TRANSACTIONAL FAMILY DYNAMICS: A NEW FRAMEWORK FOR CONCEPTUALIZING FAMILY INFLUENCE PROCESSES

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I. Introduction

> people are not just onlooking hosts of internal mechanisms orchestrated by environmental events. They are agents of experiences rather than simply undergoers of experiences. (Bandura, 2001, p. 4)

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In research on family influence processes, there is a growing dissatisfaction with existing models that assume unidirectional pathways and underemphasize dynamic processes. However, aside from acknowledging the problem, few systematic proposals have been advanced for more sophisticated ways of thinking about these pathways of influence. Addressing this gap, we propose transactional family dynamics as a new way of understanding family influence processes. *Transactional family dynamics* refers to the myriad ways in which family members influence one another, that is, mutual influence processes within families. For example, these processes may include complex patterns of influence in interparental, father–child, mother–child, and sibling relationships. Notably, our interest is in *transactional* processes—not unidirectional processes—that is, influence processes continuously moving in both directions over time.

Our interest in transactional family dynamics began with a review of the literature on child effects on families (Cummings & Schermerhorn, 2003) and empirical tests of child effects on marital conflict (Schermerhorn, Cummings, & Davies, 2005; Schermerhorn *et al*., 2007; Schermerhorn, Chow, & Cummings, 2007). We were intrigued to find that children's responses to interparental conflict predicted change in interparental conflict itself—either increases or decreases, depending on the nature of the child's response. Expanding our focus, we also found transactional links between interparental and parent–child relationships (i.e., mother–child and father–child) over time (Schermerhorn, Cummings, & Davies, 2008). We were impressed by the extent of the evidence for the transactional nature of these processes and by the multiple pathways of influence between multiple family members and relationships.

These findings, and emerging results from other laboratories, prompted us to think about the need for a new framework for conceptualizing the multitude of family influence processes. That is, rather than focusing narrowly on just one pathway (e.g., children's influence on marital conflict), we wanted our model to encompass the many pathways, and to integrate emerging empirical work suggesting the importance of multiple pathways of influence. The notion of transactional family dynamics refers to influence processes among multiple family relationships, including the influence of individual family members on family relationships, the influence of family relationships on one another, and family-wide influences. The transactional family dynamics framework also includes the reverse direction of effects. For example, with regard to the influence of individuals on family relationships, one would also be concerned with the influence of family relationships on individual family members. The aim of our approach is to provide a framework for representing these processes across multiple family relationships.

These processes unfold in "real time," or moment-by-moment interactions, as well as "developmental time," or long periods of time. Such processes encompass behaviors intended to influence other family members, but also include family members' unintentional influence on one another. Thus, another key point of our approach is that dynamic processes of influence operate at multiple levels of analysis, including varying lengths of time, or time scales. Some time ago, Thelen and Ulrich (1991) called for investigators to develop dynamic accounts of behavior at many levels of analysis. Consistent with that message, our aim is also to describe and identify the nested, multiply caused phenomenon of family influence.

Although there are increasing calls for broader conceptualizations of families (Cox & Paley, 1997; Jenkins *et al.*, 2005a), increasing the complexity of the study of families presents theoretical and practical challenges that remain to be addressed. Currently, much of the literature on families at least implicitly reflects a narrow conceptualization of families, for example, assessing only one direction of influence, or focusing on only one or a couple of family members. The narrow focus also presents a problem for the clinician, by endorsing therapies that may be ill-suited for real families because of failure to consider important directions of influence. Moreover, a gap in the study of family influence processes is the lack of an overarching theoretical framework to unite and integrate research concerning multiple directions of influence.

Thus, the development of a transactional family dynamics framework was motivated by the urgent need advocated by many in the discipline to move toward models that embrace the complexity of family relationships. In this context, it is important to consider the factors that contribute to the inherent complexity of mutual family influence processes. First, families have a hierarchical organization, with individuals nested within dyads and triads, which are nested within families. Figure 1a depicts this hierarchical organization. Second, families may include multiple family dyads and triads, and therefore, a multitude of influence pathways among them. Third, family influence processes unfold in real time interactions, as well as in the context of processes that may extend over longer periods of time (e.g., the development of emotional bonds or attachments; Bowlby, 1973). That is, time is hierarchically organized, with smaller time scales nested within increasingly long time scales, with varying possible lengths of time for potentially critical changes to occur (Cole & Maxwell, 2003). Fourth, there are different conceptualizations of influence and change in family relationships, including change from one time point to the next and overall patterns of change. Our framework recognizes and attempts to accommodate these complicating factors, for example, by classifying findings by family relationship and by conceptualization of influence and change.

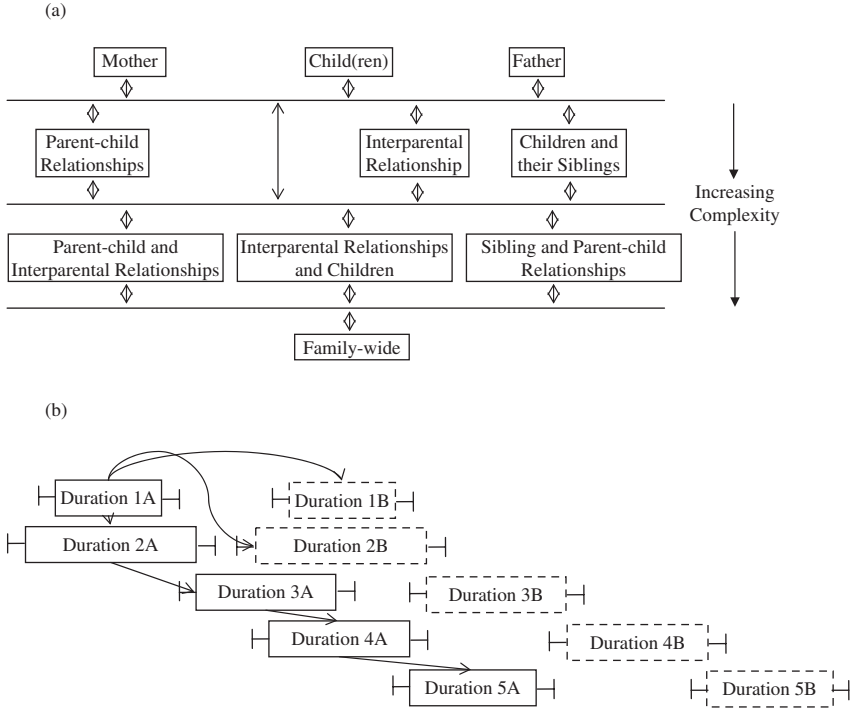

Fig. 1. The hierarchical organization of family influence processes: (a) in terms of family members and family relationships; and (b) in terms of time scales.

We begin with a brief historical overview of some of the theoretical influences that have laid the foundations for this emerging approach to understanding family influence processes. We then describe transactional family dynamics at a theoretical level, providing a set of organizing concepts and principles. Next, selected research consistent with this framework is reviewed, toward showing how these seemingly disparate directions in research fit together, and underscoring the utility of the transactional family dynamics model. We conclude by highlighting some possible directions and hypotheses for future research. The aim of this chapter is to articulate and advance a model of transactional family dynamics as a framework for conceptualizing and studying family influence processes.

Allen *et al.* (2006) developed the metaphor of a dance for the concept of family influence processes. Arguing that the critical issue is not one of seeking to understand causality, but rather of seeking to understand the dance itself, Allen and colleagues pointed out that the dance might be lead by more than one family member. Moreover, our ability to distinguish

cause and effect is very limited, as even the most sophisticated research designs and data analytic methods cannot prove that our causal models are correct, but rather, can only prove that they are incorrect. Moreover, Allen *et al.* argued, questions about causality are not even the right questions to be asking. That is, "Observing a dance doesn't tell us who's in the lead, and knowing who's in the lead doesn't tell us who decided what dance to do, or what music to play" (Allen *et al.*, 2006). Instead, we should be asking questions about the dance itself—the complex process of leading and following, giving and taking. We elaborate this metaphor by pointing out that the metaphor is not mechanistic—there is no automatic correspondence between action and reaction (although there is certainly a strong relationship between the two). Thus, this metaphor allows for individuality—it affords space for interpretation of events, personality, and agency. That is, the metaphor allows for interpreting the music through dance.

II. Setting the Stage

A. HISTORICAL OVERVIEW

Traditionally, the commonly held view of family relationships was unidirectional—the direction of influence was believed to be parent-to-child, with scant consideration of child effects on parents. Then, beginning in the late 1960s, Richard Q. Bell (1968, 1971, 1979) called attention to the reverse direction of effects, namely, child-to-parent influence processes. The late 1960s through the early 1980s saw an upsurge of research aimed at distinguishing child-to-parent effects from parent-to-child effects, and the view that children influence their parents gained acceptance (see Kahn & Antonucci, 1980; Powers *et al.*, 1983; Sameroff, 1975a, 1975b). However, in the subsequent period, relatively few researchers examined bidirectional processes (see Dunn, Hinde & Stevenson-Hinde, and Kuczynski for exceptions), perhaps partly because of methodological and statistical limitations (Lytton, 1982) and even decreased interest in the topic (Lytton, 1990b). Moreover, although some (e.g., Engfer, 1988; Lytton, 1982) had called for examination of the whole family, suggesting that children, siblings, marriages, and parenting might all be related as influences, relatively few studies adopted or advanced a family-wide model of transactional dynamics.

Gradually, however, conceptualizations of relatively complex patterns of family influence gained acceptance. A resurgence of theory and research relevant to transactional family dynamics began in the late 1990s, including increasing examination of additional family relationships, such as sibling

relationships, and links between pairs of family relationships, such as between marital and parent–child relationships. Furthermore, statistical approaches began to emerge that enabled the testing of increasingly complex and sophisticated models of family influence, addressing a long-standing barrier to progress on these notions. In addition, several decades of research on multiple areas of family functioning have yielded a broader and deeper knowledge of families that enhances understanding of transactional family processes. For example, significant advances have been made in the study of parent–child attachment, parenting, parental psychopathology, marital conflict, and child functioning in the context of families (see Connell & Goodman, 2002; Cummings & Davies, 2002; Davies & Cummings, 1994; Gray & Steinberg, 1999; Grych & Fincham, 1990; Thompson & Raikes, 2003). With these empirical and methodological advances, there is now potential for substantial progress in the study of transactional family dynamics. That is, it is now possible to return productively to the innovative questions raised several decades ago about child effects and the accompanying ideas. These ideas may well have been ahead of their time in the early 1980s, but are very appropriate and valuable for emerging directions in family research at this time. New questions for this approach are also informed by the theoretical and empirical advances in family research that began in the 1990s. Thus, the time is ripe to move forward with new advances in what we term transactional family dynamics.

B. THEORETICAL BASES FOR TRANSACTIONAL FAMILY DYNAMICS

Several major theories contribute to our conceptualization of transactional family dynamics (i.e., mutual influence processes within families; Table I). From these major theories, we have drawn a number of themes that inform our framework. First, multiple family members and family relationships influence one another continuously over time. Second, families are organized hierarchically, with individuals nested within family dyads (e.g., marriages) and triads (e.g., mother–father–child), which are, in turn, nested within families. At the same time, influence processes are also viewed as ''circular,'' with a continuous cycle of mutual influence in which action, reaction, and further reaction occur constantly (Granic, 2000). Third, time is also hierarchically organized, with moments nested within hours, which are nested within days, which are nested within weeks, which are nested within months, and so on. Importantly, processes unfolding over different time scales are qualitatively different from one another. That is, although influence processes in different time scales have much in common with one

Table I
Transactional Family Dynamics: Theoretical Foundations

Reference	Summary of contribution	Family relationship
Bandura (2001, 2006)	Notions of human agency	Individual
Bell (1968, 1971, 1979)	Child effects	Parent–child
Bogartz (1994)	Merits and weaknesses of dynamic systems theory	Child developmental processes
Bowlby (1973)	Interacting time scales	Parent–child
Bretherton (1985)	Reciprocity and interconnectedness of multiple family relationships	Parent–child
Bronfenbrenner (1979, 1986, 1988, 2005), Bronfenbrenner & Morris (1998)	Bioecological model of human development	Parent–child, person–environment
Cicchetti (2006), Cicchetti *et al.* (1988)	Developmental psychopathology	Person–environment
Collins & Madsen (2003)	Developmental perspective on parent–child interactions	Parent–child
Cook (2003), Cook & Kenny (2005), Kashy & Kenny (2000)	Social Relations Model and Actor–Partner Interdependence Model	Parent–child
Cox & Paley (1997, 2003)	Family systems theory	Multiple family relationships
Cummings & Schermerhorn (2003)	Developmental perspective on children's influence on family relationships	Multiple family relationships, especially child and interparental
Emery (1982)	Child effects on marriage	Child and interparental
Granic (2000, 2005), Granic *et al.* (2003), Granic & Hollenstein (2003, 2006), Granic & Patterson (2006)	Dynamic systems theory applied to child antisocial behavior and reciprocity in family relationships	Parent–child
Hinde & Stevenson-Hinde (1987)	Child development in context of social networks	Family, teacher, peer
Kelley *et al.* (1983)	Mutual influence processes, distinguished between emotion, thought, and behavior	Close relationships
Kuczynski & Hildebrandt (1997), Kuczynski *et al.* (1997), Kuczynski & Parkin (2007), Lollis & Kuczynski (1997)	Bidirectionality and child agency	Parent–child
Lewis (2000, 2002, 2004), Lewis *et al.* (1999), Howe & Lewis (2005)	Time scales of developmental processes, dynamic systems models of development	Utility of dynamic systems (DS) approaches to explain development
Lytton (1982, 2000)	Parent- and child-effects	Parent–child

Table I
(*Continued*)

Reference	Summary of contribution	Family relationship
Maccoby (1984)	Mutual influence processes	Parent–child
McHale & Fivaz-Depeursinge (1999), McHale *et al.* (2003)	Family-wide concepts, family alliances, child effects	Parent–child, coparenting
Minuchin (1985)	Family systems theory	Multiple family relationships
Newson & Newson (1976)	Child's developing influence on others	Parent–child
Patterson (1982), Patterson, DeBaryshe, & Ramsey (1989), Patterson & Fisher (2002)	Coercive family processes, bidirectionality and antisocial behavior	Parent–child
Powers *et al.* (1983)	Socialization and interactional processes during adolescence	Parent–child
Sameroff (1975a, 1975b, 1995), Sameroff & Fiese (2000), Sameroff & MacKenzie (2003)	Transactional models of child development, intervention research	Parent–child, person–environment
Sanders, Nicholson, & Floyd (1997)	Child effects on marriage	Child and interparental
Scarr & McCartney (1983), McCartney (2003)	Selection and creation of one's environment	Person–environment
Schaffer (1999)	Bidirectionality of relationships and child development	Parent–child
Smith (2005), Smith & Thelen (2003), Thelen & Smith (1994, 1998), Thelen and Ulrich (1991)	Dynamic systems principles and developmental psychology	Child motor and cognitive development

another, they also have important differences, which we discuss later. Fourth, multiple relevant conceptualizations of influence and change are posited. More specifically, we distinguish between influence processes involving association or contingency between family members, change from one time point to the next, and overall patterns of change. We return to these themes throughout this chapter, as they contribute substantially to the transactional family dynamics framework. In the rest of this section, we provide an overview of research and theoretical directions that provide a foundation for our approach, highlighting their relevance to our framework.

1. Child Effects

Our conceptualization of transactional family dynamics originated with our interest in child effects (Cummings & Schermerhorn, 2003).

Bell (1968, 1971, 1979) was the first to develop a well-articulated call to study effects of children on parents. A long-standing assumption in socialization research had been that the child's effects on the parent–child system could be attributed to biological characteristics of the child. Bell argued cogently for recognition of the importance of child effects in their own right, independent of the issue of biology. Building on these ideas, Lytton (1982) suggested that the existing literature may well hide child effects, because of its reliance on cross-sectional designs and correlational analyses, as well as its handling of data in ways that precluded the examination of children's influence on parents.

Subsequently, other investigators also emphasized bidirectional models of influence on children's socialization (Dunn, 1997; Kuczynski, Marshall, & Schell, 1997; Maccoby, 1984; Powers *et al.*, 1983), and the bidirectional and multifaceted development of parent–child interactions (Collins & Madsen, 2003). Moreover, child effects operate from the moment an infant is born, and children's behavior serves a homeostatic function, regulating the behavior of other family members (McHale, Kavanaugh, & Berkman, 2003). Children are not passive recipients of parenting, but rather, active participants in parent–child relationships (Cole, 2003; Emery *et al.*, 1983; Maccoby, 1984; Stifter, 2003). Parenting practices and child functioning are a product of both parent and child characteristics and behavior (Lytton 1990a; Patterson & Fisher, 2002), and maternal responding to young children's misbehavior depends in part on the type of misbehavior (Grusec & Kuczynski, 1980). Thus, the parent–child relationship can be described as reciprocal, involving mutual influence between parent and child (Bretherton, 1985).

Furthermore, parent–child interactions occur in a wide range of contexts (e.g., play, caregiving, teaching), and parent–child interactions in one context may affect interactions in another context (Lollis & Kuczynski, 1997). Relatedly, child effects occur, not solely within the mother–child relationship (a primary focus of earlier research), but also within father–child relationships, and children influence their siblings' relationships with their parents (McHale *et al.*, 2003). Moreover, children's influence extends to the marital relationship (Cummings & Schermerhorn, 2003). Children's behavioral dysregulation during marital conflict may reflect "taking on a symptom" (Emery, 1982), intended to distract parents from marital difficulties. In contrast, children's hostility in the context of interparental hostility may escalate coercive family processes (Patterson, 1982), thereby promoting increased marital discord over time.

Notably, agency and bidirectionality are to be distinguished from one another. Bidirectional effects include any behavioral, psychological, or biological processes that alter relations between two people, but are not necessarily self-initiated or intentional. However, Kuczynski and colleagues

have called for understanding children as agents in the family (Kuczynski *et al.*, 1997; Kuczynski & Hildebrandt, 1997). Agency has been described as intentional influence on one's functioning and life circumstances (Bandura, 2006) and as exercising the ability to engage in intentional behavior, choose methods of influencing others, reflect on behavior, interpret communications, and make assertions (Kuczynski & Parkin, 2007). Therefore, agentic effects are a subset of bidirectional effects. That is, the concept of agency makes stronger suppositions about the individual's role, including underlying motivations, organization, and plans.

Bandura (2006) identified four core properties of agency: (a) developing an action plan; (b) setting goals and anticipating likely outcomes; (c) acting on one's intentions; and (d) evaluating those actions. In the context of family relationships, we have defined children's agency as their behaviors that are designed to influence family members (Cummings & Schermerhorn, 2003). Kuczynski and Parkin (2007, p. 261) wrote, "A challenge for the future is to develop models that consider parents and children interacting simultaneously as agents and adapting to each other's agency during interactions."

2. Dialectical Models

Dialectical models have also informed our thinking about family influence processes and the hierarchical organization of families. Kuczynski and Parkin (2007) characterized dialectical models as reflecting intentionality and portraying the individual as active, rather than reactive. One key concept within dialectics is the unity of opposites; that is, the notion that the individual must be recognized as a part of a whole, and that in order to understand the individual, one must examine interrelations between part and whole (Kuczynski & Parkin, 2007). We draw on this notion of the unity of opposites in explicating the hierarchical organization of families, which consist of relationships, which consist of individuals. Also important is the notion of contradiction, or the role of opposing elements in producing quantitative and qualitative change; this process of contradiction and change is a pervasive part of family life. For example, contradiction may result from differences between husbands' and wives' parenting values, compounded by an opposing child value of security and family cohesion. Out of these opposing elements, which are nested within a larger family system, emerges change—ideally, a synthesis, resolving the differing parental values, ending the conflict, and thereby restoring children's sense of family security. Thus, in the context of family influence processes, the *unity of opposites* and *contradiction* may work together to produce a *synthesis*, reflecting change within the family.

3. Bronfenbrenner's Ecological Model of Human Development

Urie Bronfenbrenner's work has considerably influenced our thinking about transactional family relationships, particularly in terms of notions of hierarchical organization. His ecological theory of human development (1979, 1986) provides a model of the mutual development of the individual and the multiple, nested environments within which the individual functions (micro-, meso-, exo-, macrosystems) over the life span (chronosystem). Of particular relevance to our work, Bronfenbrenner (1979) emphasized the role of reciprocity in human interactions. In later formulations of his bioecological theory of human development, Bronfenbrenner (1988, 2005) placed particular emphasis on four broad and interrelated components of human development: (a) the developing person's characteristics; (b) interaction between the person and environment; (c) environmental contexts ranging from proximal to distal in relation to the person; and (d) the progression of time. Thus, Bronfenbrenner's ecological model provides a useful foundation for conceptualizing transactional family dynamics because it emphasizes the hierarchical organization of systems. We apply this notion of hierarchical organization to the context of families, and more specifically, family influence processes.

4. Individual–Environment Interaction

Because our framework involves mutual influence of the individual on others in the family and multiple pathways of influence, notions of interactions between the person and the environment (or family) are important to our model. Kelley *et al.* (1983) linked mutual influence processes in close relationships with events in the environment and highlighted the interactive roles of emotion, cognition, and behavior in mutual influence processes. McCartney and Scarr also presented revolutionary ideas about individual–environment interaction (McCartney, 2003; Scarr & McCartney, 1983). In particular, their notion of niche-picking, or the individual's selection and creation of environments that provide a good fit to the individual, is closely related to our views of mutual influence among family members. That is, we see family members' influence on one another as part of the process of shaping one's environment—changing the family environment.

Advancing notions of individual–environment interaction, Sameroff (1975a, 1975b, 1995) called for moving beyond examining static characteristics of the person and the environment. He suggested that researchers should instead examine the dynamic, continual transactions between the person and the environment. Sameroff argued that development is not solely a result of either characteristics of the person or environment, but instead results from the process by which these characteristics develop

through their mutual influence over time. We think this conceptualization of transactions is critically important; consequently, we use the word *transactional* in our framework.

5. Developmental Psychopathology

The field of developmental psychopathology has also contributed to the theoretical underpinnings of this framework, because of its emphasis on the hierarchical organization of developing systems. Stemming from the field of developmental psychopathology, an organizational perspective on human development emphasizes viewing, not just discrete domains of development, but rather, the overall organization of development across domains, including interrelations among domains (Cicchetti, Toth, & Bush, 1988; The Carolina Consortium on Human Development, 1996). Thus, the individual is viewed holistically (Cicchetti, 2006), and interactions between genes, neurobiology, psychology, and social functioning are viewed as critical in determining behavior (Cicchetti *et al*., 1988). Moreover, the organism is regarded as fully integrated, such that lower-level events, such as cellular functioning, can influence higher-level events, such as thought and emotion, and vice versa (Cicchetti, 2006). By extension, then, even higher-level events, like the mutual influence of family members and families, are an important focus of developmental psychopathology.

Relatedly, we view time as hierarchically organized, with shorter time scales nested within longer time scales; moment-by-moment influence processes contribute to long-term influence processes—as well as the reverse—and both long and short time scales uniquely contribute to the whole of family experience. Thus, our notions of transactional family dynamics reflect circularity in patterns of interaction and influence, as well as the hierarchical organization of families and time.

6. Dynamic Systems Theory

Dynamic systems theory has also influenced our thinking about the hierarchical organization of families and of time, as well as our conceptualizations of change. In particular, dynamic systems principles are well suited to examining complex questions about the interrelatedness of the whole and its parts (Bogartz, 1994; Smith, 2005), and thus, provide an ideal framework for research on family influence processes (Granic, 2000; O'Brien, 2005). Thus, we draw on dynamic systems principles in addressing the hierarchical organization of families, with multiple individuals and relationships nested within families, and the hierarchical organization of time, with multiple time scales nested within one another.

Dynamic systems theory addresses the *process* of change and development, rather than developmental *outcomes*; in dynamic systems terms, there is no end point of development (Thelen & Ulrich, 1991). Moreover, with its central focus on change and change in the rate of change, dynamic systems theory points to questions about both (a) change from one time point to the next; and (b) overall patterns of change. Chief among the contributions of dynamic systems theory is a set of concepts facilitating examination of overall patterns of change. Such patterns include stabilization, destabilization, and self-regulation.

In a ground-breaking application of dynamic systems theory to the field of developmental psychology, Thelen and Ulrich (1991) described motor development as the process of repeated cycles of stabilizing and destabilizing behavior patterns. In terms of social development, relationships may develop partly as a function of stabilizing and destabilizing behavior patterns of family members. For example, when parents repeatedly respond sensitively, their infants develop stable views of their parents as dependable. Moreover, family relationships may be self-regulating, with tendencies to return to baseline levels of functioning. As an illustration, a mother and her adolescent might have a fairly close relationship, but there may be periods of more or less closeness; that is, the system may oscillate back and forth past its baseline level of closeness. Thus, dynamic systems principles and methods afford opportunities to deepen conceptualization and empirically based knowledge of family influence processes. However, dynamic systems methods rely on mathematics-intensive procedures, and relatively little research has utilized this approach.

7. Social Relationships as a Context for Development

We also draw on the notion of social relationships as contexts for development; that is, notions of others' influence on one's change and development. Just as Bronfenbrenner and others have outlined models of hierarchical organization of the environment, Hinde and Stevenson-Hinde (1987) conceptualized children's development within social relationships in terms of (a) links between the *child* and the social *interactions* in which they participate; and (b) links between social *interactions* and the *relationships* within which they are nested. Hinde and Stevenson-Hinde also emphasized the history of interactions and relationship functioning as contributors to subsequent interactions and relationship functioning. Moreover, all of these processes are conceptualized as influencing, and being influenced by, children's interactions and relationships with others in their social networks, whose interactions and relationships are, in turn, influenced by other people with their own social relationships. Thus, this

conceptualization of social relationships as hierarchically organized fits with our transactional family dynamics framework, with interactions nested within dyads and triads, who in turn, are nested within families.

8. Family Systems Theory

Family systems theory emphasizes the interdependent nature of subsystems within families (Cox & Paley, 1997; Minuchin, 1985), conceptualizing families as organized wholes (Cox & Paley, 2003). These notions gave rise to our views of families as hierarchically organized, consisting of multiple family members and relationships. Families are capable of both self-regulation and self-reorganization (Cox & Paley, 1997). Self-regulation involves stabilizing interaction patterns; for example, there may be rapid changes in family conflict followed by self-regulation back to the family's typical low levels of conflict. Self-reorganization refers to adaptation to the environment. For example, a downturn in the economy may cause a father to lose his job, which may prompt the family to reorganize itself around new roles, such as the mother becoming the primary source of income.

Similarly, Bretherton (1985) discussed links between children's internal representations of multiple family relationships, and McHale and Fivaz-Depeursinge (1999) called for an examination of families as wholes, rather than as a group of individuals or dyads. Moreover, they described the notion of a family's *personality* as the family's tendency toward certain emotions and behaviors. For example, one family may have a warm and expressive personality, whereas another family may tend toward a cold, detached personality. Thus, these notions of families as hierarchically organized wholes with their own personalities, and of multiple pathways of influence play an integral part in our conceptualization of transactional family dynamics.

9. Parent and Child Development

Family influence processes depend, in part, on child and parent development. That is, the relationship between two family members is a developing one, with each member of the relationship affecting the other member over time. Maccoby (1984) discussed at length the effect of child development on bidirectionality. Maccoby highlighted the role of such developmental factors as physical growth, language development, conceptions of others, and autonomy in children's interactions with their parents. As they develop, children become better able to communicate with family members and become increasingly aware of others' points of view, as well as becoming more skilled at portraying themselves favorably (Newson &

Newson, 1976). Children also become more skillful in their approach to noncompliance with parental requests (Kuczynski & Kochanska, 1990). Moreover, children show increasing emotion during conflict with mothers and siblings during the second year of life, and they show increasing understanding of their family members and of ways to comfort their siblings (Dunn & Munn, 1985). These changes enable children to better coordinate their own activities with those of other family members.

At the same time, parents also develop and change in many ways, developments that are, themselves, important to the changing nature of family influence processes. For example, parents adjust their parenting and disciplinary styles to match their children's development (Kuczynski *et al.*, 1987). That is, concurrent with changes in children's interactions with family members, parents respond to their children's cognitive development by using increasingly verbal instructions and explanations in place of physical demonstrations, and by making more sophisticated verbal responses to their children's requests (Maccoby, 1984). With maturity, children are more likely to be influenced by their parents' petitions to their sense of fairness, and their parents respond to this change by decreasing their emphasis on reward and punishment. Furthermore, older children's greater understanding of mutual obligations means that, as children get older, their parents are more effectively able to discipline by revoking their children's privileges. Older children can also be influenced by their parents' emphasis on what other people will think of their behavior.

Although we have discussed development here primarily in terms of the parent–child relationship, the same principles apply to other family relationships. Moreover, parents also develop as individuals, independent of their development as parents; that is, their development as adults, outside the realm of the family, likely also contributes to the dynamics of family influence processes (Sarah J. Schoppe-Sullivan, personal communication, July 26, 2007). Thus, the interacting effects of all family members' development contribute in important ways to family influence processes.

III. Transactional Family Dynamics: An Emerging Theme

A. WHY IS A TRANSACTIONAL FAMILY DYNAMICS MODEL NEEDED?

A transactional family dynamics model addresses a gap in conceptualizing family influence processes, consistent with the complexity of families. That is, we propose a model of multiple family members and family relationships nested within families, connected via multiple pathways of

influence. Moreover, these influence processes unfold over the course of multiple, nested time scales, each of which contributes uniquely to development. Lastly, influence and change can be conceptualized in terms of association and contingency of family members' behavior, observation-to-observation change, and change in the overall pattern of influence.

The transactional family dynamics approach can help inform and increase the accuracy of conceptualizations of other domains of family research. That is, in order to develop a fuller understanding of family processes, it is important to test hypotheses in ways that are as precise as possible, including framing investigations to capture the complexity of families. Failure to account for these influence processes may create distortions throughout the research process, from selecting research methods to conducting data analyses (misspecification of statistical models) to interpreting results. Although the issue of bidirectionality is commonly acknowledged at a conceptual level, even when the data necessary to assess bidirectional effects are available, these processes are often overlooked in statistical analyses.

Moreover, a theoretical framework is needed to unify the work of many different investigators and to provide a framework addressing questions about how all of this work fits together. Together, the research and theories reviewed support a theoretical perspective that is a useful model for examining how family members and family relationships influence one another over time. In a subsequent section, we show how existing work fits within this framework.

B. WHAT KIND OF APPROACH IS NEEDED?

A model is needed that emphasizes the hierarchical organization of family members (family members are nested within family relationships, which are nested within families) and of time scales (shorter time scales are nested within longer time scales). Moreover, our model facilitates distinguishing between influence in the form of association and contingency, change from one time point to the next, and the overall pattern of change, as well as examining pathways of influence between multiple family dyads and triads. That is, it is important to account for the complex pathways between multiple family relationships, including the circular directions of influence that underlie transactional processes, each of which influences other family relationships at the same time that they, themselves, are changing.

Researchers and theorists such as Bell, Bronfenbrenner, Hinde, and Lytton were already pointing to complex research questions such as these in

the 1980s, but did not yet have the methodological or statistical tools to actually answer them. For example, Lytton (1982, p. 273) wrote extensively about practical problems in studying family process, including the presence of multiple family members, limitations of statistical software, consideration of the broader ecology within which the family exists, and concluded

> The state-of-the-art analysis in this area prevents us from looking simultaneously at the interaction of all these systems over time in any rigorous fashion. We will, I think, have to confine ourselves to investigating one or two aspects at one attempt … While this may seem a piecemeal approach, it enables us to make progress in testing different theoretical models by methods of manageable complexity.

Since that time, advances in methodological and statistical tools have given rise to the possibility for substantial advances to be made now in the study of family influence processes. Moreover, the work of various researchers reflects considerable progress in studying aspects of family influence processes. Their work has great utility for developing integrated models of family influence, increasing the accuracy with which they reflect family life and family functioning. Thus, we are now ready to return to the complex questions about family relationships that have been laid out for us—a legacy we have inherited from these leaders in the field.

C. THE HIERARCHICALLY ORGANIZED SYSTEMS OF TRANSACTIONAL FAMILY DYNAMICS

At the core of our model of transactional family dynamics is the notion that behavior has multiple, hierarchically ordered causes, with events at lower levels of the hierarchy influencing, and being influenced by, events at higher levels of the hierarchy. For example, family influence processes begin with the actions of a single family member. At the next level of the hierarchy, family influence processes involve multiple family members, who are nested within dyads, acting and interacting with one another. In turn, multiple family dyads and triads, which are nested within families, influence one another via multiple pathways (see Figure 1a). Moreover, time is hierarchically organized, with real time processes nested within increasingly longer time scales. An additional factor creating complexity for the study of family influence processes is the multiple conceptualizations of change and influence.

To impose some order on this complexity, we classify influence processes in terms of three different conceptualizations of influence: Systems A, B, and C. System A focuses on *associations* between two family members (or between two family relationships) reflecting mutual influence of both people

on each other, without a change in either one. System B involves *change processes within families from one time point to the next*, again in terms of family influences. In particular, we consider how change unfolds over different time scales. System C focuses on *change in the rate of change*, that is, the overall pattern of change. These systems apply equally well to the various levels of the family hierarchy, pathways of family influence, and time scales. There is no great significance to the names we have assigned to these three systems; they are simply used as a short-hand to refer to the corresponding conceptualizations of change and influence. However, the research questions that map onto one system are qualitatively different from those that map onto another system.

Figure 2 depicts the relations between Systems A, B, and C, as well as the components of each. System A shows interconnected characteristics, behavior, and developmental status, symbolizing their influence on one another. System B reflects change from one time point to the next, and refers to different time scales. System C depicts the dynamics of the system as a whole, escalating and de-escalating over time, as symbolized by the dashed, wavy arrows. Several terms from dynamic systems theory are also illustrated in System C; they are explained in a later section. As shown in the figure, Systems A and B are subsumed within System C and contribute much to it. The portion of the figure that illustrates Systems A and B represents a cross-section of System C, a snapshot in time of the overall pattern of change. Notably, arrows symbolize influence of processes in different time scales on one another, as well as influence of different systems on one another. Circles are used to symbolize the continuity of influence processes and to emphasize the *process*, as opposed to an endpoint or outcome.

Although the systems can be distinguished from one another in terms of their statistical meanings, more useful for the present purpose is that the systems are also distinguished from one another conceptually, by virtue of their relationship to change. That is, research questions can be classified in terms of the way influence and change are conceptualized, and these classifications map directly onto the systems we outline. In System A, research questions focus on influence and association in the absence of change. We can think of this as the level or amount of influence at one time point. Thus, the focus is one family member's influence on another; that is, one family member elicits a particular response from another, but that response does not necessarily reflect a change from an earlier point in time. In System B, influence and change are conceptualized in terms of change from one time point to the next. Reflecting a different, more topographical perspective—a bird's eye view—System C defines influence and change in terms of overall patterns of influence and change; that is, the rhythms of a relationship.

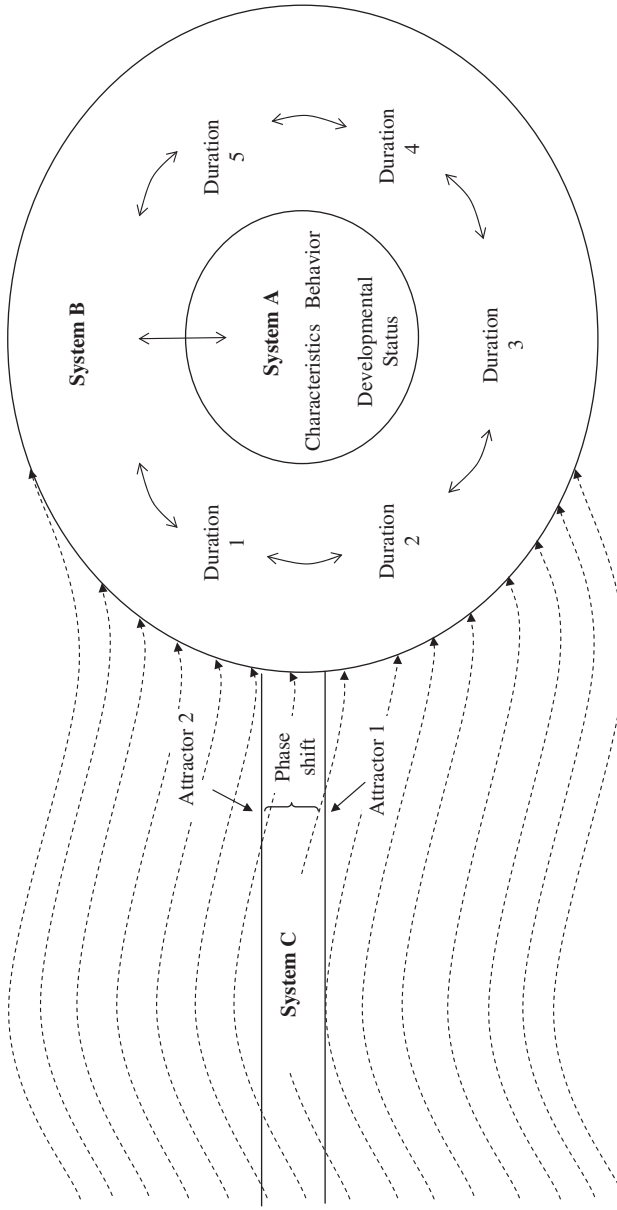

Fig. 2. Conceptual figure depicting relationships between Systems A, B, and C.

These conceptual distinctions reflect qualitative differences. The systems, thus, give rise to distinct research questions, and therefore offer unique ways of thinking about family influence processes. Together, these three systems allow us to address the complexity of family influence processes along multiple dimensions previously outlined, including nested time scales, the hierarchical organization of family relations, differing notions of influence and change (which correspond to the systems), and pathways of influence among multiple family dyads and triads.

1. System A

System A pertains to family influence processes without change—that is, the amount of influence in a relationship at any point in time. Thus, we are interested in qualities of individual family members, such as personal characteristics and values, developmental status, and behavior as they influence the behavior of other family members. Examples of personal characteristics and values include age, pubertal status, physical size, gender, temperament, adjustment problems, political views, moral values, and other beliefs. System A does not directly involve change processes, but it does involve qualities that influence family members, either at one moment in time or over the course of time—that is, influence without change in influence. For example, a father might encourage his son to pursue sports and his daughter to play the piano; in this example, the father is treating his children differently because of their gender. Notice that this example does not involve *change* in the amount of influence, but rather, it reflects the influence of a personal characteristic in eliciting the father's behavior. The father's behavior is caused, at least in part, by personal characteristics of his children. As another example, a mother may allow her son to stay out late than her daughter, because her son is reserved and cautious, whereas her daughter is impulsive. Thus, one family member's behavior may be contingent on characteristics of another family member. Importantly, although this system does not reflect change, it can reflect causal processes, as the above examples illustrate (notably, an experimental design is needed to demonstrate causation), as well as the influence of family members on one another (e.g., granting requests, reciprocal responding). Much of the empirical literature on family influence processes involves these sorts of response processes (Table II).

As outlined briefly already, many individual characteristics are important to transactional family dynamics. Child behavior problems are one example (Jenkins *et al.*, 2005b). Moreover, temperament can contribute to influence processes; for example, a baby who is cheerful and outgoing probably makes her parents feel happy.

Table II
Transactional Family Dynamics: Empirical Contributions

Study	Sample (age) and design	Methodologies	System	Transactional results
Transactional dynamics of the parent–child relationship				
Anderson, Lytton, & Romney (1986)	32 mother–child dyads; half of the children met Diagnostic and Statistical Manual (DSM) III criteria for Conduct Disorder (CD), half of the children did not have disorders	Cross-sectional; 15-min observations of each mother with (a) her own child, (b) a child without CD, and (c) a child with CD	A	Compared with nonconduct disordered (NCD) children, conduct disordered (CD) children elicited more requests and negative responses from both mothers of CD and mothers of NCD children.
Boyle *et al.* (2004)	3 datasets, consisting of the following: 2,128 4–16-year-olds (894 families); 7,392 4–11-year-olds (3,376 families); 2,876 3–14-year-olds (1,218 families); mothers and teachers	Cross-sectional; questionnaire, observational, vocabulary test	A	Child-specific differential parenting was linked with concurrent adjustment problems for all siblings in 2 of the 3 datasets.
Brody (2003)	156 African American children in single-parent households, as well as their mothers and teachers; average child age at Time 1 = 11 years	3 waves, each spaced 1 year apart; questionnaire data; used structural equation model (SEM) with autoregressive controls for some constructs	B	Maternal monitoring predicted later child externalizing, but child externalizing did not predict later monitoring. Child temperament predicted later parent–child relationship quality, which was linked with concurrent monitoring.

Table II
(*Continued*)

Study	Sample (age) and design	Methodologies	System	Transactional results
Brophy & Dunn (2002)	30 families of "hard to manage" children (conduct disordered and/or hyperactive) and 26 families of control children; child ages were 3.6–4.6 years at Time 1	2 waves, spaced 18 months apart; intelligence testing, observational	A (tests of links from Time 1 to Time 2 were not reported)	Compared with control children, in mother–child dyads with hard to manage children: (a) at Time 1, mother–child conversational turn-taking was lower and maternal negative control was higher; (b) at Time 2, mothers showed more negative control and less positive control.
Brunk & Henggeler (1984)	32 mothers; ranging in age from 25 to 48 years	Cross-sectional, experimental design: 2 10-year-old male confederates displayed either anxious-withdrawn (AW) or conduct-problem (CP) behavior	A	In the AW condition, participants showed more rewarding and helping behavior than in the CP condition; in the CP condition, participants showed more discipline, commands, and ignoring than in the AW condition.
Clark *et al.* (2000)	108 mothers and their infants (infants averaged 9 months of age at Time 1)	2 waves spaced 4–6 months apart; observational, and questionnaire data	A	Child negative emotionality predicted subsequent maternal power assertion, but not maternal responsiveness; child emotionality interacted with maternal personality in links with subsequent maternal power assertion.

Cole *et al.* (2003)	85 mother–child pairs; children were preschoolers at Time 1	2 waves, spaced approximately 2 years apart; questionnaire, observational data	B	Within an interaction, mothers reciprocated their daughters' positive emotional expressions more than they reciprocated negative emotional expressions. Mothers' reciprocation of children's expression of anger predicted increases in child externalizing problems.
Cook & Kenny (2005)	203 mother–adolescent dyads	2 waves spaced 1 year apart; questionnaire data; used autoregressive controls	B	Associations between mother and child attachment security were bidirectional.
Covell & Abramovitch (1987)	123 children (ages 5–15 years) and 54 of their parents	Cross-sectional; structured story-based interview	B (because the data reflect participants' beliefs about change)	Children reported that they could change maternal mood; their mothers confirmed their perception.
Covell & Miles (1992)	Study 1: 120 4–9-year-old children; Study 2: 180 4–12-year-old children and their parents	Cross-sectional; structured story-based interview	A	Children indicated they would be more likely to directly intervene when they caused parental anger than when work-related problems or interparental conflict caused parental anger.
Eisenberg *et al.* (1999)	94 children (preschool-/kindergarten-age at Time 1) and their mothers and fathers	5 waves, spaced 6 months to 2 years apart; questionnaire data; used SEM with autoregressive controls for all variables.	B	Reciprocal links were found between some (but not all) time points for: (a) child anger, hostility, irritation and parental punitive and distressed reactions; and (b) child regulation and parental punitive (but not distressed) reactions.

Table II
(*Continued*)

Study	Sample (age) and design	Methodologies	System	Transactional results
Granic *et al.* (2003)	149 children (9–10 years old at Time 1) and their parents	5 waves, spaced 2 years apart; observational data from a problem-solving task; state space grids	C	Behavioral variability during family interactions peaked at 13–14 years of age.
Granic & Lamey (2002)	36 8–12-year-old boys with clinical levels of externalizing symptoms and their mothers	Time-series (10-min problem-solving task); questionnaire and observational; state space grids	C	The mother–child interactions of children with externalizing symptoms were characterized by a permissive pattern, whereas the interactions of children with both externalizing and internalizing symptoms changed from a permissive pattern to one that was mutually hostile, following a cue to resolve a conflict.
Grundy (2007)	133 mothers and their firstborn children, who were 4th graders at Time 1	5 waves spaced 1 year apart; questionnaire data	B	Maternal monitoring-related knowledge and preadolescent children's competent behavior predicted increases in one another over time.
Grusec & Kuczynski (1980)	20 mothers of 4–5-year-olds; 20 mothers of 6.5–8-year-olds	Cross-sectional; structured observational task	A	Maternal response to scenario involving child misbehavior depended partly on type of misbehavior.

Harach & Kuczynski (2005)	48 parents of at least 1 4–7-year-old	Cross-sectional; structured interviews in home or lab	B (because the data reflect participants' discourse about change)	Parents reported that the parent–child relationship is most strengthened by their efforts at companionship and by their child's compliance and efforts at companionship; the parent–child relationship is most weakened by parental overuse of authority and child noncompliance.
Hollenstein *et al.* (2004)	240 kindergarten children and their parents; families were from a low-income neighborhood	2 waves during kindergarten; time-series parent–child observation, questionnaire data	C	Child internalizing and externalizing problems were linked with rigidity in parent–child interactions.
Huh *et al.* (2006)	494 adolescent girls	2 waves, spaced 1 year apart; questionnaire, structured interview, and physical growth data; used autoregressive controls for all constructs	B	Adolescent externalizing symptoms predicted subsequent decreases in parental support and control; adolescent substance abuse and parental control predicted subsequent decreases in one another.
Kerr & Stattin (2003a)	1,077 14-year-old children and their parents	2 waves, spaced 2 years apart; questionnaire data	B	Child delinquency predicted subsequent parenting, but findings regarding the reverse direction of effects were mixed, with some evidence that delinquency predicts decreases in parental monitoring.

Table II
(*Continued*)

Study	Sample (age) and design	Methodologies	System	Transactional results
Kochanska & Kuczynski (1991)	50 5-year-old children and their mothers, 26 of whom had histories of depression and 24 of whom did not	Cross-sectional, time-series parent–child observation	A	Depressed mothers' autonomy-granting was dependent on both child cooperation and maternal mood; moreover, mothers reciprocated their children's behavior more than children reciprocated their mothers' behavior.
Lewis *et al*. (1999)	8 mother–infant dyads	2 3-week waves (at infant ages 10–12 weeks and 26–28 weeks); observations of separations and reunions; used state space grids	C	Examined distress intensity and attention to mother; found that baseline levels had substantial stability and influence on behavior.
Lytton (1979)	136 boys (age 25–35 months), and their mothers and fathers (when available)	Cross-sectional; time-series data from home observations	A (although the data were sequential, the study examined contingency and association, not change)	Children complied with their mothers more when their fathers were present. Parents most frequently exhibited no response to either child compliance or noncompliance, but fathers responded significantly less than mothers to child compliance.
Lytton (1982)	136 boys (92 twins, 44 singletons; age range 25–35 months) and their parents	3 waves (Time 2 was 1 week after Time 1; Time 3 was approximately 7 years after Time 1); in-home interviews and observations; used SEM with autoregressive controls for some constructs	B	Child effects on attachment were more prominent in the short-term, but parent effects on compliance were more prominent in the short-, medium-, and long-terms; parents treated their children differently as a function of (largely genetically based) differences in child behavior.

Martini *et al.* (2004)	94 mothers of 3–6-year-old children	Cross-sectional; questionnaires, home interviews, and responses to vignettes	A	Maternal emotion regulation varied as a function of child emotion type (sadness, anger, fear), but not as a function of child temperament.
Masche *et al.* (2006)	Sample 1: 1,339 adolescents (average Time 1 age = 13.7); Sample 2: 1,343 adolescents (average Time 1 age = 15.8) and their parents	4 waves, spaced 1 year apart; questionnaire; used autoregressive controls for all constructs	B	Adolescents' externalizing behavior (delinquency, problems at home) predicted less parental behavioral control and positive behavior and more aversive parental behavior, which predicted increases in adolescent externalizing behavior.
Shearer *et al.* (2005)	170 mothers and 159 fathers (average age of their firstborn child was 16.3 years at Time 2)	2 waves, spaced 4 years apart; questionnaire and interview	B	Maternal ratings of mother–adolescent relations were most positive following increases in parent–child acceptance and decreases in conflict. Parents reported granting their children more autonomy as a function of their child's development.
Steinberg (1981)	27 mother–father–son triads; sons were 11–14 years old at Time 1	3 waves, spaced 6 months apart; questionnaire and observational; computed change scores for each dependent variable	B	During the period of adolescence prior to the pubertal apex, sons and mothers interrupted each other more and explained themselves less, and sons deferred to their mothers less; after the pubertal apex, mothers interrupted their sons less. Across ages 11–14, fathers' interruptions of their sons increased and sons showed more deference toward their fathers.

Table II
(*Continued*)

Study	Sample (age) and design	Methodologies	System	Transactional results
Stice & Barrera (1995)	441 10–16-year-olds (half of whom were children of alcoholics) and their parents	2 waves, spaced 1 year apart; interview; used autoregressive controls for all constructs	B	Adolescent externalizing problems and substance use predicted decreases in parental control and support, whereas parental control and support predicted decreases in substance use, but not externalizing.
Trickett & Kuczynski (1986)	40 families with a child age 4–11 years, half of whom had at least 1 abusive parent	Cross-sectional; daily reports (5 days) of child misbehavior and parental responding	A	Abusive parents most frequently responded to child misbehavior with punishment, whereas for nonabusive parents, choice of discipline depended on misbehavior type.
Tucker *et al.* (2003)	188 families with 2 adolescent siblings (firstborns' average age was 15 years; second-borns' average age was 12.5 years)	Cross-sectional; home interviews of each family member	A	Parents treat their children differently as a function of child personal characteristics.
Warren *et al.* (2006)	1,222 1–36-month-old children and their mothers	5 waves (ages 1-, 6-, 15-, 24-, and 36-months) home interviews and questionnaires; used autoregressive controls for all constructs	B	Whereas maternal depression predicts increases in the duration of infant awakening, longer durations of infant awakening predict decreases in maternal depression.

Transactional dynamics between parent–child and interparental relationships

Davis (2007)	59 families with a preschool child	2 waves, spaced 1 year apart; mother–father–child interaction; used autoregressive controls for all constructs	B	Child positive affect predicted increases in supportive coparenting, but coparenting did not predict change in positive affect.
Eiden *et al.* (1995)	45 mothers and their 16–62-month-old children	Cross-sectional; mother–child interaction, Attachment Q-set, Adult Attachment Interview, questionnaire	A	For families with low marital adjustment, children of secure mothers were more secure than children of insecure mothers.
Engfer (1988)	36 families with a 4-month-old baby	5 waves (at child birth, and at 4, 8, 18, and 43 month of age); questionnaire and observational	A	Marital functioning and the mother–child relationship both predicted one another, and maternal personality predicted functioning in both relationships.
Frosch *et al.* (2000)	53 families with a preschool-age child (average age = 3 years)	2 waves, spaced 2.5 years apart; Q-sort, observational, and questionnaire data	A	Links between concurrent and subsequent marital functioning, parent–child security, and parenting.
Howes & Markman (1989)	20 families with children ages 1–3 years	2 waves: premarriage and post-birth (3–5 years later); questionnaires, Q-sort	A	Premarital assessment of interparental relationship quality was correlated with mother–child security at 1–3 years of age.
Owen & Cox (1997)	38 families (mothers, fathers, and infants)	3 waves (prenatal, 3 months of age, 1 year of age); observational, interview, strange situation	A	Marital conflict predicted insecurity in mother- and father–child relationships.

Table II
(*Continued*)

Study	Sample (age) and design	Methodologies	System	Transactional results
Schermerhorn *et al.* (2008)	232 children (kindergarten-age at Time 1), their mothers, and fathers	3 waves, each spaced 1 year apart; story-stem completion task; used SEM with autoregressive controls for each construct	B	Found links between children's emotional security about marital conflict, mother–child, and father–child relationships.
Schoppe *et al.* (2001)	57 families with a 3-year-old at Time 1	2 waves, spaced 1 year apart; triadic (mother–father–child) observation and questionnaires	A	For families with low positive affect, supportive coparenting predicted low child externalizing problems, whereas undermining coparenting predicted more externalizing in families with more negative affect.
Schoppe-Sullivan *et al.* (2004)	46 families with a 6-month-old at Time 1	2 waves, spaced approximately 2.5 years apart; dyadic (parent–child) and triadic (mother–father–child) observations, questionnaires; used autoregressive controls for all constructs	B	Coparenting in early childhood predicts subsequent marital behavior, but marital behavior during early childhood does not predict subsequent coparenting.
Schoppe-Sullivan *et al.* (2007)	283 families with a child age 8–16 years at Time 1	3 waves, spaced 1 year apart; questionnaire data; used autoregressive controls for some constructs	B	Parenting (behavioral control, autonomy-granting, and warmth) mediated relations between marital conflict and child adjustment; with autoregressive controls of child adjustment, behavioral control continued to mediate relations between marital conflict and children's internalizing symptoms.

Talbot & McHale (2004)	50 families with a 12-month-old child	Cross-sectional; questionnaire, observational (including triadic interaction)	A	Marital quality and aspects of parenting predicted concurrent coparenting harmony and negativity.
Transactional dynamics of interparental relationships and children				
Cummings *et al*. (2003)	116 families with a child aged 8–16 years	Cross-sectional; questionnaires, home diary reports completed on each of 15 days; analyses included cross-reporter tests	A	Destructive marital conflict tactics were linked with children's insecure emotional responding; constructive marital conflict tactics were linked with children's secure emotional responding.
Cummings *et al*. (2004)	108 families with a child aged 8–16 years	Cross-sectional; questionnaires, home diary reports completed on each of 15 days, and children's responses to videotaped depictions of marital conflict episodes	A	Diary reports of destructive marital conflict tactics and negative marital emotions were associated with children's aggressive responding to analog depictions of marital conflict; children's aggressive responses to marital conflict were linked with externalizing problems.
Cummings *et al*. (2002)	51 couples with a child aged 4–11 years	Cross-sectional; home diary reports completed on each of 6 days	A	Parents' negative emotions and destructive conflict tactics were associated with children's insecure responding; parents' positive emotions and constructive conflict tactics were associated with children's secure responding.

Table II
(*Continued*)

Study	Sample (age) and design	Methodologies	System	Transactional results
Cummings *et al.* (2006)	Study 1: 226 children, ages 9–18 and their parents; Study 2: 232 children, ages 5–7 and their parents	Study 1: 2 waves, spaced 2 years apart, used questionnaire data; Study 2: 3 waves, each spaced 1 year apart, used questionnaire and observational data; SEM was used in both studies, with autoregressive controls in Study 2.	B	Children's emotional insecurity about the marital relationship linked destructive marital conflict and increases in children's internalizing and externalizing problems.
Davies *et al.* (2002)	285 children, ages 11–13, and their parents	2 waves spaced 2 years apart; questionnaire; used SEM with autoregressive controls	B	Children's emotional insecurity about the marital relationship linked destructive marital conflict with increases in children's internalizing and externalizing problems.
Jenkins *et al.* (2005)	296 children from 127 families; average child age was 5 years at Time 1; siblings ranged in age from 6 to 17 years; parents and teachers; sample included stepfamilies	2 waves, spaced 2 years apart; questionnaire; used autoregressive controls for marital conflict	B	Child externalizing problems predicted increases in marital conflict.

Schermerhorn *et al.* (2007)	113 married or cohabiting couples, with a child in the age range of 8–16 years (average age = 11)	Cross-sectional; home diary reports completed on each of 15 days, questionnaire; used dynamic systems modeling	C	Child agentic behavior predicted less destructive, more constructive, more resolved marital conflict; child negativity predicted more destructive, less constructive, more unresolved marital conflict; from one marital conflict to the next, husbands' behavior changes rapidly; wives' conflict resolution slows down this rapid change in their husbands' behavior.
Schermerhorn *et al.* (2005)	115 children (kindergarten-age at Time 1), their mothers, and fathers	2 waves, spaced 1 year apart; story-stem completion task; used SEM with autoregressive control for marital conflict	B	Destructive marital conflict predicted more child negative emotionality, which predicted more child perceived agency; perceived agency predicted increases in marital conflict.
Schermerhorn *et al.* (2007)	232 couples with a kindergarten-age child at Time 1	3 waves, each spaced 1 year apart; questionnaire and observational data; used SEM with autoregressive controls for marital conflict	B	Destructive marital conflict predicted more negative emotionality; emotionality predicted more subsequent agentic behavior and behavioral dysregulation, which predicted change in marital conflict.
Family-wide transactional dynamics				
Brody *et al.* (2003)	152 single-mother families with at least 2 children and the children's teachers; average child ages were approximately 12 years for firstborns and 9 years for second-borns	4-wave design, 1 year between waves; home interviews; autoregressive controls were included for some constructs	B	Longitudinal links between maternal psychological functioning and parenting, younger and older sibling competence, and younger sibling self-regulation.

Table II
(*Continued*)

Study	Sample (age) and design	Methodologies	System	Transactional results
Bumpus *et al.* (2001)	194 families with an 8th–10th grade firstborn child and at least 1 child 1–4 years younger	Cross-sectional; home interviews and nightly telephone calls (7 nights for children; 3 nights for parents)	A	Parental autonomy-granting varied as a function of child birth-order, gender, and girls' menarcheal status, as well as maternal gender role attitudes.
Dunn *et al.* (1999)	3,681 sibling pairs, approximately 4–7 years of age	2 waves (14 weeks before birth of second child and 4 years later); questionnaire	A	Significant correlations were found between marital, parent–child, and sibling relationships in positivity and negativity.
McGuire *et al.* (1996)	91 2-parent families with 2 or more children; at Time 1, older siblings were 4th/5th graders and younger siblings were $\geq$6 years old	4 waves, each spaced 6 months apart; home-based questionnaires, interviews	A	Both concurrently and 1 year subsequently, sibling warmth is linked with (a) children's satisfaction in parent–child relationships; and (b) marital satisfaction and love.
McHale & Rasmussen (1998)	37 families with an 8–11-month-old child at Time 1	2 waves, spaced 3 years apart; observational and questionnaire data	A	Marital functioning and family processes in infancy predicted child internalizing and externalizing problems 3 years later.

Rasbash *et al.* (2007)	657 families with both parents and 2 children (10–18 years old, not more than 4 years apart); sibling pairs in nondivorced families were: 92 monozygotic twin, 94 dizygotic twin, and 90 full (nontwin), and in stepfamilies were: 171 full, 104 half, and 124 unrelated	Cross-sectional; observations of positive and negative emotional expression in each family dyad (sibling, marital, mother–child, father–child); used autoregressive controls for all constructs	B	Greater reciprocity was present in sibling and in marital dyads than in parent–child dyads; genetic effects were responsible for substantial variability at the individual level; and positivity emerged as an individual-specific variable, whereas negativity emerged as a relationship-specific variable.
Rinaldi & Howe (2003)	60 families with a 5th/6th grade child and the child's closest-in-age sibling	Cross-sectional; questionnaire	A	Correlations were found between (a) parent–child and sibling conflict; (b) parent–child and marital conflict; (c) marital and sibling conflict.
Vuchinich *et al.* (1988)	52 families with 1–6 children, aged 2–22 years	Cross-sectional; observations of 39 dinners with 2 parents and 1–6 children ages 3–22 years, 17 dinners with mother and 1–3 children ages 2–6 years	A	During conflict within a family dyad, a third family member intervenes 1/3 of the time, with preferred strategies including mediation (parents) and distraction (children).

Having discussed System A primarily in terms of individual family members, we now note that System A concepts also apply to family relationships and to families as a whole. That is, families and family relationships have characteristics, values, and developmental status of their own. For example, family relationships can be described as supportive or as having an even distribution of power; whole families can be described as warm, emotionally expressive, secure, and open. Thus, the explanations and description we have provided for System A apply not only at the level of individual family members, but also at the level of family relationships and families as a whole.

2. *System B*

System B revolves around *change from one time point to the next*. Change unfolds over nested time scales, with events occurring on shorter time scales influencing events occurring on longer time scales of years. Consistent with that, dynamic systems theory emphasizes this nested, interdependent nature of time, and we refer to this unfolding process in System B. Individuals' behavior during family interactions, on a time scale of seconds, are nested within family influence processes that are on much longer time scales. Thus, one important way in which transactional family dynamics are hierarchically organized is in terms of the nested time scales in which they unfold. Thus, System B involves these time-linked influence processes. Notably, as with System A, the concept of System B applies, not only at the level of individual family members, but also at the level of family relationships and whole families.

Several researchers have distinguished between micro processes unfolding over short periods of time, and macro processes unfolding over long periods of time (Bandura, 2001; Lewis, 2002; Lytton, 1982; Patterson, 1997). There have also been calls to examine relations between different time scales (Granic & Patterson, 2006; Lewis, 2002; Thelen, 1995; van Gelder & Port, 1995). Highlighting the unique contributions of different time scales to development, Smith (2005) emphasized the contributions of "real time" processes to developmental change, and Lytton argued that cause–effect relations might differ as a function of timeframe. In the context of influence processes, we consider what might transpire over different time scales, and we suggest issues to consider in terms of the influence of various time scales on each other. Figure 3 illustrates these notions, applied to the arena of children's influence on marital conflict. We use labels to refer to processes that unfold over different time scales (Durations 1–5; see Figure 1b). As with the systems, the labels we apply to the time scales are arbitrary and are used only to simplify our discussion. Notably, we define episodes as any

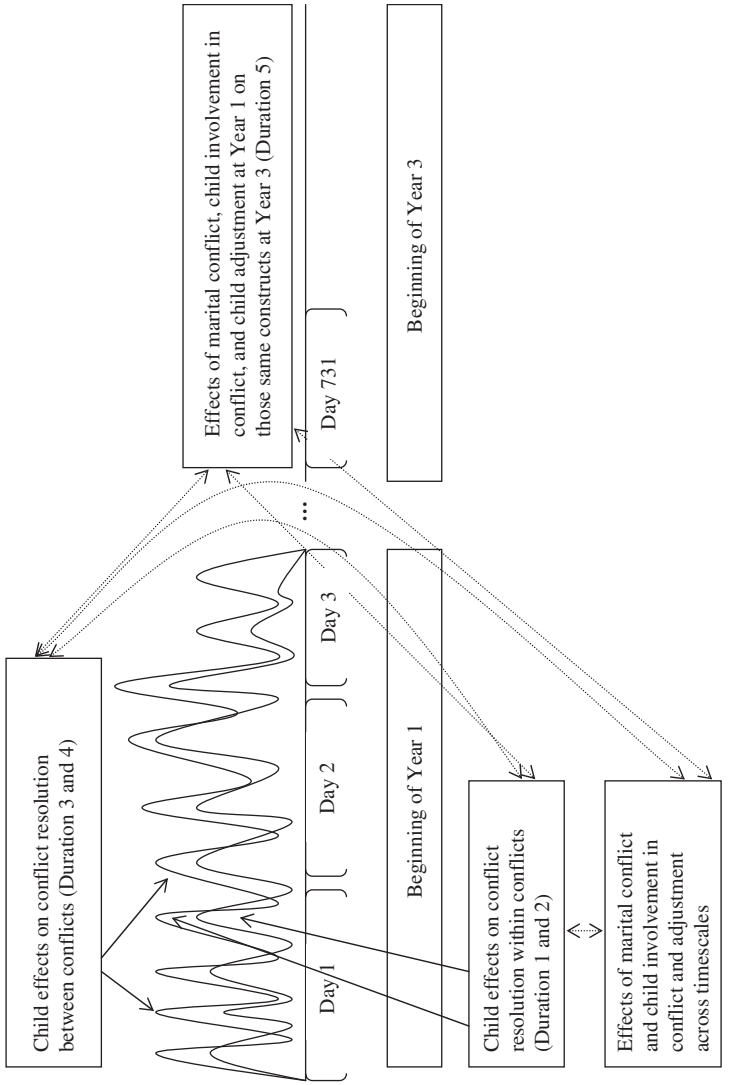

Fig. 3. Transactional influence between marital conflict and children across different time scales.

interactions between family members, including disagreements, casual conversations, and nonverbal communications.

The label "Duration 1" refers to the most intense exchanges during episodes between family members, for example, the most heated period of an interparental disagreement. These exchanges occur in real time—over seconds or minutes. As an example of Duration 1 processes, if one family member speaks defensively, cries, or is silent, that likely influences the behavior of another family member at the next moment. Thus, one important influence process involves the most intense exchange between family members—the epicenter of an episode. Duration 2 consists of influence processes spanning the entire episode, not just the most intense portion of the episode. Thus, Duration 2 includes Duration 1 and the rest of the episode as well. That is, this time scale involves all of the influence processes that occur throughout an episode. Duration 3 includes the proximal events that lead up to an episode, as well as the period during which a family member is actively thinking about an interaction or episode, but the episode has come to an end (although feelings stemming from the interaction might remain intense). Duration 4 is the time frame during which a family member periodically recalls aspects of an interaction or episode, in between periods of thinking about other things. Duration 5 is the period during which a family member is influenced at a broader, more global level by the episode or interaction. For example, a father–child disagreement over an adolescent's breaking curfew could create lasting "coolness" between parent and child. If the offense is repeated, the parents' response is likely to solidify, resulting in further punishment and further distrust, this time sustained over a longer period of time.

We think that examining multiple time scales offers the possibility for developing new insights about influence processes. The hierarchical organization of time scales is depicted in Figure 1b; "A" and "B" are used to denote different individual interactions or episodes; for example, "Duration 1A" and "Duration 2A" refer to the first two Durations of Episode A, whereas "Duration 1A" and "Duration 1B" refer to the first Durations of Episode A and Episode B. We would suggest that the contributions of these time scales to development cannot be disentangled. Arrows indicate the flow from real time to long-term processes. For example, processes unfolding during the period of the most intense exchange (Duration 1) influence the rest of the episode (Duration 2), which is largely limited by much longer-term processes (Duration 5). Furthermore, we propose that the most intense exchange during one interaction influences the most intense exchange during the next interaction (e.g., the influence of Duration 1A on Duration 1B). For example, a child's tearfulness during a marital disagreement might prompt her parents to

handle their next disagreement behind closed doors. Notably, this process is not limited to temporally adjacent episodes, but includes episodes separated by other, intervening episodes. We also suggest cross-influence among the time scales (e.g., the influence of Duration 1A on Duration 4B). For example, a family member may tend to remember a heated exchange for several days. Moreover, Duration 4 processes might also feed back to influence both Duration 1 and Duration 5. For example, thinking for several days about an earlier disagreement might provoke further episodes of intense conflict and might lead to more negative attributions about the relationship over time. Moreover, the most intense exchange might reflect the influence of a specific aspect of a previous interaction on a specific aspect of a subsequent interaction. For example, the wife's raising tangential grievances during one conflict episode (Duration 2A) may prompt the husband to do the same the next time (Duration 2B). (For simplicity of presentation, in Figure 1b we included only a small subset of all of the possible arrows depicting influence processes.) Thus, one family member's behavior in previous interactions may influence other family members' expectations of future behavior. These expectations, in turn, influence family members' behavior in subsequent interactions (Bowlby, 1973). Thus, various time scales interact and produce further development.

In addition to the influence of various time scales on one another, we propose qualitative differences between processes unfolding at different time scales, and that different time scales have unique implications for family influence processes. In particular, we suggest that real time processes involve specific, concrete behaviors, whereas longer-term processes reflect more global processes, such as firmly held beliefs. Another possibility may be that more emotion is elicited at shorter time scales (Durations 1 and 2) than at longer ones (especially Duration 5); that is, emotion may arise more frequently during interactions in real time than in developmental time. Moreover, influence processes during shorter time scales may reflect more automated cognition, and influence processes during longer time scales may reflect more controlled cognition (see Klaczynski & Daniel's (2005) description of experiential and analytic reasoning systems), especially reflecting the development of attributions about a family member or relationship. However, this notion is purely speculative, as we know of only one study that has investigated this issue. Lytton (1982) found that parental discipline may appear as a response to child behavior in the short-term (Duration 1), but in the long-term (Duration 5), it may be influenced more by parental values and beliefs, both of which are integrated into a parent's approach to parenting. Notably, in terms of methodological considerations, observations are needed from a range of time scales—each is equally important to our gaining insight into the functioning of these processes.

That is, we need measures from many time scales in order to advance current knowledge of how transactional family dynamics work. As noted by Cole and Maxwell (2003), a key issue for future research is to identify appropriate time frames over which various causal processes unfold; identifying such time frames remains an empirical question for many areas of family research.

3. System C

System C involves change in the rate of change, or the overall pattern of change, in family influence processes. As with Systems A and B, System C applies to individual family members, family relationships, and whole families. System C is largely concerned with how relationships cycle. For example, a relationship may experience cycles of escalation, involving periods of time with more than the usual number of disagreements, followed by periods of relative cohesion and peace. Thus, this system involves the rhythms of a relationship, with fluctuations in conflict and harmony.

This section focuses on principles from dynamic systems theory and is somewhat technical. However, we provide definitions of terms and illustrate points with hypothetical examples pertaining to family influences processes; thus, we think that this material, although technical, is helpful in clarifying what we mean by System C, as well as the explanatory potential of looking at family influence processes through this lens.

In the language of dynamic systems theory, *attractor* refers to the baseline level of the phenomenon, the natural tendency, or stable, recurrent patterns of interaction (see Figure 2). Thus, attractors can be conceptualized as a relationship's natural behavioral tendency in terms of influence processes. In terms of transactional family dynamics, the attractor would be a family's baseline family influence processes. Using an example from our previous work, the attractor would be the baseline level of marital conflict (whatever that is for a given couple), with a corresponding baseline level of child behavioral responding to marital conflict. Moreover, there may be different attractors for individual family members and for relationships.

Drawing on dynamic systems principles, *control variables* are events that disturb a relationship, moving it away from the attractor state. Thus, an increase in the frequency and destructiveness of marital conflict might lead to an increase in a child's efforts to resolve marital conflict, followed by a change in marital functioning, in turn resulting in a change in child behavior. Change in System C can be predicted by any of a large number of factors. Examples include normative developmental processes as previously described, major conflicts or other threats to relationship stability (e.g., an extra-marital affair), new friendships, work-related stress (distress, eustress), functioning of relationships with extended family.

Consistent with these notions, Granic (2000) described the parent–child relationship as self-organizing and discussed the roles of each person in guiding the other back toward baseline levels of behavior (both individual and dyadic baseline levels). For example, if a child is upset, a parent may try to soothe the child to get him back to his normal calm state. In terms of stability, family relationships typically have a baseline, or attractor, for influence processes specific to that relationship; relationships tend to return themselves to their baseline, a process known as self-stabilization or self-organization.

Several other patterns of change are also relevant to family influence processes. Acceleration refers to an increase in the rate of change and deceleration refers to a decrease in the rate of change (Bisconti, Bergeman, & Boker, 2004). If the rate of change in a family influence process increases, the dyad will move back and forth past baseline more and more rapidly. For example, compared with the husband, the wife may have a more rapid increase in marital dissatisfaction in response to a major marital disagreement. Alternatively, reflecting deceleration, a spouse's mood might change increasingly slowly over time.

The amplitude, or level, of the behavior can also fluctuate. An escalating pattern would involve increases in the amplitude of the behavior—for example, increases in the husband's use of destructive marital conflict tactics over time. The level can also oscillate back and forth past the baseline. For example, in the aftermath of a marital disagreement, partners may feel very angry one moment, much less angry the next moment, and more angry again after that. Over time, these swings in the amount of anger may decrease, and partners may settle back out at their baseline level of anger. Such a pattern of change would reflect damping. Moreover, a damping of one partner's anger might help bring about a damping of the other partner's anger.

Thelen and Ulrich (1991) provide a useful guide for conducting research that is consistent with dynamic systems principles. Their first step is to identify what they refer to as the *collective variable*, or index of the change process. In terms of family influence processes, the collective variable is a behavior in real time, such as talking, ignoring, and misbehaving, that indexes the overall pattern of change in the influence process (e.g., escalating, damping).

Development occurs when disturbances introduced by some aspect of the family relationship (e.g., cognitive development in one family member, action by another member of the family, marked physical growth) cause the relationship to shift from one attractor to another. This type of shift *is* development. In dynamic systems terms, this is referred to as a *phase shift* (see Figure 2); such periods represent changes in the overall pattern of influence. Because they involve change, phase shifts present opportunities to

learn about the dynamics of the relationship. It is during these phase shifts that novel behavioral forms can emerge. Thus, new forms are not necessarily produced by the environment beyond the dyad, triad, or family, but rather, can emerge from within. Control variables are factors that are responsible for these changes; thus, an understanding of development requires identification of the variables that lead to phase shifts in attractor states.

Thus, an important task for researchers is to identify the points of transition where loss of stability occurs (i.e., points at which a relationship is unstable, and therefore, more open to change). In terms of transactional family dynamics, possible transition points include periods of growth in child cognitive development, adolescent pubertal development, and divorce. During these periods, there is the potential for substantial, sustained change in family influence processes. For example, one question may be whether children's efforts to influence the marital relationship fluctuate more when marital conflict increases. If so, then marital conflict is a potential control variable for that child behavior. The next step would be to manipulate the hypothesized control variables to test whether that produces a phase shift (Thelen & Ulrich, 1991). Intervention programs and experiments offer ethical ways of examining differences between experimental and control groups as a function of the hypothesized control variables.

D. A COMPREHENSIVE MODEL OF TRANSACTIONAL FAMILY DYNAMICS

Thus, transactional family dynamics provides a framework for organizing and integrating information about family influence processes. One hope is that the theoretical notions we describe here may serve as a catalyst prompting others to outline their own (possibly quite different) theoretical notions regarding the family influence processes we describe as transactional family dynamics. By bringing together the work of many scholars of transactional family dynamics, particularly those focused on different family relationships, different time scales, and different conceptualizations of influence and change, we hope the eventual result will be the development of a comprehensive theory of transactional family dynamics.

IV. Mapping Empirical Work onto a Transactional Family Dynamics Framework

We now provide an overview of selected empirical work that is relevant to transactional family dynamics, demonstrating how this work fits into our

framework (see Table II). We organize the studies according to the family relationships they address, in order of increasing complexity (see Figure 1a) and according to the systems they reflect (see Figure 2), and when possible, we provide at least one example of each system for each family relationship. Notably, relatively few groups have conducted work examining change in the rate of change (System C), perhaps because of the newness of the necessary statistical (dynamic systems modeling) and graphical (Gridware; Lamey *et al.*, 2004) approaches. In the next sections of the chapter, we highlight a subset of these studies. Our goal in this section is to show how selected studies fit within a transactional family dynamics framework, rather than to provide an exhaustive review of the evidence for and against transactional processes, and to highlight gaps in what is known about these processes. Although we show in Table II how influence processes in other family relationships (children and their siblings, sibling and parent–child relationships) fit within our framework, due to space limits our discussion in the text focuses on transactional influence in (a) the parent–child relationship, (b) the interparental relationship, (c) links between the parent–child and interparental relationships, (d) links between the interparental relationship and children, and (e) family-wide processes.

In cataloging the studies by system in Table II, the passage of time was a requirement for classification in Systems B and C. Because cross-sectional studies cannot examine change, their findings are most consistent with static views of characteristics and behavior, and thus, they typically reflect System A (but see Covell & Abramovitch (1987) for an exception). Moreover, because we have defined Systems B and C to reflect change, studies that do not examine change, even if they include longitudinal data, are not consistent with either Systems B or C. That is, studies testing associations between one construct at one time point and another construct at a later time point without testing for change in the second construct (e.g., via autoregressive controls, growth curve modeling) were classified in System A. In addition, some studies reflect more than one system. Because fewer studies have examined System C than System B, and fewer have examined System B than System A, in Table II we indicate System C when possible, followed by System B when possible.

A. TRANSACTIONAL DYNAMICS OF THE PARENT–CHILD RELATIONSHIP

1. System A

Our focus in this section is on studies examining the influence of individual characteristics, behavior, and developmental status on parents

and children (see Table II). Substantial evidence suggests that parents treat their children differently on the basis of personal characteristics of the child. For example, parents' time involvement, affection, and disciplinary practices vary as a function of child gender, and privilege-granting and chore assignments vary as a function of child age and birth order (Tucker, McHale, & Crouter, 2003).

Several studies have examined links between parents and children in terms of psychosocial functioning (see Table II). Among depressed mothers, maternal autonomy granting is a function of both child behavior and maternal negative mood (Kochanska & Kuczynski, 1991). Interestingly, mothers reciprocate their children's behavior more than children reciprocate their mothers'. Examining children's adjustment problems as a characteristic eliciting differential responding from parents, Boyle *et al.* (2004) found links (in two out of three studies) between child-specific differential maternal parenting and adjustment problems across siblings. In addition, in mother–child dyads with conduct disordered or hyperactive children, mothers use more negative control and less positive control, and mother–child conversational turn-taking is diminished, compared with mother–child dyads with nondisordered children (Brophy & Dunn, 2002). Moreover, when interacting with anxious-withdrawn children, adults exhibit more effort toward eliciting responses from the child; when interacting with conduct-disordered children, adults exhibit more effort toward restricting the child's behavior (Brunk & Henggeler, 1984). Providing further insight into this process, conduct-disordered children elicit more negative responses and more requests from mothers, compared with nonconduct-disordered children (Anderson *et al.*, 1986). This finding holds equally for mothers who are themselves parents of a conduct-disordered child and for mothers who are not parents of a conduct-disordered child. These findings support the notion that the direction of effects between conduct disorders and parenting may be child-to-parent as much as parent-to-child.

With regard to children's temperament, maternal emotion regulation varies as a function of children's emotion (sadness, anger, fear), but not as a function of other dimensions of children's temperament (Martini, Root, & Jenkins, 2004). Moreover, child negative emotionality predicts subsequent maternal power assertion, and for mothers low in perspective-taking or high in extraversion, child negative emotionality is linked with more power assertion (Clark, Kochanska, & Ready, 2000). Thus, the mother–child relationship appears to be more closely related to child emotionality and mother personality than to other dimensions of child temperament.

Several studies have examined the contingency of parents' and children's behavior, that is, the degree to which one family member's behavior is contingent on another's (see Table II). Interestingly, children are more

likely to try to reduce parental anger when they are the cause of the anger than when the anger is caused by difficulties at work or interparental conflict (Covell & Miles, 1992). With regard to child compliance, young children comply more with their mothers when their fathers are present (Lytton, 1979). Surprisingly, the most frequent parental response to both child compliance and noncompliance is actually a complete lack of response from the parent, and fathers respond even less than mothers do to compliance. Elucidating these contingent processes in violent families, abusive parents tend to respond to all child misbehavior with punishment, whereas for nonabusive parents, the discipline strategy depends on the type of misbehavior (Trickett & Kuczynski, 1986).

2. System B

In this section, we discuss transactional parent–child influence processes in terms of change from one time point to the next. Several studies have examined change as a function of parent–child interactions (see Table II). During the preschool years, mothers reciprocate their daughters' (but not their sons') positive emotional expressions more than they reciprocate their expressions of anger (Cole, Teti, & Zahn-Waxler, 2003). However, when mothers do reciprocate their children's angry expressions, that predicts increases in children's externalizing problems. Examining these links from preschool through age 12, children's anger predicts increases in both punitive and distressed parental reactions, which predict increases in children's anger (Eisenberg *et al.*, 1999). In contrast, children's self-regulation predicts decreases in punitive (but not distressed) parental reactions, and both punitive and distressed reactions predict decreases in self-regulation.

Family interaction patterns change somewhat over the course of adolescence. During the period of adolescence prior to the pubertal apex, sons and mothers interrupt each other more and explain themselves less, and sons defer to their mothers less; after the pubertal apex, however, mothers interrupt their sons less (Steinberg, 1981). In contrast, across puberty, fathers' interruptions of their sons increase and sons show more deference toward their fathers.

In terms of parent–child relationship quality, mothers describe their relationships with their adolescents as most positive following increases in parent–child acceptance and decreases in parent–child conflict (Shearer, Crouter, & McHale, 2005). Moreover, parents grant their children more autonomy as their children develop. Relatedly, parents perceive that the parent–child relationship is most strengthened by their children's compliance and by both parent and child efforts at companionship, whereas parental overuse of authority and child noncompliance are most

detrimental to the parent–child relationship (Harach & Kuczynski, 2005). Interestingly, children perceive that they are capable of changing their mothers' moods, endorsing gift-giving and verbal strategies for improving maternal mood, and their mothers agree that their children are able to change their moods (Covell & Abramovitch, 1987).

Links between child adjustment problems (externalizing, delinquency) and parenting support notions of transactional processes (see Table II). Highlighting the transactional nature of these links, adolescent externalizing problems predict less parental behavioral control and positive behavior and more aversive parental behavior, which in turn predict more adolescent externalizing problems (Masche, Stattin, & Kerr, 2006). Relatedly, preadolescent competent behavior and maternal monitoring-relevant knowledge are reciprocally linked, with both constructs predicting increases in one another (Grundy, Gondoli, & Blodgett Salafia, 2007). Moreover, parental control and support and adolescent substance use predict decreases in one another over time (Huh *et al.*, 2006; Stice & Barrera, 1995). Some studies have found stronger support for child effects or parent effects, however (see Table II). For example, some work suggests that child delinquency prompts changes in parental monitoring, rather than the reverse direction, with some evidence that monitoring may actually decrease in the face of delinquency (Kerr & Stattin, 2003a). Moreover, adolescent externalizing symptoms predict decreases in parental support and control, whereas these dimensions of parenting do not predict changes in externalizing (Huh *et al.*, 2006; Stice & Barrera, 1995). In contrast, whereas maternal monitoring predicts subsequent child externalizing problems, externalizing problems do not predict subsequent maternal monitoring (Brody, 2003). Debate regarding the direction of effects is available in Brody (2003), Capaldi (2003), and Kerr and Stattin (2003a, 2003b).

Mother attachment security and adolescent attachment security predict increases in one another (Cook & Kenny, 2005). Toward the goal of teasing apart parental and children's influence across time scales in the domain of attachment security, Lytton (1982) found evidence that child effects outweighed parent effects in the short-term, and neither child nor parent is more influential on the other's attachment in the medium- or long-terms. In contrast, his work suggested that in the domain of discipline and compliance, parent effects outweigh child effects in the short-, medium-, and long-terms.

With regard to examination of transactional links between parental psychopathology and children's functioning or behavior in terms of change from one time point to the next, one study found that maternal depression predicts increases in the duration of infant awakening (Warren *et al.*, 2006). Interestingly, longer durations of infant awakening predict decreases in

maternal depression. Thus, maternal depression and infant awake time are reciprocally linked, but in opposing directions. Notably, as can be seen from Table II, most of the studies in the parent–child domain for System B utilized data from relatively long time scales (1 or more years between assessments), with a few studies drawing on medium-term time scales (several months), and one study examining somewhat shorter time scales.

3. System C

We now turn our attention to studies examining influence processes in terms of the overall patterns of change in parent–child relationships (see Table II). Examining infants' distress intensity and attention to their mothers, Lewis, Lamey, and Douglas (1999) found that baseline levels of these constructs had substantial stability and influence on their behavior. During kindergarten-age children's interactions with their parents, rigidity—that is, a lack of flexible adaptability—is linked with externalizing and internalizing problems (Hollenstein *et al*., 2004). During adolescence, variability and instability in behavioral responding during parent–child interactions peaks at around age 13–14 years (Granic *et al*., 2003). In terms of links with adjustment problems, externalizing children's interactions with their mothers are characterized by a permissive pattern, whereas the mother–child interactions of children with both externalizing and internalizing symptoms change from a permissive pattern to one that is mutually hostile (Granic & Lamey, 2002). In terms of time scales, as can be seen from Table II, all of the studies in System C used short units of time.

4. Summary

There has been a considerable amount of work examining the influence of child characteristics and contingencies, and change from one time point to the next, and several studies have examined overall patterns of change in parent–child influence processes. However, as can be seen from the studies we reviewed (see Table II), much of this literature is based on studies with mothers, rather than including both parents. Therefore, we know much less about these transactional processes in the father–child relationship. In terms of overall patterns of change, work in this area has utilized data drawn from real time observations, but to our knowledge, no studies have examined patterns of change in terms of longer time scales. Thus, there are several gaps in our knowledge of transactional processes in the parent–child relationship. Moreover, little is known about positive or adaptive functioning and parental mental health. Thus, one question might involve examining whether children's positive behavior (e.g., prosocial behavior, helping with household tasks) predicts decreases in parental psychopathology.

B. TRANSACTIONAL DYNAMICS BETWEEN PARENT–CHILD AND INTERPARENTAL RELATIONSHIPS

1. System A

Several studies have addressed associations between aspects of the parent–child and interparental relationships (see Table II). Interparental hostility is linked with low levels of mother–child attachment security several years later, and mother- and father–child security are associated with concurrent low levels of interparental conflict and high levels of interparental positivity (Frosch, Mangelsdorf, & McHale, 2000). Linking these constructs to maternal security, in families with low levels of marital adjustment, children of secure mothers are more securely attached to their mothers, compared with children of insecure mothers (Eiden, Teti, & Corns, 1995). In fact, for children of secure mothers, mother–child attachment security is unrelated to marital adjustment. In contrast, even premarital relationship quality is linked with mother–child attachment at 1–3 years of age, as is concurrent marital functioning (Howes & Markman, 1989), and pre-birth marital conflict predicts less secure mother- and father–child relations at 12–15 months of age (Owen & Cox, 1997).

Coparenting, or joint parenting by adults in a family, is another important domain of family life. For families with low levels of positive affect, supportive coparenting predicts low levels of child externalizing problems, and in families with high levels of negative affect, undermining coparenting predicts externalizing problems (Schoppe, Mangelsdorf, & Frosch, 2001). Moreover, the combination of undermining coparenting and maladaptive family structure (e.g., triangulation) predicts higher levels of externalizing problems. Furthermore, marital quality and parental flexibility and self-control have been jointly linked with concurrent coparenting harmony and negativity (Talbot & McHale, 2004). In addition, Engfer (1988) found evidence of four mechanisms linking the parent–child and marital relationships: (a) marital functioning influences the mother–child relationship, (b) the mother attempts to compensate for an unsatisfactory marriage by fulfilling her love and intimacy needs from the parent–child relationship, (c) the stresses of childcare influence the marital relationship, and (d) maternal personality influences both the marital and parent–child relationships.

2. System B

A number of studies have also examined transactional influence between marital and parent–child relationships in terms of change from one time point to the next. For example, parental behavioral control mediated the link

between marital conflict and change in children's internalizing problems (Schoppe-Sullivan, Schermerhorn, & Cummings, 2008); moreover, parental behavioral control, autonomy-granting, and warmth mediated relations between marital conflict and child internalizing and externalizing. Relatedly, children's positive affect predicts increases in supportive coparenting, but coparenting does not predict change in children's affect (Davis, 2007). Moreover, although coparenting predicts change in marital behavior, marital behavior does not predict change in coparenting (Schoppe-Sullivan *et al.*, 2004). In addition, children's secure internal representations of father–child relations predict increases in their representations of emotional security about marital function and representations of security about both the mother- and father–child relationships (Schermerhorn *et al.*, 2008). Moreover, secure representations of the mother–child relationship predict increases in the security of father–child representations. Notably, all of the System B studies used fairly long time scales (1 year or longer between waves), and we know of no System C studies linking the parent–child and interparental relationships (i.e., studies examining change in the rate of change).

3. Summary

Considerable research has examined links between the interparental and parent–child relationships in terms of associations between characteristics and functioning and in terms of change from one time point to the next. However, links between characteristics of children (e.g., age and gender) and change in interparental and parent–child relationships have been understudied, and many questions about coparenting remain unanswered. Moreover, examination of overall patterns of change (System C) in links between the interparental and parent–child relationships remains another gap in the literature. This type of work, drawing largely on dynamic systems theory and methods, is relatively new in family research, and thus, there are relatively few examples. Notably, dynamic systems modeling involves complicated statistical procedures. At the same time, this approach holds tremendous promise for contributing to the development of richer understanding of family influence processes.

C. TRANSACTIONAL DYNAMICS OF INTERPARENTAL RELATIONSHIPS AND CHILDREN

1. System A

Building on existing questionnaire- and laboratory-based work, a new direction in studies examining links between marital conflict and child

functioning is the use of diary methods, which provide a more ecologically valid test of these links (Cummings & Davies, 1994). Based on diary methods, destructive marital conflict tactics have been linked with children's emotional insecurity and adjustment problems (Cummings, Goeke-Morey, & Papp, 2003) and aggression (Cummings, Goeke-Morey, & Papp, 2004), whereas constructive marital conflict tactics have been linked with children's emotional security and lower levels of aggression. Moreover, both negative marital emotions and destructive marital conflict tactics are linked with children's emotionally insecure responses, and positive marital emotions and constructive marital conflict tactics are linked with children's secure responses (Cummings *et al*., 2002).

2. System B

In terms of processes linking marital conflict and change in child functioning, children's emotional insecurity about marital relations serves as an explanatory mechanism. In kindergarten-age children, children's emotional insecurity links destructive marital conflict with increases in children's internalizing and externalizing problems (Cummings *et al*., 2006). Moreover, in a sample of preadolescent children, children's emotional insecurity about marital conflict, but not their cognitions about marital conflict, served to link destructive marital conflict with increases in children's internalizing and externalizing problems (Davies *et al*., 2002).

Notably, few studies have examined the ways in which children contribute to change in the marital relationship. However, in a landmark study, Jenkins *et al*. (2005b) found that in families with high levels of child externalizing problems, externalizing problems predicted increases in marital conflict. In contrast, preadolescents' competent behavior does not predict subsequent marital conflict (Grundy *et al*., 2007).

Subsequent research advanced this area of work further by examining links between children's patterns of responding during marital conflict and subsequent marital conflict. Specifically, we have conducted several studies examining children's intentional influence on change in marital conflict. We found that destructive marital conflict predicted more child negative emotionality, which related to greater perceptions of agency, agentic behavior, and behavioral dysregulation (Schermerhorn *et al*., 2005; Schermerhorn *et al*., 2007). Perceived agency and agentic behavior, in turn, were associated with subsequent decreases in destructive marital conflict, whereas behavioral dysregulation was linked with subsequent increases in destructive marital conflict. Person-oriented analyses of agentic and dysregulated responses indicated distinct clusters of children (low behavioral, agentic, high behavioral), and cluster membership was linked

with individual differences in marital and psychosocial functioning (Schermerhorn *et al.*, 2007).

Notably, as can be seen in Table II, all of these studies used long time scales, with one or more years between waves. Extending our examination of agency and behavioral dysregulation to shorter-term processes, we utilized diary data to assess children's influence on marital conflict within conflict episodes, using dynamic systems modeling (Duration 2; Schermerhorn *et al.*, 2007). We found that agentic behavior predicted less destructive conflict and more constructive and resolved conflict, and that dysregulated and negative child behavior predicted more destructive conflict and less constructive and resolved conflict. Thus, the results of our examination of shorter-term processes were consistent with our findings examining these processes over longer periods of time.

3. System C

In our study of children's influence over shorter time scales (i.e., Schermerhorn *et al.*, 2007), we also examined dynamic processes between husbands' and wives' conflict behavior, using dynamic systems modeling to examine each spouses' change around their baselines. We found that husbands' behavior during each conflict was influenced by their own behavior during the immediately preceding conflict, such that their behavior changed considerably from one conflict to the next, tending to oscillate back and forth past baseline levels (Durations 3–4). This is, husbands who had high levels of negativity during one conflict tended to have low levels of negativity in the next conflict. Interestingly, husbands' conflict resolution during one disagreement was influenced by their wives' resolution during the preceding disagreement, meaning that husbands' behavior in one disagreement was similar to their wives' behavior from the preceding disagreement. This work thus represents an effort to examine overall patterns of change. That is, we examined husbands' and wives' influence on their own, and each others', patterns of change. However, we know of no other studies directed toward these goals in the context of transactional links between interparental relationships and children.

4. Summary

Many key questions about transactional links between marital and child functioning have been addressed, both in terms of key characteristics of marital conflict and child adjustment, and in terms of change processes. However, a critical gap in the literature involves examination of overall patterns of change in links between marital conflict and children (System C). Moreover, although previous work has examined both day-to-day time

scales and yearly time scales, very little work has examined other time scales, and thus, questions regarding influence processes unfolding over these time scales remain unanswered.

D. FAMILY-WIDE TRANSACTIONAL DYNAMICS

1. System A

A number of researchers have examined family-wide transactional family dynamics at the level of influence processes and associations between characteristics (see Table II). First, differences in parental-autonomy granting have been linked to several parent and child characteristics. For example, firstborns are granted more autonomy than second-borns, especially in older girl–younger boy dyads (Bumpus, Crouter, & McHale, 2001). Furthermore, firstborn girls are granted less autonomy in families with more traditional gender role attitudes, compared with families having less traditional attitudes. Moreover, in families with less traditional maternal gender role attitudes, postmenarcheal girls are granted more autonomy than either postmenarcheal girls whose mothers have more traditional gender role attitudes or premenarcheal girls.

With regard to the marital relationship, longitudinal links have been found between marital hostility and affection, parent–child negativity, and sibling negativity and positivity (Dunn *et al*., 1999). In addition, marital functioning and family-wide hostility, harmony, and parenting discrepancies during infancy have been linked with child internalizing and externalizing problems 3 years later (McHale & Rasmussen, 1998). In addition, both concurrently and 1 year later, sibling warmth is linked with both children's satisfaction in their relationships with their parents and with marital satisfaction and love (McGuire, McHale, & Updegraff, 1996).

In terms of handling of conflict, links have been found between (a) parent–child and sibling conflict; (b) parent–child and marital conflict; and (c) marital and sibling conflict (Rinaldi & Howe, 2003). Moreover, research suggests that conflict affects multiple members of the family, extending to include family members not initially involved in the dispute. That is, when family dyads have conflict, a third family member intervenes approximately 1/3 of the time. However, when third parties do get involved, they are less likely to respond to conflicts with a conflictual response themselves. Parents-as-third-parties most frequently use mediation (especially mothers) and power-invoking (especially fathers) strategies (Vuchinich, Emery, & Cassidy, 1988). In contrast, distraction is the strategy of choice for children, followed by mediation as a second choice.

2. System B

With regard to whole-family processes and change from one time point to the next, previous work has addressed a variety of interrelated constructs. For example, older sibling competence predicts improvement in maternal psychological functioning, which is linked with maternal warmth toward younger siblings, which in turn, predicts subsequent younger sibling self-regulation (Brody *et al.*, 2003). In addition, younger sibling self-regulation is predicted by prior levels of older sibling competence and younger sibling self-regulation predicts subsequent younger sibling competence. Interestingly, sibling dyads show the most reciprocity of both positive and negative emotional expression of any family dyad (Rasbash *et al.*, 2007). That is, one sibling's positivity predicts an increase in the other sibling's positivity, and one sibling's negativity predicts an increase in the other sibling's negativity. Notably, father–child dyads show the least reciprocity, particularly for fathers' emotional expressions. Interestingly, positive emotional expressions are reciprocated less frequently than negative emotional expressions across all family dyads. In conducting this investigation, Rasbash *et al.* (2007) used an innovative extension of Kashy and Kenny's (2000) Actor–Partner Interdependence Model (APIM), applied to family data. Using APIM, the researcher simultaneously models *actor effects*, which reflect the prediction of a person's current behavior based on that same person's past behavior, and *partner effects*, or the influence of the other person on one's own behavior (Cook & Kenny, 2005). Thus, Rasbash *et al.*'s work makes a major contribution to the conceptualization of families, by distinguishing actor, partner, and relationship effects.

3. Summary

Thus, these findings are consistent with notions of family-wide influence processes. However, relatively little work has examined the influence of families' characteristics on individual family members. The relatively few family-wide studies examining change need to be supplemented with further examination of these links and further examination of multiple time scales, although notably, System B studies have used both short and long time scales (see Table II). Moreover, we know of no studies examining overall patterns of change in whole-family transactional dynamics. Nonetheless, given the difficulties inherent in studying family-wide influence processes, we recognize the work that has been done in this area as a remarkable contribution to the literature, and we highlight gaps toward the goal of stimulating further research in this area.

V. Discussion

Given this evidence regarding the transactional nature of family influence processes across dyads, triads, and whole families, we believe that we can further advance this area of work by viewing it through the lens of the transactional family dynamics perspective. This framework provides a way of cataloging what is known about these processes and highlighting gaps in our knowledge (see Table II). We also endeavor to provide a model of family influence processes that is realistic in terms of nested time scales, the hierarchical organization of family relationships, addressing association and contingency, time-point to time-point change, overall patterns of change, and the complexity of pathways between multiple family dyads and triads. Work in this area is not only important for advancing theory and research, but it may also facilitate more effective clinical work with families through better understanding of transactional family processes that may underlie the development and maintenance of mental health problems in families.

A. AN AGENDA FOR FUTURE RESEARCH: SOME HYPOTHESES ABOUT TRANSACTIONAL FAMILY DYNAMICS

This theoretical framework highlights important gaps, and points to significant goals for future research pertinent to developing a more complete understanding of transactional family processes. One set of issues involves time scales. That is, we have speculated about differences between processes unfolding over different time scales, but empirical work is needed to test these notions. One possibility is that there are similarities between different time scales. Thus, one might speculate that events occurring on a time scale of seconds are a microcosm of what happens on a time scale of hours, days, weeks, months, and years. One basis for this prediction is that the actors have similar intent, goals, motivations, and relationships with each other, regardless of the time frame, and thus, the processes may be similar in form. For example, real time influence processes during a marital conflict (Durations 1 and 2) may involve a lot of anger, whereas influence processes over the course of several days (Durations 4 and 5) may involve high levels of negative spousal attributions. Thus, the processes may reflect important differences in terms of emotional experiences (more prominent in real-time) and cognitive experiences (more prominent over longer time scales). At the same time, these processes can be seen as similar in terms of their likely effects on individuals and relationships. In any case, similarities and differences in processes over different time scales are in urgent need of further study. Moreover, an alternative possibility is that processes operate

differently in different time scales, in which case studying potential predictors of those differences, or of differences between families or family relationships, could contribute important new insights to the literature. Another interesting question may involve the influence of processes in one time scale on processes in another time scale. Furthermore, the coming together of multiple interdependent time scales may support the emergence of new patterns of influence. Finally, we think that distinguishing between time scales offers an interesting way of thinking about transactional family dynamics, suggesting an important new category of research questions.

Second, we suggest the need for further study of how processes in one system influence processes in other systems. That is, characteristics of individual family members or family relationships, such as gender or temperament, might influence one another (System A). That influence process might cause one family member to change his way of relating to another family member. For example, perhaps after many years of a wife's battle with depression, her husband may feel depressed himself, and begin behaving more negatively to his wife than before (System B). However, a subsequent change in another family relationship, such as a resolution of a long-standing disagreement between siblings, may cause the father to decide to behave more positively toward his wife. Over time, this shift from negative to positive behavior may solidify, resulting in a new pattern of behavior, and eventually leading to a sustained shift in behavior patterns (System C).

A third set of hypotheses involves intentionality—to what degree are influence processes intentional? For example, if a child tries to resolve interparental conflict, is it the child's efforts that bring about the decrease in conflict, or is it the child's involvement that signals to the parents that the child is distressed, causing the parents to resolve the conflict out of concern for the child? Additionally, in order to be capable of engaging in some forms of agentic behavior, at least a minimal level of development in certain domains (e.g., cognitive, emotional) must be reached. For example, children may not be able to conceptualize and enact certain types of mediation in parental disputes until they achieve relatively advanced levels of cognitive functioning. Thus, further research should investigate links between developmental processes and the emergence of children's agency, as well as identifying the domains of development that contribute to the appearance of agency (Sarah J. Schoppe-Sullivan, personal communication, July 26, 2007). Thus, there are critical questions to be addressed regarding the degree to which influence processes are attributable to intentional vs. unintentional behavior. That is, to what extent do family members act as agents of change in their families?

A fourth direction for future research involves separating out the complex web of factors that contribute to, and are part and parcel of, transactional

family dynamics. Experimental methods, following the example of Brunk and Henggeler (1984) and others (see also Cummings, 1995), and intervention research have the potential to facilitate progress toward this goal, because of the control afforded the researcher over various stimuli. That is, experimental control over independent variables provides an opportunity to learn more about dependent variables. Another approach would be to examine influence processes during phase transitions. Phase transitions to consider would include adolescence, milestones in cognitive development, divorce, school entry, job loss, and a death in the family.

B. CONCLUSIONS

Many researchers and theorists have called for greater attention to whole-family processes. As a call to action on this issue, recognizing the complexity of families—with nested individuals, dyads, and triads—Cox and Paley argued that (1997, p. 260):

> although a number of researchers … have emphasized the importance of data collected at multiple levels (e.g., individual, dyadic, whole family), it is rare for family research to include measurement that reflects all levels of the family. Even when researchers purport to have done so, the measurement often is not faithful to the level of analysis that is intended.

Further highlighting the complexity of transactional family dynamics, particularly with regard to nested time scales, Kuczynski and Parkin (2007) emphasized that instances of influence within families are not isolated events, but rather, each instance represents one thread interwoven into the fabric of family life and family experience, the whole of which produces continuous change. Thus, our goal is to, not only study the thread, but also to study—and come to understand—the fabric itself.

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