October 2003

Dear Colleagues,

This document is the initial proposal our team at Duke, Maryland, and UCLA submitted in response to the RFP, “Designing New Models for Explaining Family Change and Variation.” It represents the views of our research team but, by virtue of the constraints of the review process, we were not able to take account of the views of the NICHD Project Officer and other NICHD staff.

The project that was eventually funded by NICHD is somewhat revised from this initial plan, including a reconceptualized Executive Committee structure and a more developed plan for collaboration with colleagues at NICHD.

We welcome suggestions about this work. We are excited about the project and look forward to working with all members of the demographic community.

Sincerely,

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Designing New Models for Explaining Family Change and Variation

Technical Proposal: Response to RFP NICHD 2003-03

“Designing New Models for Explaining Family Change and Variation”

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April 14, 2003
Technical Proposal:
Designing New Models for Explaining Family Change and Variation

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Technical Proposal:

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A. Statement of Work

A.1 OBJECTIVES

We will review existing knowledge on family and fertility change and on variation in family attitudes and behavior between women and men and among members of different race/ethnic, socioeconomic, and cultural groups. We will use the reviews to identify areas in which important progress can be made through new analyses, data collection, and methodologies. We will explore new ways to use existing data and new methods for studying family and fertility change to advance understanding of causal relationships. Commissioned papers and pilot projects will inform recommendations for future research and data collection on family and fertility change. The project identifies eight areas for intensive study through a coordinated set of working groups with intersecting memberships and synchronized work schedules. To advance scientific understanding of family change, we adopt a strategy of routine and open consultation with researchers in multiple disciplines.

A.2) APPROACH

A.2.a Overview, Principles of Operation, and Strategy

Researchers have made substantial progress in documenting patterns of family change and in beginning to determine the causes of these changes. The challenges of continuing this progress in the first part of the 21st century motivate our proposal. We propose an array of coordinated activities that identify areas for new work on theoretical questions, develop innovative methods for assessing causal associations, and continue the long-standing tradition of rich description of trends and differentials that informed the progress in understanding family change on which this proposal builds.

The key to progress in understanding family change is a balance between substantive breadth and a theoretically and methodologically consistent approach toward social science research. The PI and Co-PIs are an interdisciplinary team of economists, sociologists and demographers who have a demonstrated ability to work together and communicate to academic and policy audiences. Each team member has been involved in collaborative research projects that include researchers from other disciplines. We will draw on these contacts and advice from NIH and other researchers who study family and fertility change to inform the work of this project. As demonstrated by our overarching conceptual framework (described below), it is essential to treat family and fertility changes as the outcome of biological, psychological and social processes. The PI and six co-PIs, who together constitute the “Core Group” of researchers for this project, will convene a set of overlapping working groups organized around eight conceptual and substantive modules whose activities reflect this principle.

Our activities are aimed at creating a public resource. We believe that innovative ideas and new approaches to the study of family change will be developed more efficiently and adopted more quickly if a broad set of stakeholders in the research and policy communities are involved in advising the Core Group, in recommending new approaches, and in reviewing our work-in-progress throughout the life of this project. Therefore, the Core Group will rely on specialist consultants, externally-commissioned papers and pilot projects, as well as its own expertise, in order to develop new approaches to family research and to translate and integrate promising strategies drawn from a range of pertinent substantive
areas. The Core Group will also make systematic efforts to communicate with the broader academic community through conference presentations, workshops, informal seminars, and a project web page that will publicize project activities and disseminate working papers and other project research products. We will publicize the web page and other project activities through email, regular mail, and through contacts with professional associations, such as the Population Association of America, American Economics Association, American Sociological Association, sections of the American Psychological Association, the National Council on Family Relations, the Society for Research on Child Development, and the Gerontological Society of America. We will coordinate all activities with the NICHD Project Officer and other NICHD representatives.

Maintaining the rights of human subjects is a paramount concern for research on family and fertility change and is a core principle of our work. Four aspects of our planned work require careful assessment of ways to protect human subjects: pilot projects involving laboratory experiments; developmental survey work, including field tests; linking administrative records to each other and linking administrative and survey sources; and developing designs for new data collection that include collection of biomarker information. We anticipate that project work and consultation with the broader research community will also identify new aspects of family data that require careful attention to the protection of human subjects.

We characterize our work plan as follows and in Figure A2.1: Through a coordinated set of eight modules on central challenges in the study of family change (see Section A.3: Work Topics), we will review existing knowledge on family and fertility change, identify areas where important progress can be made, and suggest strategies to realize these advances. Using as a starting point the existing literature, and especially recent review volumes [for example, Thornton (2001) and the National Academy of Sciences volume on Human Fertility Behavior in Biodemographic Perspective (Wachter and Bulatao 2003)], we identify eight areas for intensive study. Each module will be assigned a Working Group, and there will be intersecting memberships in the Working Groups. The time schedules require synchronous reports and meetings so that progress in Working Groups can diffuse across groups working on specific modules. The Working Groups have as their mission the project objective – but focused on subareas of the family/fertility domain. Working Groups will use various mechanisms to achieve these aims, including commissioned papers and pilot projects. But the primary task will be focused discussions within the Working Group itself that are informed by Working Group members’ intensive analyses of existing literature and resources.

We will produce a range of products, including a set of recommendations for each area of intensive study. We describe the process and expected products in more detail below in Section A.4 (Work Process). The remainder of the proposal follows this outline: First, we introduce our conceptual framework. Then we outline key methodological issues related to identifying causation in models of family change. We also consider related methodological challenges for new work on family and fertility change. The sections after this provide a more in-depth discussion of modules we propose as central concerns to new theories and research on family change. We conclude with a description of the methods we will adopt to pursue questions posed in the specific modules and to fulfill the responsibilities of openness and integration essential to advancing family research.
A.2.b. Conceptual Introduction

The family has changed dramatically over the last half century. In 1950, during admittedly unusual demographic (see Cherlin 1992) and economic (see Levy 1998) times, the average American woman married at an early age, bore 3.03 children, and worked very little outside the home. In 1950, Americans shared a common image of what family life should entail and how mothers, fathers, and children should behave: the “ideal” family consisted of a homemaker-wife, a breadwinner-father, and two or more children. Parents were joined in legal unions, confined their childbearing to marriage, and married for life.

Today in the United States, men and women marry much later; couples often cohabit prior to marriage; both partners are likely to work in the labor market; a marriage is as likely to end in divorce as not; women have fewer children and live longer after those children are grown; they may or may not have those children within a legally sanctioned union; and children, either because of divorce or because their mother and father never married, are much less likely to live with both of their biological parents while growing up. While important differences remain across racial, ethnic, socioeconomic, regional, and cultural subgroups in the United States, all groups experienced these trends to some degree. And while differing in details, other developed countries – and many less developed ones – have experienced similar dramatic change.

The goals of this project are to better understand the driving forces behind this change and its
implications for the well-being of men, women, and children in the United States. Specifically, we will develop an ambitious new inter-disciplinary research program to advance scientific understanding about the factors and processes that produce family change in populations over time and that influence variation in family change and behavior among racial, ethnic, socioeconomic, regional, and cultural groups, and among men and women. We argue below that the changing social context in which families form and operate is important to understanding these changes. For this reason, our research program also explores the experiences of other parts of the world in comparison to the United States. Our research will provide a comprehensive evaluation of the current theoretical, empirical and methodological literatures on the family, including research on marriage and cohabitation, fertility and sexual behavior, the cognitive and social development of children, parenting and intergenerational relationships, work and family interrelationships, and family decision-making. We also focus on ways to assess causation, a task that is especially important for anticipating how policies affect family behavior. Our studies will conclude with integrative new theory and suggestions for subsequent research that will significantly advance our understanding of the factors and processes that drive family change at both the individual and societal levels. This research program will aid NICHD – and the scientific community – in setting the stage for the next generation of research and data collection on the family.

**Why Families? Overarching Theoretical Perspectives**

In developing a set of overarching theoretical perspectives for research on families and related behaviors, we assert that one must confront the following fundamental question: Why do individuals organize into family units? Understanding the principal reasons for why families exist guides us in our consideration of the possible factors and processes that produce family change in populations over time and that influence variation in family change and behavior among subgroups in the United States.

Five disciplines have supplied the bulk of the theory on why human beings organize themselves into family units – Biology, Psychology, Economics, Sociology and Anthropology. Not surprisingly, each discipline tends to emphasize the factors that the field understands best. Biologists tend to emphasize the value of the family in the survival of human genes and the role of evolution in “hardwiring” human beings in ways that make family life attractive. Psychologists tend to study developmental processes, identity formation, cognitive functioning, personality, and interpersonal relationships. Economists tend to emphasize individual choice and the many benefits that accrue to individuals from family life that are impossible or more costly without it. Sociologists recognize that this choice is constrained by institutions and norms, inequality in the distribution of resources, power relationships, and the structure of social networks. Finally, there is a growing emphasis among Economists and Sociologists, and a long-term interest among Anthropologists, in the role that the family plays in the culture and organization of society as a whole and in the competing interests and the redistribution of costs and benefits from various family forms. While these views are often interpreted as competing perspectives, our research plan stresses that population research has much to gain by integrating these views and exploiting the complementary nature of these explanations.

**The Role of Biology in Family Formation and Behaviors.** We first consider the biological or evolutionary basis for family groupings and behaviors. Biologists emphasize three themes to explain the variability in the social organization of species. First, natural selection maximizes the total energy dedicated to reproduction over the life course. Both reproduction and growth of an organism requires energy. Because growth enhances future fertility, the cost of present fertility is a reduction in future fertility (sometimes through mortality of the parent). For all species, natural selection must solve the problem of how much of a species’ life is dedicated to a “juvenile” period and how much to a period of reproduction.

Second, natural selection must also solve the problem of whether energy is dedicated to increasing the number of offspring or to increasing the “quality” of offspring. In general, biologists have
assumed that natural selection works to maximize the number of offspring that survive to reproduce themselves.

Finally, sexual dimorphism (probably itself selected to increase the genetic variability of offspring) is an important component of the “design” of a species’ social organization and particularly the tradeoff between the number of children and their “quality.” While offspring share equally the genetic material of each parent, parents may not contribute equally to the offspring’s viability. This stems from female gametes being larger than male gametes and requiring greater initial energetic investment on the part of females. This greater investment results in a shorter supply of female gametes and competition between males for a female’s scarce genetic material. In some species the optimal strategy for males is to use energy to fight off other males and mate with as many females as possible. In other species the optimal strategy is for the males to use energy for parenting and compete by offering parental effort to ensure the viability of shared offspring. In the biological view, families reflect the outcome of natural selection acting to maximize the reproductive success of humans as a species.

Psychologists emphasize the neurological processes and developmental constraints on cognition and affective responses that underlie stimuli and responses. They note that individuals may label their physiological responses (e.g., stress reactions) in ways that affect interaction with others. Psychological research also investigates cognitive constraints on how individuals process information, understand risk, and anticipate how life would be if they were to decide to act one way instead of another (marry or not; decide to co-reside or not) (see Carley, 2001). Those in other social sciences, especially anthropology and sociology, have embraced and championed the view that explanations for social behavior lay almost entirely in the social realm. The view has been that humans are born with a tabula rasa, a blank slate, upon which a society stamps a personality, a worldview, and sets of norms. This position is now under assault from scientists with strong counter evidence and credible theories anchored in the biological/psychological evolutionary sciences. For instance, in a book-length critique, Pinker (2002) attacks the blank slate as the denial of human nature and innate predispositions. We contend that social scientists have too quickly dismissed biological factors. If evolution acts as described above, it may affect human biology in important ways that predispose humans toward particular behaviors. For example, certainly feelings of “love” and “commitment” aid in the social organization of families, and the neural circuitry necessary for these feelings/emotions may be “hardwired” in order to support an evolutionary equilibrium where parenthood is delayed for many years, where the number of offspring is limited, where parents invest a great deal in offspring, and where fathers do not completely shirk familial obligations. Social scientists have also tended to assume that biological explanations are deterministic when, in fact, much of the emerging evidence suggests great range for the expression of biological predisposition dependent on the social environment.

The Role of Choice in Family Formation and Behaviors. The focus on why families exist necessitates considerable attention to understanding individual choices, preferences, and actual and perceived constraints in family formation and functioning. Virtually all the theoretical streams currently used to understand family and fertility processes bring us to this second focus because they interpret the contemporary context in the United States as one where individuals have a wide margin of choice in the family behaviors they engage in throughout life.

Lesthaeghe (1995) argues for the causal importance of ideational change, in particular the increased value placed on individual autonomy, and to a lesser extent the goal of female emancipation or gender equality, as the motivational force behind changes in the second demographic transition – changes he argues that are unlikely to be reversed and that privilege individual autonomy and control over family decisions.

Life course theorists emphasize the work and family transitions people make and the trajectories individuals choose (Elder 1985). People make transitions from being unmarried to married, from being childless to becoming parents, from being married to being divorced or widowed, and so forth. Those who assume a family life course perspective invoke the notion that, as we age, we all make a pathway and
that individual pathways take different directions with differing consequences for individuals and for subsequent decisions.

Economic theories of the family (see Willis 1987 for a review) and social exchange theoretical perspectives (e.g., Molm 2003; Levinger 1979) have focused attention on the cost/benefit analysis that underlies family decision-making when family decisions are viewed as within the choice-set of individuals. And, indeed, in section A.3.b, we elaborate on this cost/benefit framework for envisioning the family.

**The Role of Society and Context in Family Formation and Behaviors.** To address the overarching question of why we have a “family” mode of social organization and why it looks the way it does in any historical setting requires a third focus: We must acknowledge that there are powerful normative and contextual factors in place so pervasive, in any given time and place, that actors do not see alternatives. Families just “are” or “are a certain way.” They exist; they are taken for granted, unquestioned. This is easiest to illustrate by considering a young child’s point of view. A child is born into a family that is configured a certain way: the family is a given, and the child is not cognizant of his/her ability to change it. In some times and places, women (and men) also see little choice or find only one path for what adult women (and men) do. These customs, norms, and supporting institutions may exist to benefit family members directly, may benefit some family members more than others, or may serve a function that extends beyond the interests of family members themselves. For example, religious prescriptions may lower the costs to family members of coming to a common view of household responsibilities and relative power of men and women in relationships. Societies have an interest in the organization in families in so much as differences in the way families are organized affect societal institutions. For example, current advocacy on the part of gays and lesbians for legal recognition of their partnerships is controversial because it requires an expansion and reorientation of the meaning of the institution of marriage and also alters legal entitlements to public and private benefits.

Often, social pressures on the organization of the family and the reasons that a society adopts the social institutions that it does are difficult to study. This is because they are typically common across families (within a country, for example), and societal institutions by definition change very slowly. Individuals adapt when there is a shock to the system (e.g., early death of a male head of household). But individual solutions do not necessarily become more than idiosyncrasies. Only when there is rapid social change in family behaviors of many individuals, such as characterized the latter half of the 20th century, do new questions about family organization and structures arise. The belief in the powerful defining influence of social context sets the third pinion of our overarching framework. We believe it is important to emphasize a comparative perspective (and to lesser extent a historical perspective) if we are to understand the broad social-demographic and macro-economic context in which family decision-making is nested in the contemporary United States.

**Overarching Issues in Gathering Data and Drawing Inferences in Study of Family Change and Family-Related Behaviors**

Demography has a long history of combining innovation in measurement with statistical methods to provide a rich picture of family life. This has, in turn, served as the foundation for formulating and testing theories of the family. This subsection parallels our overview of conceptual models of the family and discusses the measurement and methodological issues that need to be confronted in order to better describe, interpret and understand family change and variation. After briefly reviewing the measurement tools available to family demographers, we discuss some of the limitations that have impeded progress in describing and understanding the family. Integrating theories of family life with new measures of family behavior is key to progress in this area of scientific inquiry. Specific examples are suggested in the orienting and substantive modules below (see Sections A.3.b and A.3.c.); the feasibility and value of some of these will be tested in the pilot studies that form part of this project (see A.4). We turn next to interpreting the facts and highlight the importance of isolating causal pathways in order to draw
inferences about behaviors of families.

**Gathering Data.** Demographic research has a long tradition of utilizing a broad array of data sources to analyze such issues as fertility, marriage, death, child and adult well-being, to name a few. This project will continue in this tradition. We will explore new approaches to data collection, combining multiple modes of measurement, and will evaluate their likely contributions to the study of families and family-related behaviors.

Census and survey interviews of individuals, households, and families are the bread and butter of research on families. In contrast to censuses of entire populations, surveys focus on samples of populations. The tremendous heterogeneity in survey design is a reflection of the variety of scientific questions that surveys are intended to address. Surveys vary, for example, by sampling unit; who is interviewed within that unit; whether multiple respondents in the unit report their own experiences or whether reports are from a single (proxy) respondent; whether the information they gather is broad in nature or focused on a limited range of issues, such as time allocation, income, or spending patterns; and the relative mix of questions about current characteristics and retrospective reports. Whereas cross-section surveys provide a snapshot at a point in time, cohort or longitudinal surveys have enabled demographers to trace individuals through the life course. The combination of these data with event history methods have placed the spotlight on transitions between states and the timing of those transitions.1

The specifics of survey design directly affect the questions about family life that can be addressed. The vast majority of surveys sample housing units, although most theories focus on the family. The two are not identical. The increasingly common phenomena of divorce, single parenthood, and the (locational) separation of kin suggest that limiting sampling plans to housing units is very problematic for understanding family change and the interactions and behaviors of family members. A small number of surveys have sought to address this limitation by gathering information about non-coresident family members in household-based surveys. In spite of its importance for empirical models of the family, the quality of this information has not been subjected to extensive scrutiny.

In contemporary societies, the increasing demands on one’s time, the constancy of intrusions on people’s privacy, as well as the increasing likelihood that family members are physically separated at any point in time, imply important tradeoffs between quality of responses and costs of data collection. Whatever their causes, the declining participation rates in many surveys that have been observed in the United States represents a troubling trend for family research. Lower participation rates among males raise special concerns. These problems of low male participation rates have resulted in greater reliance on proxy responses by wives, mothers or daughters in studies of family and fertility behavior, and the impact on data quality is not well understood. In addition, lower participation rates seriously impede matching independent information collected from individuals in a couple. These trends are especially problematic in light of the fact that an individual’s expectations and attitudes, as well as interactions between spouses,

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1 Interview-based data sources, including the Public Use Microdata Samples (PUMS) from the decennial Censuses of Population; the National Surveys of Family Growth (NSFG); the Current Population Surveys (CPS) and Surveys of Income and Program Participation (SIPP); the National Survey of Families and Households (NSFH); the National Longitudinal Surveys of Youth (NLSY); the Panel Study of Income Dynamics (PSID); the Health and Retirement Survey (HRS); the Study of the Assets and Health Dynamics Among the Oldest Old (AHEAD); the Consumer Expenditure Survey (CEX); and Fragile Families. Outside the United States, the British Household Panel Survey (BHPS); the Family Expenditure Survey (FES); the English Longitudinal Survey of Aging (ELSA) and the associated panel surveys of aging underway in 12 European countries (Surveys of Health, Aging and Retirement in Europe, SHARE); the German Socioeconomic Panel; the Dutch Socioeconomic Panel; the Hungarian Household Panel; the Indonesia Family Life Survey; the Malaysian Family Life Survey; the Matlab Health and Socioeconomic Survey; the Russia Longitudinal Monitoring Survey; Demographic Health Surveys; Surveys on the Status of Women and Fertility and the World Bank Living Standards Measurement Surveys conducted in many countries around the world, have all provided new insights into family behavior.
are important ingredients in many models of family behavior. Furthermore, evidence suggests that nonparticipation is greater among parents who invest less in their children, raising serious concerns that nonresponse (or attrition) is not ignorable in models of parental behavior (Schaeffer et al., 1991; Lin and Schaeffer, 1995; Schaeffer et al., 1998).

There have been important innovations in the design of surveys that collect information on the environment in which the sampling unit is located. These community or contextual surveys are expensive, particularly in a longitudinal setting (since respondents move away from the original clusters), and they are not well-suited to provide information about the historical context. Administrative records are an extremely valuable source of contextual information both at the time of a survey and also historically.

Administrative records contain a wealth of information in their own right. They have the potential to provide good historical information about an individual at low cost by, for example, matching individuals to social security records or records on program participation. Registration systems can also provide detailed information about birth, death, marriage, and residential location; information from court records documents divorce settlements, paternity establishments, and probate arrangements. We provide examples below of how the combination of administrative and survey data provides a powerful resource for understanding family change. We also demonstrate the value of combining data sources from different contexts to better understand variation in families across those contexts. The Core Group has substantial experience dealing with the human subjects issues that arise when using administrative data and linking contextual data to administrative and survey data (see Section A.5 below.)

Survey interviews are constrained by the time and level of detail that respondents are willing to provide. Recent studies that have combined population-based surveys with ethnographies have yielded new insights into the ways families function. Results from in-depth interviewing and subject observation have enabled scientists to present a richer and more nuanced characterization of the constraints, opportunities, and choices of families, while also suggesting hypotheses that have subsequently been tested with survey data.

Data gathering on families, their members and their contexts, by whatever means, must also acknowledge and respect the fundamental rights of human subjects to privacy and confidentiality. While the benefits of participating in social research on families typically accrue to groups or at the population level, including the development of improved social policies and programs to help families, the costs occur at the individual and family level. Threats to confidentiality are especially important for study participants and those identified in administrative records. We think that links between administrative records and between administrative records and survey data provide a valuable opportunity for evaluating the effects of social policies on family behavior and individual well-being. But methods must be devised that protect the privacy of subjects and ensure the confidentiality of their information. Similarly, careful attention must be paid to obtaining informed consent, as well as to devising ways of reducing the “inconvenience” costs of subject participation in all forms of data gathering, be they surveys, ethnographic and observational studies, or “laboratory” experiments.

**Inference.** Different theoretical perspectives have been used to understand why families form, what motivates their behavior, and how they respond to changes in their environments or contexts. To make progress in our understanding of the family and how it changes over time and across contexts, social scientists seek to find ways to assess the validity of the implications of these theories. Drawing inferences about the hypotheses derived from these theories takes different forms and uses different methodologies. We provide herein a brief taxonomy of these methods.

The starting point for analysis in any substantive area of the social sciences is a description of behavior patterns and how they vary over time or across groups. Descriptive cross-sectional and trend analysis has a long and valued place in demographic research. In the context of studying families and family-related behaviors, this includes statistical analyses of historical trends in fertility and/or death rates in the United States or a comparison of these trends across racial/ethnic groups, by socioeconomic status,
or across countries or societies. Descriptive analyses are important tools for forecasting future needs – such as resources necessary to provide Social Security in coming years. These statistical portraits are essential for characterizing the stylized facts for observed behaviors and relationships that theories must explain.

Drawing inferences about what causes these observed relationships or patterns of change is much more challenging in general and for studying family-related behaviors in particular. A key goal in this research project is to assess the likelihood of drawing credible inferences about causal effects in family research and to assess the feasibility of exploiting methods of causal analysis in the context of behavioral research related to family formation, interactions, and behaviors. We briefly review the range of methods used to conduct empirical investigations of causal effects, including some that have not been traditionally used in the analysis of family-related behavior.

In the biomedical sciences, randomized treatment-control experiments have been the gold standard for measuring the causal effect of a treatment. These designs have been adopted in several important studies in the social sciences to address questions regarding the design of policies in the area of public assistance to the poor, health care pricing and delivery, the effects of alternative training and educational programs, and the administration of child support systems.

It has been argued that random assignment of a treatment circumvents the “selection problem;” i.e., the fact that an individual chooses a treatment compromises our ability to isolate the causal effect of the treatment from the “endogenous” selection of the treatment. But these methods are not without controversy, especially for the study of behaviors of individuals and their families. (See the exchange between Burtless, 1995, and Heckman and Smith, 1995, for more on this issue.) Much of the controversy revolves around the ability to maintain the integrity of random assignment of treatments after the initiation of a study since it is difficult – and possibly unethical – to assure compliance with the treatment protocol of the experiment precisely because individuals are free to choose their behaviors. To be sure, these problems are not unique to social research but also exist in medical studies. The key point for our purpose is that while random assignment studies are a potentially valuable tool for understanding family variation, it is critical that study designs take into account the fact that subjects are able to adjust their behavior as the study progresses.

Since many questions about the family are not amenable to random assignment, research on the family has relied primarily on observational data. The combination of statistical methods and reliance on insights from theories of the family has provided the tools to uncover causal mechanisms in the absence of randomization.

Drawing on the intuition of experimental methods, researchers have sought out naturally-occurring variation in the assignment of treatments, or factors that influence assignment, in order to make causal inferences. These approaches can be collected under the heading of “natural experiments,” with “instrumental variables” and “difference-in-differences” methods representing classes of estimators for this approach. In the case of instrumental variables, one seeks a variable or factor that affects the likelihood of receiving some treatment but does not have an independent effect on the outcome of interest. Similarly, the difference-in-differences estimator compares the outcomes of two otherwise-similar groups of subjects before and after the implementation of a treatment, or policy, where one group is eligible for the treatment in the post-treatment period while those in the second, control group are not eligible in either period. In lieu of experimentally induced randomization, implementation of these methods calls for strong assumptions that, at least implicitly, have some foundation in theory. Their plausibility obviously varies from context to context (see Blundell and MaCurdy, 2000, and, 2001).

Natural experiment designs that rely on instrumental variables or difference-in-difference methods have provided important new insights into family behavior. For example, studies have measured the effects of fertility on the labor supply of mothers (Rosenzweig and Wolpin, 1980, Angrist and Evans, 1998), the effects of teenage childbearing on various socioeconomic outcomes of teen mothers (Bronars and Grogger, 1994, Hotz, McElroy and Sanders, 1997, Hotz, Mullin and Sanders, 1997), and the effects
of joint legal custody on paternal involvement after divorce (Seltzer, 1998; Seltzer et al. 1998) to name but a few.

Difference-in-difference estimators are members of a more general class of methods for causal inference that exploit repeated measures on the same unit of observation. In these methods, common, unobserved factors are swept out of the estimates so that we are, by assumption, left with comparing the outcome of the “treated” group with an otherwise identical “control” group. These estimators have been used to examine change in an individual followed over time (with person fixed effects) and to compare outcomes of twins (who share a common genetic endowment), siblings (who share common backgrounds), or even neighborhoods. Studies have adopted these methods to measure the effects of the Head Start program on the attainment of disadvantaged populations (Currie and Thomas, 1995), the effects of teenage childbearing on the subsequent socioeconomic attainment of mothers (Geronimus and Korenman, 1993, Bronars and Grogger, 1994), and to isolate the quantity-quality tradeoff in investments in children (Rosenzweig and Wolpin, 1980). The assumption that all differences between the treated and the controls are related to measured variation in the environment is a strong assumption and is the key to identification of the causal effect in these models.

A related method for deriving causal inferences about behavioral effects relies on obtaining control group members that are statistical “matches” for those individuals who receive a particular treatment. One obtains a “paired-match” for a treated individual, where the matched pair has the same observable characteristics (e.g., age, race, gender, educational attainment, etc.) as the treated individual, but where the matched pair did not receive the treatment. Similar strategies can be used to form control groups where the matches are similar, though not identical. The intuition behind this class of methods is that, by “aligning” control and treated group members on enough observable characteristics, one can reduce or eliminate the biases associated with selection and thus isolate the causal effect of a particular treatment on outcomes of interest. Matching methods have a long tradition in “observational studies” used in the biomedical sciences and, more recently, have been refined by statisticians and econometricians with such variants as propensity score estimation (see Rosenbaum and Rubin, 1983; Imbens, 2000; Hirano, Imbens and Ridder, 2001, Heckman, LaLonde and Smith, 1999). This methodology is akin to the “selection on observables” statistical-adjustment approach advocated by Barnow, Cain and Goldberger (1980).

At the core of all these methods is the attainment of “exogenous” sources of variation with which to identify causal effects. Such variation is essential to all forms of causal inference. Experimental variation is, by its very design, exogenous. As noted above, this is why being able to conduct experiments is so attractive. The other methods described above seek to attain such exogenous variation by using naturally-occurring – not necessarily exogenous – variation in conjunction with special samples (e.g., twins) and/or statistical adjustments (e.g., matching methods). Being able to assess the reliability of the latter methods is essential for their credibility. Furthermore, the availability of types of data – such as panel data with repeated measures of outcomes, data on twins, or data with sufficiently rich measures of background characteristics and past behaviors to exploit matching methods – are generally crucial for successful causal inference. Thus the design of new data-gathering efforts or contexts in which to conduct analyses rests not only on the quality of the measures that can be obtained but also on the capacity for exploiting such data in conducting causal inference.

But drawing causal inferences can both be aided and guided by explicit theories of behavior. Some research on the family, for example, has sought to explicitly model the selection processes generating treatment choice and the behavioral determinants of outcomes of interest in order to isolate causal pathways underlying individual and family behaviors. These approaches manifest themselves in such methods as simultaneous equation models, path analysis, factor analysis, and multiple-indicator/multiple-cause models, as well as models that make assumptions about the nature of preferences, expectations, and information. In many cases, these models are used to substitute theory for data that simply do not exist. But, in other settings, theories can be used to design experiments or to
impose sufficient structure on data to exploit less-than-exogenous variation when drawing inferences about behavior and the validity of alternative hypotheses. Such an approach has been used to generate new insights into behavior over the life cycle in the absence of complete information on a person’s lifetime social, demographic and economic choices, including fertility decisions (Wolpin, 1984), the relationship between fertility choices and labor supply over the life course (Hotz and Miller, 1988) and the effects of contraceptive choices on fertility and other outcomes (Rosenzweig and Schultz, 1985; Hotz and Miller, 1993).

In our view, the challenge and promise for making progress in causal inferences related to the family and the behaviors of its members lie in finding ways to: (a) identify existing situations in which there is exogenous variation in treatments or other “forcing variables” and (b) profitably exploit the structures and hypotheses generated by alternative theories.

**“Principles” That Guide our Approach to This Project**

The overarching theoretical perspectives and approaches to measurement and inference discussed above provide us with several tentative “principles” that guide the way we approach the work of this project. We briefly describe these below:

1. **Significant attention needs to be paid to understanding and developing the theoretical interactions between biology and social forces in the study of family formation, fertility, and changes in these phenomena than has been typical of past research.** We see this set of interactions as an underdeveloped, often overlooked, area of study and one that holds the possibility for significant new knowledge and innovation in the study of fertility and family processes.

2. **It is important that our efforts to develop new theories, data, and methods be guided by the perspective that the formation and functioning of families can be profitably viewed as a set of choices made by collections of actors rather than taking family units and their structures as “given.”** As an illustration, we elaborate below what a cost/benefit approach to the family might address. The reason we place so much emphasis on the operation of choices and preferences, within constraints, is that we think that dominant theoretical traditions for understanding family and fertility behaviors all point to the ascendancy of actors’ choices in the contemporary U.S. context. Sets of conditions push us in this direction: enhanced economic opportunities for women, rising standards of living, increased educational expectations for offspring, and so forth.

3. **To make progress on understanding the changes in families and their behaviors, it is essential that we model the influence of a rich set of contexts, be they macroeconomic, cultural, social, or legal, on such behaviors. At the same time, we must examine how those contexts also may be influenced by the structure and behaviors of families.** This emphasis on the role and importance of context implies that restricting the study of the family to theoretical perspectives of individual cost/benefit analysis or rational choice models is much too limiting if one is to address questions of family organization, maintenance, and demise. Such studies need to incorporate and exploit theories, methods, and data development in which comparative approaches, across time and place, are essential to understanding and capturing the influences of context, even in a study of families in the contemporary United States.

4. **Our approach to all of these issues must be theoretically broad, inclusive, and integrative.** We acknowledge individual biology and its implication for innate human forms, limitations, and predispositions. We recognize that individuals develop relationships within (usually) coresident and cooperating groups and develop strategies for decision-making in order to meet individual and group needs. We see that both biological and decision-making processes are shaped by the constraints, opportunities, and meaning structures of the social and physical environment. We argue that this framework offers the most promising path toward greater knowledge about family variation and change.

5. **Data gathering must confront the reality that an increasingly disparate set of individuals, many of
whom do not “reside together,” must be studied if we are to gain understanding about the decision-making processes and behaviors of families and how they change. As noted above, the focus on nuclear and coresiding families no longer captures the reality of family formation in many contemporary societies. Without a wider perspective guiding sampling frames and data collection, we risk imposing severe constraints on our ability to understand what families do and do not do.

6. To improve our understanding of family decision-making and behaviors, it is important that we explore ways to better measure such constructs as “altruism,” “selfishness,” and “power” or “control,” given the key role that they play theoretically in distinguishing families from other social organizations or collectivities. The orientation of our view of the family as a collection of actors (Principle 2) suggests that there are unique components of preferences, emotions or attitudes, depending on one’s disciplinary perspective, that distinguish families as a collectivity from other social organizations or institutions. Theoretical perspectives on the family suggest that altruism and/or some commonality of preferences motivate, in part, the formation and maintenance of families. Furthermore, as developed below, theoretical models concerning the division of labor and allocation of resources within the family crucially turn on the distribution of power among family members. In our view, progress on assessing the implications of these models and on understanding how families function will be greatly enhanced if more direct ways of measuring these concepts are included in the data sets that are used to study family formation and family-related behaviors.

7. New attention must be placed on how to generate and/or identify exogenous sources of variation in contexts, incentives, and “treatments” and how to use these in combination with theoretical insights when conducting inferences about family-related behaviors.

8. We need to find ways of combining and exploiting information gathered in different ways to study family change while adequately protecting the privacy of subjects and the confidentiality of their information and in ways that minimize the burdens and costs of such data collection.

It is important to reiterate that these guiding principles must be tentative. As we shall develop below, they reflect our current assessment of the central issues facing the objectives of this project, namely the assessment of existing theories, data sources, and methods for drawing inference and the development/identification of new theoretical, data-gathering, and inferential approaches to the study of family change. As a Core Group and in the working groups, we will assemble to meet these objectives and conduct these assessments based on these principles. But we recognize that a task of this project is to re-evaluate these principles. The principles may change, be added to and/or be dropped. But, they provide guidance for the descriptions provided below of the substantive topics and methodological issues that we see as the work of this project.

A.3) WORK TOPICS

A.3.a. Introduction to the Work Topics and Organization, Activities, and Products of Working Groups

To link our overarching theoretical and methodological perspectives described above to key questions about family and fertility, we divide the project work topics into two sets of modules, shown in Figure A.3.1. The first set consists of three modules and remains at a high level of abstraction. These modules address some “big picture” issues about family and fertility change, theoretically, methodologically, and with respect to data needs.
Module 1: Household and Family Decision-making  
Module 2: The Role of Biology in Families and Fertility  
Module 3: Contexts Shaping Families and Family Change

This broad synthetic work will occur simultaneously with that on a second and larger set of modules. This second set of five modules focuses on key questions and social problems that require theorizing at a midlevel range. These substantive and empirical modules draw from the overarching frame, but in ways that reflect unique features of the particular phenomena. These midlevel substantive and empirical modules are informed by the abstract elements outlined in the framework and by advances in the first set of modules. We propose the second set of modules to take account of research and policy questions about key family decisions or life stages.

Module 4: Union Formation and Dissolution  
Module 5: Why Have Children? Biological and Social Constraints on Reproduction  
Module 6: Caring for the Next Generation: Families’ Effects on Children’s Wellbeing  
Module 7: Intergenerational Relationships: Kin Obligations throughout Adulthood  
Module 8: Family and (Paid and Unpaid) Work

We propose simultaneous work on all modules. Work schedules are synchronized so that key personnel can be involved in multiple modules and to increase efficiency (see A.5: Work Process). In describing our approach, we begin by defining sets of actors and a set of mechanisms.

**Actors:**

*Core Group:* The seven key personnel (Morgan, project PI, and the co-PIs Bianchi, DiPrete, Hotz, Sanders, Seltzer, Thomas) constitute the Core Group. As a group, they have prepared this proposal and will lead the working groups and otherwise direct the described activities.

*Working Groups:* Small groups (5-8 persons) that are assigned responsibility for the work in a given module. Each Working Group is led by a member of the Core Group, includes two other other members of the Core Group, and includes up to five consultants selected to be members of the working group. Working groups focus on conceptual or methodological problems and evaluate possible recommendations.

*Consultants:* A large, diverse set of persons who work in the substantive domains of focus. We describe the selection of consultants below in section A.5. Consultants will play several roles: (a) as working group members, (b) as *ad hoc* advisors to a working group, (c) as persons who might be commissioned to write substantive papers and/or conduct pilot projects needed for the project, and (d) as reviewers of the proposed final reports.

*Stakeholders:* NICHD staff, principal investigators for current data collection efforts, staff members at private foundations that sponsor work on families (e.g., the Russell Sage Foundation, the MacArthur Foundation, the William T. Grant Foundation, the Alfred P. Sloan Foundation), members of the policy community, and, of course, the broad research community.
Activities and Products:

Meetings of Working Groups: Each Working Group will meet (in person, by telephone, and/or by video conferencing) to: (a) discuss key issues that are relevant to their initial charge; (b) identify and refine the focus of their charge; (c) identify outside consultants that may provide ad hoc input to the working group and/or that might be commissioned to write targeted papers and/or conduct pilot projects; (d) identify and share information relevant for development of reviews of the existing literatures and data sources; (e) develop the issues to be addressed in the working group’s technical papers and reports.

Meetings (or Other Types of Exchanges) with Non-Working Group Consultants: A set of consultants will provide the working groups with their views through attendance at selected working group meetings and/or through written reports to the working group. The nature of their interaction with the working group will be determined by working group needs.

Conference: A public forum for presentation of our project work and to assess its link with ongoing or planned work. We propose one conference at the conclusion of the project to get final comments on our recommendations and to assess them vis-à-vis related efforts and ongoing empirical research.

Working Group Literature and Data Review Reports and Technical Reports of Findings and Recommendations: Each working group will have responsibility for: (a) preparing reviews of extant research and existing data sources, including descriptions of key findings, the strength/weakness of empirical evidence, the availability and quality of data; and (b) Technical Reports of the group’s findings and recommendations, including identification and preliminary assessments of new approaches and recommendations for future work in their assigned area (module).

Commissioned Papers: Working groups may find it necessary to commission one or more individuals outside the Core Group (and usually outside the working group) to write papers. These authors are knowledgeable in key areas known less well by the Core Group and working group members. These papers are meant to inform the Core Group and working group members of knowledge and strategies relevant to key questions. Commissioned papers can translate highly technical materials and identify aspects most relevant to studies of family/fertility change. Illustrative topics are discussed in Section A.4 and selection of topics and authors is discussed Section A.5.

Pilot Projects: Projects aimed at assessing the feasibility of particular research strategies. Pilot projects are commissioned to Core Group members, consultants, or others. Pilot projects are discussed further in Sections A.4 and A.5 below.

Organizing the Work of the Project:

Our general strategy for organizing the work of this project is as follows: Two tasks will begin immediately: 1) a large set of consultants will be identified and approved by NICHD (additional consultants will be added to the list throughout the project period [see section A.5]), and 2) literature reviews will be drafted for each module by Core Group members. The literature reviews will assess the adequacy of the general framework and the centrality of the questions discussed in the Key Questions and Challenges section of each module. The literature review will also identify a set of priorities for conceptual and methodological work in this area and evaluate the relevance of ongoing data collections. The Core Group, selected consultants, and other stakeholders in this process will review this work and the priorities identified. This review will help identify two or three areas for intensive work within each module. This work may also identify areas of knowledge not easily accessible by the Core Group. A summary of Working Group plans (at the 60-day mark) will be made available for NICHD review and
posted at the project web site.

The Core Group will meet jointly to review and discuss the literature reviews and to assess suggested priorities and areas where additional expertise is desired. The Core Group will designate working groups and assign commissioned papers. They will also draft a request for research in a given area and will subsequently commission pilot projects in high-priority and innovative areas. All of these activities will be done in consultation with NICHD staff.

In later phases of the project, the results of literature reviews will be revised and recommendations formulated based on the results of pilot projects, the input from commissioned papers and ad hoc consultants, and research and discussions of the working group. Details of our work plan and the schedule of activities are discussed below in Section A.5. We first turn to a description of the eight modules, beginning with the broad, orienting, and conceptual models.

**A.3.b Orienting, Conceptual Modules**

In this section, we discuss the content and key issues and questions for each of our three conceptual modules. For each module, we begin by providing a discussion of the background and motivating issues that characterize its purview. We then provide a list of key questions and issues that we have identified — to date — and that we will ask the working group for the particular module to address. These lists of questions and issues represent a starting point for the working groups. As the groups meet and interact, we fully anticipate that these lists of key questions and issues will be modified, refocused, and/or expanded. Where possible, we also suggest some preliminary papers and/or pilot projects that might be undertaken and/or commissioned by these groups in order to help address the key questions and issues that arise in a particular module. These papers and pilot projects should be viewed as illustrative of the types of products that we anticipate will emerge from the activities of these working groups. More complete description of these illustrative papers and/or pilot projects is provided in Section A.4, after we have outlined all eight of our planned modules.

**MODULE 1: HOUSEHOLD AND FAMILY DECISION-MAKING**

**Background and Motivating Issues.** Individuals benefit from being part of a family, but these benefits also come with costs. Benefits and costs are often distributed unequally among family members. Insight into why individuals, even those who receive fewer benefits of family membership than others, remain in families comes from considering the types of goods and services families provide. These include “public goods,” such as children, whose benefits each family member can enjoy without compromising others’ enjoyment.\(^2\) Families also provide unique goods and services, including a sense of caring, that distinguishes family-produced services from those available in the market. For instance, meal planning and cooking have social meaning for mothers, who express love for their husbands and children through this aspect of housework (DeVault 1991). Finally, the family as a social institution is often thought to provide goods and services more efficiently than can be done by an individual or other organizational entities. Families may be better able to resolve differences in tastes and interests in resource allocations because families are also guided by altruism or caring, which enables members to “internalize” these differences better than members of other types of organizations. Families may also be more efficient because members know each other well and share a common understanding of their obligations, which reduces the transaction costs of family production (Pollak, 1995). Efficiency in families also comes from...
the specialization of family members in specific activities. The classic example of this is the breadwinner/homemaker division of labor which Parsons and Bales (in sociology) and Becker (in economics) identify as beneficial to the family. The benefits of this kind of efficiency, however, must be weighed against the potential costs from loss of privacy and compromises between individual family members’ divergent preferences.

Much of what social scientists know about family decision-making comes from research that assumes that “family” and “household” are the same thing. Yet recent changes in U.S. family life show clearly that family membership and coresidence do not always coincide. Children live with their parents and unrelated cohabiting partners; fathers and children live apart because of divorce and nonmarital childbearing; and older parents and adult children exchange resources because of family obligation, even when they live in separate households. The extent to which family members live together is an important outcome of family decision-making, as when a young adult child leaves the parental home. The distinction between family and household highlights another central concern in theories about family decision-making: Who are the relevant actors? Put another way, models of how families make decisions must first consider who is in the family and whether each family member has a voice in the decision. Decision-making theories usually assume that husbands and wives bargain about how to distribute resources, but children’s preferences also affect family decisions. Children’s active role in family decisions probably increases throughout childhood and adolescence as they begin to establish independence and consider moving away from their parents’ home. Our work in this module pays close attention to differences across contexts in who is in the family, the correspondence between family and household composition, and the identification of relevant actors in decision-making processes.

The processes that underlie family or household decision-making affect how much cooperation benefits that unit. The decision-making process will also influence the distribution of those benefits among the family members. There are several models for the ways families make decisions. These models vary in dimensions, including whether or not all family members (or just the family “head”) have a say in the allocation of resources and responsibilities, and when others in addition to the household head have a say, what happens when a cooperative solution to conflicting individual interests is not attained. Lurking behind these models is a clear concern for the relative power of men and women in relationships and for the relative amount of surplus that each gains from marriage. This concern is well placed. The change in fertility and family choices over the last 40 years has been coincident with the growing economic and social independence of women in most Western societies. At the same time, options for women’s family and work roles changed, and norms about what is “appropriate” behavior changed. For instance, delayed marriage increases the risk of out-of-wedlock childbearing, and a rise in dual-earner married couples suggests that the growing economic and social independence of women may have changed the benefits men and women get from marriage compared to their alternatives.

The vast majority of studies in the social science literature have treated family decision-making as if the family operated like a single individual with one member making all decisions. This could occur if the husband, by social convention, by law, or through some other mechanism, retains all decision-making power within the family. Alternatively, from an observationally-equivalent point of view, this occurs when all family members share the same preferences. While this model of a “unitary” family has been an extremely powerful organizing principle in the literature and has provided the theoretical foundation for a broad array of important insights into the workings of the family, it is predicated on a set of assumptions that are difficult to reconcile with the realities of social and demographic behavior. Divorce provides an example. Prior to a divorce, the model assumes a husband and wife may be treated as if they have identical preferences (or as if one of them makes all decisions); after the divorce, no restrictions are placed on the preferences of each member. This may be reconciled by assuming that preferences depend on marital status. In that case, it is very difficult to develop empirically-testable models of reasons for divorce or to evaluate the effects of divorce on well-being. If individuals are assumed to have preferences that are time- (or state-)invariant, then it is not clear how to think about divorce in this model. Leaving the nest, cohabitation and marriage, birth of a child, and death of a partner
are all key lifetime demographic events that are also difficult to model in the framework of this “unitary” family or household.

The theoretical literature has sought to model family decision-making from a perspective that highlights the individuality of each family member. Many of these models have at their core the intuition that individuals combine into a family or a household to share the benefits of their cooperation and that these benefits are shared among them in some way about which they can agree. When the benefits of this sharing exceed the costs, they continue to make decisions together. But should the costs exceed the benefits, some form of reorganization will occur. This may be a reallocation of the costs and benefits within the present family structure (e.g. a rearrangement of household responsibilities), or it may involve a change in family structure (e.g. divorce or a family member’s leaving the home).

The literature has not reached a consensus on the precise mechanisms that underlie family decision-making in these “collective” models of households. Furthermore, it has turned out to be difficult to distinguish many of the proposed models from one another and, in some cases, from the unitary model of the household. For instance, the breadwinner/homemaker division of labor has been variously interpreted as evidence of (a) two domains of authority in which each spouse controls production and allocates resources within one sphere; (b) strong social norms about what men and women should do, which, if violated, severely threaten individual identity; and, (c) women’s comparative advantage for homemaking either through biological predisposition or socialization. Even studies using survey responses about who makes decisions and how couples decide about routine and contested aspects of the division of labor and family resources fall short of identifying the mechanisms that underlie family decision-making (Szinovacz 1987).

To better understand the processes underlying household and family decision-making, seminal work by McElroy and Horney (1981) and Manser and Brown (1980) formalized the treatment of family decisions as the outcome of a bargaining process in which the share of the benefits of family life are distributed to each member in proportion to their bargaining power. A key insight of this work is that power did not necessarily flow from control of income but instead is derived from factors outside the marriage, including factors that are not under the control of the couple such as marriage opportunities, labor market opportunities, the legal and institutional environments, and social norms (see Blumberg and Coleman (1989) for a similar observation from the sociological literature). This discussion highlights the integral role of the social and institutional context (discussed in Module 3), the “marriage market” (Module 4), and the labor market (Module 8) in understanding how families make decisions.

According to these bargaining models, the fruits of organizing as a family – including income earned by all members – are distributed according to each member’s power to assert his or her preferences over other members. The basic intuition of this model is extremely powerful. It suggests that as one household member’s bargaining power increases, he or she should be able to negotiate a greater share of the benefits associated with being a member of that family, the “family surplus.”

One model that has been subjected to extensive scrutiny assumes that family and household decisions are the outcome of what economists call “a cooperative Nash bargaining game.” In this model, all family members are fully informed about the other family members’ motives, preferences, and behaviors. Each member makes decisions taking into account each other family member’s “best response” to his or her decision. The object is for each individual to choose what is in his or her best interest, taking into account that all other family members will be doing the same. Under these assumptions, each member’s share of the “family surplus” depends on his or her alternatives outside that family living arrangement. This may be, for example, the person’s alternative, if the couple were to divorce or the adult child were to leave the parents’ home. This is important because it identifies the source of an individual’s bargaining power as his or her options outside the family arrangement.

A similar intuition underlies all models of cooperative bargaining in which information about other family members is complete. While this assumption about information seems reasonable in the context of repeated interactions of family members, the assumption that decisions conform to a
cooperative game is more controversial. Lundberg and Pollak (1993, 1994 and 1996) discuss models in which family members can behave cooperatively, but if the members cannot reach a cooperative agreement, they can behave uncooperatively while still remaining in the family (instead of leaving for an extra-family alternative). A possible noncooperative equilibrium is a division of labor with separate spheres of influence for women (home and children perhaps) and men (e.g., money). The model suggests there is some loss of family surplus from failure to coordinate. In contrast with cooperative models, these noncooperative models predict that the allocation of the “family surplus” does not depend on options outside the family, but instead depend on the extent to which one family member can credibly threaten other members’ well-being by not cooperating. It is easy to see how these models provide important insights into the nature of interactions in which there is likely to be substantial disagreement and, therefore, conflict such as the relationship between parents and their children and decisions in households with complex structures involving more than, for example, a couple and their children.

To distinguish among the cooperative and noncooperative models requires good information about the validity of assumptions – for instance, how well do family members understand each other’s preferences and alternatives outside the relationship? What constitutes family surplus is also an important question at the intersection of economic and sociological models of decision-making. Compared to fathers, mothers may define children’s basic needs as greater and requiring a bigger investment of family resources. Thus, from a mother’s perspective, there is less family surplus than from the father’s perspective. Understanding how social definitions affect when bargaining occurs and what its outcome will be are important avenues for new interdisciplinary research.

In recent years, the theoretical literature on models of collective decision-making has made considerable progress. New work includes models of the development of social capital or, more generally, the formation and operation of “groups” or “clubs” (Putnam, 1995; Fukuyama, 2000; Dasgupta and Sirageldin, 2000; Qand Laibson, 2002; Ellickson et al. 2002). There is a direct link between the difficulties of coordination in these models of behavior in nonfamilial settings and the coordination problems facing families. Several authors have discussed insights from social theory in the context of family decision-making (e.g., Astone, Nathanson, Schoen and Kim, 1999). An important body of theoretical work on “collective” models of family decision-making integrates these literatures with insights from bargaining models of family decision-making (Chiappori, 1988, 1992, 2000; Browning and Chiappori, 1998; Browning, Bourguignon, Chiappori and Lechene, 1993). One line of models has at its foundation the presumption that family decision-making results in what economists label “Pareto efficiency”—that is no family member could be made better off without someone being worse off. Put another way, the “family surplus” pie is shared among family members so that no crumbs are left on the table. While it seems intuitively reasonable to assume that families will seek to maximize the total benefit of cooperative behavior, it is not obvious that this assumption is true. Indeed, there are many plausible scenarios in which family members may not cooperate fully and the “family surplus” pie will not be shared efficiently. This may arise if cooperation changes the bargaining power of one member relative to another, if there are strategic benefits from not cooperating, or if members place different values on trust, risk, or altruism. It should not be surprising then that the assumption of efficiency turns out to imply empirically-testable restrictions on decision-making without making additional assumptions about the precise nature of the underlying negotiating process. The notion of “family surplus” lies at the core of these models, and its distribution among members is determined by the power each member has in asserting his or her preferences over others.

 Whereas there have been important theoretical innovations in this literature, empirical evaluation of models of family decision-making have lagged far behind. There is a large literature on the changing role of women in the family and on the increasing tensions between family and work. As social norms about the role of women in society change and as women enter the labor market and earn wages, it is reasonable to suppose that women’s bargaining position in the family improves. Many studies have focused on resources and compared the way income earned by a woman is spent relative to income earned by a man. Typically, this research finds that women’s income is associated with greater spending
on goods and services for children and women as well as on substitutes for work in the home such as restaurant meals and timesaving durables. While these studies are of considerable interest at a descriptive level, it is difficult to interpret the results in terms of models of family decision-making. According to the theory outlined above, family members negotiate over both the allocation of income and the allocation of time. Thus, in these models, whether a man or woman works and how much the person works are themselves an outcome in the family negotiation process and cannot be treated as an exogenous driving force behind change in decision-making processes. This issue is taken up again below in Module 8. (See Blumberg, 1988; Behrman, 1994; Guyer, 1998; Triest, 1998; Lundberg and Pollak, 2002 for reviews).

Studies have attempted to address this concern by using individuals’ wealth (or income from wealth) as an indicator of power (Schultz, 1990; Thomas, 1990). If, however, savings are part of the family negotiation, then accumulated wealth may be treated as an outcome of that decision-making process rather than a driving force determining decisions. The theory suggests, therefore, that identification of the processes underlying decision-making within a family calls for variation in factors that plausibly affect “bargaining power” but are not subject to negotiation within the family. This might include opportunities outside the family (McElroy, 1990) such as laws or social norms regarding divorce and the division of resources at the time of divorce; remarriage opportunities; and broader changes in the social, legal, or economic environment that affect family members in different ways (see Module 3 below). Lundberg, Pollak, and Wales (1994) provide a very clever example. In the 1980s, the United Kingdom switched from paying public child benefits through the tax system (and thus primarily to men) to paying the benefit directly to women. Arguably, control over resources was shifted within the family by an outside force. According to the “unitary” model of the household, there should have been no change in spending patterns. In fact, the change in the way the benefit was paid resulted in a switch to increased spending on children’s and females’ clothing and reduced spending on males’ clothing. This evidence is not consistent with the assumption that all family members share the same preferences. Alternative explanations include that, compared to fathers, mothers know more about children’s needs (e.g., because they help them get ready for school in the morning) or have different standards for what children need.

This project explores the outcomes of family decision-making, as well as the processes that inform decisions, in order to improve theory and data on decision-making.

Pension payments in South Africa have been examined in a framework similar to that used by Lundberg and her colleagues (Case and Deaton, 1998; Duflo, 2002; Bertrand, Miller, and Mullainathan, 2002). Following McElroy, several papers have examined the effect on family choices of variation in divorce laws (Carlin, 1991; Frieberg, 1998), marriage market opportunities (Chiappori and Fortin, 2002), resources brought to a marriage (Quisumbing, 1994; Thomas, Contreras and Frankenberg, 2003), as well as (publicly-provided) transfers in the event of a divorce (Rubalcava and Thomas, 2003). The vast majority of this literature leads to a single conclusion: to understand the dynamics of family decision-making, it is necessary to take seriously the preferences and constraints that each member faces. As one member’s “bargaining power” changes, the evidence indicates that the allocation of the family surplus pie also changes. Yet the precise meaning of “bargaining power” and the magnitude of these effects remain important unanswered questions in the scientific literature. This research project will provide new insights into these questions.

In addition, the empirical predictions of “collective” models of family decision-making lie not in highlighting the importance of individuals in decision-making, but revolve around assumptions about whether family decisions are “Pareto efficient.” If they are, one can think of the family as making decisions in two stages. In the first stage, the family divides all resources and responsibilities, and, in the second stage, each member chooses how to spend his or her resources. This implies that a change in “bargaining power” will only affect the first stage of the process, namely the splitting of the “family surplus.” Thus, from an empirical perspective, the effect of realignment of power in the household is much like a shift in control over income. This means, for example, that if there are two or more sources of power, then the ratio of the effects of each source will be the same for all decisions. This is a remarkable prediction and, again, its truth is not immediately obvious. It has been tested in a small number of studies.
and has been rejected in only one case (Browning, Bourguignon, Chiappori, and Lechene, 1993, 1994; Thomas and Chen, 1996; Browning and Chiappori, 2000). In an important study, Udry (1996) tests the prediction using information on production of farmers (in West Africa) and concludes that families could increase their total income through greater cooperation. According to this result, the family is not an efficient organization, and changes in norms or laws could make some people better off without making anyone worse off. Understanding why is an avenue that is ripe for further investigation. A potential explanation revolves around the role of social norms and how the meaning of control over resources varies with context.

In fact, social context has been shown to play an important role in affecting family decision-making. Research in developing countries is instructive on this point. Early work on resource control sought to improve the lot of female agricultural workers in West Africa by targeting technology to women so that they might introduce new crops and earn higher incomes. When those crops were shown to be successful, males took over growing the crops (Dey, 1997). While traditional male and female roles have been used to draw inferences about the distribution of power within households, this example highlights the importance of treating the context as responsive to changes in family behaviors. Clearly the treatment of context as endogenous to the decision-making process renders these models extremely complex.

The model where families bargain to a “Pareto Efficient” solution places restrictions on the role of variation in the social and economic environment. These restrictions provide new ways to identify some of the processes that underlie decision-making within families and, specifically, can distinguish between alternative models of cooperative and non-cooperative behaviors. This research module will confront existing data with these new empirical tests in order to provide a fuller understanding of the nature of family decision-making with a view to providing a comprehensive reassessment of the existing scientific literature. Clearly, there is much to learn about family behavior by contrasting the evidence regarding decision-making across different social, economic, and legal contexts. This project will synthesize the evidence from a broad multidisciplinary perspective with a view to eliciting key lessons about how family members solve problems of coordination and distribute the benefits of family life among members. We anticipate that models for decision-making developed in one context may not apply to all contexts. We integrate the activities of this module with those developed in the module on social contexts (Module 3).

Economic models of family decision-making and bargaining would be greatly enriched by taking account of insights about the process of conflict and conflict resolution in the psychological literature. Individuals differ in their willingness to express disagreements and in what economists might call their “taste” for battle. Psychological research that includes measures of physiological responses to negative affect suggest that men’s greater sensitivity to the physiological strain of negative interactions fosters men’s efforts to minimize bad feelings in marital interaction by withdrawing from conflict or adopting a more “rational” stance compared to women’s more “emotional” approach (Gottman, 1994). This is consistent with related research on gender differences in the social dynamics of marital conflict (Cummings and Davies, 1994). A more complete integration of findings like these with social differences in women’s and men’s power are particularly important for models of family decision-making because of the important role gender plays in defining family roles and potentially competing interests.

**Key Questions and Challenges to be Addressed by Working Group.** Based on the above discussion of the central issues related to family formation and the decision-making of its (potential) members, we have identified the following initial set of key questions and challenges that this Module’s Working Group shall address:

- What are the unique features of the “family” as an institution that coordinates the sometimes conflicting goals and preferences of a collection of individuals? What mechanisms, structures and devices do family members use to resolve conflicts within families? What roles do biology,
geographic and social proximity play in affecting the costs and benefits of the “family”? 

- What behaviors, decisions and characteristics of potential family members are associated with greater benefits of the family as a social organization? How are those benefits distributed and what constitutes “power” in decision-making processes?

- What theoretical perspectives are likely to inform the modeling of family decision-making and how can they be integrated into a more informative theoretical framework?

- How are family decision-making processes modified by variation in norms, social and economic context?

- What empirical strategies are likely to successfully identify sources of relative power of family members and the structure or “response functions” that affect decisions within families?

- What data sources will be the most productive for the analysis of family decision-making and the balance-of-power among individuals that may constitute a family?

- What are the key data constraints that limit empirical implementation of models of family decision-making? What innovations in survey design and survey instruments are likely to be useful for future research on the dynamics of family decision-making?

- How can measures of concepts in existing and promising models of family decision-making be meaningfully constructed? For example, how might “power” or “control” be measured? What methods might be used to measure “altruism” and “selfishness” and, more generally, preferences of existing and potential family members?

**MODULE 2: THE ROLE OF BIOLOGY IN FAMILIES AND FERTILITY**

*Background and Motivating Issues.* Family members are the set of people who collectively make decisions on the function of the group. Three important factors affect the formation and maintenance of families. The first is the self-interest of individual family members; individuals enter into families, remain in them, or leave them based on “what is in it for them.” This motivation and how it affects decisions about family formation and dissolution, as well as resource allocations, was the focus of Module 1. Second, the context in which individuals and families function matters; it both affects and is affected by the self-interest of individuals. But culture, social institutions, technology, and the physical environment all condition self-interest and both encourage socially-useful emotions and limit disruptive ones. The role and importance of context for family formation, family maintenance, and family-related behaviors are the focus of Module 3.

A third factor is the subject of this module. People are biological creatures, inheriting an evolutionary history, endocrine process, and physiological form. This history helps us to understand human emotions and physical constraints, factors that are clearly important to family decision-making. It is difficult to think about why families exist without thinking about “love.” It is difficult to think about marital fidelity without thinking about “impulse control.” And it is difficult to think about marital conflict without thinking about “aggression.” While evolutionary biologists provide well-developed theories on the relationship between emotions and family choice, increasingly, microbiologists are finding specific pathways associated with these emotions. It now appears clear that both basal (base) as well as reactive levels of hormones vary across individuals. There is also increasing evidence that these differences are correlated with individual differences in behavior. Finally, it is difficult to think about childbearing without thinking about reproductive physiology and then about men and women making choices within these biological constraints in order to ensure, limit, and time reproduction. We argue below that “love,” “impulse control,” and “aggression,” as well as other emotions are likely the result of evolutionary processes and – instead of being in conflict with self-interest – in fact support it. Further, physiology,
particularly reproductive physiology, is an important element in individual choice.

We now turn to major mechanisms within biology and social environment that are important to answering such questions as: “Why do families exist?” and “What are the gains to family life?” We offer three perspectives on the role of biology in family formation and maintenance, namely those drawn from Evolutionary Biology, Behavioral Endocrinology, and Physiology.

**Evolutionary Biology.** Altruism (or love) is perhaps the greatest – and most elusive – motivation for the formation and maintenance of families. Just as economists think about individuals making choices in their own self-interest, the vast majority of evolutionary biologists think that traits develop when they confer a reproductive benefit to individual organisms. Biologists discuss two forms of altruism that might be better described as “prudence.” Kin-selection suggests that sacrifice for kin will be related to the degree of genetic relatedness between individuals. Since children have half the genes of a parent, a parent would be willing to lay down his or her life to ensure that two or more children survive to reproduce. This strategy maximizes the propagation of the parents’ genes. The problem with kin-selection is that it does not explain well the many acts of kindness that parents give children that do not affect the chances of the child’s living to reproductive age, as well as the many acts of kindness that people give genetically-unrelated individuals (including strangers and adopted children).

One resolution is that people act benevolently – expecting reciprocal acts of kindness in the future – and that this aids individual survival (Reciprocal Altruism). Reciprocal altruism works best when individuals can trust each other. Without trust, reciprocal altruism may still occur if there are repeated interactions with known individuals and a memory of past acts. Humans are perhaps the best organisms to meet this condition. The problem with reciprocal altruism is again that there are many examples of selfless acts with no reasonable expectation of reciprocation (e.g. the care given to a dying spouse).3

Trivers (1971) suggests that the coevolution of mediating emotions might support reciprocal altruism. For example, “love” may make a person reciprocate even when it is not in his or her narrow self-interest to do so. If all individuals have love, this would support reciprocal altruism. An important shortcoming is that Trivers does not explain the evolutionary advantage of “love” to an individual, nor how it would be a trait selected in an evolutionary equilibrium. In fact, “love” puts an individual at a competitive disadvantage in a world where others do not have “love” (e.g. transfers resources to others who will not reciprocate). Yet love on the part of at least some clearly benefits the group. Other biologists recognize that some traits may benefit a group, but these same traits may not benefit an individual. This suggests that group-selection rather than individual-selection may be at play. However, selfish members of altruistic groups would have an evolutionary advantage over their more altruistic brethren, and it would not be long before the group became selfish. Wilson (1975) discusses at length the limitations of the group-selection hypothesis.

The dilemma then for evolutionary biologists is that forms of altruism that benefit groups but not individuals are selectively disadvantaged in an evolutionary sense. Yet we see many examples of such selflessness in human populations, and they appear to be quite persistent. In his influential book, *Passion Within Reason*, Robert Frank (1988) proposes one way to resolve this apparent dilemma: evolution has hardwired emotions to solve what he calls “the commitment problem,” and solving this is in the interest of individuals. Following Trivers, he suggests that emotions are a binding force that allow individuals to do what they would like to do rationally but that they cannot do without coordination with others. For example, there are many benefits to marriage, and individuals might want to enter into binding agreements with their partners in order to reap the full gains from their partnership (including substantial investment in the relationship of both people). However, each realizes that if it were only material gain keeping them together, then if one of the partners was unable to uphold his or her end of the “production

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3 A second technical problem is that in most models of reciprocal altruism the population would evolve so that either everyone or no one could be trusted. It appears that trustworthiness varies a great deal across people and contexts.
contract,” the partnership would likely dissolve. Knowing this, people would be reluctant to invest heavily in partnerships, something they would like to do (and that might even bring more material gain).

Below we discuss cultural and other kinds of institutions that foster commitment from outside the marriage, but Frank suggests that “love” itself fosters commitment. If people marry for “love,” then marriages can sustain unexpected problems that threaten marital happiness. This allows people to do what they wanted to do in the first place: invest in an ongoing partnership. Frank shows that as long as it is possible – but not cheap – to identify people who truly have emotions of “love,” “honesty,” etc., an evolutionary equilibrium will allow for some, but not all, individuals in a population to have these traits. Further, Frank cites evidence that individuals in marriages that appear to be “exchange-oriented” (that “every positive or negative action by one individual should be met by a similarly-weighted action by the recipient”) are less happy than marriages in which partners do not keep a mental tally of such exchanges.

Research on the extent to which altruism is present in any organized group and on the factors that influence the extent of its presence remains remarkably primitive. Yet it almost surely plays a central role in understanding the structures of families, how they are formed, and how they function. Surprisingly little is known about what drives altruism, or sustains commitment, and how binding ties vary across gender, age, cohorts, socio-economic groups, race or ethnicity, and institutional and cultural settings.

Altruism is by no means the only passion that evolutionary biologists have suggested as having evolutionary roots. Others include notions of fairness, honesty, and duty. The arguments for the reproductive advantage of fairness, honesty, and a sense of duty to groups and their potential advantage to individuals by helping to solve the commitment problem run parallel to the advantages of altruism. And further, an evolutionary equilibrium could exist where some, but not all, people were fair, honest, and possessed a sense of duty.

There is one additional emotion that deserves special attention: impulsivity. One of the best-established empirical regularities from both studies on humans and animals is that immediate rewards appear more attractive than can reasonably be reconciled with cost-benefit analysis alone. Behavioral psychologists believe that when a payoff is immediate, it is just too salient to ignore – and it overwhelms a person’s rational judgment. Evolutionary biologists suggest that when selection pressures are intense, it is only current payoffs that matter – for future payoffs cannot accrue if an organism does not survive through current hardships. Therefore, an ability to devote a great deal of attention to present conditions (especially in an uncertain environment) may have bestowed a survival advantage on individuals.

Unbridled, the impulse control problem would in contemporary society lead to many acts that in the short run benefit an individual but in the long run do not. When tempted by opportunity, individuals would cheat on a spouse even when the losses from doing so far outweigh the benefits in any reasonable calculation. The teenage years are ones of particular impulsivity (likely tied to changing hormone patterns) and impulse control problems may be key to explaining unprotected sex. Other emotions may play a special role as a self-control device in these cases. If feelings of guilt (or love for a spouse) are present at the same time as feelings of temptation, the immediacy of guilt (or love) can counterbalance the immediacy of temptation. And if – in an evolutionary equilibrium – some, but not all, people possess guilt, love, and other emotions, then reputation can emerge as a visible way of inferring who possesses these helpful emotions. For if everyone is tempted, only people who also possess guilt will not cheat or otherwise give into temptation, and – over time – those without a conscience will be observed cheating.

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4 Pigeons, when given a choice of a small amount of food obtained in 30 seconds or a much larger amount in 40 seconds, choose (by pecking a button) the larger amount of food. But when the smaller amount is available immediately versus the larger amount’s being available in 10 seconds, pigeons often choose the smaller (but more immediate) amount. Similarly, when humans are given the choice between $100 in 28 days or $120 in 31 days, most people respond in the rational way by picking the $120 option (no reasonable investment pays 20% in 3 days!). But when $100 is offered today versus $120 offered three days from now, most individuals choose the $100 option (these examples are described in Frank, (1988)).
and develop a reputation for it.

Research on the factors that influence the extent to which altruism, guilt, honesty, and other emotions are present remains remarkably primitive. Yet emotions almost surely play a central role in understanding the structures of families, how they are formed, and how they function. Surprisingly little is known about what drives altruism, or sustains commitment, and how binding ties vary across gender, age and cohorts, socio-economic groups, race or ethnicity, and institutional and cultural settings. Further, there are standard tests in psychology to measure emotions such as altruism (for example the Thematic Apperception Test (TAT)) and standard laboratory “games” to measure similar emotions. But the link to behavior, particularly within the family, has not been made.

**Behavioral Endocrinology.** One area of biology that has recently made major inroads into population research is behavioral endocrinology. Behavioral endocrinology studies the relationship between hormones and behavior and is at the forefront in studies of adolescents, children, and families. For many years, relationships between endocrines and behavior were suspected because there was macrolevel evidence on such relationships (that is, correlations with groups known to have an elevated level of some hormone displayed more of a particular behavior, for example, aggression). However, only recently has the technology to measure endocrine levels become so inexpensive and noninvasive that it is possible to collect samples on a wide range of individuals. A major advance was the ability to measure endocrine levels in saliva rather than blood serum samples. This has allowed social science researchers to collect fluid samples on a large population of individuals for whom more standard social science survey data are also collected.

Population researchers can now correlate basal and reactive hormone levels with many behaviors at the individual level. Also at the individual level, they can correlate environmental and developmental factors with hormone levels. Researchers have shown that levels of hormones are correlated with individual differences in developmental trajectories and family relationships. While this work is a major advance in our understanding of family dynamics and fertility, this field is in its infancy. To date, studies are best seen as descriptive, with few causal relationships between endocrine levels and behavior that are well-established.

To date, two endocrines, testosterone and cortisol, have been the focus of research on family and fertility behavior. (For a more complete review, see Booth, Carver and Granger, 2000). There may be great opportunity for future research on families and family-related behaviors to use this innovative source of data together with other data sources and collection techniques in order to better understand causal connections between the endocrine system and behavior.

**Testosterone** ($C_{19}H_{28}O_2$) is a steroid hormone that controls the development and maintenance of masculine characteristics (an androgen). The primary source of testosterone in men are the testes and the adrenal glands. For women the primary source is from the ovaries and the adrenal glands, with the level of testosterone in women being several times lower than in men. The hormone is responsible for the development of male secondary sexual characteristics, as well as aggression and other forms of dominant behavior. Testosterone is correlated with many behaviors, of which the most researched is aggression. But it is also correlated with many choices related more directly to the family and fertility in both men and women. A study by Udry, Morris and Kobenock (1995) finds that women with high basal levels of testosterone were less likely to marry, and assigned a lower priority to having children. They also report enjoying childcare activities less. Cashdan (1995) reports that women with higher basal testosterone levels reported being less in need of a partner and had sex with more partners. Testosterone has also been linked to childrearing and marriage. Storey, Walsh, Quinton, and Wynne-Edwards (2000) report that basal testosterone levels in men drop immediately following the birth of a child. Mazur and Michalek

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5 For example Booth and Osgood (1993) report that troubled youths with high levels of testosterone were far less likely to desist from crime as an adult than youths with lower levels of testosterone.
(1998) find that unmarried men had high levels of testosterone but that these levels decreased following marriage. It is possible that the lowering of testosterone may be crucial to carrying out the nurturing role of being a good father or husband. From an evolutionary perspective, this could be the selected biochemical mechanism that encourages commitment (discussed above).

Cortisol \((C_{21}H_{30}O_{5})\) is a steroid hormone produced by the adrenal cortex that regulates carbohydrate metabolism and maintains blood pressure. Cortisol regulates the metabolism, the fight-flight response, and aspects of learning and memory. As such it is crucial in enabling humans to adapt to stress and environmental change. Cortisol has been of particular interest, as levels can be quickly affected by a variety of environmental factors and stimuli. Both the basal level and response level of cortisol vary across individuals and may be a key to individual reactions to stress. Why there is this variation across individuals is likely a combination of genetics and early childhood environmental factors. For example, studies of institutionalized Romanian orphans show that severe social and tactile deprivation interferes with the normal cycle of cortisol production (Carlson and Earls (1997)). But many less severe circumstances also are implicated in changing cortisol production. Flynn and England (1995) report that children in homes with high levels of conflict, punishment, and fighting have higher cortisol levels. Further, they report that changes in family structure, such as men moving in and out or living with a stepfather, also raise levels of cortisol. Because cortisol is so strongly related to childhood stress, it is perhaps not surprising that it is also related to poor child development. In children, high cortisol levels were associated with high levels of social difficulty, withdrawal, and anxiety and low levels of feelings of control, mastery, and agency (Granger, Weisz and Kauneckis (1994)).

While we discuss only testosterone and cortisol here, several other endocrines are now typically measured in saliva and blood samples and have also been linked to important aspects of family and fertility choice. Dehydroepiandrosterone (DHEA), Estradiol, Melatonin, Progesterone, Oxytocin and Androstenedione can all be measured and have been linked to family behavior as varied as the timing of sexual intercourse, the feelings of attachment to children, gendered behavior, parent-child relationships, courtship and mating, and marital stress and marital dissolution.

While the use of bioassay data to study behavior is an exciting new field, most of the studies cited above should be viewed as descriptive. Bioassay technology is innovative and useful, especially when incorporated into longitudinal survey data collection. However, bioassay data share many of the shortcomings of standard social science data collected in surveys. Typically, endocrine levels are measured at a point in time. While there have been some experiments in which subjects were manipulated to measure response levels of endocrines, this type of bioassay collection often has not been linked to survey data. In addition, because endocrine levels are both related to behavior, and are affected by behavior, causality is extremely difficult to establish. For example, the fact that women with higher testosterone levels have more sexual partners might result either because testosterone lowers partner selectivity or because sexual variety increases testosterone. And the results on cortisol and childhood developmental problems are equally vexing (e.g. while animosity in a home may raise a child’s cortisol levels and his or her behavioral problems, this does not establish that cortisol induces bad behavior – in fact, it could be the mechanism that limits it). The use of bioassay data could benefit greatly from more careful observational and experimental analyses.

**Physiology.** A final aspect of biology that affects family and fertility choices is physiology. Human beings, perhaps for evolutionary reasons, have physical limits and characteristics that constrain their choices. Some aspects of physiology have long been recognized and incorporated into demographic models. For example, Gary Becker’s theory of specialization is based on the notion that because women bear children and have a greater biological investment in children, women specialize in home production while men specialize in market production. Since the time that many of these models were conceived, technological advances and changes in the return to physical attributes (with a changing economy) make revisiting these models worthwhile. For example, while male upper body strength gives men a comparative advantage for market work in preindustrial and industrial societies, the movement to an information-
based economy mutes this advantage.

We believe that continuing the tradition of embedding aspects of physiology into choice-theoretic models of family-related behaviors has great potential to help explain commonalities of family and fertility choices across societies. In addition, the interaction of features of physiology with the changing levels of technology in a society may help explain changes over time in family and fertility choices. While many aspects of physiology are likely central to choice, one aspect, women’s experience of menopause, serves as an example.

One undeniable fact about human reproduction is that women go through menopause, after which fertility is zero. This is driven largely by biology. A typical woman is born with four million eggs. Each month, one egg ripens and passes into the uterus and about 10,000 eggs deteriorate. When she runs out of functioning eggs, she is in menopause. In the U.S., menopause occurs between the ages of 40 and 60, with age 50.5 the median age of menopause and 10% of women beginning menopause after age 54. The distribution of the onset of menopause appears not to have changed over the last 100 years, and there is only small variation across societies. While there appears to be heritable variation of the age at menopause, the mechanism is not well understood. Fertility also falls for men with age, but men are clearly fertile for more of their adult years than women.

What are the potential implications of this differential fertility of men and women for observable behaviors? It would appear to become much more salient when men and women care both about the intrinsic utility from marriage as well as the utility of having children, as childbearing can occur only if both the husband and wife are fertile. In a “forward looking” model of fertility choice, the more limited fertility horizon of women has implications for the “best age” to marry for men and women, the “quality” of a mate that is acceptable for marriage at different ages, the best times to have children outside of marriage should marriage be deemed unlikely, and the predicted rate of marital dissolution for women who marry at various ages. For example, Giolito (2003) shows that the more limited fertility horizon of women alone explains why women marry younger than men and also suggests that women would accept lower-quality mates as they approach menopause, but would demand higher-quality mates after menopause. Empirical work with the 2000 Census of Population suggests that this simple model fits a predicted pattern for the ratio of the number of single women relative to men available for marriage. In addition, if one accepts that people prefer to marry other people like themselves (e.g. same race, similar education level, etc.), the model predicts that the rate of interracial marriage and marrying educationally-dissimilar spouses should rise for women in their late 40s and then decline after their mid 50s, but that a similar pattern should not exist for men. Again, this prediction is upheld in preliminary empirical analysis. Other researchers (Schmitt 2002; Siow 1998) model the more limited fertility horizon of women in other ways, and these other modeling assumptions have differing predictions of the ramifications of women’s more limited fertility time horizons. Better understanding of physiology can improve tests of differing models of its ramifications.

There are, of course, many other aspects of physiology that may have ramifications on choices that families make. Earlier ages of menarche and differential fecundity rates across ethnic groups and the differential rates of anemia between men and women are just a few other examples. As we are able to catalog well-known aspects of physiology, it may be possible to develop better models of marriage, fertility, and mortality.

**Key Questions and Challenges to be Addressed by the Working Group.** Based on the above discussion of the central issues concerning the role of biology in influencing family formation and family-related behaviors, we pose the following initial set of key questions and challenges to this Module’s Working Group:

- *What is the current “state-of-knowledge,” both theoretical and empirical, of the influence and importance of biology for understanding family formation, fertility, and family-related behaviors in human populations?* Addressing this question will entail drawing on existing summaries of the literature to
determine this state-of-knowledge and then seeking to fill in and extend this review by drawing on a group of experts in these fields.

- **How can the implications from evolutionary biology, behavioral endocrinology, and the study of physiological processes be more tightly integrated into behavioral theories of fertility, family formation, and related behaviors such as the division of labor between men and women? And, most importantly, how can these theoretical interactions be refined so as to generate clear and testable implications about observed behaviors?** Key issues for making progress in our understanding of the interactions of biology and choice in family formation and behaviors are to make sure that the testable implications of these theories are clearly delineated and to pay particular attention to the operational and measurement issues associated with conducting such tests. Accomplishing these objectives – or at least establishing the data and contextual requirements for doing so – will be a major focus of this working group.

- **What are the weaknesses in existing data collection and measurement efforts and the sources for identifying variation that limit tests of the empirical implications of these biologically-based theories of family behavior?** What new data collection efforts and/or experimental designs might improve upon existing evidence and what designs are most feasible, cost-effective, and consistent with ensuring adequate protections of human subjects? These questions addresses strengths and weaknesses in available data, methodologies, and current data collection strategies for measuring biological factors and biosocial interactions. Addressing these issues will complement the work to be undertaken in Module 1, which identified key questions for research on the dynamics of family decision-making, and Module 3, which performs the same function for issues of social context and its relationship to families and fertility.

**MODULE 3: CONTEXTS SHAPING FAMILIES AND FAMILY CHANGE**

**Background and Motivating Issues.** A central theme in the social history of the modern period is the view that there has been an ineluctable progression from familial to non-familial modes of organization that has removed from the family many of the functions it served in earlier times (Coleman 1993; Hernandez 1993; Popenoe 1993; Thornton and Fricke 1989). For example, schools socialize children. Paid labor markets supplant farm- or household-based family economic production. Social welfare programs diminish the need for support from extended kin. However, this progression from family to non-family based modes of organization enlarges rather than limits the domains that require attention in any study of family and fertility change. Increasingly, to understand what families provide to members, one also must understand what other institutions do for the family and how social context affects family organization and functioning and fertility decision-making. None of the non-familial contexts cited as examples above completely replaces the family. Rather, the role of the family is altered in interaction with the institution or contextual factor that now provides to individuals something that only families provided in the past. For example, not all socialization of children occurs in schools, because children’s lives are divided between school settings, where they interact with teachers and peers, and family settings where they continue to be influenced by parents, siblings and extended kin. Market work replaces home production but the earnings from that work still must be redistributed within the family to provide for nonworking, economically-dependent members. Public transfer systems and markets often do a poor job of providing non-financial assistance to individuals and, hence, a role for the family in kin-caregiving remains. Thus, three central tasks for the working group of this module are: (a) identifying the relevant “contexts” for the study of family change; (b) determining the best ways to measure these contexts; and (c) assessing how to isolate the causal influences of these contexts on changes in family structure and family-related behaviors. We consider each of these issues below.
Identifying Relevant Aspects of Context

Below we highlight a number of relevant aspects of context and the reciprocal causal relationships between context and family that must be addressed in models of family change. The discussion is meant to be illustrative, not exhaustive.

Social Institutions. The literature on social institutions is vast, and institutional constraints are frequently invoked to understand family and fertility change (Morgan, 2001:14; Smith, 1989). Norms (rules of behavior identified by sanctions that encourage compliance) can organize behavior in a domain of life, thus creating a social institution. For instance, the institution of marriage consists of a set of norms that regulate the behavior of spouses toward one another and with extended kin and the community at large. Some of these norms are codified as law, with formal sanctions for violations. Many others are informal and are supported by approbation or approval. As a second example, given the time and energy required to care for young children, mothers need assistance to provide for and supervise their children. In cooperative-breeding societies, Wilson (1975; also see Hurdy 1999: 91) termed these additional caretakers as allomothers (i.e. allo, Greek for “other than”). Different family institutions designate different persons as preferred allomothers (grandmothers in some settings) or incorporate nonfamilial institutions (e.g., formal child care) in ways that permit dominant economic activities. Variation in the organization of children’s care and economic activity suggests that, over the long run, changes in institutions are interdependent. Increasing labor force participation for women, for example, can exert pressure for change in a range of other institutions, especially in gender relationships, family and the economy. Various conceptualizations of institutional adjustment and strain are also part of the literature on low fertility (e.g., Esping-Anderson 1999; McDonald 2000; Morgan and King 2001).

Culture. Culture can be characterized as a shared meaning system that includes beliefs, shared values, and social norms. Culture influences the goals individuals set for themselves, the range of legitimate means for achieving these goals, and the cognitive categories that individuals use to make sense of the world, their own actions, and the actions of others around them. For example, changing ideology about the rights of women that accompanies the structural shift in their position within the economic, legal and political systems has increased the legitimacy of women’s choice of childlessness especially when there is mismatch in rates of change in familial and nonfamilial settings (McDonald 2000; Morgan and King 2001). Work by Hammel (1990) and Pollak and Watkins (1993) criticize demographic, sociological, and economic models for their overly static view of culture. Modifications of these approaches include recognizing that tastes may change (Pollak and Watkins) and that individuals, to some extent, create culture. Hammel (1990: 475) argues for “recognizing the agency of individuals in using behavior as a symbol selected from a repertoire that has some coherence and endures over time, but that is created and maintained by patterns of selection by actors as well as by innovation.” This distinguishes between culture as a slowly-changing constraint on individuals’ family choices and the process by which individuals understand and re-interpret cultural rules. A challenge for research on family and fertility change in the United States is to identify race-ethnic and immigrant group differences in “repertoires” or “cultures” that influence options that individuals and groups think are possible for family behavior (e.g., whether it is in the realm of choice for a woman to have a child outside of marriage or for an older, widowed mother to live alone instead of with adult children).

Social Interaction. Research on changes in fertility and the diffusion of new ideas builds on the view that individuals and micro-level processes, including interactions between individuals, foster cultural change (Pollak and Watkins, 1993; see also Casterline, 2001). Reference group theory in social psychology suggests that individuals’ attitudes and behavior depend on the behavior of significant others, for example, teenagers’ friends at school affect academic achievement and delinquent behavior. The availability of role models whose behavior informs young adults’ decisions about work and family responsibilities is another aspect of social interaction that provides guidelines for an individual’s choices.
(Wilson 1987). Studying the effects of social interaction requires that researchers take account of all parties to a relationship. Researchers must distinguish the effect of interaction from an individual’s and other family member’s choices about such things as who to befriend or the neighborhood in which to live.

Social interaction, broadly defined, is the context of behaviors of relevant actors. This context can be defined locally or at higher levels of aggregation. Manski (1995) refers to the effect of behavior of “group members” on an individual’s own behavior as an “endogenous effect” of social interaction (see also Kohler 2001). The effects of social interaction occur when the behavior of one actor directly influences the behavior of another. A closely-related but again distinct concept is the notion of social networks in a society, which define the theoretical rate at which individuals within that society can communicate with each other. Networks also define the form and redundancy of that communication. The structure of social networks is an important determinant of the pattern of social interaction. The relative importance of “social interactional” versus “cultural” approaches to contextual effects is one of the key unanswered theoretical issues in the area of family research.

Technology. Technological change has profound implications for family behavior and family structure. Technology works both directly and indirectly through economic growth. Direct effects occur, for example, through advances in transportation and communication (which affects residential patterns, the proximity of extended family members, etc.), birth control (which affects fertility), improved medical procedures (which affect mortality), labor-saving household devices (which affect labor supply and unpaid work done in the home), or entertainment (which affects how family members spend time together). New technologies can be internally-produced or they can diffuse across populations. Regardless, they can be powerful agents of change. How to conceptualize the influence of technology in studies of family and fertility change requires careful thought. Past research shows that new technology can be used for different purposes given different institutional settings. An example from the fertility area is the use of contraception in Africa for birth spacing, which contrasts with other settings where contraception was adopted primarily to prevent births, or to limit their number. In addition, technology frequently changes norms by undermining their rationale or function. For example, new birth control technology may have undermined norms against premarital sexual activity in many countries by weakening the link between sex and pregnancy. In this way, technology is a distal cause; it produces change in family structure and behavior through its ability to change social institutions. The Core Group will devote considerable attention to the effects of technology and pathways (both direct and indirect) of influence.

Macroeconomics and Market Forces. Economic growth pushes mean incomes higher, and, along with the structure of wage inequality and the level of unemployment, defines the economic prospects for unmarried men and women. These economic prospects, in turn, affect marriage, cohabitation, and divorce rates. Economic growth and market forces also define budget constraints and consumption possibilities for families. Thus, economic factors constrain opportunities in and outside of families. The continued development of large corporations has contributed to the growth a national labor market, which facilitates geographic mobility and the physical separation of some family members. Where family members live, whether they are able to co-reside, decisions about when to marry and when to have children may depend on characteristics of the housing market, itself a function of other economic forces. Wage distributions for women and the availability of part-time jobs affect the costs of withdrawing from the labor force to have children, potentially affecting fertility rates and the welfare of mothers and children.

Geography and the Physical Environment. There are strong arguments linking the physical environment to family forms and behaviors. At a very basic level, culture, institutions, and technology are adaptations by the human population to the physical environment that mediate its effects on social outcomes. Geographic features form an important part of the explanation for within-nation heterogeneity and for cross-national variation in family forms and behavior. For example, the combination of a national labor market and the large physical size of the United States creates greater average spatial isolation of the nuclear family from the extended family than in smaller countries. Also, metropolitan areas in the United States
have lower density than most other industrialized nations, which affects mean travel time between work, school, and home, and the level of spatial isolation of nuclear families. Metropolitan areas in the United States also have relatively high racial, ethnic, and socioeconomic segregation. These neighborhood characteristics, in turn, have potentially important effects on child academic and behavioral outcomes and thus potentially magnify within-nation heterogeneity in these outcomes.

**Laws, Regulations, and Social Policy.** Laws and regulations have an obvious impact on family formation and behavior. Laws define permissible behavior concerning marriage, cohabitation, and sexual activity. They define the legal rights and responsibilities of spouses in marriage to each other and to children. Moreover, they define the process of divorce, and the financial and custodial consequences of divorce. Labor market regulation, tax policies, and social welfare benefits affect the level of earnings inequality at a point in time and across the life course, the level of employment protection, and the unemployment rate. They also affect the stability of a family’s standard of living over time and the level of access to health services. Finally, family-related social welfare policies affect the cost of children through direct transfers, tax credits, or day care and educational subsidies. Taken together, the structure of law, regulation and social welfare policy are relevant for virtually every aspect of family structure and behavior.

**Measuring Context**

One of the challenges in studying family change is determining the relevant contexts that affect and are affected by family behaviors and then determining how best to measure them. Indicators for some contextual factors are more readily available than for others. For example, in the case of macroeconomic variables, researchers often can access administrative data from “national accounting systems.” In the case of laws and social policy, dates of enactment and provisions of those laws are readily available, although it can be difficult to track how rapidly changes filter through the administrative and enforcement system charged with social policy change (e.g., administrative lags and unevenness in child support enforcement, implementation of new welfare rules, etc.). We expect that as part of their activities the working group for this module will investigate possible sources of contextual measurement that have not been fully incorporated into research on the family but that have potential for informing family and fertility processes. In the area of environment, for example, data on “trips” from the Department of Transportation or health and exposure to environmental hazards collected by the Environmental Protection Agency might be used to study distance among family members or as indicators of more or less “healthy” environments for childrearing. New data from the Los Angeles Families and Neighborhood Survey on the geographic locations in which individuals spend time (work, school, shopping, etc.) recognize that family members differ in their exposure to the neighborhood environment and that even co-resident families may be exposed to different “contextual effects.” Recent advances by ethnographers in anthropology and sociology who describe rigorously how individuals understand the world around them, particularly the choices available to them and their perception of the normative value of these choices, provide a basis for improvements in measures of the cultural context in quantitative studies, such as surveys. Finally, we believe that there are some dimensions of context, culture being perhaps one, where determining how and what to measure is extremely important but difficult. As noted by Hammel (1990), part of the challenge is bridging disciplinary boundaries; hence, another important task in this area is to consider how best to measure context in ways that not only will move the field forward, but also prove useful to a wide array of family and fertility researchers from multiple disciplines.

**Isolating Causal Effects of Context on Family Structure and Behavior**

Within economics, there is a well-developed literature on analyzing the casual effects of various aspects of social policy on family formation, family structure and family-related behaviors. Examples include: research by Moffitt (1998) that uses state-level variation in “parameters” of welfare programs on incidence of marriage, female headship and fertility; research by Rosenzweig (1999) on effects of welfare
on marriage and non-marital childbearing; work by Dickert-Conlin and Chandra (1999) on effects of taxes on timing of births; studies by Kane and Staiger (1996) and others on effects of changes in the availability of abortion on teenage childbearing; research by Currie and Cole (1993) on the effects of welfare (AFDC) on birth weight; Currie and Thomas (1995) and Currie and Gruber (1996) on effects of the Medicaid program on health status of low-income children. This work attempts either to use cross-sectional variation in state laws and policy implementation or changes in laws and a longitudinal “difference-in-difference” analytic strategy to assess behavioral outcomes.

However, a challenging set of issues remains because of the potential for the “endogeneity” of policy or context with the behavior being studied (e.g., Case, 1998). There is also the related problem of “confounding effects” of unmeasured contextual factors on behaviors. That is, an “omitted” policy or social factor that is not controlled may result in the misattribution of the causal effect to the contextual factor that is measured. As a result it becomes very difficult to design studies or techniques for isolating the causal effects of these macro-contextual factors on micro-level behavioral outcomes because the variation in context is not exogenous.

A central problem in studying families is that family behavior in some parts of society can produce contextual change that then affects family behavior in other parts of society. Also, specific family behaviors can produce contextual change that stimulates either further change in the specific behavior, or change in other behaviors (e.g., what Coleman (1986) refers to as “micro-to-macro” effects or Hedström and Swedberg (1998) label as “transformational mechanisms”). Behaviors of actors shape customs, norms, laws, etc. which, in reverse, ends up influencing behavior. That is, environmental change, whether generated exogenously or as a response to individual behavior, is a principal determinant of family change. While recognizing that a complete theory of environmental change comes close to being a “theory of everything,” we assert that those aspects of the environment that most affect family outcomes are themselves strongly influenced by family behavior. An understanding of this reciprocal influence is thus an essential ingredient of an adequate theory for family change. At one level, this is exactly the problem that Manski (1995) worries about in his work on “social interactions.”

Finally, the causal mechanisms linking micro-processes to macro-outcomes are often of interest in their own right and have been the object of increasing study especially in sociology (Coleman 1986; Hedström and Swedberg 1998). When the issue is one of estimating the true causal effect of context on micro-level outcomes, various strategies have been proposed (e.g., see discussion by Blau and Kahn, 2002, and Winship and Morgan, 1999). The successful implementation of these strategies often requires a good theory of the phenomenon in question. One challenge for the working group on this module is to try to determine the institutional features that might plausibly be driving cross-national and temporal variation in family outcomes and to evaluate the kinds of strategies, including those in other research areas, that might be fruitfully applied to the analysis of family variation and change.

Key Questions and Challenges to be Addressed by the Working Group. Based on the above discussion of the central issues concerning the role of context in influencing family structure and family-related behaviors and the importance of the endogeneity of some or all of these contexts, we pose the following initial set of key questions and challenges to this Module’s Working Group:

- How can we develop better data sources that allow the estimation of the effect of contextual variation on within- and between-nation heterogeneity in family forms and behaviors? We propose a pilot project (which is described in section A.4 below) that addresses this challenge to shed light on explanations for family change.
• How do we adequately measure key aspects of context such as culture and social norms? Addressing this question requires conceptual and methodological strategies for combining individuals’ understanding of social rules and norms as an aggregate property of a community, race-ethnic or immigrant group, or other social entity.

• How do we get sufficient variation in these norms and cultural factors so that we can assess their effects? How can we best use cross-country and cross-cultural variation in our analyses of family change and changes in family-related behaviors?

• What are the strengths and weaknesses of existing strategies for use in isolating the causal effects of various dimensions of context on family structure and family-related behaviors?

• Are there reliable strategies that can be used to investigate the endogenous relationships between micro-level and macro-level variables?

MODULE 4: UNION FORMATION AND DISSOLUTION

Background and Motivating Issues. Through time and across societies marriage has consistently been one of the key social institutions. Marriage has been the primary setting for childbearing and childrearing in the United States, both historically and continuing to the present. Marriage facilitates the division of labor between spouses, encourages partners’ pooling of resources and investment in public goods, especially children, and reduces the risks involved in long-term exchanges, especially the economic risks that married women incur by limiting labor force participation while raising young children (Lieberson, 2001). It confers a set of rights and responsibilities on both husband and wife, many of which are codified by law and all of which are reinforced by norms and common social understandings.

Nonetheless, the incidence and durability of marriages and their linkage with childbearing and other family activities have all undergone significant changes over the last 50 years in the United States and in many other countries. Men and women increasingly delay entry into marriage, and many individuals in some racial groups never marry. At the same time, cohabitation has become an increasingly important alternative living arrangement in the United States and in other developed countries (e.g., Sweden). The well-documented historical rise in divorce clearly indicates that marriages no longer represent binding lifetime commitments. Furthermore, childbearing and childrearing are no longer restricted to marriage. Finally, all of these changes in the institution of marriage would appear to heighten the potential conflicts of interest between spouses, as well as among prospective partners (see Module 1 on family decision-making).

In the remainder of this section, we elaborate some of these key trends in marriage, cohabitation and divorce and describe some of the key theoretical arguments and frameworks that seek to explain changes in union formation.

Key Trends in Union Formation

Delayed Marriage and Increase in Cohabitation. The long-term secular rise in educational attainment for women and men has contributed to changes in marriage. Increased schooling delays young adults’ entry into full-time employment. As individuals take longer to demonstrate their economic potential, the search for a spouse is substantially delayed compared to an earlier period when men demonstrated their economic qualifications for marriage at younger ages (Oppenheimer, 1988). Cohabitation provides a setting in which potential partners can evaluate their compatibility and establish a mutually-acceptable division of labor (Clarkberg 1999; Cherlin, 2000) at the same time they assess each other’s likely economic success. By the mid-1990s, over half of first unions in the United States were cohabiting unions instead of marriages (Bumpass and Lu, 2000). As cohabitation increases, the social stigma
associated with cohabitation diminishes, thereby contributing to further increases in cohabitation (Seltzer, forthcoming). This is an example of the effect of family change on social context (see Module 3).

One might expect the quality of marriage matches to be improving over time because the search for a marriage partner takes longer than it used to take and because cohabitation improves information about potential spouses. Yet one line of research suggests just the opposite. Higher rates of divorce for couples that lived together before marriage compared to those who did not have received substantial attention in the scholarly and popular press (Bumpass and Lu 2000; DeMaris and Rao 1992; Laumann et al. 1994; Lillard et al. 1995; Sweet and Bumpass 1992). Those who disapprove of cohabitation cite the “effects” of premarital cohabitation on divorce to support claims that cohabitation threatens the institution of marriage (Popenoe and Whitehead, 2002). Evidence that cohabitation causes divorce is mixed. Several studies show that, compared to those who marry without first cohabiting, those who cohabit before marriage are more accepting of divorce even before they begin cohabiting and are more likely to have come from a single parent family, another predictor of divorce (Axinn and Thornton, 1992; Bumpass and Sweet, 1989; Cherlin et al. 1995; Thornton, 1991). Some econometric studies support the contention that higher rates of divorce for those who previously cohabited are due to unobserved differences between those who are inclined to cohabit and those who are not (Lillard et al. 1995). However, the experience of cohabitation does appear to alter individuals’ attitudes making them more “divorce-prone” (Axinn and Thornton, 1992). The challenge of distinguishing the effects of cohabitation from its correlates is analogous to the problem of identifying the effects of marriage on individuals’ welfare and the consequences of divorce. All require that researchers take into account the nonrandom selection into (or out of) the union.

Whether premarital cohabitation affects marital stability is likely to depend on the context in which couples form their relationships. Couples who cohabit in a context in which cohabitation is seen as a normal stage in courtship face less social disapproval and fewer strains in their relationships than do those who form cohabiting unions in a less supportive environment. That the association between premarital cohabitation and divorce varies across countries suggests that the institutional context may also affect the consequences of cohabitation (e.g., Berrington and Diamond, 1999; Leridon, 1990).

Separation of Marriage and Childrearing. Although most U.S. children are still born within marriage, the institutions of marriage and parenthood are increasingly distinct. High divorce rates among parents and high rates of childbearing outside marriage increase the percentage of children reared by a single parent, who is usually the mother. An increasing percentage of children born outside of marriage are born to cohabiting parents (Bumpass and Lu 2000; Raley, 2001) and the likelihood that a pregnancy leads to marriage before the birth of a child is falling (O’Connell 2002). Furthermore, women who bear one child outside of marriage have become more likely to bear all of their children outside of marriage (Hoffman and Foster, 1997). The explanations for this weakening link between marriage and childrearing and the implications of this change for the welfare of the next generation are among the major challenges for future work on union formation and dissolution.

Substantial variation exists in the extent to which childbearing occurs outside marriage among groups from different race-ethnic, religious, and socioeconomic backgrounds. Cohabitation and divorce rates also vary by age, race-ethnicity, education, and religion. In the United States, marriage rates are lower among African-Americans and for those who are less educated, and higher for some religious groups (e.g., fundamentalist Protestants and Mormons) than for others. Although cohabitation has increased for all racial-ethnic and educational groups, rates of cohabitation remain higher for those with less education and more limited economic resources. In addition to heterogeneity within the United States,

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6 A “successful” search can be defined in different ways. Evidence of growing similarity between husbands’ and wives’ education (Mare, 1991) suggests greater compatibility on some characteristics.
comparative projects document considerable variation in cohabitation, marriage, and divorce rates and trends across industrialized countries (Kiernan, 2002; Prinz, 1995).

In the United States, Edin’s (2002) interviews with low-income cohabiting parents suggest that one reason for the education differentials in marriage, cohabitation, and nonmarital childbearing is the (perceived) economic requirement of marriage: economic security is seen as necessary for marriage, though not for childbearing among low-income women and men. Understanding differences in the meaning of cohabitation for those who are well-educated and have sufficient, secure incomes, the “haves,” and those who are less well-educated and more economically vulnerable, the “have nots,” is critical to interpreting variation in couple and family relationships.

**Theoretical Formulations about Changes in Union Formation**

While the above trends in union formation and dissolution are well-documented, the causes of these trends and differentials are not clear or agreed upon. Several recent reviews summarize theoretical approaches to union formation (Waite et al. 2000; Booth and Crouter, 2002; Casper and Bianchi, 2002; Smock and Gupta, 2002; Z. Wu, 2000; Seltzer, forthcoming). At present, the field is characterized by a set of plausible theories that provide sometimes powerful interpretations of these trends. However, limitations in theoretical development, in data, and in methodology have precluded the kind of rigorous hypothesis-testing that could adjudicate among competing theories or establish the relative contribution of valid but partial explanations. These include: cultural or ideational shifts; changes in the “gains to marriage;” changes in norms about fairness and bargaining in interpersonal relationships; shifts in the normative and structural supports for marriage as a social institution; and evolutionary or bio-social factors. We consider each of these briefly.

**Cultural or Ideational Shifts.** These approaches highlight changes in the meaning of marriage and are part of a broader focus on trends of secularization and individualization (Bumpass 1990; Lesthaeghe, 1995). Cultural variables also may account for a portion of observed subgroup differences in the United States (e.g., Puerto Ricans’ greater acceptance of childbearing in cohabiting unions compared with non-Hispanic Whites’; immigrants versus nonimmigrants (Landale and Fennelly, 1992; Oropesa and Gorman, 2000). Advances in cultural approaches to union formation and dissolution require greater attention to how ideas about marriage and parenthood differ among groups and how ideas about what is appropriate are shaped by individuals’ (and couples’) social environment.

**Shifting “Gains to Marriage.”** The costs and benefits of marriage compared to other alternatives, including being single or cohabiting, may be changing over time (see the discussion in Module 1 on decision-making). The rise in opportunities for sexual relationships outside of marriage, greater tolerance of single parenthood, declining marital fertility, and improved employment opportunities for women may reduce the relative benefits of marriage. On the other hand, as husbands and wives are increasingly likely to earn income and share housework somewhat more evenly, the qualities (potential) spouses value in marriage may change to more fragile types of solidarity, such as emotional intimacy. Finally, marriage provides the benefit of a contract recognized by the state and by members of the couple’s social network that reinforces trust between the partners so that investments in children and other common concerns are reasonable. In an environment in which divorce is common, however, gains to marriage of enforceable trust decline relative to cohabiting unions or other nonmarital couple relationships.

The “gains to marriage” approach has obvious appeal. Yet predictions are difficult partly because it is hard to measure and weight the different components of gains. Another challenge to evaluating hypotheses about the gains to marriage is the identification of individuals’ perceived alternatives to marriage. Assessing the relative gains to marriage requires a better-developed understanding of the changing context in which individuals and couples make decisions about marriage.

**Changing Norms and Expectations about Marriage and Consequences for Spousal Bargaining.** Theories
about the gains to marriage must also consider how members of a couple divide the benefits of marriage. Even when the division is unequal, each partner may still be better off than if they had not married. However, if one or both spouses think that the division of marital benefits is unfair, their perception of inequity may threaten their commitment to the relationship and increase marital instability. A challenge of applying this interpretation to trends and differentials in marriage is that if the spouse who is more advantaged by the marriage had anticipated that his/her partner would find the arrangement unfair (and therefore a threat to the continuation of the marriage), the partner might have struck a different bargain. Of course marriage (or cohabitation) proposals are not like repeated games; the same partners do not “try again” with each other if the first union fails. New potential partners may react very differently to unequal bargains than previous partners, so it is difficult to apply lessons learned from past experiences.

In principle, rising divorce rates and high rates of union dissolution by cohabitators might be explained in terms of shifts in fairness norms (e.g., by women) that make previously optimal (male) bargaining strategies suboptimal. A long history of relatively stable gender roles and marital expectations clearly dissolved into a more recent period of substantial instability in social expectations about the obligations of cohabiting and married partners toward each other. The legal and administrative environment governing cohabitators’ rights and responsibilities (e.g., domestic partnership agreements, health insurance and property rights of cohabitors) is also in flux. Thus, individuals enter a relationship with varying — and sometimes uncertain — expectations about the likely outcome of the union or the relative gains of the union. Determining whether evolutionary game theory is a useful and powerful approach for understanding the trends in union formation and dissolution is one of the goals of this module.

**Evolutionary and Bio-Social Factors.** Biologists and evolutionary psychologists are developing new theories about how biological predispositions may underlie emotions that form the “glue” in long-term relationships (see Module 2). These models provide an intriguing explanation for marriage and for marital conflict and thus a potential theory for divorce. The models privilege specific sources of marital conflict, in particular sexual infidelity, infertility, investment in “non-nuclear” relatives (including children from previous partnerships), and economic factors (“failure to provide”). The models adopt a broad historical focus, but they are not highly sensitive to recent environmental changes (e.g., rising female labor force participation, secularization, or the rise of gender egalitarian ideologies) that appear linked with recent trends in partnership states. Thus, their potential contribution is as yet undeveloped.

**Support for Marriage from the Environment.** It is at least arguable that lowered levels of specialization, changing expectations concerning how domestic work should be shared between genders, and the apparent continuing lag between expectations and reality concerning the household division of labor imply an increased level of marital stress compared to earlier times. Environmental factors that affect the level of marital stress and support for marrying or “staying married” include such things as geographic mobility that alters the presence of extended family members in the immediate vicinity, involvement in a church that frowns on divorce or cohabitation, divorce laws, child support enforcement and visitation rights, and so forth. Environmental factors may contribute to the weakening of the social/emotional “glue” that is thought to hold marriages together, which is variously conceptualized as “marital investment,” “marital commitment,” “coping ability,” a “long-term (vs. short-term) orientation,” “altruistic (vs. self-interested) behavior,” or “emotional skills for achieving and maintaining intimacy.”

While useful research continues to accumulate, we still know relatively little about the intra-marital processes that generate satisfaction or conflict and union dissolution. We also know relatively little about sources of trends in either the process of finding a partner or the capabilities that partners bring to the relationship. On the one hand, we have fairly solid evidence that a propensity to divorce is transmitted across generations (e.g., Bumpass and Sweet 1972; McLanahan and Bumpass 1988; Diekmann and Engelhardt 1999). On the other hand, the argument that a higher societal rate of divorce reduces investments in marriage, thereby increasing the risks of divorce has the character of post-hoc rationalization. The willingness to invest in marriage depends upon many factors, including individuals’ abilities
to trust one another. The degree of trust or trustworthiness may affect levels of marital investment, while changes in trust or trustworthiness may lead to rapid devaluation of past investment in the marriage. A burgeoning interdisciplinary literature is now developing on the dynamics of trust and trustworthiness (e.g., Ostrom and Walker 2002), but its implications for the dynamics of cohabitation, marriage, and divorce are as yet unknown.

In summary, research on marriage, cohabitation, and divorce has greatly increased our understanding of these processes. It has produced good descriptive information about trends and distributions across partnership statuses, and provided potentially powerful theoretical perspectives that, in principle, may explain these trends and distributions. At the same time, existing knowledge does not provide sufficiently reliable predictions about the further evolution of trends in these rates. Nearly all theoretical approaches consider men and women as separate actors, yet few studies include information from both men and women or couples. Enhanced understanding of change in union formation and dissolution in the United States will require attention to several issues, some of which require improvements in data on union formation and dissolution.

**Key Questions and Challenges to be Addressed by the Working Group.** The above initial assessment of the state of knowledge and research in the area of union formation and dissolution by our Core Group indicates that while there are reasonably well-developed theoretical views about marriage formation and dissolution, the challenges for this field are in two major domains: how to test theories, and what data are needed to do so. In addition, the rise of cohabitation and more informal arrangements of “living together,” as well as some recent changes in the gathering of information on marriage and divorce in official statistical data systems, raise some important issues for our ability to measure and track marriages and divorces, both in descriptive as well as more analytical studies. We characterize these issues in a set of questions below. We envision that this working group will build on the investments that NICHD and the research community have already made to enhance understanding of these institutions (e.g., NICHD workshop on “Counting Couples”; childstats.gov; Waite et al., 2000, volume on marriage; report on out-of-wedlock childbearing; working groups on improving information from fathers).

- **Can new and innovative strategies be applied or developed to “test” some of the alternative theories of union formation and dissolution?**

Perhaps the most pressing need in the area of union formation and dissolution is more rigorous attention to ways of testing the alternative theories that have been developed to explain union formation and dissolution and thereby begin to adjudicate between alternative hypotheses about marital change. In addition, there are various claims made about “mechanisms” that affect entry and exist into living arrangements. For example, various claims have been made about the direction and magnitude of the effect of cohabitation on divorce probabilities. But how effective are alternative research designs for isolating the causal effect of cohabitation on divorce? Addressing such issues will require a systematic assessment of the use of alternative methodologies (e.g., natural experiments, or quasi-experimental methods such as propensity-score matching, or difference-in-differences estimation). It will also require assessing the availability of data sources for conducting such analyses. We anticipate that this working group will develop an “inventory” of studies of such tests and assess the methods and data sources used and available for such analyses. We also anticipate that the group will explore the data requirements and methods needed for the testing of some of the hypotheses suggested by evolutionary biologists.

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7 With respect to data, we anticipate that the working group will catalogue the potential uses of new and existing data for research in this area. For example, new data sources for the study of union formation and dissolution include: the latest wave of the National Survey of Family Growth: Add Health; NLSY97 (which are still underutilized for understanding selection into cohabitation and marriage); and the British Household Panel Survey (which contains data on income pooling that might affect transaction costs and divorce).
One area the working group will explore, which overlaps with Module 1 on decision making, is the specific applicability of game theory and recent results from this literature about the evolution of norms or social behaviors that engender trust to the case of union formation and dissolution. Unions are vastly more complicated than the games studied by evolutionary game theorists. It is possible, however, that experiments could be designed to better replicate some of the essential features of unions, specifically including the fact that total payoffs from the union (and therefore the size of the shares of the gain for each partner) are a function of the stability of the union, which in turn may be a function of the relative size of the two distributions (e.g., availability of other partners). We think it likely that a review of existing findings may lead to a pilot project in this area, either to examine the trends in norms, strategies and stability of more realistic repeated games or to evaluate whether to recommend inclusion of experimental measures of trust in longitudinal surveys on the dynamics of unions. For instance, Fehr et al. (2003) describes the collection of such data in the German Socioeconomic Panel. Data of this type may increase our understanding of causes of union formation and union stability.

- **How can we make progress on developing testable models of the effects of context on cohabitation, marriage and divorce?**

At this point, we anticipate that one of the greatest challenges for work on this module may be to improve understanding of how social context affects union formation and dissolution and the relationship between being in a union and childbearing. An important question is: What can be learned by comparing the very different distributions of partnership and parenthood statuses, transition probabilities, attitudes, and environmental constraints in the United States compared with those of other industrialized countries? Compilations of “what we know about marriage and divorce” now routinely devote a chapter to cross-national comparisons. But the descriptive material in these chapters is still rarely used to challenge explanations for trends and heterogeneity that are proposed for the American context. The goal for this working group is to determine how to better use cross-national variation to begin to evaluate alternate explanations. This activity will be coordinated with that of Module 3 on context.

- **How accurately do existing surveys and other data sources “measure” the living arrangements of individuals at a point in time and transitions between these living arrangements?**

A central concern for both descriptive and more causal empirical analyses about union formation and dissolution concerns whether existing data sources provide accurate and reliable measures of exactly what living arrangements individuals are in at any point in time and when individuals change from one arrangement to another. There are several aspects to this issue of measurement. One concerns whether our current survey instruments adequately measure these states and transitions between them. There is some concern that there is an inadequate understanding about how respondents understand questions about cohabitation, although research on how household rosters are enumerated and when parents use the phrase “lives with” (Gerber and Bates, 1994; Tourangeau et al. 1997; Lin et al., 2003) offer a place to start. Problems in how respondents understand and respond to survey questions about cohabitation reflects, in part, the real ambiguity about when cohabitation begins from the couple’s point of view and differences between partners in how they define the start or end of their cohabitation. New qualitative work in progress on how young adults think about whether to remain single, cohabit, or marry, the stability of relationships, and qualities sought in prospective partners may provide valuable insights into their perceptions of the relative gains to marriage but it is important to determine whether findings from the qualitative work hold up when these questions are addressed in large, representative samples. Thus, we envision that the working group for this module will conduct an in-depth literature review of findings based on these new sources of data, including findings from new work in progress and as yet unpublished.
While demographic data on cohabitation, marriage, and divorce are vastly better today than ever before in the United States, there are some serious concerns about the deterioration of federal data on marriage and divorce during the 1990s. For example, in 1995, detailed data on characteristics of marriages and divorces recorded at the county level were no longer compiled by the National Center for Health Statistics into a national Vital Statistics reporting system. In addition, the battery of questions that gather marital histories of respondents, although included in the Survey of Income and Program Participation (SIPP), was omitted in the June 2000 Current Population Survey (CPS). (The comparability of SIPP with earlier CPS data is unknown.) These changes threaten demographers’ ability to maintain a long time series on a variety of aspects of family formation and dissolution, particularly for racial-ethnic subgroups of the population. Finally, because roughly 40 percent of children in recent cohorts will spend some time living in a cohabiting family (Bumpass and Lu 1999), it is also important to continue to incorporate information about cohabitation in large national surveys (e.g., the Consumer Expenditure Survey) whenever possible.

MODULE 5: WHY HAVE CHILDREN?

Background and Motivating Issues. This module explores the reasons why people want children and when they want to have them during their life. The module identifies obstacles to realizing these desires and intentions. Thus, this research area includes current concerns about very low fertility at the country level (e.g., in Italy, Spain, Japan) and the difficulty that increasing numbers of women have in realizing their intentions due to subfecundity or infecundity. Issues of long term saliency, unwanted fertility, teenage childbearing, nonmarital childbearing, and innovations in the measurement and forecasting of fertility, are also within this domain.8 We emphasize that to understand the causes of change in the United States, comparisons to other societies are of great value.

U.S. fertility and related behaviors have been transformed in the last 40 years. After the postwar baby boom, a decline in fertility occurred in virtually all age, socioeconomic, and race groups (Rindfuss and Sweet 1977; Sweet and Rindfuss 1983). The general trend towards lower fertility occurred both in the U.S. as well as in developed countries more generally. Nevertheless, by the late 1990s there were remarkable differences in the levels of fertility across developed countries, ranging from TFR levels below 1.3 in Southern European countries to TFR levels at or moderately below 2.1. For example, while many European countries had a steady decline in TFR, in the United States the TFR has reversed from a trough of 1.74 in 1976 to a level above 2.05 in the late 1990s.

This divergence of fertility levels in developed countries has been accompanied by a disruption or even a reversal of many well-known associations between fertility and related behaviors. For example, in European or OECD countries the cross-sectional correlations between the TFR and the proportion of extramarital births and the TFR and the female labor force participation rate reversed during the period from 1975 to 1999 (Rindfuss, Guzzo and Morgan 2003; Billari and Kohler 2002; Brewster and Rindfuss 2000). By the end of the 1990s, there was no longer evidence that divorce levels were negatively associated with fertility levels. Perhaps most importantly, there is a clear indication that a high prevalence of marriage and institutionalized long-term partnerships are no longer associated with higher fertility in cross-sectional comparisons among European countries.

Initially, differences in fertility among developed countries were related to differences in stopping behavior, that is, the rate of reduction of higher parity births. More recently, the postponement of first births that has emerged as the crucial determinant of differences in fertility levels among developed countries. For instance, during the period 1980 to 1999 the period mean age at first birth increased from 25.0 to 29.0 years in Spain, from 25.7 to 28.7 years in the Netherlands, whereas in the U.S. it has

8 All of these questions were identified as key question in the NICHD DBSR review of goals and opportunities for 2002-2006. http://www.nichd.nih.gov/publications/pubs/dbsb_plan.htm#cross-cutting.
increased from 22.0 years in 1972 to 24.9 in 2000.

In light of these different demographic factors leading to low fertility, we need to distinguish between what changes the demand for children and what effects birth timing. There are several well-developed theoretical approaches to explain the decline in the demand for children since these are merely extensions and adaptation of theories used to explain fertility decline during the demographic transitions. For example, reductions in the number of children have historically been related to increased child costs (Becker 1981), a potential reversal of wealth flows (Caldwell 1982), increased levels of (female) education, higher opportunity costs of women’s time (Willis 1973), and population policies (Gauthier 1996). These factors may still be relevant. But new factors may also be at play. For example, the diffusion of low fertility norms and value orientations is particularly emphasized in the second demographic transition theory (van de Kaa 1987), which argues that demographic change in developed countries since the 1970s is closely linked to ideational shifts towards more postmodern, individualistic and post-materialistic value orientations. Theories focused on the timing of childbearing may be quite different than those focused on number, and key factors may be related to other choices in new ways. These factors might include increased incentives to invest in higher education and labor market experience, increased uncertainty in early adulthood, general economic uncertainty in Central and Eastern European transition countries, and inefficient housing markets leading to high costs of establishing or expanding independent households. Kohler, Billari and Ortega (2002) argue that social interaction effects are likely to reinforce individually made choices about the desire to delay childbearing. These interaction effects occur due to social learning and social influence (Montgomery and Casterline 1996). As a consequence of these interaction effects, Kohler et al. (2002) argue that the delay of childbearing follows a postponement transition that shares many characteristics with the fertility transition in Europe or contemporary developing countries: it occurs across a wide range of socioeconomic conditions; once initiated, it results in a rapid and persistent delay in the timing of childbearing; and it is likely to continue even if the socioeconomic changes that initiated the transition are reversed.

Which of these factors best explain recent trends? What are the likely future trends? How do these trends affect other aspects of family life in the contemporary United States? How do past and future trends depend on institutional settings, social changes and technological progress? How can we explain the differences and similarities between the United States and other developed countries? International comparisons play a central role. Here we provide two examples. The first example, out-of-wedlock childbearing, stresses how international comparisons help choose among competing explanations. The second example where casual explanations are less developed, fertility levels, comparative work can structure potential explanations through useful accounting exercises. We see both as exceedingly useful.

Out-of-wedlock childbearing

In 1965, 7.7 percent of children were born outside of marriage a rate that had only increased slightly over the previous 50 years. By 1975 almost 15 percent of children were born outside of wedlock. By 1995 this percentage approached one third. The rates for African Americans were much higher than for whites, but the increasing trends were parallel for both groups. Time series evidence shows that declines in the proportion marrying was the proximate demographic cause ((Smith, Morgan and Cox 1996). Thus something salient in the U.S. occurred in the late 1960’s that undermined marriage and increased the level of out-of-wedlock childbearing after many years of relative stability. Three classes of behavioral models compete to explain the rise in out-of-wedlock childbearing in the United States. Specifically, a large set of papers suggests that the rise of the welfare state, a system that undermined incentives to marry, is chiefly responsible for the rise. Since the 1960’s was a time of rapid expansion of the social safety net, the temporal synchronity supports this explanation. Many empirical studies have tried to address this question by using the differences across states in welfare generosity and assessing its association with out of wedlock childbearing. In general the results of these studies are inconsistent, and
when a positive association between welfare generosity and out-of-wedlock childbearing rates is found the statistical relationship is usually small. Others have suggested that the cross state differences understate the role of the rise of the welfare state as a causal role in raising out-of-wedlock childbearing as the mere existence of such benefits may have allowed women to support children without having husbands. A second explanation is the changing opportunities in the labor market for men and women. William Julius Wilson argues that the decline in heavy industries in the late 1960’s lowered the attractiveness of low skilled men as mates. Jobs in heavy manufacturing certainly paid high wages to low skilled workers and their disappearance clearly was part of the lowered wage prospects for the unskilled. Wilson believes that women, when faced with the prospect of marrying a man who could not contribute well to the livelihood of the family, choose instead to have children without marrying. There is now a good deal of evidence that the ratio of eligible (i.e., employable) men to women is correlated with out-of-wedlock childbearing rates. However, this ratio cannot explain the central fact that Wilson proposed it would – namely the higher rate of out-of-wedlock childbearing among black women compared to white women (see Brien, 1997, as an example). Again the time series evidence is consistent with the U.S. trend of out-of-wedlock childbearing.

A third set of explanations focuses on new contraceptive technologies: the pill, the increased availability of abortions and changing social norms. Akerlof, Yellen and Katz (1996) suggest that some women used birth control methods and were willing to have an abortion if pregnancy occurred. For these women the availability of the pill and abortion greatly increased their willingness to have sex outside of marriage. This would have increased the rate of premarital sex but, in and of itself, not necessarily the rate of out-of-wedlock childbearing (as these women would have sex outside of marriage because for them the risk of an out-of-wedlock birth was very low). The novel part of their argument is that once some women began to have premarital sex, this became accepted behavior among a broader group of women and a behavior more men expected. Akerlof et.al. suggest that greater sexual activity among women who were unwilling to have an abortion or to effectively contracept was the driving force behind the rise in out-of-wedlock childbearing. Since these reproductive technologies spread relatively uniformly through out the United States in the mid-1960s, and since abortion became legal in all states over a very short period of time in the early 1970s, there is little scope for using geographic variation to test this proposition.

These three explanations suggest the late 1960s and early 1970s were special but for different reasons. How can one choose the most salient, if any, when all three explanations fit well the time series data? In this context, international comparisons are of great use. Out-of-wedlock childbearing in the United States, neither the current level nor the upward trend, is remarkable in a comparative context (Ermisch 1991). In 1998 half or more of births in Norway and Sweden were out of wedlock, compared with one third in the United States. Other industrialized countries with higher proportions of non-marital births were Denmark, France, and the United Kingdom. However, levels in the United States are much higher than in some industrialized countries, such as Germany, Italy, Greece, and Japan, where less than 15 percent of births are out of wedlock. (The United States is very different, however, in its rate of teenage childbearing.) The United States has not been alone, nor has it outpaced other countries, in the long increase in unmarried childbearing to its current levels.

What this suggests is those explanations that rely on U.S. specific policies or shifts in the economy are not likely to be full explanations. Put in an international context it seems more likely that shifting social norms (but perhaps not connected to U.S. abortion policy) or other more general changes in society are of more importance.

**Fertility Levels**

While not exceptional in its level or rise in out-of-wedlock childbearing, the United States does have an exceptional level of overall fertility. In fact, fertility is well below replacement in many other countries and well below the number many women intend (Bongaarts 2002, Kohler, Billari and Ortega 2002). Why is the U.S. fertility level high relative to other developed countries? Is the very low fertility observed in some other countries transitory? Or are the forces of economic development and concomitant
changes inevitably anti-natalist?

We will briefly contrast two positions on “how low will fertility go?”. The first posits low fertility and high rates of childlessness as inevitable. For example, Bumpass (1990) has argued that secular trends producing family change, and an imbedded fertility transition, have “not run their course.” Key secular trends include economic development, increasing female labor force participation, and ideologies that stress individuals’ right to assess the costs of family obligations and children and to act in their individual self-interest (also see Lesthaeghe 1983; 1995). Bumpass (1990:493) concludes, “there is no reason to think that these processes are exhausted or are likely to reverse.”

A second position sees the future as highly indeterminate (Morgan 1996). Morgan (2003) refers to this perspective as “moving beyond the demographic transition.” His view stresses the distinction between high and low parity births and argues that the later, supported by institutions that reduce the conflict between women’s familial and nonfamilial opportunities, and perhaps supportive biological predispositions, are conducive with modest family sizes (also see Morgan and King, 2001). Key in this framework is the ability of institutions to condition the effect of secular change and the importance of idiosyncratic events and responses to them in producing an environment more or less conducive to childbearing and parenting. Rindfuss, Guzzo and Morgan (2003), for instance, show that pervasive, country-level increases in female labor force participation are consistent with various fertility trends. Childcare availability and acceptability, gender change, and changes in the economy are all seen as mediating the degree of incompatibility between women’s labor force participation and fertility.

In unpublished work, Bongaarts (2001) offers a useful accounting framework that captures many of the factors that need be considered. This framework is useful in accounting for the reasons that the U.S. fertility rates are exceptionally high. Specifically,

\[ TFR = IFS \times Fu \times Fg \times Fr \times Ft \times Fi \timesFc \times E \]

Table B-1.1 shows hypothetical values for two populations, stylized versions of Italy and the United States. In Bongaarts’ conceptualization, the total fertility rate equals intended family size increased or decreased by a set of multiplicative factors that reflect forces not incorporated into reports of childbearing intentions. In this example we assume that intended family size does not vary across countries, consistent with data presented by Bongaarts (2001; 2003). Specifically, unwanted fertility ($Fu$) increases the $TFR$ by 12 percent in the United States and by one-third this amount in Italy. The next two components are additional births resulting from attempts to achieve a given sex preference ($Fg$) or to “replace” a child that has died ($Fr$). These factors are very small and do not vary in this example. The remaining three factors are important in low fertility settings and reduce observed fertility relative to intent. The tempo effect ($Ft$) represents the effects of fertility postponement that is greater in Italy than in the United States. When individuals postpone fertility to later ages they also postpone them to subsequent years. While “temporary,” this effect can operate for several decades and is an important factor in contemporary low fertility rates, as in this example (see Bongaarts and Feeney 1998). The sub/infecundity factor ($Fi$) represents the opposite of unwanted births. These are births women do not have because they are unable to conceive and produce a live birth prior to becoming infecund. The importance of this factor increases as the pattern of childbearing moves later (or if relevant diseases are prevalent). Here we assume a greater reduction in Italian fertility due to its later mean age at childbearing. Finally, there is a parameter, $Fc$, that reflects competition with other activities (e.g., women’s career) or obstacles (e.g., the absence of a suitable partner) that lead one to adjust intended family size. This adjustment could be upwards or

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9 Critiques of this approach point to the differential timing of structural changes and fertility decline and/or to the speed of fertility decline vis-à-vis structural change. But Bumpass (1990; also see Mason 1997) argues that an appropriate decadal time scale provides consistent support for these arguments.

10 Simple means of desired or intended family size vary little across low fertility countries. But more nuanced analyses (e.g., Micheli and Bernardi 2003) or more recent data (e.g., Goldstein, Lutz and Testa 2003) make this an active area of inquiry.
downwards for individuals, but in the low fertility context there is evidence that the predominant shift is downwards (Quesnel-Vallee and Morgan 2002). Here we posit illustrative values that suggest much greater competition in the Italian context. Observed TFR differences represent the balance of these effects and a set of modest but complementary differences can cumulate to produce substantial differences like those below.

### Module 5 Table. Bongaarts’ (2001) Conceptual Model of Factors Affecting Period Fertility*

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Post-transition (Italy)</th>
<th>Post-transition (United States)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFS</td>
<td>intended family size</td>
<td>2.10</td>
<td>2.10</td>
</tr>
<tr>
<td>$F_u$</td>
<td>unwanted fertility</td>
<td>1.04</td>
<td>1.12</td>
</tr>
<tr>
<td>$F_g$</td>
<td>gender preferences</td>
<td>1.02</td>
<td>1.02</td>
</tr>
<tr>
<td>$F_r$</td>
<td>replacement effect</td>
<td>1.01</td>
<td>1.01</td>
</tr>
<tr>
<td>$F_t$</td>
<td>tempo effect</td>
<td>0.85</td>
<td>0.95</td>
</tr>
<tr>
<td>$F_s$</td>
<td>sub/infecundity</td>
<td>0.90</td>
<td>0.95</td>
</tr>
<tr>
<td>$F_c$</td>
<td>competition</td>
<td>0.75</td>
<td>0.90</td>
</tr>
<tr>
<td><strong>TFR</strong></td>
<td></td>
<td><strong>1.28</strong></td>
<td><strong>1.96</strong></td>
</tr>
</tbody>
</table>

*TFR = IFS × $F_u$ × $F_g$ × $F_r$ × $F_t$ × $F_s$ × $F_c$ × $E$

This formulation is a compact way to account for differences across countries in various components effecting fertility. The formulation helps us think through which aspects of fertility are responsible for differences in fertility levels across groups. Evidence such as this allows us to contemplate behavioral models on the most important aspects separating U.S. fertility levels from other countries. In trying to answer the question “Will fertility fall to, or remain at, levels well below replacement levels in the first few decades of the 21st century?” we must answer a set of question structured by the above framework:

- What are the intended family sizes of young adults and what level of certainty is attached to these plans?
- What accounts for variation and change in these intentions?
- What proportion of individuals will have mistimed and unwanted births?
- How is this related to the availability of reproductive health services and contraceptives?
- How strongly will the desires for a child of each sex influence fertility?
- To what extent will individuals’ intended or desired fertility be frustrated by subfecundity or infecundity?
- Will new technologies reduce the number of women unable to have the children they intend?
- Will competition from non-childbearing desires/interests lead to shifts in intended family size over the life cycle?
- What is the impact of increasing female labor force participation and how will it be offset by institutional adjustments?
- How important is the establishment of a stable long-term relationship for achieving intended family size?

The conceptual/analytic framework above begs more fundamental questions about a unified theory of fertility change. Given the immense amount of empirical evidence and willingness for interdisciplinary collaboration, progress toward such a theory is within reach. This theory needs to confront the period (not cohort) nature of change (NiBhrolchain 2002); it must incorporate diffusion processes (see Casterline 2001; Kohler 2001) and acknowledge the influence of interaction and networks in constraining behavior and the impacts of “new behavior” in altering institutional constraints (see Hammel 1990; Kohler 2001). It must allow for the influence of secular, cyclical, and idiosyncratic factors and for the contemporary interpretation of these “objective” conditions. In addition, several further aspects deserve specific attention:

**Key Questions and Challenges to be Addressed by Working Group**

- **What accounts for observed variation in low fertility populations (see list above)?**
- **Is the very low fertility observed in some countries transitory?**
- **Are U.S. subgroup fertility differences (e.g., among Hispanics, African Americans and whites) attributable to different intentions about family size or to differential success in realizing these intentions? What behavioral theories are responsible for such differences?**
- **Will the proportion of mistimed and unwanted births remain high in the United States?**
- **To what extent will individuals intended fertility be frustrated by infecundity?**
- **How important is a stable long-term relationship for achieving intended family size (to be coordinated with the working group activities for the module on union formation and dissolution)?**

These questions pose theoretical and methodological challenges that parallel those in other modules, for instance, how to integrate the effects of social context and interaction to explain the causes of fertility change and group differences in fertility; how the physiological aspects of reproduction constrain choices about childbearing; and the relationship among different types of family decisions. The module’s methodological challenges correspond closely to these questions, including how to measure childbearing intentions, when and how to treat fertility as the outcome of a couple’s intentions rather than an individual’s, and how to cost-effectively acquire biomarker, social psychological, and demographic data about the interdependence of these dimensions as women pass through their reproductive years while at the same time protecting the rights of human subjects. We will address these common challenges through the integrated working group projects.
MODULE 6: CARING FOR THE NEXT GENERATION: FAMILIES’ EFFECTS ON CHILDREN’S WELL-BEING

Background and Motivating Issues. In virtually every time and place, one of the most important responsibilities of the family is the care and nurturing of the next generation. Human fetuses require a relatively long gestational period for a healthy birth outcome. Human infants require many years of care by adults. Once children can care for themselves physically, they still require large investments before they are able to provide for the totality of their needs and function more or less autonomously. Given the skill demands of modern societies and the length of time it takes to acquire advanced educational credentials, the number of years it takes children to achieve adult self-sufficiency is likely increasing in the United States and other developed economies. Hence, a sustained period of investment must occur for salutary child and young adult outcomes.

One can conceptualize the process for producing child-well being as one where families, particularly parents, provide a set of inputs, or make available to children a set of resources. The inputs consist both of shared genes and shared family environments. Somehow these inputs get translated, through a set of intervening mechanisms, into more or less desirable child outcomes. We use this conceptual scheme to organize our discussion in this section, considering the key developments on child inputs, outcomes and the mechanisms by which the inputs get translated into outputs. In addition, however, we note that the family or, more narrowly, co-residing parents and their biological offspring, is not the only actor providing inputs and thereby affecting child outcomes. A key issue, in light of the incidence of divorce and non-marital childbearing (and childrearing) is the role of such actors as non-biological parents and absent parents. In addition, some of the existing research on child well-being has focused on the roles that other actors and institutions (i.e., peers, schools, neighborhoods, and the media) may independently, or in conjunction with the family, play to determine child outcomes. In the discussion below, we consider the roles of these other actors and their consequences for research on child well-being.

Family Inputs. The most important resources families, and especially parents, bring to childrearing might be divided into three broad categories: (i) genetic endowment, (ii) investments of time, and (iii) financial resources. In the past decade, there has been increased attention to the role that heritability may play in a wide range of child outcomes and development processes (e.g., Schonkoff and Phillips, 2000: Chapter 2). We consider each of these sets of inputs in turn:

Children and biological parents share both genetic makeup and environment (shared family life). One way researchers have attempted to get a handle on genetic and environmental linkages and interactions is through studies of twins, half- and full-siblings, and adopted children who are biologically unrelated to the parents who raise them. However, many empirical assessments of child outcomes are not able to assess genetic or other biological processes because the requisite data are not collected or the design of the data collection is inadequate for such an assessment. In response to this problem, recent data collections, such as Add Health (National Longitudinal Study of Adolescent Health), have been designed to enhance the likelihood that genetic predispositions and biological-environmental interactions could be studied.

Time investments in childrearing have also begun to be directly measured more accurately and more extensively in recent data collections on children (e.g. Sandberg and Hofferth 2001) but lack of longitudinal information limits how much we know about whether and how much time spent with children matters for child outcomes. There is accumulating evidence that extensive maternal employment in the first year of life may negatively affect some groups of children (Waldfogel, Han and Brooks-Gunn 2002). Yet, in much of this literature, time investments are inferred from distal measures such as the number of parents in the household or the number of paid work hours of parents. Because there is not a one-to-one
tradeoff between increased hours of market work and decreased hours of caring for children, inferences about how parents’ childrearing practices change when paid work hours change can be misleading (Bianchi, 2000). For example, it is likely that childrearing is not a “marginal,” but rather a “central,” activity in families with young children, and hence, reallocation of time away from children is not the first adjustment that is made when families encounter stresses and strains. One additional shortcoming in the literature that does link parental time investments to child outcomes early in life is that most of what we know comes from one data source: The children of the NLSY79 cohort of mothers, for example, has provided the bulk of the nationally-representative longitudinal evidence of the effects of family inputs on cognitive and behavioral outcomes in early childhood. How robust findings are across cohorts or settings needs further empirical investigation.

With respect to financial resources allocated to children, the Panel Study of Income Dynamics (PSID) has been the other widely-used longitudinal data source for assessing the changing economic situation in childhood, especially child poverty. However, until the 1997 Child Development Supplement, the PSID contained no child outcome assessments. Hence, the PSID research has primarily focused on outcomes in young adulthood such as school completion and labor market entry (e.g., Haveman and Wolfe 1994). Research suggests, for example, that poverty in the early years of life, when brain development is rapid, may be more consequential for later achievement outcomes than poverty later in childhood (Duncan et al. 1998).

Perhaps the most voluminous literature on the “parental time and money” input question is that on children’s experience outside a (biological) two-parent family, with children in a single-mother family receiving the most widespread attention. Over the past decade, a consensus has grown that children who spend time with only one parent do less well than children who reside throughout childhood with two biological parents (Mclanahan and Sandefur 1994). However, the strength of the causal connection between single parenting and poor child outcomes is still open to question (Biblarz and Rafferty 1999). The single-parenting findings have been accepted more or less like the earlier findings on the negative effects of teen childbearing. Much more attention to establishing causal linkages between family structure and child outcomes is needed. One complication is that family structure and family economic resources are closely intertwined, with changes in economic resources throughout childhood often much less well-measured than changes in family structure. Hence, disentangling the effects of socioeconomic status from family structure has proved extremely difficult (Schonkoff and Phillips 2000: Chapter 10). Also, family structure has often been measured at only one point in childhood (e.g., age 16). Some work suggests that it is repeated family transitions, or family instability (e.g., Wu and Martinson 1993) more so than growing up with one parent, that may be most detrimental to child outcomes.

The above discussion has focused primarily on the inputs provided by the family, be they biologically-related or not. But, as the recent literature on the roles of peers, neighborhood and social environment has shown, families are not the only source of inputs to children. The central issues about these other “suppliers” of inputs are what they provide, the differences in the mechanisms by which they are supplied, and how these other suppliers interact with “the family” to affect the development and well-being of children. We take up these issues below in the discussion of mechanisms.

Outcomes. There is an extensive literature describing child outcomes, beginning with aspects of birth (e.g., gestational age and birth weight), cognitive, behavioral, health and emotional well-being in early and middle childhood, risk taking, mental health, academic achievement in adolescence, and transitions

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11 The recent advances in the development of systematic measures of child indicators and outcomes are due, in part, to the work of the Federal Interagency Forum on Child and Family Statistics which, in recent years, has issued an annual report of key indicators of children’s well being (most recently in July 2002). In addition, networks of researchers, such as the NICHD Family and Child Well-being Network, have also helped spur conceptual development of a broad set of child outcomes and competencies (e.g., Duncan and Brooks-Gunn 1999; Hauser, Brown, Prosser 1998; Moore 2001; Thornton 2001).
(educational, labor market, familial) in late adolescence and early adulthood. Risky behavior in adolescence, particularly early sexual activity, pregnancy and teen-childbearing, has perhaps received more attention in the family demographic literature than any other behavior. Interest has been both in the causes and consequences of early sexual activity and childbearing, with first a consensus that such behavior had harmful effects on young women’s socioeconomic outcomes and then, more recently, revision in this assessment based on studies questioning the strength of the causal connection between early childbearing and negative outcomes. (See Hotz, McElroy, and Sanders, 1997; Hotz, Mullin and Sanders, 1997; and see Wu and Wolfe, 2001, for an excellent recent volume on the state of knowledge about nonmarital and early childbearing.)

**Mechanisms.** The National Academy report on early childhood development, *Neurons to Neighborhoods* (Schonkoff and Phillips 2000), notes the “dynamic and continuous interaction between biology and experience” and the importance of cultural influences in childrearing patterns, but also the difficulty in distinguishing normal variation in human development from “dysfunction” or “maturational delays.” What children need changes rapidly as maturational processes unfold, brain development occurs, and social interaction with a wider and wider set of “others” takes place. Research on early childhood is increasingly focused on interconnections among family resources, psychological functioning of parents and children, and child outcomes (McLoyd 1998) but the causal pathways are complex and difficult to establish.

Studying the mechanisms through which a distal, but perhaps important, family or parental resource (such as the number of parents actively involved in childrearing or the educational level of parents) is translated into child outcomes is especially important if the goal is to develop a better understanding of the processes by which family resources are effectively linked to child outcomes. An illustration of the type of research that is promising is a recent working paper on maternal education and birth outcomes (Currie and Moretti 2002). The research is designed to elaborate the pathways between higher educational attainment and better birth outcomes: Women who get more education between a first and second birth are more likely to seek prenatal care in the first trimester and are less likely to smoke during pregnancy. Higher maternal education also enhances the likelihood of marriage to a partner with a good income, thereby raising the socioeconomic resources of the woman during and after pregnancy.

The interest in pathways or mechanisms has increased the attention to factors such as parental psychological health (e.g., maternal depression) that may condition how effectively family resources are used to promote child well-being. Aspects of the home environments are also increasingly assessed in major data collections of children such as the children of mothers of the National Longitudinal Survey of Youth (NLSY79). The relationships are also dynamic: change in resources can affect outcomes but child outcomes, in turn, can alter the family resource base.

There are also important issues concerning the role of other suppliers of inputs to children beyond biological parents. As noted above, co-residing, non-biological parents, absent parents, other relatives, siblings, peers, neighborhoods and other forces, such as the media, are all potential, and sometimes active, participants in child development and the well-being of children, regardless of whether their roles are positive or negative with respect to either development or well-being. Recent research on children and adolescents has focused on “peer” and “neighborhood” effects and much of this research has focused on the interrelationships between families and these other actors in affecting the development and well-being of children (e.g., Brooks-Gunn et al. 1997). In our view, three challenges confront these sorts of analysis: (a) How does one determine who are the “relevant” other actors that influence child well-being and gather data on them? (b) What does one want to know (or “measure”) about these actors and their interactions with children? (c) How does one get at the causal effects of the “inputs” of these various actors on child development and well-being? We return to these questions in the next section.

**Key Questions and Challenges to be Addressed by the Working Group.** Based on the above discussion of the effects of families on child development and well-being, we have identified the following initial set of key questions and challenges for this module’s working group:
• What are the relevant “stylized facts” about the role of families and family structures for childhood development and well-being and how do they vary across different demographic and socio-economic segments of the population?

One of the first tasks for this working group is to review, assemble and catalogue the set of stylized facts about the role of the family on child development and well-being. This should be a relatively straightforward task, given the availability of numerous surveys and syntheses of this issue that have been developed over the last decade. (See, for example, Duncan and Brooks-Gunn (eds.) 1999, *Consequences of Growing Up Poor*; Schonkoff and Phillips, (eds.) 2000 *Neurons to Neighborhoods*; Hauser, Brown, Prosser 1997; Moore et al. 2001; and Thornton 2001). These sources and others will form the basis of an extensive literature review that will help characterize what we know.

• What are the relevant theoretical developments in this field, and what is the state of the “evidence” on their validity?

The working group also will need to assemble the relevant theoretical frameworks for the relationships between families and children and assess the “state of knowledge” on the evidence as to their validity for accounting for the various stylized facts and the hypotheses concerning various observed behaviors that are suggested by these theories. There has also been increased attention in the literature to what parents (and other caregivers) do vis-à-vis children, how peers influence each other, school climates, child care settings, neighborhood and community resources, and children’s media exposure. At the same time, it is our initial assessment, that the theoretical development and empirical evidence that establishes causal pathways between the inputs (e.g., “what parents do”) and the array of outcomes (e.g., ultimately “how children turn out”) is still in a formative stage of development. While we assume parental (and other) investments in childrearing matter, it is not clear that we have established how much and in what ways family interactions and resources matter for good child outcomes, especially relative to genetic transmission and peer and other influences. (See Harris (1999) for a recent controversial assessment of the role of families, genetic endowment, and peer influences on child outcomes.) Integrating theory on child development is particularly important to understanding the relationship among inputs, mechanisms, and outputs (see, for example, Bornstein et al. (eds). 2003 for an assessment of various domains of development over the child, adolescent and young adult life course).

• What data sources are available for the study of the role of families and child well-being? To what extent do they support conducting credible analyses of the causal effects of parental and family inputs on child well-being and development?

There are a number of longitudinal data collections focused on portions of childhood. Add Health (National Longitudinal Study of Adolescent Health) and NELS are school-based samples that focus on adolescents; children of the NLSY79 mothers are followed over childhood, most from birth. The PSID is now collecting the second wave of its Child Development Supplement. In addition, data on child well-being among more disadvantaged populations in the U.S. have been collected in a number of major evaluations of policy interventions (e.g., the *Welfare, Children and Families: A Three City Study* and *Fragile Families and Child Well-Being Study*, as well as studies conducted to evaluate recent reforms of the U.S. welfare system, some of which are summarized in Zaslow et al. 2002.)

The crucial task of this working group is to catalogue the various data collections and assess how they can be used to provide a complete picture of investments and outcomes throughout childhood. Particular attention will be paid to the utility of these data and data collection strategies for improving our understanding of the causes of variation in child well-being, and of practical policy interventions that might improve child well-being. We plan to identify a set of critical child outcomes, and to commission a paper to evaluate the unused potential of these data sources for improving our understanding about these outcomes.
What data sources are available for the study of the relationships between biological factors and child well-being and how can they be improved? To what extent do these data sources contain biological information on both children and parents and sufficient information on socioeconomic characteristics of households and children and measures of child outcomes and family-related behaviors to facilitate analyses of both biological and behavioral theories of child development and well-being?

The literature we have reviewed above makes clear the potential importance of genetic endowment and biological predispositions on child well-being. Some social science research has been cognizant of this input (e.g., Rosenzweig and Schultz, 1985, and Rosenzweig and Wolpin, 1980). But much of the evidence this work has produced on the role of genetic endowment has been indirect, largely because of what appears to be the lack of direct data on genetic characteristics and, in some cases, of complete information on the genetic links between members of households. Similarly, our discussion of the role of biology in Module 2 makes clear that bio-medical research provides information on the empirical relationships between biological factors and a limited set of indicators of adolescent and child well-being. Advances in understanding of neurological circuitry and brain development is influencing the study of outcomes in early childhood (Shonkoff and Phillips 2000). One of the key issues that will confront this working group is the availability of data sources that include both biological information and a rich set of indicators of child well-being and other socioeconomic information on the families in which they reside and/or about the characteristics of their parents. We suspect that this assessment of data sources will spawn useful recommendations from this Working Group on ways to improve existing data sources in both the bio-medical and demographic fields.

Can we develop sampling frames that gather information on a full range of family members, including those that do not co-reside with their children?

The above discussion (and the discussion in Module 4) about the fact that an increasing number of children do not reside with both (or either) parent raises an important concern regarding the household-based sampling frames used in most demographic and social science surveys. This is most apparent in the case of nonresident parents, usually fathers, and their children but extended-kin such as grandparents who live elsewhere may also make substantial investments in their grandchildren. To date, the study of nonresident fathers has primarily concentrated on the payment of child support though ethnographic information points to the importance of other in-kind flows of support to children (Edin and Lein 1997). Children might be thought of as at the center of a social network that includes family members in and outside the home, as well as non-kin significant others. Attention is needed as to how to best sample this network.

Why do children who share the same parents and family household turn out so differently?

One of the most perplexing questions about child outcomes is how children who share the same parents and family household can turn out so differently. Part of the answer to the puzzle may be that, depending on how far apart children are spaced and how rapidly family context changes, siblings may actually grow up in rather different family contexts. There also may be a better “fit” between some contexts, or parenting styles, and one child in the family than another. Although many parents no doubt subscribe to an ideology of “equal treatment” for all children, there are many instances in which equal treatment seems not to be carried out in practice. More attention to the family as a system of actors with only partially overlapping circumstances may enhance our ability to detect when changing environments alter behaviors and outcomes. Much more theoretical development of “unequal” parenting, even within an ideological context of “equal” investment in offspring, is also needed. We anticipate that panel data on sibling outcomes, such as provided in the NLSY child supplement or the PSID Child Development Supplement will be crucial resources for addressing this issue. A goal of the working group is to identify effective analytical strategies for using these data to study within-family variation in child welfare.
• How does one determine who are the “relevant” actors and institutions that influence child and adolescent well-being and gather data on them? How do the influences of these actors on children interact with family inputs? How does one get at the causal effects of the “inputs” of these various actors on child development and well-being?

Perhaps the most difficult challenge for this Working Group is assessing the broader context in which family inputs in childrearing occur, and the role of that broader context on the mechanisms by which inputs affect child outcomes. This task intersects with that of the working group of Module 3 but is focused here on the role of context on developmental outcomes in childhood and adolescence.

MODULE 7: OLDER FAMILIES AND INTERGENERATIONAL RELATIONSHIPS

Background and Motivating Issues. The U.S. population is aging rapidly through falling fertility and greater longevity. By 2030, one fifth of the U.S. population is projected to be 65 years old or older. Aging of the U.S. population has motivated substantial investments in new research on the physiological and cognitive processes of aging, health and economic disparities among race-ethnic and immigrant groups, retirement, widowhood, and relationships among kin. In this module, we will investigate the relationships between generations and the role that the family plays in these relationships, including the influences that family ties have on the health and well-being of older generations, their retirement decisions, and the resource flows between generations, including transfers of time and money. By way of background, we discuss several of these linkages between generations, the extent to which existing theories address them and, at the end, we discuss the potential issues related to data needs for studying intergenerational relationships and the role of the family in these relationships.

Challenges for Older Families of U.S. Population Change. U.S. demographic trends pose new challenges for families and public programs that help support older persons. Declining fertility means that parents have fewer children on whom they can rely and that some adults have no children. High rates of nonmarital childbearing and divorce coupled with prevailing custody patterns have the long-term effect of reducing adult children’s connections to older fathers (Cooney, 1994; Pezzin and Schone 1999; Furstenberg et al. 1995). Remarriage and cohabitation create new family ties that have the potential to compensate for declining numbers of biological children (Wachter, 1998), but stepchildren and stepparents have weaker social ties to each other and are much less likely to share or exchange resources in adulthood than biological kin (White, 1994; Rossi and Rossi, 1990). Attitude surveys show that individuals exercise more choice about when to help step-kin than about when to help biological kin (Ganong and Coleman 1999).

At the same time that nonmarital childbearing, divorce, and remarriage/cohabitation disrupt ties between members of the middle generation and their older parents, these trends may also enhance ties between grandchildren and grandparents who step in to help raise their grandchildren (Casper and Bianchi 2002: Chapter 6). Gender differences characterize multi-generational differences as well as those between two-generations. Women are the “kin-keepers.” Grandmothers are more involved with their grandchildren than grandfathers. Grandmothers also appear to facilitate grandfathers’ ties to grandchildren, and contact between grandparents and children is greater when the adult child is a daughter rather than a son (Uhlenberg and Hammill 1998). Gender differences in adult children’s motivations for providing support to their parents point to the importance of examining social psychological as well as structural explanations for these patterns (Silverstein et al. 1995).

Improvements in mortality increase the potential for multiple generations of families to interact. Obligations within and between generations may be altered by the expectation that the time horizon for potential reciprocity is longer than ever before. The type and direction of transfers between generations vary over the life course (Logan and Spitze 1996). The lengthening of old age may alter how parents
think about investing in children and how adult children think about providing care to older parents. For instance, siblings may take turns providing assistance (see, for example, Riley 1983; Hagestad 2000). Longer life expectancy might also change the need for kin support as a type of insurance system. Longer life, even if a person is in good health, means a longer period of exposure to unexpected events that may require assistance of some sort. We know little about how the combination of changing expectations about the durability of kin bonds and increased potential for needing help affects intergenerational relationships.

The changing racial-ethnic composition of the United States, and particularly the higher fertility of Hispanic and immigrant groups, will affect the size and composition of older persons’ kin networks. Racial-ethnic groups also differ in their attitudes about kin obligations. For instance, African Americans recognize obligations to more distant kin than whites (Rossi and Rossi, 1990). Immigrant groups differ among themselves and from those who are native-born in their understanding of kin obligations, the availability of kin in the United States (versus the sending country), and in plans for return migration. Social scientists know little about how these group differences affect relationships between generations, particularly in older age.

Debates about the direction of transfers between generations are on the public agenda, for instance in debates about the economic viability of the Social Security system and how to cover rising health care costs. These debates implicitly, and sometimes explicitly, contrast the cost of public support for older persons with the cost of private support provided by family members. Advocates of cutting support for programs affecting older persons assume that family members will use their resources to offset any program cuts. Yet researchers know little about how intrafamily transfers are related to participation in public programs (Rosenzweig and Wolpin 1994; Schoeni 2002). Thus, a central focus of the working group for this module will be to examine the relationship between public and family (private) support in families with older kin.

**Retirement Decisions and Outcomes.** As the debate about Social Security implies, one of the most important decisions in many peoples’ lives is the timing of retirement. The decision affects not only economic welfare, but also important aspects of family life, including how older people allocate their time and money. Whereas much of the research on the lives of younger families has centered on the competing demands on time spent working (both in and out of the labor force) and on time spent rearing children, research on older families has focused on decisions about retirement, savings and income. The relationship between retirement and income after retirement, through private or public support, has preoccupied much of the literature. In recent years, there has been increased emphasis on the relationship among retirement, wealth and levels of economic security. Studies of the links between health and retirement in the United States have traditionally focused on disability insurance and work decisions, although an emerging literature relates health disparities to work in later life. The vast majority of this work has focused on decisions by an individual, placing the family in the background, often far from sight. Yet the family likely plays an important mediating role in all of these relationships.

The decision to retire by one family member will depend, in general, on the time and resource demands of other family members. In a family in which a husband and wife work, they are likely to choose to retire at around the same time (assuming weak but plausible assumptions about the complementarity of spouses’ leisure time). This implies that a woman will typically retire at an earlier age than a man, which in turn likely affects the level of private and public pensions for which each is eligible. This trade-off between time with a spouse now and resources in later life is a particularly stark example of the on-going juggling of competing demands of family and work throughout the lives of many individuals. (See Module 8 on Family and Work.) Recent research confirms that, as theory predicts, retirement decisions are made jointly by a husband and wife (Davenport 1998; Gustman and Steinmeier 2002; Coile 2003), although there is very little scientific evidence on the implications of these choices for the well-being of the retirees, their children or their grandchildren.

The importance of family in affecting retirement extends well beyond the retirement choices of an
individual’s spouse. An individual may choose to retire to care for his or her spouse, for an elderly parent or possibly for a child or grandchild (Wolf and Soldo, 1994; McGarry 2003). Alternatively, individuals may postpone retirement to retain health insurance or additional income needed to provide for a family member in poor health, or to provide cash transfers to support extended family members. Thus studies of retirement behavior that focus solely on the importance of individual (and the individual’s own job) characteristics likely miss key determinants of this life-changing decision. Moreover, the consequences of retirement are far broader than solely economic. While retirement is typically thought of as a positive experience, the change in social roles may bring with it feelings of isolation or a questioning of self-worth. Sociological studies point to the potential for work to improve individuals’ emotional well-being and recent medical evidence suggests that activity may put off the onset of poor health or reduced cognitive capacity.

**Health, Aging and Families.** Health plays a key role in affecting the well-being of (extended) families with older members. Studies have demonstrated that poor health and retirement are strongly related. Thus improvements in health across cohorts can be expected to lead to longer work lives. Scheduled increases in the Social Security normal retirement age will also be expected to result in longer work lives. Despite these potential changes, the length of time in retirement has continued to increase, thereby suggesting the need for greater retirement resources. In addition, one would expect increases in the demand for medical care and for social support. To the extent that parents will rely on their children and grandchildren for this support, there are potentially important implications for the well-being of future generations. Differences by race, ethnicity, and economic status in social norms and the provision of support imply that the expected demands on the younger generation will also vary.

**Intergenerational Transfers.** Older families figure prominently in studies of intergenerational relationships, particularly with respect to transfers within the extended family. Transfers can flow in several directions and may be made in different currencies. Older parents may provide cash transfers to their adult children or grandchildren, they often leave inheritances when they die, and they may provide assistance with the care of grandchildren. Conversely, younger families may provide care to an elderly parent, grandparent, or other relative, or they may provide financial assistance. Less easily quantified are the costs and benefits of shared residence. Elderly parents may move in with adult children or vice-versa. How the benefits of these shared living arrangements are distributed is not clear. Classical theories about fertility treat parents’ investments in children as a potential source of old-age support. But it would appear that the “old-age security” hypothesis for determining family size is less relevant for most developed societies. In the United States, for instance, most transfers are from older parents to adult children (McGarry and Schoeni 1995, 1997). Even when the balance of transfers favors children, adult children may still provide significant socioemotional support, time and financial assistance to their parents, especially in times of crisis, e.g., when a parent is widowed or seriously ill. This set of facts about intergenerational transfers has spawned new work on the motives for transfers.

There is, for example, a long line of research that exploits interfamilial transfer behavior to assess the relative importance of altruism and exchange (or a quid-pro-quo motivation) for family decisions. Previous evidence has failed to find conclusive evidence of either model (Cox, 1987; Altonji et al. 1992, 1997). More recently, Light and McGarry (2002) examine new data on why parents chose a particular allocation of assets when writing a will, and conclude that altruism and exchange are more or less equally important in this choice. Researchers know little about how siblings interact when confronted with older parents in need of care. Constrained by the limitations of current data, empirical studies have focused on bilateral relationships between parents and one child. A more general model of time and money transfers, in the context of an extended family in which all potential sources of support are included in the choice set of older adults, their children and their children’s families, will provide a much richer characterization of the opportunities and constraints under which these multilateral negotiations take place. This will likely yield new directions for research on the family. Even a simple model in which couples are choosing to allocate limited time or money to the wife’s or the husband’s parents opens new possibilities for
distinguishing the motives behind decisions and suggests sharper tests of the role that altruism may play in affecting *intervivos* transfers and bequests.

These models also speak to the processes underlying family decision-making discussed in Module 1 above. If, as suggested above, the decision to retire is a joint decision and if the ideal date of retirement for a husband and wife are not the same, then there is presumably scope for bargaining over the precise timing of retirement. In a dynamic model of family decision-making, this bargaining process will extend over the entire life course and many models of behavior will be consistent with any array of observed behavior. Bargaining models will also provide insights into the provision of assistance to the parents of the husband and the wife. The type and amount of assistance may vary with the bargaining power of the particular spouse. However, plans that are disrupted because of an unanticipated change in health status, employment opportunities or income after retirement provide the purchase necessary to empirically distinguish models of family decision-making. The unanticipated run-up of the stock market, changes in social security rules and job loss because of economic decline (which typically affects older more than younger workers) are all potential examples of such events. This module will explore these sources of variation, within and outside the United States, to develop tests of competing models of family behavior.

Indeed, unexpected events in later life are a powerful source of information for identifying key behavioral parameters that affect many family choices. Such events represent the sort of “exogenous” variation in the conditions/incentives that play a crucial role in isolating causal effects discussed in our Conceptual Introduction (Section A.2.b). In the context of studying intergenerational behavior, those who retire earlier than expected, for reasons of poor health or family obligations, are likely to have too little in the way of resources to finance a comfortable retirement. In addition to employment status and the retirement decision, the eventual well-being of older families depends crucially on savings decisions made throughout the life course. Recent research tends to show that individuals have saved too little for their retirement. Thus, a careful study of the retirement processes requires analysis of decision-making processes beginning at much younger ages. In economic models these financial decisions depend on such factors as the individual’s planning horizon, the role of risk, and the desire to save, factors that can perhaps be best observed by studying the behavior of younger individuals. Despite the importance of these variables to the central tenets of life cycle models of behavior, there is little scientific evidence on the magnitudes of these parameters. Innovative modules in the Health and Retirement Study have provided new evidence on risk aversion, subjective rates of time discount and planning horizons although these items have not been included in studies of family behavior. Knowledge of these parameters is not only critical for understanding decisions about work, retirement and well-being in later life, but also about investments in human capital, fertility, and marriage. By carefully exploiting these data, in conjunction with similar data collected in Europe and Asia, we will assess their contributions to developing a better understanding of the role the family plays in mediating the well-being of individuals over the life course.

**Key Questions and Challenges to be Addressed by the Working Group.** We plan to begin the work of this module by addressing a number of challenges to researchers’ understanding of intergenerational relationships and aging. Our agenda for this working group will incorporate and extend the agenda outlined in the 2001 NAS volume, *Preparing for an Aging World*. As will be discussed below in Section A.6.b on Personnel, the work of this module will involve Professor Kathleen McGarry (UCLA), who is expert in the study of aging, policies affecting older persons, and economic relationships between parents and adult children.

- *What is the current state of theoretical development and knowledge about the interrelationships among multiple generations and the interactions among individuals with different types of familial connections (step, biological, in-laws)?*

While there is a great deal of theoretical work on intergenerational relations, our discussion above suggests that many questions remain. For example, there appears to be relatively little known about
how intrafamily transfers are related to participation in public programs (Rosenzweig and Wolpin 1994; Schoeni 2002). Thus in addressing this key question, we anticipate that the working group will identify current limitations of the theoretical frameworks used to analyze intergenerational relationships and behaviors. We will pursue this activity in close collaboration with activities in Module 1 on family decision-making. We will strive to ensure that the assessment of the existing state of knowledge on model development will be informed by ethnographic and survey findings about kin obligations and individuals’ reports about the obligations of different types of kin. Where we identify needs, we anticipate that the working group, or a commissioned consultant, will undertake new model development or, at a minimum, outline what the key issues are that need to be addressed in such an effort.

- **What are the key implications of the changing population composition for the availability of the number, type, and characteristics of available kin for current and future generations?**

Assessments and forecasts of the demographic structure of current and future generations in a nation play a crucial role in addressing such issues as the solvency of social security system and the provision of health care (such as under the Medicare and Medicaid systems in the United States). Underlying these forecasts are different assumptions about changes in immigration, fertility, and family formation and dissolution. The availability of kin constrains the potential for intergenerational contact and exchanges. Thus we shall have our working group examine these forecasts and the methods used to construct them, with special attention to their sensitivity to the availability and likelihood of receiving support from kin. This effort will build closely on the simulation projects already underway, but we will elaborate them to take more careful account of racial-ethnic and immigrant group differences in the availability of kin. We anticipate that this will be accomplished by a technical paper that we may commission from a prominent researcher working in this area.

- **What is the state of development of the testing of hypotheses about the multigenerational processes that affect family behavior and individual welfare?**

As in other modules, assessing the state of development of the testing of theories about how multigenerational processes affect family behavior, as well as the reverse direction of causality, will be an important task for this working group. We tentatively envision that this area may be aided by commissioning a pilot study, using existing data, to test hypotheses about the multigenerational processes that affect family behavior and individual welfare. Examples of valuable, but still underutilized, survey sources are: the Health and Retirement Study (HRS), the National Survey of Families and Households (NSFH), the German Socio-Economic Panel (GSOEP), the Survey of Health, Aging, and Retirement in Europe (SHARE), the Indonesian Family Life Survey (IFLS), and the Comparative Asian Surveys.

- **Are there ways to gather richer sets of data on multiple-generations of individuals in the same extended family in order to better assess the potential and availability for kin support and understand the interactions among non-resident kin?**

As is clear from the discussion above, many of the issues related to various decisions made by older adults and the role that kin, extended and immediate, play in them require richer data that include information from multiple generations within a family. Some of the challenges for data collection are similar to those in other modules: How can demographers improve the quality of reports, recognizing that family members differ in their knowledge about each other and the broader kin network, and vary in their tastes and interests? Can this be done without overburdening respondents and at a reasonable cost for field work and data processing? Such detailed information about kin networks is necessary to test theories of family behavior that go beyond the two-generational, single household models on which most current work is based.
MODULE 8: FAMILY AND (PAID AND UNPAID) WORK

**Background and Motivating Issues.** Two trends in the family—the dramatic increase in the rates of paid employment of mothers, particularly married mothers of young children, and the increase in single parenting—have heightened attention to the interplay and potential conflict between market work and family caregiving responsibilities. These two trends upset one (formerly) widespread adaptation to work and family demands: a highly specialized, gender-differentiated division of labor. More generally, work and family time allocation, as well as resource flows, are central to virtually all family outcomes, including decisions about union formation and fertility, time and money investments in children, health and well-being of adults, gender relationships, and intergenerational transmissions of health, wealth and well-being. Thus, in improving our understanding of the change in the family and family-related behaviors requires that we understand how decisions about paid work and unpaid caregiving are made, how they affect family formation and functioning, and how family functioning feeds back and affects paid work decisions, fertility behaviors, and time allocation inside the family.

Families always have faced the following “work and family” time allocation problem: who will earn money and bring it back to the family and who will provide the caregiving children require and the support that earner(s) need? When the increase in women’s employment was confined to young, single women, as it was early in the 20th century, or to women who had completed raising their children, as it tended to be in the 1950s and 1960s, the competition between allocating time outside versus inside the home was less obvious, at least to the individual. In the past for the U.S. context, and still true for many societies, market-work versus home-work time allocations were highly specialized along gender lines, with paid work handled by men and unpaid work in the home needed to cover childrearing demands largely the domain of women. At the beginning of the 21st century, there continues to be heterogeneity among families with respect to this market-work versus home-work time allocation trade-off. Some segments of society and demographic groups still operate with a highly gender-specialized division of labor, particularly when there are two parents and very young children. However, it is now much more common, at least in developed societies, for women and men to both be engaged in paid market work and unpaid domestic work and/or family caregiving. There is little question this is the case for women. But evidence from time diary research suggests that there has been some increase in the amount of time that men spend in housework work and sizeable increases in child care activities, at least among married fathers, over the last twenty years (Bianchi et al. 2000; Bianchi 2000; Sandberg and Hofferth 2001).

As noted, families always face time and money allocation issues but under a highly gender-specialized division of labor, it is primarily men who bring resources in the form of money into the household. As discussed in Module 1, husbands and wives must determine how those resources will be shared or reallocated to members (women and children) who do not have direct access to them through paid work. Consistent with the theoretical notions developed in Module 1, the role of power of individual family members plays a crucial role in these allocation decisions. This role of power has received a good deal of attention in the sociological literature (the “classic study”, that of Blood and Wolfe, 1965). Similar attention has been paid to this issue in the economics literature (Becker 1991). There has been relatively little direct study of how U.S. families (re)allocate resources, such as money (Treas, 1993; Kenney, 2002; Seltzer 2002) and how this changes as market work of women increases, approaches, or surpasses that of men in families. Nonetheless, there is evidence—as discussed in more detail in Module 1—that when women control the flow of financial resources into the family, expenditure patterns change.

A less gender-differentiated division of labor in the family in some sense moves the family time allocation problem down to the level of the individual. Now each individual faces the issue of allocating time to market activities and non-market activities in support of the caregiving goals of the family. It is not that these time allocation issues did not exist in the past; rather, it is that tasks that formerly were allocated to different family members now are reallocated such that each adult in the family does some of both. In the case of couples, if both partners do some of both types of work (some market work, some unpaid domestic work and/or caregiving) each develops expertise in both domains and perhaps a sense of
their entitlement to “have a say” about how the work gets done and how the resources from paid work get allocated. So, increasingly women may want more say in financial matters but it is also conceivable that men may feel more accomplished in domestic matters and thereby entitled to more control in those affairs. More negotiation may be required in symmetric than non-symmetric relationships (Lesthaeghe 2001).

A less-gender differentiated division of labor between paid work and unpaid work can give rise to coordination issues at a family level and beyond. One individual no longer controls one domain, the output of which can be exchanged for what the other individual controls. Rather, since time is finite, the market time of one individual must increasingly enter into the calculations of the other individual in order to ensure adequate time for unpaid activities such as housework and child care. As Jacobs and Gerson (2001) show, the number of combined work hours has increased in two-parent families as more mothers have entered the paid workforce. There is also some increase in couples whose combined paid work hours are very long (100+ hours per week) but this is still the minority. Feelings of time pressure result from the joint nature of the paid work hours, the reduced overall adult hours in the home. It is not just a worker’s hours of market work but also the hours of those he/she lives with that constrain activities and contribute to a sense on the part of some that work demands are “out of control.” At the same time, there are others, mostly the less-educated, who cannot get enough paid work hours or, when they do work many hours, are financially strapped because wages are low.

This is especially true of single parents, most often mothers, who when they are the only adult living with children face considerable time and money pressures. A quarter century ago, Vickery (1977) argued that single mothers were not only at heightened risk of financial poverty but that they also suffered a severe time deficit. Single parents also form an interesting and unique case because their work and family negotiations almost by definition cross household boundaries. It they are to balance paid work and childrearing with resources other than their own time and ability to command income in the labor market (or through the welfare system), they have to effectively obtain time and money (e.g., child support) from the child’s other parent, who by definition resides elsewhere. Alternatively, they have to negotiate assistance from extended kin or friends, either those who coreside or those who live elsewhere. Tracking these complicated time and money flows to and from single parent households is difficult to do in many data collections that use household-based sampling frames.

There are a number of ethnographic studies that describe strategies for combining work and family (e.g., Becker and Moen 1999). There is also new descriptive information from time diary studies and “beeper studies” on objective and subjective dimensions of work and family life. For example, Robinson and Godbey (1999) track changes in time allocation, both paid and unpaid work, as well as leisure and Bittman and Wajcman (2000) document international differences in men’s and women’s paid and unpaid work. In the United States, there seems to have emerged a “leisure” gap, with men having a half hour more “free time” each day and it is clear that parents, especially of young children, consume much less leisure than non-parents (Mattingly and Bianchi 2003). However, what is missing from the research is strong evidence of casual connections between work and family stresses and poor child or adult outcomes.

There is also relatively limited information on the longitudinal, or life course, effect of different work and family decisions taken earlier in life. One exception is recent work by Joshi (2002) with British cohort data in which she estimates the effect of having children on mother’s accumulated lifetime work experience and earnings, and shows that effects can be substantial but primarily for the less educated. She then turns the tables and asks what effect maternal employment has on childbearing and child quality. With respect to fertility, she shows that effects are primarily on the tempo rather than quantum of fertility, particularly for the highly educated. As far as child quality, as measured by child development indicators, there is little effect of maternal employment but children benefit from growing up with more highly educated mothers. The use of cohorts of mothers and children in this study represents an interesting attempt to model the bi-directional flow of maternal employment decisions on family outcomes (child quality)
and vice versa, the effect of childbearing decisions on maternal employment and earnings. In the literature on the United States, there has been recent attention to modeling the “cost” of childbearing and rearing on women (the “family wage” gap analyses of Waldfogel, 1997, and the “motherhood penalty” estimates of Budig and England, 2001) but relatively little work on the bi-directional nature of work and family time allocation and well-being outcomes.

**Key Questions and Challenges to be Addressed by Working Group.** To help focus the work of this Module, we outline several key questions and issues that confront our understanding of the causes of the changes in the paid work versus non-paid work allocations of men and women and their consequences for a range of family-related outcomes. At the outset, we note that NICHD has underway a separate initiative on “Workforce Workplace Mismatch: Work, Family, Health, and Well-being.” Whereas there may be overlap in this module with the NICHD “Workforce” Initiative, our understanding of that Initiative is that it has a somewhat different focus and will lead ultimately to experimental studies of work-family policies in employment settings. Nonetheless, since one of the core group members (Bianchi) is involved in this Initiative and is co-editing the volume that will result from the first conference of this Initiative (in June 2003), the Working Group for this module will, no doubt, benefit substantially from the work and findings of this NICHD Initiative.

- **Given the dramatic changes in work and family life in the United States in the past 50 years, what is the state of knowledge with respect to the dynamic and changing linkages between market work and unpaid family caregiving activities and responsibilities? What data sources support research on these linkages?**

  We plan to build on the insights of the conference to be held as part of the NICHD “Workforce” Initiative, using its findings as one of the “starting points” for addressing the above set of questions. In addition, working group will conduct a comprehensive assessment of the data sources that have been used (or might be used) to study work and family choices, constraints and contexts. We will give special attention to longitudinal data sets that might be better exploited for study of this area or that might be augmented in ways that would provide cost-effective enhancement to our knowledge about work and family intersections. For example, there exist the series of NLS cohorts of women that cover the second half of the 20th century (the Mature Women cohort, Young Women cohort, NLSY79, and NLSY97). We understand that comparability across cohort data collections can be a serious issue but we would hope to assess whether these might be more fully exploited to shed new light on changing work and family decisions of women, augmenting what we know from cross-sectional data from the March CPS and decennial censuses.

  The working group will pay particular attention to determining whether one of these (or other) longitudinal data collection efforts could be supplemented in ways to enhance our ability to assess allocation of time or money within the family. The model that comes to mind is the Child Development Supplement that was embedded in the Panel Study of Income Dynamics. This supplement has provided rich new data on children’s time use and father’s involvement with children in a study with extensive information about the financial situation, past and present, of the children’s families. Couple decision-making modules about work and family embedded in an ongoing longitudinal study might be very attractive and cost effective.

  Finally, based on ongoing work by one of us (DiPrete), the working group will explore the value of assembling an international collection of longitudinal data sets to study work and family topics. Assessing the comparability and research potential for innovative data analysis of cross-national, 12

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12 This conference will focus on “how different dimensions of work and family act independently and interact to affect the health and well-being of workers, families, children, communities, and workplaces’ and will “identify theories, methodologies, key concepts, and constructs used in research across numerous disciplines” (taken from the Programmatic Vision Statement).
longitudinal data sets will also be a high priority. We develop this idea as part of an illustrative pilot study in Section A.4.

- **What are the casual linkages between the changing nature of work and family time commitments and family outcomes broadly defined to include union formation (whether to marry or stay married), fertility (whether to have children and how many), investments in children (time and money), health outcomes for adults (stress, mental health, physical health, financial stability and well-being over the life-course), gender power differentials, and intergenerational transmissions of health, wealth and well-being?**

It is often asserted that families are under-investing in childrearing, women are choosing to remain unmarried and childless, adults are increasingly “stressed” because of increases in work effort on the part of women. Yet the research to date that establishes causal connections between changing work efforts of women (or men) and fertility and family outcomes remains weak. An important task of the working group is to assess the arguments, theories, and empirical evidence that connects work with family outcomes and vice versa with the goal of improving understanding of the strength of linkages between the two spheres.

- **What can be done to either enhance or develop new sources of data to improve our understanding of the nature of the allocation of time and financial resources within families?**

Consistent with the issues that were discussed in Module 1, one of the important tasks of this Working Group is to make recommendations for new ways of gathering data that will be informative about the issues of exactly how family members allocate their time and resources within families. In developing these recommendations, this working group will carefully assess several on-going efforts at gathering data related to time use within households. These included work by the Bureau of Labor Statistics that is currently underway in which a time diary has been incorporated into the surveys of outgoing rotation groups of the CPS and the time diary collection efforts recently undertaken at the Universities of Michigan and Maryland. The group will also assess the experiences of researchers associated with the University of Chicago’s Sloan Center in their data collection in families with adolescents using the Experience Sampling Method (ESM) and the UCLA Sloan Center, which is also combining different strategies for measuring family members time use at work and at home. The working group also will assess (or commission a technical paper to assess) the ways to gather data on the allocation of financial resources within the family. Such data would enable researchers to more directly assess the extent to which families pool income and the extent to which financial resources of family members are able to efficiently allocate these resources to meet alternative objectives. Again, we note that this work will be complementary with that of the working group involved in Module 1.

**A.4. TECHNICAL PAPERS AND PILOT PROJECTS**

This project will use a number of “mechanisms” to develop models for a coordinated program of research and data collection to advance understanding of changes in family and fertility. As discussed in Section A.3, each working group will develop a “state-of-knowledge” (literature review) and “state-of-data” reports on the substantive and methodological topics associated with their modules. These reports will be informed by discussions in the working groups, commissioned studies, and pilot projects. Finally, after our proposed conference, the Core Group will complete a final report that will integrate the findings of the working groups and address issues that cut across the groups.

This section describes areas in which the Core Group believes that commissioned papers and pilot projects may be particularly valuable for advancing knowledge about specific aspects of family life. The
section is a balancing act. On the one hand, we want to give the review panel a sense of the innovative nature of our own ideas about the potential for advances in key questions or challenges, based on our own expertise. On the other hand, we fully recognize that our expertise is limited and that without the more expansive consultation with the broader research community required by this project it is difficult to know which papers and projects (described below and emerging from collaboration with other scholars) will be recognized as the most promising. The Core Group will finalize the list of commissioned papers immediately following the project meeting scheduled for February 2004 (6 months into the project) with decisions about pilot projects coming several months later and commissioned with start dates coinciding with the beginning of the second year of the project. These projects will be undertaken by members of the working groups or be commissioned with one or more outside consultants.

We describe below a preliminary set of papers and pilot projects that we believe are warranted and useful based on our current assessment of the questions and issues that confront future research and data development. In the work plan in Section A.5 below, we budget for 10 commissioned papers and a number of pilot projects. The topics for the papers be decided in the first year of the project and the projects commission in the second year. Below we give 7 illustrative examples of the kind of papers we might need to commission and a number of areas where we might need pilot projects. The examples below follow the “Guiding Principles” that we delineated in the Conceptual Introduction to this proposal (Section A.2.b). The pilot projects vary in the breadth of the questions they address, the degree to which they address both methodological and theoretical challenges, and their correspondence with ongoing work on family and fertility or integration of fields that inform family research but have focused less directly on families. We anticipate a portfolio of proposals for pilot projects. Some of the pilot studies will be narrowly focused on the issues relevant for only one module or working group. Some of the papers and pilot studies will address issues relevant to several modules. But again, we recognize that time and financial resources will force the group to choose only a subset of these papers and topics.

A.4.a Potential Commissioned Papers

1. **Collecting Data from Multiple Family Members to Assess Reporting Quality by Each Family Member**

   Given the importance of sampling and survey design issues when the perspective of multiple persons must be obtained, we propose commissioning a paper from an expert in sampling and survey design, not necessarily in the family field, who can elaborate the strategies for obtaining information from multiple respondents with accuracy and also evaluate the effectiveness and cost of various designs. Especially relevant to modules 1, 4, 5, 6, 7 and 8.

2. **Assessing Strategies for Gathering Data on Non-Resident Family Members and their Interactions.**

   The received wisdom—and evidence from such efforts in the National Survey of Families and Households and the sibling supplement to the General Social Survey — is that it is often difficult to get respondents to provide interviewers with information necessary to locate non-co-residing members of a family. For example, a divorced- or single-parent female respondent may not want to provide, or may not have, such information about her former spouse or father of her co-residing children. Nonetheless, we

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13 Pilot projects would not be commissioned until the beginning of the project’s second year to allow for review of human subjects issues (if relevant) and for the work group to specify precisely the work required. Commissioning of working papers will take place in months 6-9 of the project.

14 Note that no pilot project will be undertaken (nor funded) until all human subject concerns have been reviewed and appropriate IRB committees have approved it.
think that it is worthwhile to commission one or more experts in survey research to review this issue. This review should assess attempts to develop such “extended” sampling plans of other family members and, explore whether there are ways to develop such sampling plans that are feasible and sensitive to human subject concerns and that maintain respondent cooperation and participation. Ideally, this review and exploration will distinguish between gathering information to locate different “types” of family members, e.g., those with whom the key respondents still have contact and a good relationship, versus those with whom the key respondents are estranged versus those about whom the key respondent has no knowledge of the whereabouts of the “family” member. Finally, it would be helpful if this (these) review(s) examined the research literature to determine the quality of information that is gathered about non-co-resident family members by “proxy,” i.e., asking respondents about their older parents’ income or a divorced female respondent who has custody of the children about her former husband’s educational attainment and income. The findings of these commissioned studies may be pessimistic on the feasibility of implementing sampling plans that enroll non-co-resident family members into a survey. Nevertheless, a reassessment is important due to the potential value of gathering such data. Especially relevant to modules 1, 2, 4, 6, and 7 and Issue Area # 4 below.

3. Title: The Potential of New Technology and Innovations for Collecting Time Use Data

Time use data is of great value in family studies (see Binachi 2000; Bianchi et al. 2000; Gershuny 2000), but these data can be difficult and expensive to collect. We propose a paper that reviews efforts to collect information on time use. We expect a focus on innovations and technology that may decrease the costs of collecting these data. We would especially like to find methods to measure how families would spend a “marginal hour,” that is, when a time crunch occurs, what activities would be cut back first. Especially relevant for modules 1, 4, 6, and 8.

4. Available Data on Twins and the Potential for Collecting New Data Including Relatedness of Respondents

This paper would describe data on twins, either in the form of sampling twins or sampling parents who have given birth to twins as a strategy to implement behavioral genetics studies, to control for unobserved heterogeneity, or to use the “surprise” of twins to explore the implications of unexpected

15. We have ignored surveys and studies where information is directly collected on non-co-resident family members. Several notable examples exist. The first is the Panel Survey of Income Dynamics (PSID). From 1968 to 1996, the PSID interviewed and reinterviewed individuals from families in its core sample every year, whether or not they were living in the same dwelling or with the same people. All adults were followed as they grew older, and children were followed as they advanced through childhood and into adulthood, forming family units of their own. The inclusion and following “split offs” from the original families in the study makes the PSID a unique source of panel data set on multiple generations of families. Second, the National Survey of Families and Households (NSFH) followed married parents who separated between interviews and included questions for each former spouse about the other’s characteristics. The NSFH also interviewed parents and young adult children of the primary respondents. Finally, we note that the National Longitudinal Surveys of Youth 1979 and 1997, gathered data on all siblings in an original sampled household that fell within a certain age range and then followed those siblings through time as they left their parents’ residence. Each of these examples of studies obtain direct information on multiple generations and/or siblings from the same original families by virtue of being longitudinal surveys that follow individuals, wherever they reside. As such, they represent important data sources that have been used to address some of the sorts of research questions related to the role of common family background on various types of behaviors. Furthermore, as discussed in our Conceptual Introduction, the feature of common family background sustains an important class of methods for estimating causal effects related to a variety of related behaviors.
variation of fertility on further fertility, labor force participation or divorce (while DZ twins are no longer random events due to in vitro fertilization, MZ twins continue to be essentially random events that are not influenced by IVF treatments). Especially relevant to modules 2 and 5.

5. **Collecting Data on Temporal Decision-making and Discounting and Interpersonal Preferences**

This paper would review attempts to collect cognitive information, especially data related to temporal decision-making and discounting. Much fertility and family behavior depends on "timing." Therefore, the evaluation of intertemporal discounting (i.e., the relative weight that individuals place on short-run and long-run expected outcomes of particular decisions) is highly relevant for the study of the timing of marriage and fertility. We would also like a review of methods for collecting this type of cognitive information and information on Interpersonal Preferences such as “altruism,” “fairness” etc. Especially relevant to modules 1, 4, and 5 and Issue Area #1 below.

6. **Collecting Data on Social Networks Relevant to Family Behavior and Decisions**

This paper would review strategies for collecting network data for family members. Systematic collection of data on social networks/social capital is a potentially significant indicator of the “micro-context” that can affect child development, the quantity and division of family work, and the process of union formation and dissolution. Especially relevant for module 1, 4, 6 and 8.

7. **Conceptual models for genetic predispositions and contemporary family behavior**

This paper, written by a psychologist with extensive knowledge of genetics, would discuss the biological basis of possible genetic predispositions and how they might influence family behavior. The emphasis would be on translating the work of geneticists into conceptual models of how such effects might operate and descriptions of the pathways of influence. Especially relevant for module 2.

**A.4.b Potential Pilot Projects**

Below we outline possible pilot projects organized within four issue areas. The first is a set of coordinated pilot projects that focus on understanding the role of preferences in family behavior. Each pilot in the set could be conducted independently of the others, but we present them combined as a set because they address related challenges of measuring central concepts in theories of family behavior. The second issue area and associated pilot project uses a comparative approach to examine the effects of context on family outcomes. The third issue area with a set of pilot projects investigates how data from administrative records can be combined with survey data to improve the quality of information for studying family behavior at the same time that human subjects’ rights to privacy are protected. The fourth issue area and pilot project systematically explore the feasibility of obtaining information about routine and unexpected family interactions from more than one family member, including those who do not co-reside.

**Issue Area #1: Strategies for Measuring Interpersonal and Intertemporal Preferences and the Influence of Biology for use with Survey Data.**

**I. Introduction: The Importance of Interpersonal and Intertemporal Preferences**

Several modules discuss the importance of interpersonal preferences (e.g. “altruism”) and intertemporal preferences (e.g. “future orientation” or “impulsivity”). While these factors play a key role in theoretical models, these have proven very difficult to measure. As we discussed, attitudes and preferences towards interpersonal relationships such as “altruism,” “selfishness,” and “reciprocity” are
the bedrock upon which families are built and may be endemic to humans from our evolutionary history. The constructs feature prominently in models of family formation, the allocation of goods and time over the life course, including decisions about fertility, investments in children, caring for the sick, the elderly and the less well-off. Not only are inter-personal preferences critical components of models of decision-making within families and households but they and are also likely related to power over resources within relationships. Take, as an example, a couple in which one member is more altruistic than the other; all other things equal, the less altruistic member will appear to strike a ‘better’ bargain in the distribution of the family “surplus” in terms of getting more economic and social resources.

*Intertemporal* preferences play a similar role in these relationships. Differences among family members in attitudes towards risk and uncertainty as well as differences in the extent to which members discount opportunities or outcomes in the future have powerful implications for understanding family behavior. For example, in bargaining models of family decision-making, a member who discounts the future more heavily and, thus, prefers benefits today or a family member who is willing is take on more risk today will have an advantage in striking a bargain that provides him or her with a bigger share of family surplus. This is because he or she will likely choose (or credibly threaten to choose) an outside option before a more cautious family member, all else being equal. As another example, individuals who “hyperbolically discount” the future, that is give disproportionate attention to contemporaneous costs and benefits, may make choices quite differently from individuals who do not face such impulse control issues.

There is considerable interest in measurement of these “preference parameters” and a rich tradition in the experimental branches of psychology, sociology, anthropology and economics. Common to all of these experiments are designs where subjects are placed in a controlled environment and randomly assigned some form of stimulus (treatment). While the implementation of these experiments is fraught with complexities of design, robust protocols have been developed and a great deal has been learned from the research. Studies that compare men with women, for example, suggest that on average women tend to be more altruistic, more risk averse and discount the future less heavily than men. (Eckel and Grossman, 1998, 2002.) In the context of the discussion of models of family, this suggests that women will be at a disadvantage in negotiating outcomes within the family. Studies that have examined the behaviors of children suggest they tend to indulge in risky behavior in part because they discount the future and they tend to value interpersonal reciprocity less than parents. Teenagers in particular seem to be willing to take actions with immediate payoffs even when these have large future costs and this may be tied to the hormonal changes of puberty. The models of family suggest that children will have an advantage over their parents.

These studies offer many insights into family behavior, but rarely do studies investigate how real-life families make decisions. An important exception is a recent experiment that compared sharing among strangers with sharing among family members to show that family members are more inclined to be altruistic toward each other and that adults are more altruistic than children (Peters et al., 1999). Experimental and survey research traditions treat preferences very differently. Researchers typically view experimental measurement of preferences as a substitute for survey measures and vice versa instead of viewing them as complementary approaches. To our knowledge there have not been attempts to collect experimental data on preferences in an ongoing survey. This greatly limits the ability to model the correlates of preferences or the potentially important causal effects of preferences on behavior.

**II. Potential Pilot Projects**

*Project 1: Measuring Preferences of Survey Respondents in an Experimental Setting.*

Further developing this line of research to measure preferences of family members for whom survey data is also available is likely to yield important insights into the meaning of family and how families function. For example, nothing is known about whether differences in altruism, risk aversion and time
preferences between men and women are mitigated or exacerbated within families. Assortative matching of spouses would suggest matching on tastes and thus relatively small differences between partnered men and women. Evolutionary biology, however, might point to seeking out differences and thus exacerbation of preference heterogeneity between partners. Little is known about whether interpersonal and intertemporal preferences evolve over the life course and, if so, whether the preferences of couples tend to converge or diverge over time. The evolution of tastes for family life through childhood, adolescence, adulthood and older age remains virgin territory. Finally, little is known about the intergenerational transmission of preferences and the role of biology in influencing these traits. While a much larger project is necessary to assess all of these, here we discuss what might be learned from drawing a subsample of respondents (about 200) from an ongoing survey and measuring intertemporal and interpersonal preferences at a limited number of times (twice, one year apart). The Work and Iron Status Evaluation (WISE), an on-going longitudinal survey of over 4,000 households in Central Java Indonesia, the Balinese Economic and Social Transitions Study ((BEST), a survey of 2,000 households conducted in February 2002 with the first reinterview in February 2003, and LA FANS are three longitudinal datasets collected by faculty at UCLA that might offer the potential to pilot such integration of experiments embedded in ongoing surveys. However, we will rely on collaborating scholars to advise us on whether other data collection projects might be available for such experimentation (AdHealth, PSID, etc.), to help gain access to the survey staff to implement such work, and to help form a project Core that can gain from the experiences in experimental economic, psychology and sociology.

One example of the kind of experiments we have in mind is what economists have labeled the “ultimatum game.” This has been viewed as a way to measure notions of fairness and to see how subject behavior changes when the gains to “fairness” change. A second example is a common experimental approach to measuring future orientation. In the laboratory, subjects are given the choice of a dollar valued payoff immediately or in the future. The timing and size of payoffs is varied and subject responses to these offers collected in order to understand time preferences. These are examples of measurement methods but again we would rely on collaborating scholars to understand the most important concepts to measure and the best experimental methods for doing so.

This project would make two key contributions. First, experiments to measure preferences such as altruism could involve respondents and members of their own family and respondents and strangers. The assignment of subjects to family and non-family groups will provide new opportunities to better understand how the organization of the family molds preferences and behaviors. These experiments will seek to measure both interpersonal and intertemporal preferences of parents and children, older and younger, males and females. Second, by drawing subjects from respondents in an ongoing survey, we can explore the integration of experimental data with survey data collection. While we would of course hope to learn about behavior, the pilot project would be aimed at working out protocols, recruitment strategies, acceptable informed consent mechanisms, and cost efficient methods of collecting this type of data.

Project 2: Integrating Bioassay Data to Study Preferences and Behavior.

We envision that some of the experiments will involve stress, competition among family members or between individuals and strangers. One potentially important source of additional information is on the underlying biological mechanisms that support the preferences of individuals. A second pilot project might explore the possibilities of collecting bioassay data, both basal levels and response levels induced by the stress of the experiment. While saliva samples can measure several endocrines, cortisol will be of particular interest when examining time preference parameters, and testosterone when examining degrees of altruism or aggression. For example, we would like to find out whether individuals who are more tempted by current payoffs or who are measured to be more selfish differ in either basal or response levels of endocrines. As we discussed in Module 2, endocrines are shown to respond to factors such as the birth of children and scholars have speculated that this may support a changing preference to become nurturing. The idea of this project is to see whether measures in the games of fairness etc. are correlated with endocrine levels. Subjects would also be thoroughly debriefed and in-depth interviews conducted with a subsample of respondents. Data from the experiments, biomarkers assays, survey data and in-depth exit interviews would provide the groundwork.
for evaluating the contributions of each of the methods to understanding the family.

**Project 3: Investigating Survey Based Methods for Measuring Preferences**

A third interrelated pilot project could investigate whether survey based methods could be used to capture the same information as is captured in experiments. This is important as psychological laboratory experiments may be too costly and too inconvenient to field on a large number of respondents in a survey. It would therefore be useful to develop instruments that could be included in large-scale surveys. Questions on intertemporal preferences have been successfully implemented in the Health and Retirement Survey (Barsky et al., 1997). This pilot project would further develop the vignette approach to questionnaire design and build new survey modules. Testing these questions in longitudinal surveys such as HRS, PSID and IFLS will be extremely valuable to research on the family since it would be possible to link information on interpersonal and intertemporal preferences to behavioral choices over the life course. And having a small set of pilot respondents where we could see whether these survey based approaches are correlated with the results from measurement by games and supporting endocrine levels would validate their potential usefulness. Repeat measures of the same constructs within a panel survey would provide scientific evidence on the evolution of those constructs that might vary over the life-course and the test-retest validity of constructs that are thought to be time-invariant. The ultimate test of this approach to measurement of preferences would be an evaluation of its contributions to understanding family behavior. That evaluation is only possible with a concerted and focused effort to build the information infrastructure that is necessary to better understand the family.

**Issue Area #2: Using A Cross-National Comparative Approach to Study Effects of Context on Family Outcomes.**

**I. Introduction: Cataloging and Using Cross-National Social Contexts.**

The role and measurement of social context is an overarching focus of work described in Module 3 and is analyzed in each of the substantive module (Modules 4-8). One important source of variation in context arises by looking across countries and conducting cross-country comparative analyses. Exploiting such variation may allow us to understand why countries differ in a range of family-related outcomes, from rates of union formation and dissolution, fertility rates, and the division of market and family work. Assembling comparable data on the institutional, legal, and cultural factors across countries hold the promise for a richer set of cross-national analyses than have been available to date.

In many respects, the literature on comparative family outcomes could develop in parallel with the literature on comparative labor markets: a variety of institutional and cultural differences across countries are potential causes for national differences in marriage and divorce, childbearing, and the division of labor between men and women. Institutional and structural factors that potentially affect family outcomes and that may be relatively stable or strongly trending in a particular direction include family benefits, tax policies affecting families (e.g., incentives and disincentives for union formation or dissolution), parental leave policies, availability and price of child care, characteristics of the housing market, minimum wage laws, wage structures, unemployment insurance benefits, characteristics of the school-to-work transition, macroeconomic shocks, changes in demographic structure, female educational and occupational aspirations, attitudes toward marriage, work and gender roles, educational attainment, and so forth.
II. A Potential Pilot Project

*Project: Cataloging and Extending Cross-national Databases on Social Context and Evaluating Their Usefulness.*

We propose that one of our core group members (DiPrete) or one or more commissioned consultants undertake a set of analyses to determine the feasibility of a cross-national approach to understanding the context of U.S. family change. The work would assess the feasibility of (a) assembling a set of contextual data for a set of countries; (b) the potential to merge these data with existing country-specific data on family-related outcomes into a cross-national, aggregated cross-sectional, time series database; and (c) the potential to match these data to individual level panel data for multiple countries to determine how context affects family dynamics. We propose to investigate not only variation across countries, but where possible and relevant, variation across regions within countries.

Assembling a database on context across countries and regions requires consistent measures of institutional characteristics. This is a challenge as data availability may differ over time and across countries. A major task then is to identify what type of measures can be consistently constructed and at what level of aggregation. This project would draw on existing sources that have assembled a portion of the relevant contextual and behavioral variables (e.g., the family policy database constructed by Kamerman, Kahn and Flora at the Mannheim Center for European Social Policy—see Bahle and Maucher (1998), OECD and Eurostat sources, work by Gornick, Myers and Ross (1997), Gauthier and Hatzius (1997), and, for measures of attitudes, the ZUMA archive or the ISSP project). To this, we would merge data on family outcomes obtained from administrative sources in the various countries and from appropriate surveys, such as the time-budget surveys archived at the Essex Institute for Social and Economic Research by the Multinational Time Use Study (see Gershuny 2000). We would then see which contextual factors if any could be collected and coded to add to this database within the time and budget limits of a pilot project.

To determine the value of extending this project, we intend to analyze the effects of the contextual measures on family-related behaviors, using existing panel datasets that contain information on family-related outcomes. Such data sets are available for a number of industrialized countries. These panel data sets have been heavily used for single-country research. While comparative research using panel data is increasing (e.g., the PSID sponsored conference on “Cross-National Comparative Research using Panel Studies” that is now forthcoming as a special issue of the *Journal of Human Resources*), they are still clearly underutilized, relative to their potential intellectual value.

The anticipated products of this pilot project would include a preliminary unified database characterizing a set of social and legal institutions in many countries and regions and at many points in time. We would also issue a report on the feasibility of extending such a database and on the value of cross-national research using panel data, this based on our preliminary experiences. This could be the

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16 (See [http://www.isr.umich.edu/src/psid/panelstudies.html](http://www.isr.umich.edu/src/psid/panelstudies.html) for a reasonably comprehensive list). Data is available for Germany (the German Socioeconomic Panel), the UK (the British Household Panel), Canada (the Canadian Survey of Labor and Income Dynamics), the Netherlands (the Dutch Socioeconomic Panel), France (Enquête Socio-Economique auprès des Ménages Lorrains), and Hungary (the Hungarian Household Panel) among other countries. In addition, Eurostat has collected panel data for twelve countries as part of the European Community Household Panel (ECHP) project. Finally, two principal efforts (the PACO project in Luxembourg, and the Cross-National Equivalence File Project at Cornell) have been underway to improve the comparability of different subsets of the available panel data sets.
basis for a separate R01 proposal to carry out the actual extension of such a databases and to conduct analytic work.

**Issue Area #3: Linking Data Sources: Administrative Data and Survey Data.**

1. **I. Introduction: The Potential Benefit for Complementing Survey Data with Administrative Data.**
   
   Survey and administrative data are both valuable sources of information for research on the family. Each, however, has its limitations. Typically, administrative data, such as birth or death certificates, cover the entire target population and provide very accurate information on indicators that are measured but these data tend to be limited in scope and lack information on characteristics of individuals or their families. Surveys gather comprehensive information on individuals, households and sometimes families but samples are smaller and the quality of the information collected is compromised by the cognitive demands of survey questions, particularly those that involve recall, inadequate knowledge or expertise on the part of the respondent (e.g., uncertainty about a health condition) as well as by non-representativeness of those who respond to a survey or items in surveys. Combining administrative with survey data has the potential to yield an extremely rich resource for many of the key issues in research on the family.

2. **II. Potential Pilot Projects**

   **Pilot 1: Feasibility and Desirability of Linking Survey and Administrative Data for Research on the Family.**

   A pilot study could evaluate the feasibility and desirability of linking survey with administrative data in order to address critical issues in research on the family. As a first step, the study would undertake a systematic survey of the range of data collection efforts relevant for family-related research in which administrative data have been used to complement survey data.\(^{17}\) The second step would be to identify those potential sources of administrative and survey data that might be profitably linked to support critical research projects on family-related behaviors. The study would conduct a critical assessment of the quality of the information contained in linked databases and their suitability for research on the family in an effort to provide the foundation for an assessment of the strengths and weaknesses of prospective data linking efforts in order to determine the value of encouraging more of these data linkage projects in the future.

   Linking survey with administrative data raises extremely important and legitimate human subjects issues. The project would examine approaches to protecting the confidentiality and privacy of subjects that have been used in the United States, Canada and Europe and assess the effects of those procedures on the

\(^{17}\) There are several successful examples of linked administrative and survey data. For example, the Health and Retirement Survey (HRS) allows researchers access, on a restricted basis, to versions of the survey data that are linked with data on respondent=s wage and self-employment income histories, Social Security Retirement, Survivors, and Disability Insurance (RSDI) benefits histories, and projections of social security benefits that are obtained from matches of with the Social Security Administration (SSA) administrative records for those respondents that granted such permissions. Another example, is the National Maternal and Infant Health Survey (NMIHS) conducted in 1988 with a 1991 follow-up survey. The sampling frame for the 1988 NMIHS consists of samples drawn from the live births, infant deaths, and late fetal deaths occurring in the U.S. in 1988, where these samples are drawn from birth and death certificate records. The parents (both of the live births and those that died) were interviewed in 1989 and again in 1991 and were asked a range of questions about the child associated with the 1988 pregnancy, and about any subsequent children. The information collected included aspects of the pregnancy (e.g. prenatal care), measures of use of medical care during the child=s first three years, and measures of health and safety in the home environment. In addition, the NMIHS collected information from the primary care physicians of each child on immunizations and other care received.
rights of respondents and on the quality of research on the family. The study would critically evaluate the nature of informed consent or other permissions that are required, the procedures that have been adopted to obtain informed consent and seek to identify procedures and technologies that have the potential to better protect subjects and improve the quality of data for research on the family. A major goal of the pilot study would be the design of feasible procedures that balance confidentiality with data availability and that might serve as models for future linkage efforts.

**Pilot 2: A Limited Data Linkage Study as an Example**

In order to provide a concrete assessment of the feasibility and desirability of linking administrative with survey data, we propose to conduct a specific data linkage, albeit on a limited scale. The pilot project would link administrative data from inpatient hospital discharge records in California with the California subsample of several waves of the Survey of Income and Program Participation (SIPP). The California Office of Statewide Health Planning and Development maintains a database known as the California Hospital Discharge Data (CHDD) on hospital discharges on all individuals that received inpatient care at any hospital located in the State of California. These data contain information about each hospital stay, including length of stay; disposition of patient; external cause of injuries (up to 4), if relevant; diagnoses (up to 24); procedures performed (up to 20); as well as information about total charges for the stay and principal source of payment (e.g., health insurance, self-insurance, Medicaid, Medicare). These data also contain information on the patient, including their age, race, gender, zip code and Social Security Numbers (SSN). The latter information and some of the person-level information are not publicly available but this information does reside in state records. These data have been systematically collected since 1983, with reliable information, including that with Social Security numbers of patients, available from 1991 onward. The SIPP is well known and is not described in detail here. It is a panel of households, gathering detailed information on income, labor force information, program participation and eligibility data, and general demographic characteristics of all household members over the age of 15. In addition, the survey establishes a household roster and gathers general demographic information on the children (under age 15) in the household. The SIPP also administers various topical modules on such topics as child care arrangements; indicators of the well-being of children in the household; Medical Expenses/Utilization of Health Care; marital and fertility histories. The 1990-1993 and 1996 SIPP panels contained a total of 112,000 households nationwide, approximately 13,500 of which are in California.

With these linked data, the study will, first, assess the quality of those data items that are in common between the SIPP and the CHDD data. Second, the CHDD data allow a researcher to answer questions simply not possible with the SIPP alone. For example, one could analyze the effect of aspects of children’s health on mothers’ employment and on marital stability. Prior to doing any of this work, permission to undertake the linkage will need to be obtained from the U.S. Census Bureau (for the SIPP) and the State of California (for the CHDD data).

**Issue Area #4: Assessing Strategies for Gathering Data on Non-Resident Family Members.**

**I. Introduction: The Importance of Data on Non-Resident Family Members**

With few exceptions, most of the surveys used in family-related research are based on surveys of households residing in a particular physical location. Yet, many of the challenges to understanding family behavior, such as when do single mothers move in with their parents or how do adult children share responsibility for older parents when they become ill, require information about the family members who live apart. Family research and theory has long recognized that important aspects of family life occur across households, but most surveys designed to study families are household-based.

In principle, there are two ways of collecting information on kin living outside the primary household. One way that has been implemented in surveys such as the NSFH is using “proxy” reports from members of the household on their kin residing elsewhere. There is a great deal of concern about the accuracy of information collected in this way. This, however, is an area in which a pilot project can
provide some answers. A second more ambitions method is to sample and interview members of the same family who live in different households. Only a handful of studies have attempted this and, as we discussed above, substantial difficulties exist. A key issue is that recruiting non-resident kin into a sampling frame will likely be correlated with the quality of family relationships (whether the initial respondent gets along with the family member that the interviewer is trying to trace, family cohesion, residential mobility, etc.). Thus, it is important to obtain systematic information about the conditions under which interviewers are successful at obtaining information about the location of extra-household family members. While we intend to conduct a pilot study testing theories of how this might be done, our primary vehicle for cataloging and assessing potential mechanisms is gathered in Commissioned Paper (2). At this time we do not know what this advice will be so we concentrate our description here on assessing the quality of proxy reporting on kin living outside the household, an area where progress can be made.

II. Potential Pilot Projects

_Pilot Project 1: Assessing the Quality of Proxy Reporting on Kin Living Outside the Household._

First, we will conduct a rigorous analysis of nonparticipation for different types of family respondents in the NSFH (parent primary respondents and adult children; adult children who are primary respondents and their older parents; families with the potential for survey participation by three generations). One of the Core Group, Seltzer, was a member of the NSFH design team for waves 1 and 2 of the panel. The first wave of the NSFH included interviews with a primary respondent and his or her spouse/partner. Part of the survey asked questions both about parents living outside of the household and about one adult child. The second wave of the study included interviews directly with parents and adult children of original respondents as well as interviews with the original respondent’s former spouse or cohabiting partner if the respondent’s union had ended. This gives us the basis for modeling the quality of respondent reports about their parents, adult children and former spouses or partners. We propose to use the information in wave 1 of the NSFH to assess the level of agreement between proxy reports and own reports from parents and adult children. We also propose to investigate covariates that might affect the accuracy of such reports, assuming that respondents provide more accurate information about their own characteristics than about those of other relatives. Important covariates might be the distance the respondent lives from the parent, adult child or former spouse, how much contact the respondent has with the parent, adult child or former spouse (measured by transfer and contact information), and demographic factors such as gender (for instance if women pay more attention to some characteristics and men to others) and stage of the life cycle.

One of the strengths of the NSFH that has not been fully exploited is the collection of data in dyadic pairs. For example, a respondent might claim to have transferred resources to a parent. In the parent survey, information on transfers from children is collected. But unlike other datasets such as the PSID, a parent who reports receiving a transfer is then asked a question about “from whom.” This allows the researcher to link survey responses (involving a parent) collected from the main respondent to what should be similar responses from the parent. For this reason, a large number of proxy data items can be examined.

_Pilot Project 2: Sampling Non-resident Kin._

Clearly, finding ways to sample non-resident kin is of increasing importance. We envision that one useful study would be an observational study of interviewer-respondent interaction to learn more about the interactions that are successful in producing family contact information. A related concern is whether or not the contact information is sufficiently accurate to locate the extra-household family member. But we stress that while some pilot work here is clearly valuable, this is a new area of research. We believe that especially here, the participation of collaborating scholars is likely to play a large role in suggesting which type of pilot work will be most useful for achieving the goal of understanding how to
sample non-resident kin. For now, we simply identify this as an area of primary concern and one likely to require pilot work (as opposed to a literature review).

A.5. WORK PROCESS AND ASCHEDULE

A.5.a. Activities and Proposed Timetable

Table A.5-1 shows the proposed modules, the chairs and Core Group members assigned to each module, and a set of possible activities proposed for each module. We outline these activities as concretely as possible, recognizing that part of the work of the project is itself to identify the most effective set of coordinated activities in close consultation with NICHD and the broader research community. Core Group participation in the working groups is designed to maximize interdisciplinary collaboration among demographers trained as economists and sociologists, and to facilitate cross-institutional ties among Duke, Maryland, and UCLA. We believe this also will open the process to a broader network of researchers in other disciplines and at other institutions (see below).

Table A.5-1 Modules, Work Groups and Work Plans

<table>
<thead>
<tr>
<th>Module</th>
<th>Description</th>
<th>Organizers (Chair in bold)</th>
<th>Literature Review</th>
<th>Commissioned Papers</th>
<th>Working Group Meeting</th>
<th>Pilot Project</th>
<th>Conference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Household and Family Decision-making</td>
<td>Thomas DiPrete, Bianchi*</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>The Role of Biology in Family and Fertility</td>
<td>Sanders Morgan, Seltzer</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Contexts Shaping Families and Family Change</td>
<td>DiPrete Bianchi, Hotz</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Union Formation and Dissolution</td>
<td>Seltzer Morgan, Thomas</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Why Have Children?</td>
<td>Morgan Sanders</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Caring for the Next Generation</td>
<td>Hotz Morgan, Bianchi</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Intergenerational Relationships</td>
<td>Seltzer Sanders, DiPrete*</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Family and Work</td>
<td>Bianchi DiPrete, Thomas</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Summary &amp; Reports</td>
<td>Morgan All Core Group Members</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>10</td>
<td>41</td>
</tr>
</tbody>
</table>

*Marjorie McElroy (Professor of Economics, Duke University), a major contributor to the development of economic models of family decision-making, will collaborate closely with the Core Group to outline and implement the work in Module 1. Kathleen McGarry (Associate Professor of Economics, UCLA), an expert in aging and intergenerational relationships, will contribute to the Core Group activities in Module 7.

**Literature review:** Identifies key findings and disputes and evaluates the strength of the empirical evidence available and assesses the resource base for further work. Prepared by Core Group members.

**Commissioned paper:** Addresses a key issue where disputes exist or where conceptualization and addi-
tional research is needed. Contracted with consultants or other scholars.

**Working group meeting:** The Core Group of investigators meets with additional invited persons to discuss key issues, existing documents, or proposals. Working group meetings are synchronized for all modules. They will be timed to coincide with required meetings. Membership of working groups is described below.

**Pilot projects:** Projects to test the feasibility of selected data collection activities, secondary analyses of existing data, instrument development, and other tasks proposed and approved by the Core Group in consultation with NICHD.

**Conference:** A meeting that allows presentations of draft products produced by the working groups and Core Group. The conference will be announced and open to the broad community of researchers, policy makers, and stakeholders. The conference will span two days. We propose only one conference to be scheduled for late in the project period. This will allow for widespread examination and discussion of the products and conclusions of the working groups.

The proposed parallel work on these modules will follow the timeline shown in Table A.5-2.

**Table A.5-2. Project Timeline**

<table>
<thead>
<tr>
<th>Six-Month Interval Period</th>
<th>Completion Date</th>
<th>Meeting # &amp; Location</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/03</td>
<td></td>
<td></td>
<td>1 Project Start</td>
</tr>
<tr>
<td></td>
<td>10/1/2003</td>
<td></td>
<td>Required Initial Progress report (due 60 days from contract start)</td>
</tr>
<tr>
<td></td>
<td>12/1/2003</td>
<td></td>
<td>Literature Reviews Complete (Draft)</td>
</tr>
<tr>
<td></td>
<td>12/15/2003</td>
<td>1- UM</td>
<td>Core Group meeting to identify work groups, and assign research mechanisms and priorities</td>
</tr>
<tr>
<td>2/04</td>
<td>2/2004</td>
<td>2 - UM</td>
<td>Working Groups meet</td>
</tr>
<tr>
<td></td>
<td>2/2004</td>
<td></td>
<td>Commissioned papers assigned</td>
</tr>
<tr>
<td></td>
<td>2/2004</td>
<td></td>
<td>Pilot Projects discussed</td>
</tr>
<tr>
<td></td>
<td>2/2004</td>
<td></td>
<td>Pilot Projects reviewed</td>
</tr>
<tr>
<td>8/04</td>
<td>8/1/2004</td>
<td></td>
<td>Required Year 1 Progress report (due one year from contract start)</td>
</tr>
<tr>
<td></td>
<td>8/2004</td>
<td>3 - UCLA</td>
<td>Working Groups meet</td>
</tr>
<tr>
<td></td>
<td>2/05</td>
<td>4 - UM</td>
<td>Core Group meets to assess problems and progress</td>
</tr>
<tr>
<td></td>
<td>2/05</td>
<td>4 - UM</td>
<td>Working Groups meet</td>
</tr>
<tr>
<td></td>
<td>2/1/2005</td>
<td></td>
<td>Commissioned papers due (Draft)</td>
</tr>
<tr>
<td></td>
<td>4/1/2005</td>
<td></td>
<td>Core Group responds to Commissioned papers</td>
</tr>
<tr>
<td>8/05</td>
<td>8/1/2005</td>
<td></td>
<td>Required Year 2 Progress report (due two years from contract start)</td>
</tr>
<tr>
<td></td>
<td>8/2005</td>
<td>5 - UCLA</td>
<td>Core Group meets to assess problems and progress</td>
</tr>
<tr>
<td></td>
<td>8/2005</td>
<td>5 - UCLA</td>
<td>Working Groups meets and submits draft recommendations</td>
</tr>
<tr>
<td></td>
<td>8/1/2005</td>
<td></td>
<td>Commissioned papers due (Final)</td>
</tr>
<tr>
<td></td>
<td>8/1/2005</td>
<td></td>
<td>Pilot Projects Completed</td>
</tr>
<tr>
<td>2/06</td>
<td>2/2006</td>
<td>6 - UCLA</td>
<td>Core Group meeting to plan final report</td>
</tr>
<tr>
<td></td>
<td>2/2006</td>
<td>6 - UCLA</td>
<td>Working Groups meet and submits final recommendations</td>
</tr>
<tr>
<td></td>
<td>7/2006</td>
<td>7 - Duke</td>
<td>Core Group completes literature reviews, recommendations and conclusions</td>
</tr>
<tr>
<td></td>
<td>7/2006</td>
<td>7 - Duke</td>
<td>Concluding Conference</td>
</tr>
<tr>
<td>7/31/2006</td>
<td></td>
<td></td>
<td>Required Year 3 Progress report (due at end of contract period)</td>
</tr>
<tr>
<td>8/06 End</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Note: Seven meetings planned. Three at UCLA, Three at Maryland, Final Conference at Duke.

The heart of our work process is the work groups assigned to particular modules. The organizer
of each work group is responsible for coordinating the group, keeping the working group on task and on schedule. The organizer is responsible for drafting the working group report. Face-to-face working group meetings are proposed at six-month intervals. These meetings allow for both intensive interactions within work groups but also between-group contacts that stimulate diffusion of ideas and allow for problem-solving synergies. The simultaneous meeting of all of the working groups is also an effective use of travel resources and time of consultants and Core Group members.

Table A.5-3 shows an illustrative two-and-a-half-day meeting near the middle of the contract period (on 2/2005). It shows how these activities will be integrated at this particular juncture of the project. Specifically, the Core Group meets alone in the first afternoon of the meeting. On day 2, the authors of the commissioned papers will present their work. The Core Group, consultants and stakeholders attending the meeting will discuss them. There will then be four time periods for working groups to meet (late on the second day and on the third). This schedule implies two working groups meeting concurrently. Because Core Group members have overlapping memberships in the working groups this will ensure that some Core Group members participate in each session. This structure also enables Core Group members to maintain connections between the activities of the different working groups and to capitalize on common goals.

<table>
<thead>
<tr>
<th>Table A.5-3. Illustrative Meeting Plan for 2/2005</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example of organization of meeting: Proposed 2/2005 activities</strong></td>
</tr>
<tr>
<td><strong>Day 1</strong></td>
</tr>
<tr>
<td><strong>Day 2</strong></td>
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</tbody>
</table>

Working groups and the Core Group will also use telephone conferences and occasional videoconferences to allow for intensive interaction in the intervals between working group meetings. The Core Group members will meet a minimum of four times a year; two meetings will involve travel to one of the core institutions (Maryland, UCLA, or Duke) and two meetings will be arranged as videoconferences. Advanced videoconference technology is available at all three core institutions. Meetings will include the availability of shared high-speed computer screens for presentations and work on common electronic documents, as well as video and audio communication. The use of videoconferencing will save substantial travel time and improve Core Group members’ efficiency at the same time it promotes frequent interaction. Working groups and the Core Group will also collaborate using e-mail contact, sharing documents as e-mail attachments, and through a project web page allowing shared file access. We developed the plans and performed the work for this proposal using most of these
technologies. We anticipate that the addition of video-conferencing and the web page will further enhance the work of our sometimes-virtual collaboration.

Near the end of the project period (in 7/2006), we will hold a conference at Duke that is a final review and public discussion of the work and products produced during the project. The conference will consist of nine sessions—one for each module or workgroup and one overall capstone session. These sessions will be focused on the reports drafted by the work groups and the overall summary of the project. We will commission consultants to provide written critiques that they will summarize at the conference. These consultants will not have had prior input into the report, and thus can be considered “external reviewers,” in a sense. Each session will consist of a working-group report and a commissioned critique followed by discussion and questions. A tentative schedule for the conference is in Table A.5-4.

<table>
<thead>
<tr>
<th>Day</th>
<th>Session #</th>
<th>Time</th>
<th>Module/Work Group/Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>Session 1</td>
<td>9- 10:15</td>
<td>4 Union Formation and Dissolution</td>
</tr>
<tr>
<td></td>
<td>Session 2</td>
<td>10:30 12:00</td>
<td>5 Why Have Children?</td>
</tr>
<tr>
<td></td>
<td>Lunch Break</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Session 3</td>
<td>1:30 - 2:45</td>
<td>6 Caring for the Next Generation</td>
</tr>
<tr>
<td></td>
<td>Session 4</td>
<td>3:00 - 4:15</td>
<td>7 Intergenerational Relationships</td>
</tr>
<tr>
<td></td>
<td>Session 5</td>
<td>4:30 -5:45</td>
<td>8 Family and (Paid and Unpaid) Work</td>
</tr>
<tr>
<td>Day 2</td>
<td>Session 6</td>
<td>9- 10:15</td>
<td>1 Household and Family Decision-making</td>
</tr>
<tr>
<td></td>
<td>Session 7</td>
<td>10:30 12:00</td>
<td>2 The Role of Biology in Family and Fertility</td>
</tr>
<tr>
<td></td>
<td>Session 8</td>
<td>1:30 - 2:45</td>
<td>3 Contexts Shaping Families and Family Change</td>
</tr>
<tr>
<td></td>
<td>Session 9</td>
<td>3:00 - 5:00</td>
<td>Overview</td>
</tr>
<tr>
<td>Day 3</td>
<td>Core Group Only</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Given this timetable and organization, we now turn to a discussion of procedures for interdisciplinary collaboration and for an open process. As stated at the outset, our activities are aimed at creating a public resource. We intend to make a concerted effort to involve and communicate with the broader academic community about the work of this project. Mechanisms for doing that include conference presentations, workshops, informal seminars, a project web page that will publicize project activities and disseminate working papers and other project research products, and through contacts with professional associations and other venues coordinated with the NICHD Project Officer and other NICHD representatives.
Below we address activities planned within modules described above: illustrative work group activities, commissioned papers and pilot projects. This discussion builds on the description of proposed technical papers and pilot projects presented in the previous section (A.4). Here we emphasize the processes we use to accomplish project goals.

A.5.b. Interdisciplinary Collaboration on Family and Fertility Change

**Working group membership and consultants.** Each module has an assigned work group. Each of these work groups will be chaired by a member of the Core Group with at least two other Core Group members as part of the work group. The size of work groups will vary, but we will add 2-4 consultants to the work groups as full members. We have included one collaborator, McElroy from Duke, who will help establish the working group for Module 1. McElroy reformulated family decision-making models to incorporate the effect of power differences in the benefits individual family members get from being in the family. Her continued influential innovations in this field are behind our decision to include her as an initial working group member. McElroy will attend all working group meetings and be a full participant in this working group.

Because the Core Group will constitute the working groups with the advice of the NICHD project officer, we do not identify other working group members. McGarry (UCLA), for instance, is a strong candidate for working group membership. She is co-organizer of the Research Conference on Older Families sponsored by the Health and Retirement Study (scheduled for early in 2004), and she serves on the board for the HRS/AHEAD studies. McGarry is also a past chair of the Economics of Aging Interest Group in the Gerontological Society of America. Her interest in policies related to aging families prompted her recent service on the U.S. Council of Economic Advisors. We will rely on her expertise and connections to networks of researchers in the field of aging and intergenerational relationships to inform the development of working group activities.

We see a particular need to include in the working groups members of two disciplines not represented in the Core Group: psychologists and anthropologists. Many of the problems we identify as challenges for new theory and research on families require the insights provided by these disciplines. Just a few examples of the challenges we identify for innovations in research on families and fertility change illustrate the essential need to collaborate with researchers in these disciplines. For example, progress in research on the effects of families on children’s socio-emotional development and well-being requires that investigators take account of children’s developmental stage, the interaction of physiological changes and social experiences of adolescence, and the relationship between adult family members’ life stage and children’s needs. Advances in theory and research on how attitudes about family obligations change over time or the spread of “liberal” attitudes between immigrant and nonimmigrant groups about divorce, childbearing outside of marriage, or obligations to older kin require a better understanding of the cognitive aspects of how individuals acquire and interpret new information. By the same token, innovations in studies of family decision-making, in order to understand how the social context affects what individuals perceive as their choices or alternatives outside the family, depend on collaborations with anthropologists.

Although we highlight the need for interdisciplinary collaboration with psychologists and anthropologists, we also recognize that advances in theory and research on families requires collaboration with researchers in other disciplines (e.g., evolutionary biology, geography, applied linguistics, survey methodology, public health, among other fields). It is not possible to include on the working groups representatives of all disciplines that study aspects of families. The groups must be reasonably small to work together closely. We believe that there must also be some overlap or common language among group members to facilitate interdisciplinary communication. We complement this strategy for constituting the working groups by including *ad hoc* consultants who may attend selected working group
meetings but who will not be full working group members. Ad hoc consultants will provide feedback on particular issues. In addition, they will provide final critiques at the conference scheduled for July 2006. Core Group members will take responsibility for facilitating communication among group members and consultants. All of the Core Group members have substantial experience in interdisciplinary research settings and collaborations. These experiences demonstrate our commitment to interdisciplinary work and provide a strong foundation for the interdisciplinary effort required by this project.

Finally, the challenges that new work on families and fertility must address require a combination of different types of data and analytic strategies, both qualitative and quantitative. Recent efforts to use multi-method designs to investigate questions related to family change, aging, and effects of family policies, illustrate potential for enriched understanding as well as the difficulties of combining data of different types. We will build on Core Group members’ experience in multi-method collaborative research by encouraging the participation in project work of others outside the Core Group who have combined methods as well as specialists in different methodologies.

Consultants will be selected from a list that the Core Group will compile. The consultant list and the selection of persons for particular roles will be submitted to NICHD for review. Additional persons can be added to the list throughout the project period. We believe this is important to allow researchers who do new, innovative work to be included in the process. We think this may be particularly useful for including very junior researchers who are not as easy to identify as those who are more senior in the field. With approval of NICHD staff, we will identify and recruit persons for the project roles (consultant member of the working group, ad-hoc consultant to the working group, and reviewers of the final reports).

Consultants will be paid on a per day basis unless otherwise indicated. Those who are full working group members will contribute 8 days a year to the project. Those who provide more limited contributions (as ad-hoc consultants) will be paid according to the time required for their requested contributions.

We have already begun to prepare this consultant list and are ready to share this list with NICHD staff (on request). The list includes persons whom we judge to be key contributors to the particular areas of research (modules). We have made special efforts to include persons of various disciplines, ranks and career stages, a balance of persons of different racial/ethnicity background, and a balance by gender. If awarded the contract we will make a more systematic survey of potential consultants by asking others to review our list and nominate additional people. We will also include all persons who have received NICHD and NSF grants in the last five years on topics related to the key areas of study.

Selecting topics and authors for commissioned papers. Commissioned papers are one of the tools to be used by working groups. Working groups will propose to the Core Group a set of topics and assigned authors. We anticipate that the Core Group will approve a set of ten commissioned papers from all of those submitted. We will negotiate with potential authors about how the topic and scope of the papers are defined. A condition of timely completion will be stressed and a reduced honorarium (by 50%) will be paid if the drafts of the paper and the final paper are not completed on time.

Selecting topics and investigators for pilot projects. Working groups will propose pilot projects. The Core Group will review these suggestions and will contact appropriate persons about carrying out these pilot studies. The average cost of a pilot project will be $25,000, but actual costs will reflect the time demands of the project. Timely completion will be a requirement. Funds will be released on a six-month basis and failure to meet expected targets will result in cancellation of the pilot project. We will request NICHD approval of all pilot projects prior to awarding them. Decisions to cancel a pilot project will be made by the PI in consultation with the Core Group.

Our proposed timeline shows that the first year of the project does not include any pilot projects. This time schedule will provide ample opportunity for careful consultation about human subjects con-
cerns and to submit all appropriate pilot projects for review by our Institutional Review Boards.

**Integrating Activities.** The timeline outlined in Table A.5-2 is very important for the goals of the project. Effective interaction and shared information across work groups requires that the progress of the groups be synchronized. This synchronization will allow innovations to be shared and commonalities recognized. The interlocking membership of work groups provided by multiple memberships for Core Group members is the primary mechanism for between-work group diffusion of information.

The simultaneous work on the orienting, conceptual topics (modules) and the substantive, focused topics (modules) reflects an explicit strategy: working at both levels of abstraction throughout the three year period produces a constructive iteration between the different levels. The focus on broad theoretical issues is informed by the greater focus on particular substantive domains. Likewise, attention to data and methods across all modules underlines the integrative nature of theory, methods, and focused substantive questions.

Two mechanisms that we will use, commissioned papers and pilot projects, must be produced in a timely manner to facilitate working group deliberations. Timely completion will be a requirement for all papers and projects, as this is key to the Core Group’s ability to synchronize work across modules especially when papers/projects are of interest to more than one working group (module).

**A.5.c. Human Subjects**

We have identified a range of human subjects concerns throughout the proposal. The PI and Co-PIs have extensive experience in developing and reviewing procedures for protecting the fundamental rights of human subjects at the same time they produce data resources for the policy community. For instance, Hotz recently served on the Panel on Institutional Review Boards, Surveys, and Social Science Research appointed by the National Research Council. He and Sanders have extensive experience using confidential census data through the secure data facilities, Hotz at UCLA where he co-Directs the facility, and Sanders at Carnegie Mellon, Maryland and the Census Bureau. Duncan Thomas has worked closely with the UCLA Institutional Review Board to arrange human subjects procedures to collect biomarker data in Indonesia. Other Core Group members have helped develop project-specific procedures to use confidential data linking administrative records to survey data (Seltzer, Hotz) and through analyses sponsored by the U.S. Census Bureau (Bianchi). In addition, the Los Angeles Families and Neighborhoods Survey researchers (Anne Pembley, PI, UCLA) have established a highly secure procedure to protect respondent confidentiality when identifying geographical and contextual information are matched to survey data.

All institutions involved in this contract have filed an acceptable Assurance of Compliance with the Office for Human Research Protection (OHRP) and have well established Institutional Review Boards (IRB). All projects involving research on human subjects will undergo an initial and continuing review by each institution’s IRB as necessary to ensure that the rights and welfare of the human subjects involved are adequately protected, that the risks to the subjects are reasonable in relation to the potential benefits to the subjects and the importance of the knowledge to be gained, and that informed consent will be obtained by methods that are adequate and appropriate.

There are no projects involving human subjects in the first year of the project. One or more pilot projects, however, is likely to involve the participation of human subjects. Details for such projects will be carefully outlined to protect human subjects’ rights. All such projects will be reviewed by the appropriate IRBs.
All core investigators have completed training in human subject protection courses, either at their home institution, through NIH or through another university program, which meets the requirements of the NIH Guide announcement, dated June 5, 2000. Evidence and institutional certification of this training will be provided upon NICHD’s request. All investigators are aware of the requirement that human subjects training must be renewed every year. Each will keep his or her training current.

A.5.d. Inclusion of Women, Minorities, and Children

The subject matter for this proposal, family and fertility change, focuses on the experiences of children, women, and men. We consider differences among members of minority groups as a central concern in studying family change. Women, children, and minorities are well represented in the extant data sources on which we rely, except in so far as the research questions and data sources are specific to problems of old age. Pilot project plans are not final yet. Therefore we cannot provide participant enrollment information now. We will complete the “Inclusion Enrollment Report Table” provided in the RFP as necessary during the course of the contract.

A.5.e Resources to Support the Project Work

Duke, UCLA, and the University of Maryland have exception intellectual and technical resources to support innovative, interdisciplinary research on families and fertility change. The greatest institutional resource is our colleagues with whom we frequently interact. These colleagues extend the networks and expertise of Core Group members and complement the team’s strengths. We identify a few of these colleagues by name to demonstrate the breadth and depth of research on topics in the study of family and fertility change at our home institutions. These colleagues will be among those who will advise us through informal interaction and as members of our list of potential “official” participants. We are strongly committed to constituting working groups and choosing consultants from a wide array of institutions, not only our own, and provide these names only to illustrate the strength of the settings in which Core Group members work.

Examples of expertise at Duke include: Ken Land (aging, fertility, and statistical methodology), Zeng Yi (fertility, aging, and family dynamics), Angela O’Rand (family decision-making and the transition to retirement), Philip Costanzo (parental values and the cognitive development of children), Mary E. Hughes (aging, health, and the effects of community characteristics on the life course), Kenneth Manton (health and disability), Claudia Buchmann (family effects on educational outcomes in Africa), Emilio Parado (Latin American demography, the Latino population of the U.S., marriage, and fertility), Charles Payne (urban education), Philp J. Cook (youth violence), Marjorie McElroy (family decision-making), Kenneth A. Dodge (social psychology, youth violence, the impact of welfare reform on children and families), and Linda K. George (social psychology, aging, medical sociology, and family relationships). Examples of expertise at UCLA include: Moshe Buchinsky (health and disability), Janet Currie (children’s health, effects of social welfare programs), Elizabeth Frankenberg (gender inequality and reproductive health), Robert Mare (residential mobility and inequality, education, marriage, assortative mating, simulation models of population reproduction), Vilma Ortiz and Edward Telles (Mexican American Study, ethnic identity, gender and intergenerational relationships) (Anne Pembley (health, neighborhood effects on children, Los Angeles Survey of Families and Neighborhoods), Megan Sweeney (changes in U.S. marriage and divorce, stepfamily effects on children), Dawn Upchurch (teenage sexual behavior, fertility, women’s health, including menopause), Roger Waldinger (immigration, race-ethnic group relationships, assimilation/incorporation), Min Zhou (Asian American families, immigrant families and effects of family and social networks on incorporation into American life). At Maryland these include: Judy Hellerstien (health and gender differences in intergenerational transmissions and work), Mark Duggan and John Rust (health and disability), Jonah Gelbach (childcare,
social policy and the family), Rachael Kranton (social norms, identity and labor market outcomes), Ginger Jin (child outcomes and marriage markets), Rodrigo Soares (mortality, fertility and human capital), William Evans (health, family formation and fertility), Sandra Hofferth (father involvement, effects of welfare reform, child care, and time use), Laura Dugan (intrafamily violence), Joan Kahn (aging, teen childbearing, immigrant fertility), John Laub (life course, family formation and desistance from criminality), Melissa Milkie (identity formation and self-concepts, cultural meanings of parenthood), Steve Martin (nonmarital childbearing and educational differences in family formation), and Rebeca Wong (aging and health in the U.S. and Mexico).

All three Universities have faculty with cutting edge methodological interests important for studying families. These include important developments in instrumental variables estimation (Hotz, Sanders, William Evans (Maryland), Thomas), the use of matching methods (Jeff Smith (Maryland), Sanders), the use of administrative data (Mark Duggan (Maryland)), time use methodology (Katherine Abraham (Maryland), Bianchi, Sandra Hofferth (Maryland)), innovative methodological and data collection techniques for the study of health and aging processes (Kenneth Land (Duke), Kenneth Manton (Duke), Thomas), and data development in secured data sites (DiPrete, Judith Hellerstein and John Haltiwanger (Maryland), Hotz, Robert Mare (UCLA), Sanders).

Project work will also be informed by the activities of research collectivities at our institutions. For instance, at UCLA The Center on the Everyday Life of Families (CELF) funded by the Sloan Foundation provides new insights into how parents manage the competing demands of family and paid work responsibilities and the Health and Development Center (directed by Duncan Thomas) designs and conducts innovative strategies for collecting social and biomedical data on health and social welfare. The UCLA California Social Science Experimental Laboratory (CASSEL) provides the infrastructure and theoretical expertise through its research faculty to explore innovative ways to study family decision-making using controlled experiments. At UCLA a program of projects on the Social Dimensions of Inequality funded by the Russell Sage Foundation explores the spatial aspects of inequality, looking particularly at whether economic segregation has increased, whether low quality schools are more prevalent in poor neighborhoods, and how neighborhood quality affects child outcomes. Like UCLA, the University of Maryland also has a Russell Sage funded research group on the Social Dimensions of Inequality. The Maryland group, in which Suzanne Bianchi participates, focuses on the relationship between income inequality and family formation (Steve Martin), parental investment in child-rearing (Bianchi), public school funding (William Evans and Robert Schwab), and voting and civic participation (Ric Uslander).

At Duke, the Child and Family Policy Center, with funding from NIH, the Spencer Foundation, the Duke Endowment and other foundations, addresses major scientific and policy questions on child development. Its sub-units and major projects include: the Child Development Project, which has been following the social development and adjustment of a cohort of children since 1987; Fast Track, which is the largest violence-prevention study ever funded by NICHD and which has been following three cohorts of children at high risk for behavioral problems for ten years; the Durham Initiative, a collaborative initiative with the Center for Child and Family Health North Carolina that is designed to promote healthy parent-child relationships and the health and well-being of children in Durham, North Carolina; The Duke-UNC Consortium on Achievement Gaps, with focus is on the causes and effective policies for closing the minority achievement gap; and the North Carolina Education Research Data Center, which is creating and maintaining longitudinal data files drawn from the administrative files of the NC Department of Public Instruction on every student, teacher and school in the state of North Carolina from 1995 to the present. Another major resource at Duke is the Center for the Study of Aging and Human Development, a vital national resource for the study of aging since its establishment by the U.S. Surgeon General in 1955. Its multidisciplinary research program, which focuses on the whole person and his or her environment, is perhaps the greatest strength of the Duke Center for the Study of Aging and Human
Development.

A.6. INVESTIGATORS

This research team comprises a collaboration of seven of the best demographers in the world working on issues about the family. The team is uniquely well-suited to identify and confront the major issues that limit continued progress in research on the family. Taken together, the team will develop an extremely innovative, research program which will draw not only on the combined strengths of the individual Co-PIs, but also on the world’s best experts in those areas of theory, methods and data that are outlined above and which emerge as key areas of future inquiry over the course of this three-year study. This is an interdisciplinary team of economic and social demographers located at three institutions, whose interest, expertise, and experience span the full breadth of family and fertility research, the development and implementation of new research methods as well as innovative data collection in the United States, Europe, and developing countries.

A.6.a. Principal investigator

S. Philip Morgan will serve as the PI of the research team. Morgan is an internationally renowned expert on fertility and the family with extensive experience coordinating multi-location research and administrative activities. Morgan, a sociologist, began his career 25 years ago with the analysis of the major fertility surveys in the United States. This experience formed the foundation for his current research program that focuses on developing and testing explanations for low fertility in comparative perspective. This research uses innovative research designs that exploit variation in institutions and context to isolate the likely causal mechanisms explaining why individuals or couples choose whether or not to have children. His current agenda is shifting to incorporate the interplay between biological, including genetic, and social factors in the behavior of couples and their families.

Morgan has made major contributions in a wide array of areas in research on the families that are germane to this research project. This includes research on marriage and divorce; child-rearing and child well-being; living arrangements; the family, religion and society. His methodological work has focused on statistical modeling and data quality. His work spans the United States, Europe and several developing countries.

Morgan’s administrative experience and service to the field demonstrate his effective leadership. He is the current President of the Population Association of America and, as part of his duties, organized the 2003 PAA national meetings. He also currently chairs the Sociology Department at Duke. Before joining the Duke faculty, Morgan chaired the Sociology Department at the University of Pennsylvania. Morgan, with Barbara Entwisle, edited *Demography* for three years (1999-2001). He also served as chair of the Population Research Sub-Committee, National Institute of Child Health and Human Development (2000-2002) and has served on the NIH Social Sciences and Population Study Section and several NAS panels.

Morgan’s stature as an intellectual leader in the field, his research and administrative experience, and the breadth of his research portfolio provide the ideal background to serve as the leader of this research team.

A.6.b. Co-Principal Investigators

Suzanne Bianchi, a sociologist, is past President of the Population Association of America. Bianchi is a leading authority on family change over the last 50 years in America. Her original contributions on the role that the gender revolution has played in family change have reoriented demographic research on this topic. Bianchi is the co-author (with Lynne Casper) of a recent award-winning book on the family that assesses contemporary American family life. Her recent award winning
papers include research (with Liana Sayer) on the economic independence of women and the likelihood of divorce and her PAA Presidential Address which introduced time diary data and what it can illuminate about family behavior to the demographic community and questioned assumptions about the relationship between maternal employment and time with children. She is currently analyzing nonmarket time allocation in families using two new rounds of data collection that she (and John Robinson) completed at Maryland, one with innovative weekly diaries with all members of the family. She also has a long-standing interest in child outcomes, with research on the economic costs of divorce for children and trends in child poverty. As part of a Russell Sage funded research collaborative at Maryland, she is currently assessing whether educational differences in parental investments in children have changed over the past two decades. She is the Director of the Maryland Population Research Center and has been named a 2003-04 University of Maryland Distinguished Scholar-Teacher.

Thomas DiPrete, a sociologist, is a leading expert on the life course mobility of both individuals and families. DiPrete was an innovator in the application of event history techniques to the study of life course outcomes, and on the use of multilevel analysis for studying how changing social context affects trends in stratification processes. During the past decade, his research has significantly enhanced knowledge about the connection between family dynamics and the socioeconomic life course of individuals. His work on the comparative effects of labor market events and changes in family structure on life course mobility, and on the differential extent to which state tax and social welfare policies mitigate or enhance these effects across nations, has demonstrated the importance of a family perspective in the study of comparative stratification. His analyses of trends in the socioeconomic consequences of divorce have demonstrated the rising financial vulnerability of men to union dissolution that stems from increasing interdependency between male and female partners for the household standard of living. DiPrete has published comparative research on labor market and household mobility involving panel data for Germany, the Netherlands, Sweden, and France as well as the U.S. His current research on the comparative costs of children involves the analysis of panel data for Italy, Denmark, and the U.K. as well. DiPrete has experience in the combining of administrative and survey data for the study of life course mobility in both France and Sweden, is experienced in the analysis of confidential data from Eurostat and from the German Institute for Economic Research (where he now holds an affiliation as a research professor), from the U.S. Department of Education, and through the Triangle Census Research Data Center at Duke. DiPrete was also a consultant in German deliberations to set up similar data centers in that country. DiPrete’s comparative stratification perspective on family dynamics, his familiarity with European labor market and welfare state structures, and his knowledge of European cross-sectional, longitudinal, and administrative data sources is important for the understanding of contextual influences on family variation and change.

V. Joseph Hotz is a leading expert in the economics of the family who has made major contributions to both the methodological and substantive literatures on the family. Much of this work has revolved around choices of adolescents and young adults. His research on fertility and contraception developed new methods for estimating dynamic behaviors of couples over the life course combining insights from economic theories of behavior with the tools of dynamic programming. In collaboration with James Heckman and others, Hotz was an early innovator in the area of randomized trials in the social sciences and has made key contributions to the literature that have highlighted the strengths and weaknesses of this approach to identifying causal effects. Hotz’s work, in collaboration with Seth Sanders, redefined research on teenage childbearing. They demonstrated the value of identifying the causal effect of early childbearing by exploiting “natural” variation – specifically through creative use of miscarriage as a control against which to compare women who had a teen birth. Not only has this work highlighted the important role that biology plays in conditioning human behavior but the results of this “natural experiment” have had a powerful impact on thinking about the consequences of teenage childbearing. Hotz has also contributed to understanding of the trade-offs between work and family by highlighting the important role of the state and the market in the provision of child care services. Hotz’ recent work has opened up new areas of research as he has sought to understand the dynamics of family
decision-making with a focus on behaviors of parents and their adolescent children. Hotz has played an important role in demonstrating the advantages of using administrative data to address key questions about family behaviors. His work evaluating public programs targeted towards the poor – including welfare policies and public finance policies – has highlighted the importance of integrating multiple sources of data. As co-founder and co-Director of the California Census Research Data Center, he has made these kinds of approaches feasible for the demographic research community.

Seth Sanders, an economist, brings unique strengths to the project. His work centers around the use of experimental manipulation to study the behavior of individuals and families. In addition to his collaborative work with Hotz, he has designed and implemented a creative research program that has demonstrated the critical role of information in understanding the use of social programs in the U.S. His work on the role of information in food stamp participation is among the first that embedded a randomized (information) experiment within a (CPS-style) survey instrument in the field. He has also participated in analyzing how the rate at which workers cheat on the job changes when supervisors’ rates of monitoring workers is experimentally manipulated. In other work Sanders has examined how unanticipated economic shocks affect family decisions on fertility, work, and the use of social programs as well as the choice of teenagers to leave school for work. He has a long standing interest in biology, particularly population genetics and the endocrine systems. It was this interest that was exploited to understand the nature of miscarriages in his work with Hotz. In conjunction with his collaborators, Sanders has provided the demographic community with the first estimates of the gay and lesbian population, including the presence of children in gay and lesbian households. Sanders has a long history of data development in secured Census sites, first at Carnegie Mellon, now at Maryland and at the Census Bureau. Sanders is co-Director of the University of Maryland Population Center.

Judith Seltzer, a sociologist, more than anyone else on the team, brings longtime experience in innovative data collection on the family. No previous study did more to move the family field forward than the National Survey of Families and Households (NSFH) which is housed at the University of Wisconsin. Seltzer was part of the team that planned and launched that survey. In addition, she was also intimately involved in the child support demonstration projects in Wisconsin, wherein she developed an interest and expertise in the flow of money within and across households. Most recently, she has been involved in the Los Angeles Family and Neighborhood Survey (LA FANS), a data collection designed to facilitate the study of context in relation to family processes. Seltzer brings to the group strong interest in kinship patterns, intergenerational obligations, relationships between nonresident fathers and children, and how legal institutions and other policies affect family change. Her participation in the design and conduct of national and state-based surveys and matching administrative and survey data complement those of other Core Group members. Although most of her work focuses on U.S. families, she has also studied couple decision-making in a developing country, Guatemala.

Duncan Thomas, an economist, has written extensively on the links between family behaviors and the well-being of children and adults. Among the first to test the “unitary” theory of the family using data on child outcomes, Thomas’ subsequent research has sought to develop new indicators of “power” within households. This has included creative use of “natural” experiments, data from randomized trials, and the development of new survey items which have subsequently been fielded in multiple surveys around the world. A good part of Thomas’ research has focused on data quality; this has included the development of methods to maximize re-contact in longitudinal surveys; evaluations of the quality of retrospective reports of demographic events and economic status; respondent reports of health status and their relationship to biomarkers; and the evaluation of proxy reports. As co-Director of two waves of the Indonesia Family Life Survey, Thomas has followed the tradition of economic demography by combining careful measurement with insights from theories of the family. Thomas also brings to the project experience in evaluating the effects of U.S. policies on children’s welfare through his studies (with Janet Currie) of such programs as Head Start, where he has been particularly interested in racial-ethnic differences in program effects. Thomas currently directs an 8-wave longitudinal survey which involves a randomized treatment-control design to measure the effect of health on family economic, social and
psychological well-being. An important innovation in all of these surveys has been the integration of a battery of biomarkers with respondent interviews.

A.6.c. The Core Group as a Team.

The PI and Co-PIs form the Core Group with many strengths which, in combination, will play a key role in the successful completion of this research project. First, the team draws on some of the foremost leaders in research on the family. They have made major contributions to the literature and their research is on the frontier of current thinking.

Second, at a substantive level, there are extensive overlapping interests among team members in critical areas of family research. This includes active research programs in each of the overarching themes described in modules 1 through 3. Specifically, these are the processes underlying family decision-making (Bianchi, DiPrete, Hotz, Sanders, Seltzer and Thomas, with McElroy as a member of this working group), the links between biological and social processes over the life course (Hotz, Morgan, Sanders, and Thomas) and the role of institutions, context and norms in moderating family behaviors (Bianchi, DiPrete, Hotz, Morgan and Seltzer). The expertise and current research programs of Core Group members is reflected in the five substantive modules: union formation and dissolution (Bianchi, DiPrete, Hotz, Morgan, Sanders, Seltzer and Thomas); why have children (DiPrete, Hotz, Morgan, Sanders); caring for the next generation (Bianchi, Hotz, Morgan, Seltzer, Thomas); inter-generational relationships (DiPrete, Sanders, Seltzer, Thomas, with McGarry as a close collaborator); work and family (Bianchi, DiPrete, Hotz, Sanders, Seltzer, Thomas).

Third, all the team members have contributed to both the methodological and substantive literatures on family research. The team brings together an appreciation of the importance of drawing on the richness of our disciplinary perspectives to help inform research and policy, the importance of combining theory with measurement and the importance of subjecting our theories to the most rigorous tests.

Finally, the Core Group is fundamentally multidisciplinary and spans a wide array of research and methodological perspectives. Each team member has considerable experience working in – and often leading — multidisciplinary teams including interdisciplinary National Academies of Sciences panels, professional committees, research and training centers as well as productive interdisciplinary research collaborations. All members of the team are keenly interested in policy and in communicating to both lay and academic audiences about their work. This experience, in conjunction with the breadth of thinking and openness to new ideas that is the hallmark of the research program of each team member provides the foundation for this team to synthesize the science from multiple traditions, evaluate the contributions to understanding the family and successfully lay the intellectual groundwork for the development of exciting, new lines of productive research on family and fertility change.
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