

Studying Individual and Family Development: Linking Theory and Research

The predominant theoretical orientation of the majority of scientists studying human behavioral development and family functioning is derived from systems models. These theories are dynamic in their conceptualization and emphasize process and context. To a large extent, the analytic strategies we employ are not consistent with our theoretical assumptions. Analytic methods that focus on moderating and mediating processes rather than main effects, on within-group variability and the sources of that variability, and on the identification of inter-related patterns of change in individuals, families, and environments are needed for our research results to mirror the complexity of our theories.

The goal of research into individual and family development is to understand the processes by which individuals and families adapt successfully to the challenges that confront them or, alternatively, become dysfunctional. In the 30-plus years that have passed since the publication of Bell's (1968) descriptions of child effects on parents and Sameroff and Chandler's (1975) examination of developmental processes, developmental scientists have become sensitized to the complexity involved in studying these processes. *Contextualism, dynamic systems, and transactional analyses* are now the catchwords

used to indicate that the authors of a research proposal or report recognize that bidirectional and reciprocal relations exist among the variables they study. Often, however, these catchwords are emphasized in our introductions and ignored in our research designs and analyses (Tudge, 2000). A gap exists between our theoretical models of development and our empirical approaches to studying change.

This brief essay addresses that gap. First, I discuss common characteristics of modern theoretical approaches to understanding processes of individual and family development that have become widely accepted in the fields of developmental psychology, family studies, and human development. Following from this base, I examine challenges facing us in the application of our theoretical approaches to the analysis of developmental processes.

The ideas presented here are not new. The complexity of transactional developmental processes has been widely discussed by theoreticians (e.g., Bertalanffy, 1968; Bronfenbrenner, 1979; Gottlieb, 1996, to name just a few), and the difficulty of turning these complex processes into analyzable data has been recognized (Crouter & Booth, 2003; Sameroff & Mackenzie, 2003). Some observers have, in fact, proposed that essentially all the statistical procedures currently in use to study development need to be replaced with new or at least different methods (Bergman, Magnusson, & El-Khoury, 2003; Tudge, 2003). My position is not as strong as that. I believe there have been and will continue to be useful contributions to the study of developmental process using existing empirical and statistical approaches as well

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as new ones. My goal is to identify some inconsistencies between our theoretical assumptions and both the design of our studies and the analytic methods we use and to suggest some ways to bring the two into closer concordance.

CURRENT THEORETICAL APPROACHES TO THE STUDY OF DEVELOPMENT

Living systems are defined by change. Thus, research into individual development or the functioning of a family involves an examination of change. Our interest may be in the *rate* of change (i.e., vocabulary acquisition by toddlers), the *direction* of change (i.e., positive vs. negative family accommodation to chronic illness), or identifying ways to *promote* change (i.e., developing interventions to reduce risk of abuse). The change we study may be quantitative (i.e., frequency of marital conflict) or qualitative (i.e., divorce). Even when our research designs are not intended to capture change, the rationale for our questions assumes that the phenomena we do capture are important as determinants or outcomes of a process of change. For example, family interaction may be observed at a single time point, but the underlying assumption behind the study design is that supportive parent-child interaction at age 12 is important for the child's successful negotiation of the adolescent transition.

This emphasis on process and change rests on theoretical approaches that are dynamic in their conceptualization. Not so long ago, developmental psychologists could be divided into two camps: those who saw developmental change as mechanistic, imposed by the environment on a largely passive individual, and those who saw change arising from within an active individual who selectively sought out experience (Cairns, 1998). Today, these positions seem almost quaint in their simplicity. Similarly, within the family arena, the structural functionalism of the mid-20th century gave way to contextual approaches from such areas as feminist theory, family therapy, and the life course perspective (Boss, Doherty, LaRossa, Schumm, & Steinmetz, 1993). Advances in neurobiology, ethology, and genetics have laid to rest any remnants of the nature-nurture dichotomy in favor of complex, multilevel, reciprocal, interconnected, and altogether too complicated heuristics representing the processes of developmental change and family functioning. These theoretical approaches are subsumed under the general label

of *contextual models* or *systems approaches*. They include, among others, ecological system theory (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998), family systems theory (Whitchurch & Constantine, 1993), epigenetic theory (Gottlieb, 1992), dynamic systems theory (Thelen & Smith, 1998), developmental contextualism (Lerner & Simi, 2000), and the holistic-interactionistic paradigm (Bergman, Cairns, Nilsson, & Nystedt, 2000). All these theoretical approaches have as their goal the description of interactions among biological, behavioral, and environmental processes over developmental time.

Some of these theoretical models appear at first glance to be intimidating in their complexity and so global as to not readily generate researchable questions. In many ways, these theories more closely resemble metatheories or worldviews, overarching frameworks for thinking about individual and family development, than classical theories used in experimental science. Although differing from one another in some respects, these theoretical approaches share two core principles that can serve as benchmarks against which to evaluate the extent to which our research approaches are consistent with our models of change. These principles, simply stated, are as follows:

- Processes of change operate at multiple levels, from the cellular to the cultural
- Processes of change, across all levels, are transactional and reciprocal

Acceptance of these principles leads us to a consideration of analytic methods used in the field of human development and family studies.

STUDYING PROCESSES OF CHANGE AT MULTIPLE LEVELS

Systems theories recognize that development is a complex process involving biology, individual beliefs and behavior, and interpersonal transactions, all embedded within cultural context. This principle suggests research into child and family development that is multidisciplinary, broad in scope, and linked to the contexts in which people live.

The Need for Multidisciplinary Research

The field of human development and family studies is inherently multidisciplinary. At

many universities, faculty trained in separate disciplines—psychology, sociology, gerontology, and early childhood education, among others—identify themselves as members of a single department of human development and family studies and work together routinely on academic business. Interdisciplinary collaboration is valued by our professional organizations; both the Society for Research in Child Development and the National Council on Family Relations emphasize and encourage participation by professionals from many disciplines. There is a general recognition of the importance of integrating theoretical approaches, models, and methods from multiple disciplines into our research approaches.

Much recent attention has been devoted to the incorporation of biological processes in the study of human behavior (e.g., Magnusson & Stattin, 1998). Advances in molecular genetics, brain imaging, and neurochemistry have clarified the extensive role biology plays in individual behavioral development. Unlike earlier swings of the pendulum toward the biological side, that have often resulted in simplistic and deterministic models (“biology is destiny,” for example), the current focus on biological underpinnings of behavior is multifaceted and acknowledges the complex transactions between nature and nurture. Just as brain structures influence behavior, behavior changes the brain. Just as genes are involved in the display of complex human traits, life experience contributes to the activation of genes. Perhaps the most fully developed current conceptualization of the interplay between biology, behavior, and culture has been set forth by Gottlieb (1992, 1996), whose epigenetic theory postulates multiple interconnected and reciprocal pathways across all levels of development. This model emphasizes that the question of interest is not *how much* biology contributes to behavior and development as compared with the environment, but instead *how* biology and the environment interact, over developmental time, to produce individuals or families that are more or less successful in adapting to the context in which they live.

Biology is not the only discipline whose contributions are shaping ideas about development and family processes. With an increased interest in cultural contexts comes a recognition of the potential role that anthropologists can play in conceptualizing and interpreting aspects of the

broader milieu in which families are embedded (e.g., Weisner, 2002). Demographic and economic approaches are increasingly being integrated into studies of child and family development (Foster, 2002). Pediatricians and public health specialists emphasize the importance of healthy functioning both in studies of normative development and in the goals of prevention and intervention programs (Olds et al., 1998).

Yet, the reality is that most of our research is not interdisciplinary. There are many structural reasons for this. Within the academic reward structure, collaborating with faculty in other departments is not high on the list. Grant proposals tend to be reviewed by study groups made up largely of members of a single discipline. Collaboration takes time.

There are conceptual reasons as well. The intellectual histories of each of our disciplines exert an influence on us that is not unlike the role of culture in human behavior. It is not easy to merge these histories. Rules of evidence differ and paradigms clash. The anthropologist’s reliance on qualitative methods and participant involvement, although these methods are consistent with contextual theories, run counter to the psychological and sociological tradition of quantitative statistical analyses (Kidd, 2002). At the other end of the spectrum, although the approaches used by economists have offered new ways of thinking about individual development and especially family functioning, economists have less interest in the kinds of process analyses that are at the heart of systems models and focus instead on outcomes (Foster, 2002).

There is no easy way to make research more interdisciplinary. At some universities, interdisciplinary research centers have been established to promote such efforts. Another trend in the field—toward research projects of larger scope and longer duration—has the potential to encourage the inclusion of multiple perspectives.

Linking Large-Scale and Smaller Scale Research

“Big” science is popular these days. Physicists seeking to understand the nature of the atom and molecular biologists mapping the human genome have contributed to the image of science as progressing through the collaborative efforts of large groups of individuals working together on a common problem. In behavioral

science, this approach has been implemented in the form of large survey studies using nationally representative samples and smaller, but still extensive, multisite studies focusing on particular issues considered to be of widespread importance (see Table 1 for a listing of some of these studies).

Large-scale studies have many advantages from a systems or contextual viewpoint. They usually include samples that are diverse in terms of social class, ethnicity, and cultural background and therefore allow for meaningful analysis of contextual factors. Several of these initiatives have been fortunate to receive funding over a long enough period of time that processes of developmental change can begin to be studied more comprehensively than has been possible in the past. The large number of participants in many of these studies affords adequate statistical power to address questions about developmental processes as they may operate differently for girls versus boys, single female-headed households versus two-adult households, and rural areas versus urban neighborhoods. Most of the large-scale research initiatives launched in the past 20 years have also included provisions for making their databases publicly available to researchers not directly involved with the collection of the data. These data resources have great potential for promoting interdisciplinary work as scientists from various research traditions examine questions of shared

interest. When multidisciplinary teams of scientists are involved in the design of such studies, or serve on their advisory boards, the opportunities for integration across research areas are considerable.

These advantages are offset by a number of limitations common to many large-scale research efforts. The broad scope and wide-ranging goals of some large studies have been accompanied by a lack of theoretical and methodological rigor. Many constructs may be measured, but the theoretical linkages across constructs may be weak or even questionable. Further, it is not uncommon for complex individual or family level constructs (*satisfaction with parenting* is an excellent example cited by Sabatelli & Waldron, 1995) to be measured by a single item that may or may not capture important aspects of the respondent's experience ("How often would you rather be childless?"). Unless a strategy of embedding smaller, more focused studies within the larger framework is adopted, projects involving many hundreds or thousands of participants also do not lend themselves to in-depth, possibly qualitative, analyses of the thought processes contributing to decisions that precede an outward behavior of interest. Thus, we may be able to describe a child's history of child care but know nothing of the underlying reasons the child received those types of care for that number of hours. Finally, although large-scale studies

TABLE 1. EXAMPLES OF LARGE-SCALE AND LONG-TERM LONGITUDINAL OR MULTISITE STUDIES OF CHILDREN AND FAMILIES

Family and Community Health Study, Institute for Social and Behavioral Research, Iowa State University (http://www.isbr.iastate.edu/FACHS/)
Fragile Families & Child Wellbeing Study, Center for Research on Child Wellbeing, Princeton University (http://crew.princeton.edu/fragilefamilies)
Iowa Youth and Families Project, Institute for Social and Behavioral Research, Iowa State University (http://www.isbr.iastate.edu/projects/)
Longitudinal Study of Child Neglect, University of Maryland at Baltimore (http://www.acf.dhhs.gov/programs/cb/publications/compendium/ocan/ocana4.htm)
Longitudinal Study of Generations, University of Southern California (http://www.usc.edu/dept/gero/research/4gen/)
National Longitudinal Study of Adolescent Health, NICHD, Carolina Population Center, University of North Carolina (http://www.cpc.unc.edu/addhealth)
National Longitudinal Study of Youth, U.S. Department of Labor Bureau of Labor Statistics (http://stats.bls.gov/nls)
NICHD Study of Early Child Care & Youth Development, NICHD Early Child Care Research Network (http://secc.rti.org)
Data archives (access to many large-scale datasets)
Inter-University Consortium for Political and Social Research, University of Michigan (http://www.icpsr.umich.edu)
Murray Research Center Data Archive, Radcliffe Institute for Advanced Study, Harvard University (http://www.murray.harvard.edu/mra/index/jsp)

could encompass measurement at the biological, individual, interpersonal, and cultural levels, they are too often designed and directed by scientists from only one or two disciplines whose interests and expertise do not span this full range.

Large-scale nationally representative or multisite studies are here to stay, and they have great potential to enhance research into developmental processes. For that potential to be fully realized, however, these efforts require the contribution of continued and expanded smaller scale research that can look more closely at reciprocal processes of change within individuals and families. No one approach to research is the "right" one. Perhaps a productive strategy is to merge them, providing funding streams that link smaller scale research initiatives with larger studies. In other words, a large-scale core project could serve as an overarching structure within which would be embedded smaller scale projects examining related developmental processes at a more microlevel. Similarly, projects designed as multisite studies would be enhanced by the use of dual research strategies: a common protocol across all sites to address key theory-driven questions combined with smaller individual projects conducted by subsets of researchers or affiliated researchers that extend the reach of the larger project and address in-depth issues of developmental and family process. Linking research at the macro- and microlevels could help to improve the quality and consistency of analytic strategies and bring greater clarity to findings from researchers working at different levels of analysis. Participation at both levels by scientists from different disciplines could also add breadth and depth to the picture of individual and family development resulting from the set of linked studies.

Studying the Contexts of Individual and Family Development

The diversity of human experience is recognized in current theories about the development of individuals and families. The microsystems, exosystems, macrosystems, and chronosystems of ecological systems theory (Bronfenbrenner, 1979) have become an integral part of our thinking. We know that individual and interpersonal behavior is a function of overlapping influences of such factors as economics, family structure, school or workplace characteristics,

and social networks. The importance of examining behavior in natural situations has been accepted, if not always followed. Research designs are much more likely now than in the past to include children and families of varied ethnic backgrounds. Cross-cultural research in the pursuit of the universals of development is now amplified by cultural research focusing on the uniqueness of cultures.

Within much of our published literature, however, diversity is acknowledged but not analyzed. The standard approach to data analysis involves entering factors representing diversity as controls, in order that the key variables of interest can be examined without fully considering the potential importance or meaning of the variability associated with that diversity. Thus, we may control family income in studies of children's cognitive ability and achievement as if income did not bring with it varying opportunities to learn. We may control ethnicity in studies of parent-adolescent conflict as if cultures did not espouse different "rules" for the conduct of arguments. Of course, not every study can examine every possible contextual factor in detail. If we follow the logic of our contextual and systems approaches, however, *some* aspect of context or process has to be close to the heart of every theoretically driven question we ask. For example, once we identify a trend toward declining marital satisfaction following the birth of a child, we begin to ask *why*. What differentiates couples who become less satisfied from those who do not? Is it their demographic and economic status? their prior histories? their expectations regarding parenthood? Similarly, if we find links between the quality of child care and children's cognitive and language skills, the next step is an examination of specific aspects of child-care environments that contribute to learning in children who come to those environments with a specific set of characteristics. Understanding how developmental and family processes vary by context is, by definition, what we seek to know. Of particular interest to many who study child and family development are the intersections of race, class, and gender (e.g., Hill & Sprague, 1999). Marginalizing these contextual variables by using them as statistical controls rather than placing them at the center of our analyses contradicts our theoretical framework and limits our ability to understand individual and family development (Newcombe, 2003).

In much behavioral science research, comparison of contexts has tended to involve some degree of criticism of one or the other group. Adolescent girls' visual-spatial abilities are *not as good as* those of boys; single mothers provide *less* of the supervision developing children need than do two-parent families. Value-laden comparisons have contributed to the call expressed by many minority researchers in the United States for more research focusing on within-group variation rather than between-group differences (Doucette-Gates, Brooks-Gunn, & Chase-Lansdale, 1998; McLoyd, Cauce, Takeuchi, & Wilson, 2000). Within-group variation can help us to understand the processes of successful adaptation to environmental demands that are unique to a particular context. Between-group comparisons do not have to imply superiority of one group over another, however. Identifying the ways in which developmental and family processes are the same across contextual groups and the ways they differ are both important to furthering our appreciation for the contribution of culture and context (Dilworth-Anderson, Williams, & Gibson, 2002). In-depth reviews of areas of literature with an emphasis on identifying where main effects and between-group analyses have suggested process questions that have yet to be addressed would help the field in recognizing the need for more complex analyses.

STUDYING TRANSACTIONAL AND RECIPROCAL PROCESSES OF CHANGE

Systems approaches to the study of individual and family development emphasize the bidirectional nature of influence—between genetics and environment, parent and child, and cognition and behavior. No person, event, or context is static or passive. Further, development occurs in a reciprocal process: One person's behavior affects another's, whose response alters the behavior of the first, which then in turn again affects the other's behavior. The baby cries a lot, the father reliably soothes the crying, the child shows positive emotion with the dad, the dad becomes more committed to the parenting role. If the crying baby has a father who becomes irritable and tense, a different and less positive pattern is likely to follow. Concepts of transaction and reciprocity suggest research into individual and family development that focuses on the study of moderating and mediating varia-

bles and processes rather than main effects and that uses holistic approaches to measurement and analysis.

Studying Moderation and Mediation

Much of developmental science has been constructed on analyses of main effects. Children living in poverty are less successful in school than other children. Maternal depression in a child's infancy is linked to emotional dysregulation at preschool age. Within families, main effects models assume that we can learn about the whole by measuring each individual separately and combining these measurements. Gottlieb and Halpern (2002) have referred to this kind of linear thinking as "analysis of variance mentality" (p. 421). This description reminds us that our thinking about the systems of individual and family development are often tied more closely to the analytic methods we know and are comfortable with than they are to our theoretical assumptions.

Given conceptualizations of individual development and family functioning as transactional and reciprocal, main effects and linear models are no longer adequate to capture the processes of interest. It is not enough to measure a characteristic of an individual, a family, or a context at one time point and then predict an "outcome" for that individual or family at a later time point without an examination of the processes that link the two. Identifying the link between earlier events and later functioning can be a helpful, and even necessary, first step in understanding process, but it is only a first step. The study of process requires a focus on process, not on prediction. The questions posed by systems theories are difficult, and they require more fine-grained analysis than studies of main effects.

One example of a line of research where main effect results have been followed up with process analyses is the area of divorce. Early waves of research into divorce reported that children from families in which parents were divorced had a number of continuing academic and behavioral difficulties (see Hetherington, 1979, for an early review). Replicated findings of a main effect for divorce served to focus the attention of researchers on divorce and encouraged them to ask questions of process. More complex studies examined such issues as: How were individuals and families functioning prior to divorce, and how is earlier functioning

linked to child adjustment? What events and perceptions of events led to the decisions of couples to divorce? How do parent-child relationships change when parents live apart? What is happening within families following divorce that makes a difference in children's behavior? These process questions yielded much greater understanding of the dynamics occurring within families and the processes and contexts that differentiate children who are able to function successfully after their parents' divorce from those who face continuing challenges.

For the most part, these process questions involve analysis of moderation and of mediation (for further discussion of analytic approaches to moderation and mediation, see Baron & Kenny, 1986; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Rose, Holmbeck, Coakley, & Franks, 2004). Moderators influence the direction or the strength of the relation between two other variables. Thus, a family's ethnicity may moderate the link between parental discipline strategies and child outcomes (e.g., Lansford, Deater-Deckard, Dodge, Bates, & Pettit, 2004). Questions of moderation use contextual factors to help us understand, for example, why risk factors are not linked to negative outcomes for all families. Is marital conflict more likely to result in divorce when wives are employed? Does the drop in household income that typically accompanies divorce lead to more negative outcomes for teenagers than for younger children? Is there a difference in the extent to which the active involvement of a nonresident father in the child's life ameliorates negative effects for boys versus girls?

Mediators identify reasons why one variable is related to another. Thus, the quality of parenting may mediate the relation between poverty and its associated stressors and child social and academic outcomes (McLoyd, 1998). Questions of mediation use our understanding of the complexity of family context to help us understand *how* risk factors operate. Do high levels of marital conflict result in divorce because the conflict reduces intimacy? Do children in the first year after their parents' divorce experience higher levels of anxiety and depression because their parents are less supportive and involved with them? The area of divorce is one in which developmental and family researchers have actively followed up main effects with process analyses that address a wide range of complex questions (for a recent review, see Amato &

Sobolewski, 2001). Too often, we have been satisfied with main effects and ready to move on to the next analysis linking early experience with later difficulties, rather than asking the hard questions about moderating and mediating processes linked to individual and family characteristics and contexts.

Holistic Approaches to Measurement and Analysis

Within contextual theories, individual development and family functioning are seen as processes of adaptation to external challenge (Luthar, 2003). Adaptation takes place on all levels—biological, perceptual, cognitive, behavioral, and interpersonal—in an integrated, not random, manner. Similarly, contextual challenges are typically multivariate, in that disadvantages tend to co-occur just as positive characteristics of environments do. Families who are poor are usually also undereducated, live in crowded and chaotic homes and dangerous neighborhoods, have poor health and inadequate health care, and work at physically demanding jobs on the least desirable shifts. It is not clear that separating out the effects of one of these factors from the package of disadvantage, and then controlling the others, is more helpful to our understanding of family process or child development than identifying co-occurring patterns of risk. Holistic constructs—sets of related characteristics of individuals, families, and environments—are beginning to be operationalized as quantitative variables through structural equation modeling approaches and in person-centered analytic approaches, such as cluster analysis and latent class analysis. To qualitative researchers, the search for encompassing and meaningful themes and patterns has long been a primary goal. The adoption of holistic approaches by quantitative researchers may help to bridge a methodological divide and contribute to more comprehensive understanding of developmental contexts.

A classic example of a holistic conceptualization is the idea of "goodness of fit" used by Thomas and Chess (1984) to describe the extent to which a young child's temperamental characteristics were adequate to meet the demands for adaptation placed by a family environment. From this viewpoint, an infant's temperament—at least in part a biologically based characteristic—can be adaptive or not depending upon the

characteristics of the caregiver and the nature of the caregiving environment. A highly active child whose parents enjoy physical play and outdoor activities is likely to grow into a skilled athlete, whereas the same child in a sedentary or an anxious family may receive criticism rather than encouragement and may be seen as having attentional or behavioral problems. Studying temperament as a predictor of later outcome, without studying the environment, is not likely to yield results that help to explain the processes of development.

Current approaches to the study of risk provide another example of the movement toward holistic analyses (Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001). Because risk factors—even those at different levels of analysis—coexist, an important consideration in identifying risk and intervening to reduce risk has to do with defining the underlying latent structure through which multiple factors act to affect outcomes. As one example, when parents separate and a teenager moves to a new community, the adolescent's access to a positive peer group may be more important in determining the course of later development than the simple fact of family disruption. The availability of peer groups, however, may depend heavily on complex and interrelated child and family factors. Did the custodial parent have to relocate so quickly that neighborhood characteristics were ignored? Have the custodial parent's paid work hours increased, providing more income to the family but allowing less time for parental involvement with the child? Is the teen socially skilled or talented in an area of achievement valued by other adolescents? The development of effective intervention approaches to minimize negative outcomes for children and families requires an understanding of the mechanisms by which biological, behavioral, and contextual risk factors operate in conjunction with one another.

The multivariate clustering methods referred to as person-centered approaches are seen by some investigators as capturing the complexity of systems models in ways that traditional variable-centered analyses cannot (Bergman et al., 2000). Whereas variable-centered approaches focus on the examination of individual differences, they also are based on an assumption that developmental processes are similar for all individuals. The goal of person-centered approaches, by contrast, is to identify subgroups of individuals that differ from one another in important ways.

Once categories or clusters are identified, the ways in which they differ can provide insight into variations in the processes of growth and change for particular sets of children or families. When both approaches are used to analyze the same sets of data, they do not compete for the right answer but instead may offer increased clarity in our efforts to understand development in children and families. Within the field of child development, these approaches have been applied primarily in clinical studies focusing on discrete subtypes of child behavior problems where the outcomes of interest are categorical (von Eye & Bergman, 2003). There is currently considerable interest, however, in the potential of these analytic approaches to allow examination of processes of change within individuals and families as they affect and are affected by the contexts in which they live.

One recent example of the use of person-centered analyses to examine family processes suggests how this approach fits a contextual viewpoint. Mueller and Elder (2003) clustered grandparents participating in the Iowa Youth and Families Project into five types on the basis of six aspects of their relationship with their grandchild. These grandparent clusters were found to differ with regard to intergenerational family relationships, indicating that family context was more important than demographic status factors in contributing to grandparent-grandchild relationships. Supportive and involved grandparents were more likely to have had a positive relationship with a grandparent of their own when they were growing up and to have children who actively involved them in the grandchild's life. Thus, family contexts and processes extending across generations are identified through these analyses as affecting children's relationships in the present.

Because our goal is to understand how development happens, or the processes through which developmental change occurs, longitudinal applications of person-centered analyses are of particular interest. An extension of the grandparent-grandchild relationship study, for example, in which the grandparent clusters were repeated at a later time point, would allow identification of relationships that *changed* and an analysis of factors associated with that change. Clearly, person-centered approaches offer new tools for our use and provide a perspective different from traditional regression-based analyses of individual difference factors.

Person-centered approaches are not without limitations, in that they are heavily data and computer driven rather than relying on theory to detect patterns that constitute meaningful categories or subgroups. Further, person-centered techniques are still relatively untested, with new applications appearing frequently in the literature. These techniques are not the only possible approach to contextual analyses. But in conjunction with more traditional and familiar types of analysis, including qualitative analyses, these methods offer another opportunity for us to link our theoretical propositions with our analytic models.

SUMMARY AND CONCLUSIONS

The worldview that guides research into human development and family studies at the beginning of the 21st century is a contextual and dynamic one. Whether presented as ecological systems theory, epigenetic theory, dynamic systems theory, family systems theory, or holistic interactionism, the underlying and widely shared conceptualization of development within individuals and families is one in which both nature and nurture are active processes operating within a complex system of reciprocal influence. Much of the actual research published in our journals, in contrast, examines direct or linear effects of individual or contextual characteristics on some outcome that is described as if it were static and immutable. The reciprocity that is at the heart of living systems has not yet been fully incorporated into our analytic methods.

To move the field forward, to make our research findings relevant to the lives of real people, and to improve the design of services aimed at the promotion of positive individual and family adjustment, we need to bring our analytic approaches in line with our theory. Structurally, universities and funding agencies can assist the movement toward such consistency by supporting multidisciplinary research and process-oriented research using qualitative as well as quantitative methods, longitudinal studies across theoretically meaningful periods of time, and programmatic efforts to link large-scale and smaller scale projects. Individually, researchers can examine their own assumptions and determine the extent to which their questions and analyses are consistent with the theory they espouse. Are contextual hypotheses proposed without a plan for measuring important features of contexts? Are main effects of one

variable on another reported with no follow-up to help us understand why or for whom these relations hold? Are quantitative variable-centered approaches used even when particular questions could be better addressed by qualitative or person-centered methods? No single research design is adequate to capture the complexity of the phenomena we seek to understand. By expanding the range of analytic possibilities and by using multiple methods, measures, and informants in all studies, we have the best opportunity to meet our goal of understanding the processes of individual and family adaptation to their changing environments.

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