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Relationship Dynamics in the Development of Psychopathology: Introduction to the Special Issue

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The developmental psychopathology framework was introduced by Sroufe and Rutter (1984) and was originally defined as the "study of the origins and course of individual patterns of behavior maladaptation." Yet the study of both adaptive and maladaptive behavior in development and psychopathology is critical in that each is mutually informative and the study of each in isolation can be misleading (Cicchetti, 1990).

The cornerstone of this working framework is attention given to development as it unfolds over time. Most studies investigating the development of psychopathology consider time as it unfolds yearly and rely on linear models for predicting future development. Missing from this approach is what Sroufe and Rutter called the *course of individual patterns.* Individual patterns, which are most likely reflected in the context of close relationships, are commonly referred to as *microsocial interactions* and are considered to be the motor of development (Granic & Patterson, 2006; Patterson, 1982). Changes that occur in broader time frames, such as weeks, months and years, are thought to be caused by microsocial patterns. The microsocial approach is inspired by the presumption that myriad social events that transpire during the course of a day maintain, amplify, suppress, or give rise to the broader behavior patterns known to be adaptive or maladaptive.

Studies on the etiology of antisocial behavior during the past two decades have revealed clear linkages between microsocial patterns and macrodevelopmental patterns of problem behavior (Dishion & Patterson, 2006). Interactions with family and peers define a complex of influence that motivates the maintenance and amplification of problem behavior over time. For example, an antisocial young adolescent may receive encouragement for antisocial acts from his father, who laughs during movies that feature antisocial conduct or winks and smiles when his mother tries to socialize, undermining her demands for change. At school, the boy has yet another experience. Children step aside as he walks down the hallway, and friends give handshakes that confirm status in the school. On the other hand, children avert their gaze from him but talk

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amongst themselves and reject him as a potential friend, and teachers learn to dislike the youth because of his aggression, lack of concern for other students, and his disruptive behavior in class. In a science of global reports, this child may perceive his father as supportive and his mother as harsh, and he may feel well liked by peers at school. These global perceptions miss the actual microsocial dynamics that are maintaining the behavioral patterns of interest, yet they do capture the fact that over time, he is becoming increasingly antisocial and by young adulthood, he may be a very dangerous person. Thus the ecological matrix of actions and reactions that define the engine of development unfolds largely outside of the radar of awareness of the key participants.

The paradoxical nature of these parallel streams of reality — the objective events that form the fabric of socialization and our subjective appraisals and experiences of being the agent of change in our lives — defines the developmental and psychopathology framework. Particularly anomalous is the study of parenting practices. By and large, adult caregivers intend to benefit their children. Despite this intention, adults are often confused when their child is not doing well and when they develop problem behaviors or emotional distress, such as depression and anxiety. The blame game begins, but rarely does parental attention fall on their daily interactions with the child, nor do they consider the possible function of their relationship dynamics.

Clinicians who are skilled at working with families to improve these daily interactions become accustomed to noting the lack of fit between the parent's subjective appraisal of the situation and what interactions might be actually driving the problem. Thus, clinicians become quite good at supporting, validating, and most important, reframing the parents' storyline into an appraisal that will motivate healthy change (Patterson & Forgatch, 1985). For example, a statement such as "your child is asking for your praise and attention" reframes, and when successful, often leads to sudden, nonlinear change, which endures the test of time (Stoolmiller, Duncan, Bank, & Patterson, 1993).

Developmental psychopathologists interested in the relationship dynamics of the engine of change are increasingly motivated to consider the nonlinear dynamics systems (NDS) framework (Granic & Hollenstein, 2003). Initially, the study of microsocial interactions was dominated by diverse strategies of examining the stochastic properties of sequences of events, as in the form of Markov models (e.g., Gottman & Roy, 1990). Unfortunately there were limitations to the sequential analytic method. First and foremost, much of the information in the social interaction was lost. For example, the p(A/B) discards all events that are not conditional on B. If B occurs 10% of the time, then 90% of the information is lost!

This special issue chronicles several development and psychopathology research programs that apply NDS methods to understanding the engine of change in family and peer relationships and in the context of interventions designed to treat families with parent–child interaction difficulties. All the

contributions share some basic strategies that are characteristic of the scientific study of relationship dynamics in development and psychopathology. For one, all the studies used videotaped social interactions designed to evoke the behavior pattern of interest. To study attachment, we videotape caregivers and children in play in a series of situations that commonly involve separation and reunion. Emotion regulation is studied by setting up scenarios that challenge children to regulate their emotions and for caregivers to support these efforts. Family conflict is studied by having families discuss real conflicts in the parent–child relationship. Finally, peer interactions are studied by having children come into a lab and play together. Each of these situations can then be carefully studied, and the dynamic patterns they evoke are then used to account for individual differences in macropatterns of social and emotional development. All the articles in this special issue reflect that basic development and psychopathology research strategy.

However, the articles go beyond describing the typical strategy of deriving a summary score of interaction patterns and instead focus on the real-time quality of the interaction dynamic. Each uses a unique strategy for studying the nonlinear patterning of dynamic exchanges into attractors, repellors, flow of information, variability, and flexibility. The use of state space grids (Lewis, 2000) has become an invaluable tool in our efforts to conceptualize and visualize these dynamic patterns of interpersonal events throughout the course of an observation session.

The dynamic systems approach was originally applied to the study of caregiver–infant interaction (e.g., Lewis, 2000). The interplay of mother responding to infant early emotion regulation conceptually would seem to be both dynamic and nonlinear. However, the field of attachment was stuck in a static conceptualization of parent–infant attachment. The first article, by Cerezo and colleagues, translates the static construct of parent–infant attachment into a dynamic state that has nonlinear properties that shift in predictable ways from one stage of development to the next. This study suggests that an NDS analysis of parent–infant interactions might show a shift into a steady state of predictability for securely attached infants.

Early in their child's life, parents are often concerned with socializing the child to respond to the world emotionally and behaviorally in such a way that they will become resilient and successful in the social world. As described in their article, Lunkenheimer and colleagues carefully observed and coded caregivers' efforts to socialize young children; the moment-to-moment interactions were captured in videotaped situations designed to evoke challenges to children's emotional regulation. Using the state space method, these researchers systematically identified attractors in the child–caregiver emotional regulation dynamic and found these patterns to correlate with parent and teacher perceptions of children's adjustment.

Snyder and colleagues attacked the matter of attractors and repellors by applying Cox hazard models to understanding the dynamic mutual influence of caregivers and young children as it unfolds in real time (Stoolmiller & Snyder, 2006). They used stochastic models to account for nonlinear duration of events and to identify factors that "stop" behavior or render them less "functional." Clearly, applying the Cox hazard approach to the analysis of duration takes a step toward testing hypotheses regarding relationship dynamics that lead to attractor or repellor states.

The mutual influence of peers on the development of a variety of problem behaviors (Dishion & Tipsord, 2011) and of depression (Rose, 2002) is being increasingly acknowledged. Much of the work in development and psychopathology has focused on dyads, yet we know that most of the peer relationship process unfolds in a system involving three or more children. The work by Lavictoire and colleagues described in this volume for the first time expands the state space grid approach to studying social interaction to include three children interacting as a peer group. These dynamic patterns predicted growth in problem behavior over time and, in particular, triadic displays of mutual aggression.

My colleagues and I were interested in considering how families with adolescents manage conflict and whether regulation itself can be studied as an attractor process (Dishion, Forgatch, Van Ryzin, & Winter, this volume). In videotaped conflict discussions within a large multiethnic sample of adolescents and their parents, we found that a resonating positive–neutral dynamic characterized by low entropy predicted positive outcomes for adolescents 2 years later. This article diverges from the usual development and psychopathology bias toward studying pathology and instead applies the attractor metaphor to consider relationship resilience in the form of peaceful problem resolution in families.

Finally, if you are to understand problem behavior, you must try to change it. In the innovative intervention research by Lichtwarck-Aschoff and colleagues, families' problem-solving dynamic was assessed periodically while a therapist was guiding change during an empirically supported family treatment. The advantages of a real-time perspective on change and development is underscored in this study, in that the families who improved appeared to go through a self-organizational shift at the front end of the change process, which was maintained through the ensuing weeks. Families who reorganized their behavior during the conflict discussion in the second assessment probe were those the clinicians rated as clinically improved. This important study applied the concept of family self-organization by using an index of entropy and reoccurrence analysis. Although change has often been conceptualized as a reorganization of the system, it has never been formally tested.

The articles in this volume describe the current array of methodologies that are facilitating the study of real-time relationship dynamics that drive adaptive and maladaptive behavior. Hopefully, these studies will also provide an impetus for future NDS contributions to understanding and intervening with children and families to prevent problem behavior and emotional distress as it unfolds throughout the life span.

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