistance." It requires that girls be given the same opportunities to participate in sport at boys. "It doesn't mean equal participation rates, but it does mean that if a girl wants to play and there are boys who are able to play, then either you need to have equal participation rates or you need to be able to make sure that girl can play."

Title IX led to a major increase in girls participating in sports. Prior to Title IX, less than 5 percent of girls played high school sports compared with 50 percent of boys. After Title IX, about 30 percent of girls played high school sports and about 50 percent of boys did.

While this changes yields some potentially useful time-series evidence, the useful quasi-experiment comes from exploiting differences across states over time. Differences across states emerge because the percentage of boys who participate in high school sports varies widely by state. In states where boys' participation is high, more girls need to be given opportunities to participate in sports to be in compliance with Title IX.

By analyzing the change in girls' sporting opportunities generated by the interaction of the passage of Title IX and the variation across states in boys' pre–Title IX sports participation rates, Stevenson was able to assess whether girls' outcomes related to education were changed in a way that

is related to the growth in sporting opportunities generated by Title IX (and in particular, in a way predicted by the preexisting level of boys' participation). The quasi-experimental approach is to identify a treated and untreated cohort. The treated cohort were those attending high school after Title IX went into effect in 1978, and the untreated cohort were those finishing high school before Title IX passed in 1972.

Combining differences across generations with the differences across states creates what economists call a "differences-in-differences" estimator. It combines time-series and cross-sectional analysis in an experimental setting, thereby controlling for cross-sectional differences and time-series differences, in which the cross-sectional differences are stable over time. It is still possible that some states increased girls' sports participation more than others because of other factors, such as a school board superintendent who worked very hard at it. But this can be controlled through what are called intention-to-treat or instrumental variables that isolate the exogenous part of the policy change.

This technique shows that female educational attainment rises with the opportunity to play sports. States with a 10 percentage point greater increase in the statewide female athletic participation rate had an overall increase in educational attainment of 0.039 years, an increase in the probability of some postsecondary education of 1.3 percentage points, and an increase of 0.8 percentage points in the probability of obtaining at least a college degree. Since Title IX raised female participation by around 30 percent, these results would be multiplied by more than three to get the aggregate effects. Meanwhile, female educational attainment rose by about 0.7 years over the time period being analyzed. As a result, Stevenson concluded that increases in sports participation caused by Title IX explain about 20 percent of the increase in women's education over the time period being analyzed. Similar analyses can be applied to the participation of women in the labor market and entrance into previously male-dominated jobs.

Documenting this effect does not mean that every girl should be forced to participate in sports, Stevenson observed. Some may benefit more from playing sports, and some may benefit less. Title IX, by increasing opportunities, allowed girls to self-select whether or not to participate. It remains to be known whether all girls would benefit from participating in sports.

DISCUSSION

During the discussion period, the presenters were asked how they would use an increase in research funding to extend their work. Barbara Fiese responded that she would integrate more sophisticated biological markers into her investigations. Such markers could be used with all of the

members of a family to look at variations in the family unit over time. "I think that would be incredibly fascinating."

Another enhancement would be to integrate the investigation with interventions and the response to interventions. It is difficult to do lengthy qualitative observations in intervention science, yet more narrative approaches can capture the richness in family situations.

A final addition would be integrate and translate research results into public arenas. For example, "how can we use this information to inform public service announcements, where we reach a broader audience, and how can we use this information to cast a wider net to communities at large?"

Darlene Kertes said that some of the issues in family research are similar for behavioral and biological measures. As with behavioral measures, attention needs to be paid to developing protocols that can be assessed longitudinally. A second point was that it is important to consider both data collection and consenting methods that are flexible and adaptable. It is difficult to predict what technologies might be available 10 years from now to analyze biological specimens. One challenge is therefore collecting biological specimens that allow for potential future use. Another is establishing best practices for consenting participants in a way that is ethical (particularly for minors) but allows for analyses to be conducted using knowledge and technologies that will be developed in the future.

Hirokazu Yoshikawa asked whether the projects that incorporated biological measures brought together people trained in specific methods or engaged in cross-training to combine the behavioral and the biological approaches. McMahon responded that his work has involved complementary studies proposed to different funders that historically have favored one kind of research over another. To carry out the work, he assembled a group of faculty with different areas of expertise. Although people were trained for each study, the quantitative methods were kept separate from the qualitative methods.

Fiese said that her research has had one team work on the narrative coding, one team work on the observational coding, and one team work on structured interviews. "But I am leaning more toward trying to integrate some of the training within individuals so that they can be a little more flexible because I am seeing this as an added value in their future careers."

6

Strengthening Funding Opportunities and Training Models for the Future of Integrated Family Research Studies

The excitement and promise of the new approaches to family research across the behavioral and biobehavioral sciences present new challenges to funding and training institutions. As an increasingly multidisciplinary field, family research requires funding and training mechanisms that extend across disciplinary boundaries. Students and researchers at all stages of their careers need opportunities to learn new and integrated sets of methods in family research and to work with colleagues in related fields. The needs of junior and senior researchers in this regard are different, but funding and training opportunities are necessary for both. Researchers need support for integrated and mixed-methods studies, such as quantitative-qualitative and biobehavioral family research.

This chapter summarizes the remarks by representatives of three federal agencies in the U.S. Department of Health and Human Services, each of whom described the agency's interest in supporting additional family research. It also describes two brief presentations on multidisciplinary training opportunities and the comments of workshop participants on the challenges and potential of multidisciplinary work.

Combining disciplinary approaches requires innovative methodologies, institutional and funding support, and a sustained commitment to collaboration. An issue emphasized by Hirokazu Yoshikawa, professor of education at the Harvard Graduate School of Education, was how disciplines learn and evolve. They do so, he said, in part by picking up and using new theories and methods from other disciplines. Under what conditions is this process most successful? Do disciplines pick new theories and meth-

ods selectively from adjacent disciplines and then adapt them to their own purposes, as when one language adopts words from another? Or are new theories and methods transferred intact among disciplines, in the same way that a person might become fluent in two languages? "This is very much a practical issue, because methods are the syntax in which scientific competence is evaluated," Yoshikawa said. "Levels of monolingual and bilingual competence are associated with academic success in your career, so this is something we have to think about when we mix theories and methods across careers and not just studies."

Institutions also shape the policies and practices of science. Institutional incentives shape the topics that are studied, the methods used to study those topics, and the pathways of careers. These incentives help create models of learning that are marked by particular milestones. For example, tenure is a developmental milestone for researchers that can influence the content and methods of research. From this perspective, one can think of interventions designed to increase the diversity of research, the extent to which it extends across disciplines, its use of technology, access and equity issues, and so on.

Access and equity are especially important considerations, Yoshikawa said. Multidisciplinary projects in family research are usually started by senior investigators. The question then becomes whether institutional policies increase or reduce inequality in access to learning opportunities across different methods. "Do the more connected simply become better connected?"

MULTIDISCIPLINARY FUNDING OPPORTUNITIES

The mission of the National Institute on Drug Abuse (NIDA), said Cheryl Anne Boyce, is to lead the nation in bringing the power of science to bear on drug abuse and addiction. That charge has two critical components: strategic support and conduct of research across a broad range of disciplines and ensuring the rapid and effective dissemination and use of the results of that research to improve prevention, treatment, and policy as it relates to drug abuse and addiction.

To achieve this mission, NIDA funds a wide variety of researchers—doctoral, clinical, and master's-level investigators—to "produce strong research evidence and answer the problems to improve the nation's health." When initially reviewing a proposal or project, Boyce tends not to know what discipline people are in, because the projects NIDA supports are problem focused.

Yet NIDA faces the problem of a relative lack of multidisciplinary research teams, she said. NIDA supports grants with multiple principal investigators, enabling the creation of such teams. But this mechanism is

used less than she expected. Particularly with family research, in which many disciplines are often involved, there is great potential through the use of multiple methods in research. There also are opportunities for the development of new technologies that draw on mixed methods, such as community-based participatory research using digital technologies. "We want the investigator to come up with the bright ideas," Boyce observed.

Similarly, most of the training grants supported by NIDA are general rather than discipline specific. Various mechanisms exist for National Institutes of Health (NIH) training grants, including fellowships, mentored career awards, mid-career awards, and senior career awards. In addition, short-term training opportunities are available that are multidisciplinary and relevant to family research.

Qualitative research is an important part of NIDA's research on substance use, Boyce said. But its value needs to be supported by showing how results can be obtained and enhanced through multiple methods. For example, a growing area of interest for NIDA is the families of veterans, and this area of research can draw on many disciplinary perspectives.

Wendy Nilsen discussed the status of multidisciplinary research through the perspective of the Office of Behavioral and Social Sciences Research (OBSSR) at NIH. The mission of the office is to stimulate behavioral and social science research throughout NIH and to integrate these areas more fully into the NIH health research enterprise, thereby improving the understanding, treatment, and prevention of disease. OBSSR is located in the Office of the Director, which has a central location across all of the 27 institutes and centers at NIH. "We at NIH want to improve the country's health and expand our knowledge, and we need multiple methods to do this."

Family research can be found throughout NIH. For example, the National Human Genome Research Institute has emphasized the importance of obtaining family health histories as part of the biomedical information collected in medical interviews. Much of the family research supported by NIH requires the involvement of multidisciplinary, interdisciplinary, and transdisciplinary teams, said Nilsen. "Complex questions take complex methods," she said. Researchers need to be local advocates to support this work and develop research projects to take advantage of these mechanisms.

Prevention, a special focus of OBSSR, involves a very broad range of biological and social factors. For example, 40 percent of premature deaths are related to behavioral and social factors (Schroeder, 2007), and many causes of health disparities have their roots in social and environmental factors (Wong et al., 2002). Working on these kinds of issues, said Nilsen, requires teams with a history of commitment to collaboration, institutional support, and strong leadership.

She also briefly discussed the Basic Behavioral and Social Science Opportunity Network or OppNet, which is a trans-NIH initiative to support the development of basic behavioral and social science research at NIH.

Susan Jekielek described the functions of the Office of Planning, Research, and Evaluation (OPRE) at the Administration for Children and Families (ACF), which is responsible for federal programs that promote the economic and social well-being of families, children, individuals, and communities. Examples of programs and services administered by ACF include adoption and foster care, child abuse and neglect, the child care subsidy program, the Head Start program, strengthening families and responsible fatherhood, Temporary Assistance for Needy Families, and refugee resettlement. OPRE is the principal advisor to the assistant secretary for ACF. It provides guidance, analysis, technical assistance, and oversight to ACF programs on strategic planning aimed at measurable results; performance measurement; research and evaluation methodologies; model development and demonstration testing; statistical, policy, and program analysis; and dissemination of research findings.

Though few OPRE grants involve training, they do support an effort to train researchers in policy-related work. The office supports dissertation grants for child care and Head Start researchers, along with workshops and meetings intended to advance and disseminate research methods.

Requests for proposals from OPRE would be unlikely to focus specifically on multiple methods. But the research being requested by its nature requires a variety of methods, including mixed qualitative and quantitative research; in fact, almost every session at the IOM workshop included research funded by OPRE. Mixed methods are particularly important in understanding diverse populations and the use of services by low-income families, Jekielek said.

An example of such work is the research conducted under the healthy marriage grant program, which has examined relationships among low-income couples. Prior to this program, most of the measures in this area were developed for middle-class couples. The program has advanced research in this area by supporting cognitive interviewing focus groups and survey testing to design family interaction measures that are appropriate for lower income families. The project also plans to archive observational data for future use.

Another example is OPRE's support for child care policy grants. Legislation specifies that parents should be able to get quality child care that fits their needs when they work. Research supported by the office has drawn on a variety of data sources, including administrative data, survey data, and qualitative interviews, to investigate this issue.

A particular challenge in this work, said Jekielek, is the diversity of

immigrant families who speak different languages, which complicates the process of conducting interviews and surveys. Different groups also can describe and think about families in different ways, which can pose challenges for researchers conducting interviews about child care.

OPRE plans to emphasize research on early childhood in the future. Legislation currently being considered proposes to focus on fatherhood, families and marriage, and this may be an indication of more research in this area to come. Home visiting programs are another focus of interest and may present opportunities for collaboration with researchers from the health and medical fields.

Finally, Jeffery Evans from the National Institute of Child Health and Human Development (NICHD) discussed funding opportunities there as well as the National Institute on Aging (NIA) and National Institute of Nursing Research (NINR). NICHD research covers a wide range of family-related issues, from demographics to mother-child interactions to families in rehabilitation. "NIA thinks that aging begins at birth, and we think that development stops at death, and families are there all along."

These agencies continue to fund traditional research projects with principal investigators. But "the wind is blowing in the direction of big science, and the rules are different in big science," said Evans. Investigators need to collaborate with other specialists and build projects that no one working alone could build. "It's a clear trend, and that's where the translational and policy impact of our science is felt." The Three City Study (see Chapter 3) is a good example. The motivating question was what would happen to children under welfare reform. The study combined a variety of disciplinary perspectives, and the first paper to emerge from the study, on the behavioral changes accompanying welfare reform, had an influence on Congress. "It helped answer a big public policy need of the day."

In the future, Evans said, a major concern will be decision-making processes in families. In some ways, families can be like a bank: they divert resources, money, help, information, and motivation to particular investments, including children. Government policy has to accommodate these decisions if it is going to be effective. "Figuring out who makes the decisions, how those decisions are made, and . . . how government policy includes them—that's going to be where a lot of the action is."

An important emphasis in the biological sciences will be epigenetics—the chemical and structural alterations in DNA that affect its functioning. "We're all epigeneticists, and I think there's an enormous opportunity for us to contribute in that direction, and if you're not training your students to be able to do it, you've trained them right into oblivion."

A TOOLBOX FOR FAMILY RESEARCH

Nathan Fox, professor of human development and director of the Child Development Laboratory at the University of Maryland, described a particular multidisciplinary project that has special relevance to family research. Under a cross-institute initiative, a group based at Northwestern University has been developing a set of measures, known as the NIH Toolbox, that can be used to assess individuals across four domains: cognition, social and emotional functioning, motor functioning, and sensory functioning. The tools have been designed to be used across the life span, have been validated against "gold standards" in the different fields of research, are being normed for both English- and Spanish-speaking populations ages 3 to 85, and are freely available for anyone who wants to use them. "As you can imagine, it was a huge undertaking," said Fox.

Teams were established for each of the different domains. In each domain, subdomains were identified, and the subdomains were divided into tasks. In the domain of cognition, for example, the subdomains included executive function, episodic memory, processing speed, language, working memory, and attention. In the domain of social and emotional functioning, the subdomains were negative affect, positive affect, stress and self-efficacy, and social relationships. While someone might use the tools for clinical populations or for populations at risk, the idea was to norm the measures on typical populations for each subdomain across age groups.

A major point of discussion has been whether one could identify subdomains and tasks that could be assessed across development. The cognition team answered that question in the affirmative, said Fox. "They felt that you could measure memory processing speed, executive function, language, starting at age three and going all the way up to eighty-five." For many of the subdomains, the motor team and the sensory teams also answered that question in the affirmative. The socioemotional domain had some subdomains that were not amenable to work effectively across age assessments. The social and emotional teams also had to rely on questionnaires to gather information rather than having direct measures of a task or subdomain. For children, a caregiver has to fill out questionnaire items for those younger than age 10; starting at age 10, it was felt that children could report on each of the subdomains themselves.

The validation phase of the NIH Toolbox is currently ending. In fall 2010, with approval from the Office of Management and Budget, the measures will be normed in each of these domains with a representative national sample in both Spanish and English. Within a year, said Fox, this set of tools will be available, individually or in combination, to researchers from the NIH website.

The use of these particular measures in family research will need to be

investigated, he said. For example, the toolbox has a set of demographic questionnaires that may be useful in characterizing households and the marital or cohabitation status of couples. According to Fox, the toolbox is a measure of individual competence across a wide range of domains and can be a useful adjunct in family research.

TRAINING

Andrew Fuligni, professor of psychiatry and behavioral sciences and of psychology at the University of California, Los Angeles, identified seven features of successful multidisciplinary training programs. First, they are problem focused. Successful programs have identified very specific problems or, in the case of longer training programs, several linked problems that can be investigated. "If you stick to those problems, then it's much easier to be interdisciplinary, because the methods you choose depend on the problem to solve. . . . You get people to identify with the problem rather than with the method."

Successful programs also have explicit requirements and incentives that promote the use of multiple methods. Some require students to have mentors in two or more disciplines. Others require dissertation committees made up of people from different disciplines or an internship year in the laboratory of someone who is outside a person's department. "These can be tricky, but they have been successful when they're explicit."

Successful training programs are multigenerational, with the old teaching the young and the young teaching the old. If faculty members have to be involved with interdisciplinary training, new ideas filter up to them, "and that's when you have a quicker impact on the field and shaping what's going on."

Successful programs are sustainable. Small seed grants can enable a few people in one department to initiate a much larger multidepartment effort. Another possibility is to encourage a journal to devote a special section to a multidisciplinary topic or sponsor such a gathering at a scientific meeting.

Successful programs are challenging for participants and do not shy away from what appear to be "dumb questions." People working outside their own fields sometimes have to ask such questions. This can be an uncomfortable situation, but if someone wants to question methods or a way of thinking, he or she has to be willing to discuss the issue. People should not harangue each other, because training cannot be productive in such a climate. But people have to be able and willing to ask questions.

To be successful, programs need collaborative and creative personalities. People can be self-selected, but, if so, the program needs to be explicit about who should become involved.

Finally, students need to remain connected to their core disciplines. "Many of our students still have to operate within the traditional academic department structure. There are many students, and we all know them, who end up being very creative, very multidisciplinary, but sociology doesn't call them a sociologist, or psychology won't call them a psychologist, and so on down the line. It can be very difficult for them to get a job, so they can end up many times . . . with positions that aren't really full-money positions, or they're not core in one department. That will create attrition at a high rate from those kinds of creative people." Researchers can be multidisciplinary, but they still need to know how to talk with people in a core department, and also how to review proposals and papers in their discipline.

Sally Powers, professor of psychology at the University of Massachusetts, Amherst, made several similar points in discussing local barriers to faculty using integrated methods. Learning and using mixed methods in interdisciplinary research is costly in terms of ego and time, she noted. People are trying to do things they were not trained to do, and collaborative work takes time. Also, institutional infrastructure is typically not set up to support interdisciplinary work. The question then becomes how to change the infrastructure at the university and departmental levels so that faculty can collaborate and learn new methods.

Powers identified four things that are needed to make such a change. The first is release time to engage in learning translational and collaborative skills. And this often has to happen before a faculty member receives funding to buy that release time from an institution.

An institution also needs a risk-taking climate to allow experts in one field to become learners in another. This is different from a safe climate in which no risks are taken. Powers said, "At the beginning of an interdisciplinary seminar, we pass out large white flags, and those white flags symbolize, 'I give up. I cannot understand your language. I don't know what you're talking about. Please help me.'"

Concrete goals are needed to help overcome the slow pace of learning to translate and collaborate. Even a small grant can keep people focused on concrete goals so that they do not feel that they are wasting their time.

Finally, faculty members and institutions need a conviction that science will progress faster with mixed methods. Administrators, chairs, center directors, vice chancellors of research, and others all need to be convinced that collaborative research will pay off in the long run. To make these arguments requires conviction and work.

The impetus to make these changes does not come just from institutions or department chairs, said Powers. It comes from the faculty members who are doing the work. Center directors, chairs, and deans may be looking for ways to support interdisciplinary research, but they will not

necessarily take the time to figure out what will make a program work. Faculty members need to go to them and say, "Here's what I really need, and here are some suggestions for how it might work."

Powers listed three things that faculty members can do or suggest to others. One is to team teach across disciplines or across methods. Even in a single department, the qualitative can be combined with the quantitative or the behavioral with the biological. "Pick out someone that you get along with well, that you don't mind spending a lot of time with, and convince your chair that team teaching is going to be incredibly important for your students." Faculty members and students can learn a tremendous amount about other departments and disciplines through such arrangements.

Second, interdisciplinary grant-writing programs can bring faculty members together to learn about and collaborate on multidisciplinary research. At the Center for Research on Families at the University of Massachusetts, Amherst, the Family Research Scholars Program brings six faculty members together for a year in an interdisciplinary seminar. Each of them applies to be part of the program, and each of them writes a research grant focused on some type of family research. They read each other's grants, give peer support, and receive other supports to develop their ability to talk across disciplines.

Also, multidisciplinary initiatives need to involve all levels of faculty, not just assistant professors. Full professors, mid-level professors, and assistant professors all benefit from multidisciplinary exchanges.

Short training courses on mixed-method approaches can be extremely valuable. Deans and chairs should be convinced that funding to attend these short courses will pay off with larger grant funding in the future.[1]

Faculty members pursuing interdisciplinary funding need to make the case that these are new grants that would not have been obtained without support from the institution. "We've been successful with that," Power said. "The money comes back and supports course releases for the next class of faculty that are going to do this, and thus far we've had more than enough to support that."

The bottom line, said Powers, is "to advocate at your local level, because it is changes in your daily life that are going to make this workable."

[1] For examples of these courses, see http://www.qualquant.net/training/scrm.htm#offer (accessed January 24, 2011).

DISCUSSION

During the discussion period, Jane Guyer emphasized the importance of planning grants in the formation of multidisciplinary projects. Putting together such projects can be labor-intensive and difficult, and planning grants could overcome some of those difficulties.

Jeffery Evans observed that NIH does provide planning grants for that purpose. Another way to support early-stage projects is through conferences and workshops. For example, with the establishment of clinical networks, a planning phase is built into the project. "The larger the enterprise, the more planning you need." Planning grants and related funding also can be used to conduct short-term training to familiarize team members with a new method. In addition, supplemental grants to an existing grant can be used to add a new method to an existing study.

A workshop participant described the difficulties in shortening a paper about a complex multimethods research project to meet the space limitations of a prominent journal. Roger Bakeman observed that journals are unlikely to devote huge amounts of space to multimethod studies, but supplemental and supporting materials that are not published can be posted on the Internet. That way, people can examine the data from which conclusions are drawn and ask their own questions of the data and the analysis.

In response to a question about whether the NIH Toolbox will have instruments that can be used with young children in culturally diverse settings, Nathan Fox noted that standardized, normed, valid measures will not be available for social and emotional development. "It's a big hole in the armamentarium of assessment of young children. . . . It's not an impossible task. It just requires someone to do the hard work, to create that battery of measures." Nor are there any direct measures of parenting, Fox continued, although there are measures of social support and relationships embedded in parent questionnaires.

Bakeman observed that the way of doing science embodied in the NIH Toolbox is desirable, but it goes against the scientific culture in some ways. Science still values individual rather than group contributions. "Many of us are not full-time researchers. We're beholden to departments that expect us to advance, be promoted, sit on committees, teach, do all kinds of other research, including these elaborate consortium arrangements which are incredibly time-consuming." Forums are needed that will encourage and reward the interdisciplinary collegial work, which is all too rare. Common tools will help, in that they will bridge disciplines. For family science to be cumulative, measures need to apply across many different laboratories in a given area of research. "We need measures that are accepted widely and used in the field."

Funding agencies could insist that researchers choose from a list

of approved tools, but many researchers would be leery of that kind of centralized control, Bakeman said. For tools to be used and work across settings, funding needs to support consortia in which such tools are employed. "We need to educate our universities and our deans that this is the right way to go . . . in a culture that largely only understands first-authored papers."

How can undergraduates, graduate students, and postdoctoral fellows be trained to move between disciplines as well as to become familiar with the language of disciplines as varied as sociology, demography, neuroscience, and developmental psychology? "This is really very difficult," said Fox, "and it's most difficult because graduate students or post-docs still have to go out and become assistant professors, and they still have to establish themselves in their departments, generally, with their own research and with their own laboratory. Multidisciplinary collaboration, which is really the way to train students and to get them involved in these kinds of multidisciplinary collaborations, often is frowned upon, interestingly enough, by departments, for individuals who are just starting out. It's sort of the luxury of those who already have tenure. That culture has to change if, in fact, we are going to be training that next generation of students."

In putting together a diverse campus, college administrators choose a diverse range of students, said Bakeman. Perhaps family research needs to do the same thing by convening people with different skills and areas of expertise. In that case, an important component of multimethods work is a culture of mutual respect. "We need to have students who are not themselves mixed-method competent but are mixed-method literate and respectful. I'm not sure how to do that—in graduate school we too often go for that narrow specialization. . . . Again, we need a culture change."

Bakeman pointed out that relatively few people use observational methods, often because they think such methods are too expensive and time-consuming. But modern visual technologies are changing that. Observations are more accessible to a wider range of people through the use of digital technologies. If common measures used in multiple independent investigations and laboratories were available, data—including video—could be archived and find many future uses. Data storage is cheap, although issues of consent need additional consideration. With major data archives, multiple methods could be brought to bear on the same data. "We need to create a culture where more work goes into collecting archives, more dissertations are earned, and more promotions are gained from working with large archival data sets. With multiple minds looking at similar phenomena that may be the real payoff of mixed methods."

Barbara Fiese pointed out that the use of archived videotapes requires

close cooperation with institutional review boards to make sure that future uses meet the terms of the original consent. She also observed that the formation of complex multidisciplinary teams in family research provides an opportunity to develop a science of team research. Researchers could look at how people interact on teams, how they train others, and the effects team participation has on a person's career trajectory. Such studies could help inform people make career decisions and could play a role in tenure reviews.

7

Final Observations

The preceding chapters focused on selected research dimensions that were explored in the workshop presentations and deliberations. Following these sessions, the planning committee met to highlight particular themes that emerged in the workshop and that deserve further consideration in developing research priorities and the infrastructure for studies of family structure, processes, and relationships. The seven themes that emerged from this discussion fall into two categories, with the first three themes derived from prior studies and the following four themes looking toward the future.

LESSONS FOR THEORY AND METHOD FROM PRIOR STUDIES

Theme 1: The need for interdisciplinary and problem-oriented research on families creates challenges for theory and measurement that can help to integrate diverse areas of inquiry.

Many of the participants in the workshop were not aware of each other's research because they work from diverse disciplinary perspectives and publish in separate journals. Yet the convergence of interest around fundamental concepts related to structure, processes, and relationships yielded productive discussions about novel and complementary ways to define, measure, and analyze these constructs. For example, the convergence of attention to causal inference and measurement of family processes in policy-relevant research on families was discussed at several points during the

workshop. Similarly, the integration of biomarkers into family intervention research was another example of a multimethod, multidisciplinary challenge in the science of research on families.

Theme 2: The increasing variety and complexity of family structure, couples' living arrangements, and life experiences require new measurement tools and terminology that can capture the richness of important variations across multiple racial and ethnic groups.

With the changing demography of American families, new measurement tools and terminology will become increasingly important in both quantitative surveys (such as those resulting in census data) as well as qualitative studies that strive to categorize family relationships and partnerships into functional units for analysis. Measuring change in families over time was a challenge at both the within-family (micro) level and at the demographic and population (macro) levels. Self-report information by family members can also be useful in mapping relationships that have meaning and significance in understanding the roles and influences of diverse members of a household or family unit. Efforts to develop appropriate terminology for family structure and networks will need to adapt to these insights.

Theme 3: Qualitative and quantitative studies offer different approaches and different strengths in understanding family characteristics and dynamics. Mixed-methods research studies are sometimes able to blend these distinct approaches, but innovative approaches are necessary to support these efforts in small-scale as well as multi-institutional projects.

More attention is needed to analyze and understand the data from existing large-scale studies. Participants indicated that intensive qualitative studies embedded in large-scale survey or experimental studies, such as the New Hope demonstration or the Fragile Families study, were one of the major advances of the last decade in family research. For example, qualitative findings from the Fragile Families study resulted in a change in survey items to examine how many nights per week or month the father was actually sleeping over at the mother's home. In other cases, findings from qualitative research will need to be confirmed by quantitative research (i.e., unwed mothers' desires for marriage). Small-scale team efforts are also necessary to focus on specific areas of interest and to identify new dimensions of family life that would be appropriate for national surveys or large-scale studies. Journals and research sponsors need encouragement and incentives to provide opportunities for papers and activities that will advance understanding of the methods and processes of mixed-methods research studies as well as the findings of the studies themselves. The challenge of

publishing multimethod studies in the space allotted for traditional journal articles and grant proposals was brought up by multiple participants in the workshop.

IMPERATIVES FOR FUTURE RESEARCH

Theme 4: Multiple opportunities are emerging to study family effects on emotional and physical health. Current studies have identified multiple ways in which interactions among family processes and experiences affect health outcomes. These diverse modes of transmission and interactions raise awareness about the importance of integrating studies of fundamental genetic, immunological, and metabolic processes (among others) with problem-oriented work focused on such issues as violence, trauma, substance abuse, mental health, obesity, and other health disorders.

Emerging studies offer exciting and compelling insights, but they often lack a coherent engagement with understanding the family-focused mechanisms that may enhance or impede biological and behavioral processes. Several participants observed that the integration of biomarker, epigenetic, and neurological approaches in family research was a new frontier in both basic and intervention studies. At present, these studies are scattered across multiple research programs that are frequently focused on specific health problems or disorders. The intensive training required for biobehavioral integration in research approaches was another challenge raised by participants in the workshop. These frontier areas of family research offer new opportunities for integrating biological, behavioral, and social context research findings.

Theme 5: Advances in the field of family research will require approaches that can move beyond problem-oriented studies to identify positive family strengths and functioning that contribute to the well-being of family members, especially during times of social disruption and adversity.

Much of the current knowledge of family structure, processes, and relationships is tightly linked to studies of adversity, risk, and psychopathology or disease, but existing studies often focus on these experiences in specific racial or ethnic groups during particular historical periods. The workshop highlighted future directions in the clinical and prevention sciences that will enrich identification of family risk and protective processes that are common to multiple groups as well as productive targets for prevention and promotion. Although some studies are beginning to advance understanding of the ways in which families contribute

to the resilience, well-being, school readiness, and healthy development of children, more effort needs to be devoted to clarifying the structures, processes, and relationships involved in these interactions in order to inform the next generation of programs and policies to support America's children and families.

Theme 6: Strategies to combine disciplinary approaches and diverse methods in the field of family research studies involve a sustained commitment to collaboration and rigorous training efforts, as well as institutional and funding support.

Multimethod, transdisciplinary training approaches require sustained and intensive learning in small team contexts. The exemplary multimethod studies presented at the workshop typically involved collaboration among junior and senior scientists in family research. In addition, joint research activities occurred across periods of multiple years, in the service of explicit, problem-oriented research goals. Cowritten grant proposals and journal articles similarly required long-term collaborations among scientists from multiple perspectives. Training programs in multimethod approaches, collaborative team-building research, and careful consultation with review boards and other oversight bodies are important building blocks in strengthening the foundation for future studies.

Theme 7: Recent advances in visual and digital technologies provide new opportunities to advance the use of observational studies in studying family processes and relationships in their natural settings.

These newer technologies, combined with traditional quantitative and qualitative studies and research on fundamental biological and behavioral processes, can contribute to a deeper understanding of the complex dynamics associated with family influences and family environments.

FINAL NOTE

The rapidly changing demographics of American families are currently accompanied by an explosion of new methods, technologies, and understandings in the science of family research. This science is on the brink of a new integration in which the next generation of scientists will combine epistemological and methodological approaches with unprecedented flexibility. The potential for the ability of science to illuminate basic developmental processes in families, as well as productive directions for programs, practice, and policy, is vast. Institutional mechanisms to support this science will need to adapt to the rapid pace of change in the field.

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Appendix

Workshop Agenda and Participants

WORKSHOP AGENDA

Workshop on the Science of Family Research

Tuesday, July 13, 2010

Welcome and Introductions — Hiro Yoshikawa, Harvard University

- Why are we interested in studying families?
- Why are families important to child health and well-being?
- Why do we want to focus on the methods of research and data collection?
- Goals and objectives of the workshop

Session 1: Measuring Family Structures, Relationships, and Processes

Session 1.1: Measuring Family Structure, Living Arrangements, and Change

Moderator: Rosemary Chalk, Board on Children, Youth, and Families, IOM/NRC

Speakers:

Measuring family structure and stability: Emerging trends and measurement challenges
Susan Brown, Bowling Green State University

Cohabitation and other aspects of household structure and instability
Kelly Raley, University of Texas
Capturing intergenerational aspects of change in family patterns
Kathleen Harris, University of North Carolina
Measuring the impact of race, class, and immigration status on family stability
Dan Lichter, Cornell University

Session 1.2 Measuring Interactions Among Stress, Conflict, and Family Processes
Moderator: Lisa Pearce, University of North Carolina
Speakers:

Multimethod research on stress, trauma, and mental health in American Indian families
Paul Spicer, University of Oklahoma
Assessing the biological stress system: considerations for family research
Darlene Kertes, University of Florida
Young children and trauma: Research and clinical perspectives on assessment
Chandra Ghosh Ippen, University of California, San Francisco

Session 2: Conducting Research on Family Influences on the Healthy Development of Children and Youth

Session 2.1 Studying Relationships Between Family Dynamics and Health Risks
Moderator: Anne Duggan, Johns Hopkins University
Speakers:

Inside family life: Multiple layers of influence on children's health and well-being
Barbara Fiese, University of Illinois
Studying substance-abusing fathers: Can evolutionary concepts help?
Thomas McMahon, Yale University
Conducting research with families with mental health issues from a preventive and resilience-based perspective
William Beardslee, Children's Hospital of Boston

Session 2.2 Studying Families and Child Well-Being
Moderator: Margaret Burchinal, University of North Carolina
Speakers:

Key measurement issues in the study of low-income families and school readiness
Heather Bachman, University of Pittsburgh
Multi- & mixed-method approaches to studying family contextual factors and child competencies
Rashmita Mistry, University of California, Los Angeles
Lessons learned from different approaches to studying family processes and child outcomes
Rebekah Levine Coley, Boston College
Estimating causal effects with observational data: Evidence from Title IX on how sports impacts kids
Betsey Stevenson, University of Pennsylvania

General Discussion

Adjourn

Wednesday, July 14, 2010

Session 3: Building the Infrastructure for Family Research

Session 3.1 Interactive Panel Discussion: Key Issues in Designing and Conducting Mixed Quantitative and Qualitative Behavioral Family Research
Moderator: Jane Guyer, Johns Hopkins University
Panel members:

Nathan Fox, University of Maryland
Roger Bakeman, Georgia State University
Sandra Hofferth, University of Maryland

Topics for discussion:

1. What are quantitative and qualitative approaches and issues related to the measurement of concepts?
2. What are key analysis issues to consider in combining quantitative and qualitative approaches to family research?
3. What are various approaches to and implications of sequencing, phasing, or embedding quantitative and qualitative research?
4. What are the most difficult dilemmas related to combining quantitative and qualitative research methods in family behavioral research and what are potential solutions?

5. What key issues were raised on the first day of the workshop?

Session 3.2 Interactive Panel Discussion: Expanding the Talent Pool, Creating Opportunities for Collaboration and Highlighting Research Priorities

Moderator: Hiro Yoshikawa, Harvard University
Andrew Fuligni, University of California, Los Angeles
Sally Powers, University of Massachusetts at Amherst

Panel members:
Cheryl Boyce, National Institute on Drug Abuse, NIH
Wendy Nilsen, Office of Behavioral and Social Sciences Research, NIH
Susan Jekielek, Office of Planning, Research, and Evaluation, Administration for Children and Families, HHS
V. Jeffery Evans, Demographic and Behavioral Sciences Branch, NICHD

Topics of discussion:
What are barriers to and supports for researchers to:
1. Learn new and integrated sets of methods in family research, across early to senior career stages?
2. Obtain funding for integrated quantitative/qualitative behavioral and biobehavioral family research from federal and foundation sources?

Final Observations Hiro Yoshikawa, Harvard University

Adjourn

PARTICIPANTS

Committee members:

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Speakers:

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Roger Bakeman, Department of Psychology, Georgia State University
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