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Relational Developmental Systems-Based Theories and the Study of Children and Families: Lerner and Spanier (1978) Revisited

We discuss the evolution of scientific theory using the example of the relational developmental systems (RDS) metamodel, a conception emphasizing mutually influential relations between individuals and contexts. An important basis for RDS ideas in contemporary developmental science is Lerner and Spanier's (1978) discussion of mutually influential relationships between children and families. In the context of recounting the role of one of the present authors (RML) in the evolution of the RDS metamodel, we compare the Lerner and Spanier discussion with RDS-based ideas. We present the implications of RDS ideas for contemporary research and applications aimed at understanding and enhancing children, families, and the systemic relationships among them.

Developmental science seeks to describe, explain, and optimize changes within individuals and between-person differences in individual change across the life span (Baltes, Reese, & Nesselroade, 1977; Lerner, 2012). At this writing, contemporary developmental science is characterized by the centrality of theories or models derived from the relational developmental systems (RDS) metamodel (Overton, 2013, 2015; Overton & Mueller, 2013). A metamodel provides a conceptual framework for the generation of lower order theories, or models, that, in turn, are used to integrate existing data and to lead to the generation of additional data. Models or theories that are constructed within the RDS metamodel focus on the processes that regulate exchanges between individuals and their contexts (Brandtstädter, 1998). The ideas associated with RDS, the models of human development derived from them, and the use of these models to generate developmental research provide the basis for evidence-based policies and programs aimed at promoting positive human development. In addition, research linked to the RDS metamodel is being used to generate an evidence base for enacting applications aimed at optimizing human development and promoting social justice among diverse youth, families, and communities around the world (Fisher, Busch-Rossnagel, Jopp, & Brown, 2013; Lerner & Overton, 2008).

Such applications have several philosophical (paradigmatic), theoretical, methodological, and empirical roots (Fisher et al., 2013; Lerner, 2006, 2012, 2015; Lerner, Lerner, Bowers, & Geldhof, 2015; Overton 2013, 2015; Overton & Mueller, 2013). However, in the study of children and families—and in particular for consideration of the potentially mutually influential relation between the developing child and his or her family—a key root is the

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edited volume published in 1978 by Lerner and Spanier, *Child Influences on Marital and Family Interaction: A Life Span Perspective*. In their opening chapter in this volume, Lerner and Spanier (1978b) discussed the theoretical basis for their claim that child development and family structure and function should be viewed as part of an integrated developmental system within the broad, multitiered, and integrated ecology of human development (Bronfenbrenner, 1977, 1979). Within this ecology there are bidirectional influences among all members of the family across their life spans and also across the family life cycle. As such, Lerner and Spanier (1978b) posited that the bidirectional links between the child and the family should be depicted as child ↔ family relationships. As we explain later in this article, the bidirectional (↔) focus on the child and the family of concern to Lerner and Spanier evolved to a more general conception, represented today as individual ↔ context relations.

At the end of the 1970s, in the "Decade Review" issue of *Journal of Marriage and Family*, Walters and Walters (1980) discussed the parent-child relationship literature published between 1970 and 1979. The Lerner and Spanier (1978a) volume was one of the five significant reviews of this literature published during the decade to which they pointed. They then went on to say that the book was also "one of the most important publications of the decade seeking to examine the theoretical and methodological issues involved in reciprocal effects of parent-child relationships" (Walters & Walters, 1980, p. 818).

Now, more than a third of a century after its publication, the ideas about human development found in this volume can be identified also among the concepts core to the RDS metamodel. As such, we believe that not only was *the past prelude*; also, many of the ideas presented by Lerner and Spanier (1978b) are still explicitly relevant today, both to the study of life-span human development in general and to the specific study of children and families. To date, however, the vision of Lerner and Spanier—that such studies would standardly involve research focused on the bidirectional relationships between the child and his or her family (in other words, on child ↔ family relationships)—has yet to be fully realized.

Accordingly, the purpose of this article is to describe the RDS metamodel and to present what Lerner and Spanier (1978b) discussed and its connection to this metamodel. We believe that this discussion will serve as a sample case of the nature of evolution (as compared to revolution; Kuhn, 1962) in scientific theory. An additional goal is to present the implications of RDS ideas for contemporary research and application aimed at understanding and enhancing the development of diverse children, families, and the systemic relationships among them. To provide this illustration of the evolution of theory, and to discuss the implications of RDS-based ideas for research and application, it seems important to recount the details of the past, which in fact constitute the prelude to the present. Because the life and career of one of us (RML) was part of this past (Lerner, 2014), we offer a personal recounting of this history. Lerner's work was both a product and, at least in some small part, a producer of this history. This autobiographical account may be a useful means to both describe this history and illustrate the role of an individual scientist within a community of scholars collaborating in the construction of a new theoretical approach to human development (Lerner, Petersen, Silbereisen, & Brooks-Gunn, 2014).[1]

Past as Prelude: The History of Developmental Science Through the Eyes of Richard M. Lerner

I moved to State College, Pennsylvania, in the summer of 1976 to join the former Department of Individual and Family Studies (IFS) within the College of Human Development at Pennsylvania State University. In the fall of 1976, my department head, Paul B. Baltes, who had recently moved from the Department of Psychology at West Virginia University to lead the Penn State program, held a faculty meeting to present his vision of the substantive foci of the department and his aspirations for its future. He wrote on the blackboard that spanned the breadth of the front of the room several areas of expertise that he believed were represented in IFS. For instance, he wrote "family studies," and he listed in this category Graham B. Spanier

[1] We are grateful to the editor of this journal and to an anonymous reviewer for recommending that we include an autobiographical account of Richard M. Lerner's role in the history of developmental science from the 1970s to the present.

and Ted Huston; "human development intervention," and he listed Bernard and Louise Guerney, Anthony and Judy D'Augelli, Steve Danish, and Fred Vondracek; "cognitive development," and he listed Lynn Liben for child development and David Hultsch for adult development and aging; and "early childhood education," and he listed Don Peters and Sherry Willis. Finally, he wrote "life-span development" on the board. He listed himself, John Nesselroade, and me.

I raised my hand to speak. "Paul," I said, "there must be a mistake. I study personality and social development in childhood and adolescence."

"No, Rich," Paul countered. "You are a life-span developmental psychologist. You just don't know it yet."

As I found to be invariantly the case over our years together at Penn State and afterward, Paul was correct. I didn't yet know what I was. However, Paul had read what is now the first edition of my book, *Concepts and Theories of Human Development* (Lerner, 1976) and had concluded that the only differences between his approach to development and mine were (a) the age levels on which we focused, (b) the methodological rigor involved in my research, and (c) the label I attached to myself. Strategically, he wanted someone to work on portions of the life span other than the adult years, so that he could begin to disentangle what was then an unnecessary linkage between the ideas associated with life-span development and the age levels associated empirically with the use of those ideas (which, to that point, were virtually exclusively the second half of the life span). In regard to my need to understand and use multivariate and change-sensitive designs, measures, and statistical procedures in my research, Paul knew that John Nesselroade and he could easily train me. And, indeed, I began to undergo a continuing education "course" in developmental methodology that was taught to me by them and then, in subsequent years at Penn State, as well by Christopher Hertzog and my dear colleague and friend Alexander von Eye. The course continues through this writing, but with Paul's passing, the new instructor on this team is Peter Molenaar, who arrived at Penn State well after I departed. I could not have better or more patient instructors! Insofar as the label I used to describe myself and my work, I adopted the description Paul assigned to me. At first, it seemed a poorly fitting suit. It seemed way too big for me. However, with Paul's mentorship I grew into it.

Paul had a grand strategy for transforming developmental psychology from a disciplinary-based field focused on infancy and childhood, and one believing in the causal primacy of early experience (as either the time during which genetically based biological changes emerged to determine the course of life *or* as the ontogenetic period within which the environment exerted a preeminent and plasticity-constraining influence on subsequent life) into the multidisciplinary field of developmental science. The field he envisioned would be framed by ideas that stressed the continual interplay of biological and environmental variables. These ideas involved the view of individuals neither as passive recipients of the genes that blueprinted their behavior and development, nor as passive recipients of an environment that molded them (recall here Skinner's, 1971, famous statement in *Beyond Freedom and Dignity* that "a person does not act upon the world, the world acts upon him," p. 211). In turn, these ideas indicated that individuals were active agents (producers) of their own development, and the resulting relative plasticity (i.e., potential for systematic change) in the structure and function of behavior and development was considered the basis for the potential for change across the life span. In short, within the burgeoning literatures of life-span development and of life-course sociology (e.g., see Baltes, Lindenberger, & Staudinger, 2006, and Elder, 1980, 1998, respectively, for a recounting of the intertwined evolution of these literatures), human agency—individuals as active producers of their own development (Lerner, 1982; Lerner & Busch-Rossnagel, 1981)—was a fundamental construct.

In constructing an integrated field that drew on multiple disciplines to describe, explain, and optimize human development, Paul's strategy was multifaceted and long term. I was a part of Paul's multidisciplinary efforts. He urged Graham Spanier, a family sociologist and demographer, and me to organize a conference integrating my developmental psychology work on the first two decades of the life span with Graham's work on the family and on marital quality and dyadic adjustment. In 1977 we held the conference "Child Influences on Marital and Family Interaction: A Life-Span Perspective,"

and fewer than 2 years later we published an edited book derived from the conference; the title of the book was the same one used for the conference (Lerner & Spanier, 1978a). The conference and subsequent book included contributions from several eminent developmental psychologists, such as Willard Hartup, Michael Lewis, Candice Fiering, Michael Lamb, Lois Hoffman, Sam Korn, and Lillian Troll; several eminent family or life-course sociologists, such as Boyd Rollins, Richard Galligan, David Klein, Stephen Jorgensen, Brent Miller, and Vern Bengtson; and distinguished colleagues from medicine and social work, such as Judy Howard, Stella Chess, and Paulina Fernandez. Our book fit not only into the general collaborations Paul was building across disciplines but also, especially, with sociologists taking a life-course approach comparable with his life-span perspective. Key colleagues in these collaborations included sociologists Glen H. Elder Jr., Orville G. (Bert) Brim, Matilda White Riley, and John Meyer. Together with his colleagues, both within Penn State and at other institutions, Paul began to transform developmental psychology into a developmental science that encompassed the entire course of life and that focused on relations among levels of analysis within the ecology of human development.

Moreover, Paul helped bring diversity to the center of scholarly attention. Of course, this focus involved the study of intraindividual change, but, as well, it included the diversity of such change as it occurred in respect to racial, ethnic, socioeconomic, cultural, and historical variation. He promoted this transformation in the nature and focus of human development scholarship through joint publications, organizing committees and subcommittees of the Social Science Research Council, holding other conferences at Penn State, and conducting symposia at key meetings of developmental scholars (e.g., the Society for Research in Child Development, the International Society for the Study of Behavioral Development). Paul also recruited to Penn State faculty members who would crystallize and extend the life-span perspective he was developing. In short, Paul was building a critical mass of scholars who envisioned this new, integrative model of human development.

Indeed, Paul's work was synergistic with the simultaneously evolving bioecological model of human development being elaborated by Urie Bronfenbrenner and his colleagues and students (e.g., Bronfenbrenner, 1974, 1977, 1979; Bronfenbrenner & Crouter, 1983). Bronfenbrenner's (1979; see also Bronfenbrenner, 2005; Bronfenbrenner & Morris, 2006) theory focused on the nested tiers of the ecology of human development and, as well, on a model of development that involved process, person, context, and time (the PPCT model). In the PPCT model, the *process* of development involved mutually influential relations between persons and contexts that varied in relation to a chronosystem that involved interrelated dimensions of individual (ontogenetic), family, and historical *time* (see Elder, 1998). The *person* developed across ontogenetic *time* and the *context* varied across family and historical *time*.

In addition to being conceptually linked to the scholarship of Bronfenbrenner, the life-span perspective was also integrated with the work of Michael Lamb (e.g., 1977a, 1979), which placed processes of infant-mother or, more generally, infant-family interactions, within a broader context, one conceptualized as acting in mutually influential ways with individual and infant-parent relations. These relations could involve normative child ↔ family relations (e.g., regarding attachment relations or the contributions of fathers to their children's development) and/or nonnormative and/or problematic relations (e.g., regarding child neglect or abuse). Moreover, the scholarship of Bronfenbrenner and Lamb was also compatible with the theory and research of Michael Lewis (e.g., Lewis & Feiring, 1978; Lewis & Rosenblum, 1974), who conducted innovative work demonstrating the effects of infants on their caregivers, again in regard to both normative and nonnormative cases. Lewis's work demonstrated that the characteristics of individuality of infants could influence mothers, fathers, or other caregivers while, at the same time, the actions of these older individuals were influencing infants.

As such, Bronfenbrenner, Lamb, and Lewis saw their evolving models not only as being applicable to the description and explanation of developmental processes but also as contributing to the prevention of problematic development and, in turn, to the optimization of human development. For instance, these applications occurred through enhancing child-parent attachment relations, improving fathering, bettering child-care systems outside the home, decreasing

child abuse or psychopathology, and improving social policies that enhanced social justice (e.g., Bronfenbrenner, 1974; Frodi & Lamb, 1980; Lamb, 1976; Lamb & Sagi, 1983; Lewis & Weinraub, 1976). In short, the life-span perspective was part of the zeitgeist in the developmental psychology and sociology of the 1970s and 1980s. This zeitgeist, in Elder's (1974, 1980, 1988) terms, saw individual development shaped by events associated with place and time, a process that involved both the agency of individuals and the mutuality of influence between person and context. This mutuality of influence reflected the openness of the course of human development to change or, in other words, the malleability of the course of human life.

I was a part of this zeitgeist and a part of Paul's plan for advancing research derived from models associated with the life-span perspective. I was and am honored by and grateful for the confidence he placed in me. His vision for the field became my vision. I know I took some directions in my work about which he may not have been completely happy. For instance, I do not think he was ever fully comfortable with my thorough rejection of the model of genetic influence found in behavior genetics (e.g., Lerner, 1992, 2002). For example, in a chapter by Baltes et al. (2006), in Volume 1 of the sixth edition of *The Handbook of Child Psychology* (which I edited), Paul continued to struggle to find some use for this egregiously conceptually flawed and empirically counterfactual approach to understanding the role of genes within the relational developmental system. Nevertheless, I believe that, in the end, when I last saw him in the summer of 2006 (I visited him in June, in Berlin, and although he was gaunt, ashen, and weakened by the advanced stage of cancer that was besetting him, he still was warm, witty, engaging, and replete with enthusiasm for a new line of work he and former student, Professor Alexandra Freund, were developing on *Sehnsucht*, or life longings). He seemed proud of my work and of the foundational role he played in shaping it and my career.

From the first days of my arrival at Penn State, Paul helped build my career by opening doors through which I ran with great enthusiasm. For instance, he believed that the model of development I presented in *Concepts and Theories* needed to be integrated with a more sophisticated and nuanced understanding of the ecology of individual development, as levels of organization that were constructive parts of the life course. As a relatively traditionally trained developmental psychologist, I had tended in my research to act *as if* the multiple levels of the context were settings within which individual processes of development unfolded. As such, Paul introduced me to Urie Bronfenbrenner and to Glen Elder, who became close colleagues, collaborators, and friends, and he teamed me with Graham Spanier, to organize and hold the previously noted conference. The conference gave Graham and me an early-career opportunity to integrate our respective ideas about human development; as well, it gave us an intellectual means for beginning to see the ecology of human development not as composed of variables that could be reduced to psychogenic processes but, instead, as part of a dynamic developmental system wherein relations among levels were the basis of developmental change.

The publication of our book (Lerner & Spanier, 1978a) announced in print that I was a life-span human developmentalist. Graham and I extended our collaboration by bringing a life-span perspective to our respective fields, developmental psychology and family sociology, in a textbook we coauthored, *Adolescent Development: A Life-Span Perspective* (1980). The book was well received, both by people in the field of adolescent development and by people who were interested in understanding whether the life-span perspective could in fact be used to elucidate periods of ontogeny prior to the adult years. Indeed, one reviewer of the book underscored this relevance by stating that it could have been titled *The Life-Span View of Human Development: The Sample Case of Adolescence.* Mission accomplished, in Graham's and my view!

The model of development involved in both of my first two books with Graham emphasized that the fundamental process of human development involved mutually influential relations between the developing individual and the changing features of his or her multilevel context. This ecology included culture and history and, as such, made sociocultural institutions a part of the basis for all individual behavior and development. This ecology also imbued the role of temporality and of historical events in all levels of organization within which the individual and the context were embedded. In addition, this ecology also provided instantiations of the enormous diversity of human development. This diversity included the previously noted domains

of normative and nonnormative (including problematic) child ↔ family relationships or, more generally, individual ↔ context relations. Instances of this diversity were also associated with racial, ethnic, socioeconomic, physical ability status, health, sexual orientation, religious, cultural, and historical variation.

In the late 1970s and early 1980s this variation in human development was generally not studied in developmental science (Hagen, Paul, Gibb, & Wolters, 1990). The field was primarily focused on studying the generic human being and on identifying nomothetic laws (Emmerich, 1968). At this writing, however, the field has evolved to the extent that the ideas about diversity introduced in the late 1970s and early 1980s have been associated with greater attention being paid to these instances of human diversity. However, in my view (Lerner, 2012), this greater level of attention is still insufficient to understand the breadth of humans' life-course trajectories (see also Spencer & Spencer, 2014). Nevertheless, the focus on diversity that burgeoned in the late 1970s and early 1980s catalyzed in the ensuing decades great attention to human agency and to the opportunities or constraints on the instantiation of it.

The emphasis on agency also created a scientific focus on the mutual actions of the individual and the context, and as such, researchers sought to understand how the individual might influence the context (the people and social institutions, such as the family, school, or community) that was influencing him or her (e.g., Brandtstädter, 1998; Lerner & Busch-Rossnagel, 1981). The focus on these relations made the person's location in time and place a critical shaper of the life course (Elder, 1980, 1998; Elder & Shanahan, 2006), and as such, they were of prime interest in the study of human development.

My understanding of these relations have continued to evolve since my experiences at Penn State within the zeitgeist of the late 1970s and early 1980s that was created by Baltes, Nesselroade, Elder, Brim, Bronfenbrenner, Lamb, Lewis, and of course Spanier (e.g., see Rosa & Tudge, 2013; Tudge, Makrova, Hatfield, & Karnik, 2009). This evolution has been crystallized within contemporary developmental science through the formulation of the relational developmental systems metamodel as the predominant one in the study of human development (Overton, 2013). In the following section, we describe the main ideas associated with this metamodel; we believe there are implications of the metamodel for research in developmental science and family science. In the final section of the article we consider if and how the earlier ideas of Lerner and Spanier are reflected in this metamodel.

The Relational Developmental Systems Metamodel

Scientific paradigms are philosophical statements that shape scholars' concepts, assumptions, and presuppositions about the nature of the world; paradigms specify which empirical phenomena or relations are to be expected within the natural (or normal) world and which phenomena or relations are either excluded from attention or considered anomalous (Kuhn, 1962; Overton, 2015). Paradigms, in turn, provide a vocabulary for generating ideas about how scientific theories should be constructed in order to both integrate existing observations about the world and generate new observations (Lerner, 2002; Overton, 2013, 2015). These guidelines for theory construction are termed *metamodels*.

The relational developmental systems (RDS) metamodel, used to frame several theories of human development (see, e.g., Lerner, 2002; Lerner, Hershberg, Hilliard, & Johnson, 2015; Overton & Molenaar, 2015), has been articulated most compellingly by Willis F. Overton (e.g., Overton, 2013, 2015; Overton & Mueller, 2013). The RDS metamodel is derived from a process-relational paradigm (Overton, 2015). Overton explains that, compared to a Cartesian paradigm, the process-relational paradigm focuses on process (systematic changes in the developmental system), becoming (moving from potential to actuality), holism (the meanings of entities and events derive from the context in which they are embedded), relational analysis (assessment of the mutually influential relations within the developmental system), and the use of multiple perspectives and multiple explanatory forms (employment of ideas from multiple theory-based models of change within, and of, the developmental system). Within the process-relational paradigm, the organism is seen as inherently active, self-creating (termed autopoietic), self-organizing, self-regulating (termed agentic), nonlinear and/or complex, and adaptive (Overton, 2015; see also Sokol, Hammond, Kuebli, & Sweetman, 2015).

Overton (2015) explained that, in the process-relational paradigm, scientists may focus on the individual and/or the context in seeking to understand particular instances of relations between them. This changing focus in developmental analysis involves different points within a research program; these points are called moments. One moment involves the idea of the identity of opposites, a second moment involves the opposites of identity, and a third (relationally integrative) moment involves the synthesis of wholes. It is useful to explain each of these three moments more fully.

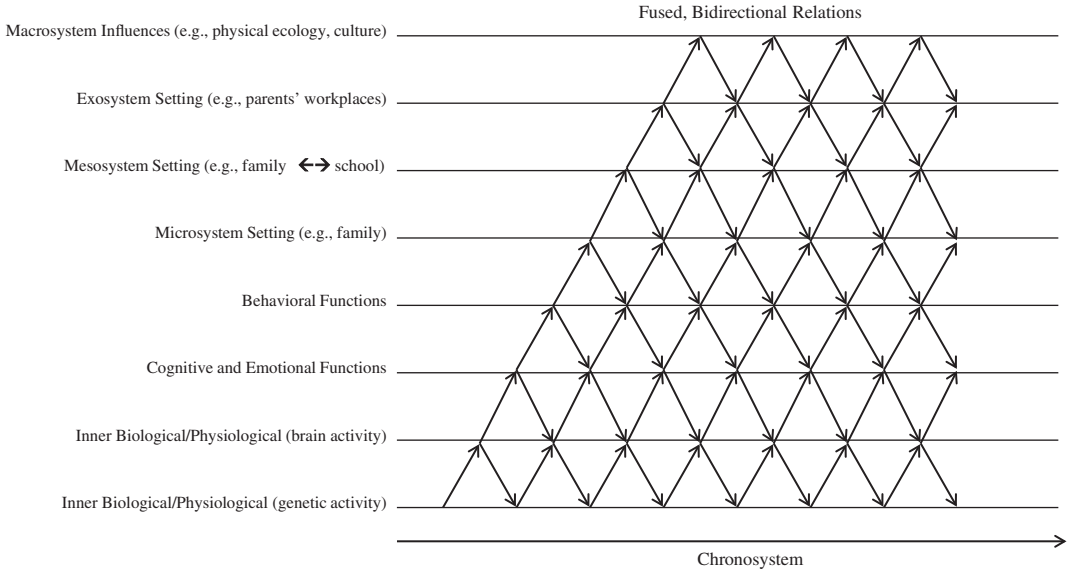
The first moment, the *identity of opposites*, recognizes that both individual and context define, and are mutually constituted by, each other. In this moment in programmatic developmental inquiry, the emphasis is on the fusion or integration of the person-context relation as the primary unit of analysis for understanding development. This fusion is represented through a double-headed arrow that indicates individual ↔ context relations. As we noted earlier in this article, the child ↔ family double-headed arrow discussed by Lerner and Spanier (1978b) is now understood as an instance of this more general conception of bidirectional influences. This representation of the coactions between person and setting within RDS-based models (i.e., the double-headed arrow) is not meant to convey a person-context interaction (which is typically represented in the developmental literature as person × context). An interaction connotes that the entities involved in the relation are separate and independent (as in a statistical interaction) and that, as such, their association involves a linear combination of discrete and separate variables. Both before and after the interaction, these entities (variables) are independent and unchanged by each other. Instead, the bidirectional arrow is intended to emphasize that the coaction of individual and context involves the entire developmental system. The relations among levels of the autopoietic (self-changing) system, and not independent linear combinatorial attributes, are the focus in such a model.

Of course, a simple bidirectional arrow is a less-than-ideal figural representation of these system relations. The well-known figure used by Gottlieb in his 1992 book *Individual Development and Evolution: The Genesis of Novel Behavior, Psychological Review* (p. 186) is a better representation of the integrated, multilevel relations we describe. This figure shows the bidirectional influences between the environment (physical, social, and cultural), behavior, neural activity, and genetic activity, and it depicts these influences as coacting across individual development. It is not efficient, however, to use such a representation within textual material, so we use the symbol ↔ depict such multilevel, bidirectional relations. Other RDS-based theories provide figures similar to the one presented by Gottlieb (1992). Examples are found in the work of Bronfenbrenner (e.g., 1979, 2005; Bronfenbrenner & Morris, 2006) and Lerner (2002, 2004). Accordingly, Figure 1 presents an illustration drawing on (inspired by) these comparable representations of the bidirectional (embodied) relations emphasized within RDS metatheory.

The second moment, *opposites of identity*, allows one, in effect, to hold the other parts of the integrated system in abeyance and to focus on one part of the system (Latour, 1993; Overton, 2013). The Aristotelian law of contradiction is in effect reasserted, and as such, categories again exclude each other. As a consequence, in this second moment, parts may be different from each other. Finally, the third moment, the *synthesis of wholes*, occurs when the first two moments are again united into one perspective. The holistic synthesis involves the understanding that the other two moments are mutually necessary to have a systematic, integrative program of research. One needs to, at points, see elements as separable and, at other points, to see them as inseparable. In any thorough research program both moments (of separateness and inseparableness) are needed.

As a result of the contributions of Overton in regard to articulating the process-relational paradigm and the RDS metamodel, and of others who have contributed to these frames for developmental science (e.g., Gottlieb, 1997, 1998; for a review, see Lerner, Lerner, et al., 2015), the sun has set on Cartesian split, reductionist accounts of developmental processes, such as ones stressing nature or nurture. From the late 1960s through the first half of the second decade of the 21st century, the study of human development evolved from a field dominated by split, reductionist (psychogenic or biogenic), approaches to a scholarly domain that is marked by multidisciplinarity (and, in regard to the aspirations of many developmental scientists, interdisciplinarity) and seeks to integrate variables from biological through cultural and historical

Figure 1. A relational developmental systems-based model of the fused relations among the levels of organization in the ecology of human development: Only a subset of relations (involving adjacent levels) is illustrated (inspired by Gottlieb [e.g., 1992, 1997, 1998], Bronfenbrenner [e.g., 1979, 2005], and Lerner [2002, 2004]).



levels of organization across the life span into a synthetic, coactional system (e.g., Elder, 1998; Ford & Lerner, 1992; Gottlieb, 1997, 1998; Lerner, 2012).

Prior, reductionist accounts of development that adhered to a Cartesian dualism pulled apart (split) facets of the integrated developmental system (Overton, 2015). For instance, they typically elevated the importance of such split formulations as nature versus nurture, continuity versus discontinuity, stability versus instability, or basic versus applied science (Lerner, 2002, 2006). In contrast, RDS-based models emphasize that the basic process of human development involves mutually influential relations between the developing individual and the multiple levels of his or her changing context (i.e., individual ↔ context relations). This bidirectionality is the reason that Gottlieb and colleagues (e.g., Gottlieb, Wahlsten, & Lickliter, 2006) and others (e.g., Overton, 2015) have argued that the concept of *coaction* or *transaction* should replace the term *interaction*, except when referring to statistics of the linear analysis of variance model—a point made as well by Lerner and Spanier (1978b). These reciprocal, bidirectional relations regulate the pace, direction, and outcomes of development. When these developmental regulations involve individual ↔ context relations that benefit both the person and his or her ecology, then they may be termed *adaptive* (Brandtstädter, 2006).

Developmental regulations are the fundamental feature of human life; indeed, *all* life exists through bidirectional exchanges with the physical and/or social context (Darwin, 1859; Tobach & Schneirla, 1968). Among humans, these exchanges involve physiological systems and functions (e.g., respiration, circulation, digestion, reproduction) and behaviors (e.g., social affiliation and cooperation, as might be involved in protection, hunting, and scavenging; Johanson & Edey, 1981). They also involve both organismic self-regulation (e.g., hypothalamic functioning, circadian rhythms) and intentional self-regulation (e.g., goal selection, resource recruitment, executive functioning; Gestsdóttir & Lerner, 2008; McClelland, Geldhof, Cameron, & Wanless, 2015). The developmental course of self-regulation is, in effect, the developmental course of human agency (Sokol et al., 2015).

All levels of organization within the ecology of human development (including individual,

social relationship, community, institutional, cultural, physical, ecological, and history) are integrated within theories derived from the RDS metamodel, and all of these levels may be involved in developmental regulations. Instances of the use of such individual ↔ context relational ideas are found in Bronfenbrenner's bioecological theory (e.g., Bronfenbrenner, 1977, 1979, 2005; Bronfenbrenner & Morris, 2006); action theoretical models of intentional, goal-directed behaviors (e.g., Baltes, 1997; Brandtstädter, 1998, 2006; Heckhausen, 1999); Elder's (1998) life-course theory; Magnusson's (1999; see also Magnusson & Stattin, 2006) holistic person-context interaction theory; and the Ford and Lerner (1992) and Gottlieb (1998) developmental systems formulations. In all of these theories, human development is conceptualized as an *embodied* phenomenon (Overton, 2013, 2015). Here, embodiment means that any variable from any level of organization within the ecology of human development is fused with variables from all other levels; the structure and function of one variable is thus governed, or regulated, by the structure and function of other variables (Agans, Säfvenbom, Davis, Bowers, & Lerner, 2013; Witherington & Heying, 2013).

The levels considered across these different instances of RDS-based theories include the biological and/or physiological (including genetic and epigenetic characteristics); the cognitive, emotional, behavioral, and physical features of the individual, family, and other social relationships; the community, institutional, cultural, physical and ecological levels; and history (temporality). History, which is the broadest level within the ecology of human development, is an essential level to include within any conceptualization of the ecology of human development. Temporality means that individual ↔ context relations may vary across time and place (Elder, Shanahan, & Jennings, 2015), across the "arrow of time." History thus imbues all other levels within the ecology of human development with change. Such change may be stochastic (e.g., nonnormative life or historical events; Baltes, Lindenberger, & Staudinger, 2006) or systematic (e.g., age- or history-graded normative life events). As such, there is always change, and across the life span there is always at least *some* potential for systematic change as well. This potential for change is termed *plasticity*, and it represents a fundamental strength of human development (Lerner, Hershberg, et al., 2015). As explained by Lerner (1984, 2002), the concept of plasticity was emphasized by scholars who were interested in countering the idea of fixedness in human development, such as that purportedly imposed by genetic inheritance or neuronal "hard wiring." Accordingly, the idea of plasticity arose to denote the capacity in human development for systematic and relatively continuous changes, as compared to stochastic (random) and short-term changes. Such relatively permanent and systematic change can arise through individual ↔ context relations that are either normative or nonnormative (Baltes et al., 2006).

Of course, plasticity means that change for the better or worse can characterize any individual's developmental trajectory. Plasticity is always a relative phenomenon within the relational developmental system because the temporal events in the life or lives of an individual or a group, respectively, may constrain change as well as promote it (Lerner, 1984). A system that promotes change can also function to diminish it. Nevertheless, a key assumption of the RDS metamodel is that the relational developmental system is sufficiently diverse and complex that some means may be found (by researchers and/or practitioners) to couple the individual and his or her context in ways that can enhance the probability of change for the better (J. Lerner et al., 2013; Lerner, 2002, 2004). In other words, because history (temporality) infuses individual ↔ context relations with the potential for relative plasticity in human development, scholars may be optimistic that instances of these relations may be found or created to promote more positive human development among all people, and to promote social justice by providing opportunities for all individuals to optimize their chances of positive, healthy development (Lerner & Overton, 2008).

This assumption means that RDS-based models are well suited not only for understanding human development but also for efforts aimed at enhancing it (or, as it is frequently termed within development science, *optimizing* it). Implementation of such optimization efforts rests on the conduct of multidisciplinary research, the use of change-sensitive methodologies, and the translation of research into policies or programs (Lerner, 2012; Molenaar, Lerner, & Newell, 2014), points to which we return later in this article.

The Sample Case of the Positive Youth Development Perspective

One example of the use of an RDS-based model for optimizing development is the study of adolescent development through the use of the positive youth development (PYD) perspective (Lerner, Lerner et al., 2015). There are several major individual and contextual changes that characterize the adolescent period. For example, changes in the prefrontal cortex, increases in the interconnectivity among brain regions, and increases in dopamine levels provide both vulnerabilities to risk and opportunities for growth in cognitive control and self-regulation (Gestsdóttir & Lerner, 2008; Steinberg, 2010). At the same time, most youth in Western societies are experiencing great contextual changes, such as school transitions (e.g., Eccles, 2004) and the increased relevance of peer pressure for risk taking (e.g., Gardner & Steinberg, 2005). Moreover, in adolescence, the individual has agency—the cognitive, behavioral, and social relational skills to contribute actively and often effectively to his or her own developmental changes (Lerner, 1982; Lerner & Busch-Rossnagel, 1981; Lerner & Walls, 1999; Ricco & Overton, 2011). Accordingly, adolescence is an ideal "ontogenetic laboratory" for studying the relative plasticity of human development and for exploring how connecting individuals and contexts in the developmental system may promote positive development during this period. Therefore, adolescence is a period that may be ideal for conducting research that is framed by conceptions derived from the RDS metamodel, and the PYD perspective constitutes one such conception.

However, there are many versions of the PYD perspective, and all are consistent with the RDS metatheory (Lerner et al., 2015); we draw on the model of PYD forwarded by Lerner and Lerner (e.g., Bowers et al., in press; J. Lerner et al., 2013) to illustrate this metatheoretical-theoretical link. The Lerner and Lerner model depicts the individual and ecological relations that may promote thriving and also may help prevent risk and/or problem behaviors. Thriving is understood as the growth of attributes that mark a flourishing, healthy young person (e.g., the characteristics termed the "five *C*s" of PYD—competence, confidence, character, connection, and caring) (e.g., Eccles & Gootman, 2002; Roth & Brooks-Gunn, 2003). These attributes may lead to the development of a sixth *C*, marked by youth contributions to self, family, community, and society.

A key hypothesis tested in research framed by this model is this: (a) If the strengths of youth (e.g., a young person's engagement with the school context, hope for the future, possession of intentional self-regulation skills) can (b) be aligned with the resources for positive growth found in families, schools, and communities (e.g., capacities of adults to provide young people with a nurturing, positive milieu in which their strengths can be enhanced and positively directed) (e.g., Benson, Scales, & Syvertsen, 2011; DuBois & Rhodes, 2006; Rhodes & Lowe, 2009), then (c) young people's healthy development will be optimized (Lerner, 2004). A second hypothesis is that, given that positively developing youth should be involved in adaptive developmental regulations, then a thriving young person should act to contribute to a context that is benefiting him or her. In other words, if positive development rests on mutually beneficial relations between the adolescent and his or her ecology, then thriving youth should be positively engaged with, and act to enhance, their worlds (i.e., they should manifest positive contributions to self, family, community, and civil society; Lerner, 2004; Lerner, Agans, DeSouza, & Hershberg, 2014). Furthermore, thriving adolescents should be less prone to engaging in risk and/or problem behaviors.

Consistent with the PPCT model presented in the bioecological theory of Bronfenbrenner (1979; see also Bronfenbrenner & Morris, 2006), the developmental process envisioned by Lerner and Lerner (e.g., Lerner, Agans et al., 2014) involves adaptive developmental regulations between youth strengths and ecological developmental assets. These mutually beneficial individual ↔ context relations are associated with the five *C*s of PYD and, in turn, with the enhanced probability of youth contributions to their ecology and lowered probabilities of risk and/or problem behaviors. Outcomes of these adaptive developmental regulations feed back to the individual and his or her context, thus creating a basis for further adaptive developmental regulations. The PPCT model that is instantiated within this PYD approach emphasizes that adaptive developmental regulations, and their positive and problematic sequelae, exist within the broader ecology of human development. This ecology includes cultural and historical (temporal) variation and

encompasses all instances of individual, family, and community diversity, for example, involving racial, ethnic, gender, religious, and health differences.

In short, changes exist within and among all levels of organization within the relational developmental system (Bronfenbrenner & Morris, 2006; Elder, 1998). Such changes are manifested as intraindividual (or within-person) change, interindividual (or between-person) differences in intraindividual change, and normative and nonnormative contextual variation (Baltes, Reese, & Nesselroade, 1977). The possibility of identifying or promoting mutually beneficial (i.e., adaptive; Brandtstädter, 1998) developmental regulations between individuals and contexts, and the potential (relative) plasticity of human development, are distinctive features of this metamodel of human development. Moreover, the suite of concepts associated with the RDS metamodel has important implications not only for conceptions of development but also for developmental methodology.

Methodological Implications of the RDS Metamodel

Given the differences between the "traditional" Cartesian paradigm for scientific research and the process-relational paradigm, it may not be surprising that there are several distinctive features of research framed by models derived from the RDS metamodel. For example, decisions about the questions asked, the design adopted, and the analyses conducted (e.g., see Geldhof et al., 2014; Lerner, Lerner et al., 2015) are all influenced by tenets of the RDS metamodel. Indeed, features of the RDS metamodel provide a rationale for making a set of methodological choices regarding study design, measurement, sampling, and data analysis. Moreover, an emphasis on how individuals act in context, the contributions that individuals make to the potentially changeable relations with that context, and other features of the process-relational paradigm foster a core interest in individual agency (or on intentional self-regulation; Gestsdóttir & Lerner, 2008), in which individuals are active producers of their own development (Lerner, 1982; Lerner & Busch-Rossnagel, 1981). This focus is best instantiated by person-centered (as compared to variable-centered) approaches to the study of human development (see von Eye, Bergman, & Hsieh, 2015; see also Amato et al., 2008; Henry, Tolan, & Gorman-Smith, 2005; Rose, Woolley, & Bowen, 2013). Such approaches are focused on the assessment of interindividual differences in intraindividual processes (Nesselroade & Molenaar, 2010).

In addition, the person-centered focus, as well as the emphases on relative plasticity and on mutually influential person ↔ context relations, has resulted in the RDS metamodel being used as a frame for a more specific understanding of the changing structure of ontogenetic trajectories (the developmental courses of within-person change). This new understanding has resulted in the view that developmental science is a nonergodic field (Molenaar & Nesselroade, 2015; Nesselroade & Molenaar, 2010). The ergodic theorem (Molenaar, 2007) regards the extent to which research findings based on interindividual (between-person) designs will be the same as findings from intraindividual (within-person) designs. The theorem is upheld (in other words, results from the two designs will be equivalent) if data are marked by two characteristics. First, there must be *homogeneity* across individuals in a three-dimensional matrix that involves persons, variables, and time. In other words, for any characteristic that is measured, all people are expected to attain the same scores, and this sameness (this homogeneity) is expected to be present whenever the people are measured. The expectation of sameness across time involves the second assumption of the ergodic theorem. That is, there must also be *stationarity* (no change) of individuals' scores on variables across time.

Researchers using relational developmental systems thinking, however, understand that there is variation both across people within time and within people across time in their trajectories of individual ↔ context relations. In other words, people differ in their paths across the life span. As such, researchers using perspectives derived from the RDS metamodel reject the assumptions of homogeneity and stationarity of the ergodic theorem (Molenaar, 2007; Nesselroade & Molenaar, 2010). As a consequence of nonergodicity, these researchers place greater importance not only on person-centered research but also on change-sensitive methodologies (designs, measures, and analyses) for their descriptive and explanatory efforts.

Conclusions About the RDS Metamodel

The conceptual and associated methodological emphases of scholarship associated with the RDS metamodel, and with theories constructed within this framework (see Overton, 2013), have led scholars using this perspective to draw on research from multiple disciplines (e.g., evolutionary biology, human genetics, developmental science, sociology, anthropology) to better understand the integrated (embodied) changes across the multiple levels of organization within the ecology of human development. As well, adoption of the RDS metamodel has resulted in contemporary developmental scientists documenting the logical and empirical shortcomings of split, biological reductionist (genetic or neuronal) models (e.g., sociobiology, evolutionary psychology, behavioral genetics; for reviews, see Lerner & Benson, 2013a, 2013b) and methods (e.g., adoption designs, monozygotic and dizygotic twin research, or heritability analysis; for reviews, see Molenaar, 2014; Molenaar, Lerner, & Newell, 2014).

These scholars have used RDS-based ideas to explain that any facet of individual structure or function (e.g., genes, brain, personality, cognition, intelligence) is embodied (fused) with other features of the individual and with the characteristics of his or her proximal and distal ecology, including family, culture, and history (for multiple examples, see, e.g., Lerner & Benson, 2013a, 2013b). For instance, Slavich and Cole (2013) provide an example of what they term *human social signal transduction*, a bidirectional system wherein (a) gene expression → transcription factors → cellular signal transduction → peripheral nerve-cell signaling → central nervous system (CNS) threat perception → social behavior and wherein (b) the social environment → CNS threat perception → peripheral nerve-cell signaling → cellular signal transduction → transcription factors → gene expression.

As we noted earlier in this article, embodiment means that biological, psychological, and behavioral attributes of the person, in fusion with culture, also have a temporal (historical) parameter (Overton, 2006; Witherington & Heying, 2013). As such, embodiment has implications across both ontogeny (the course of development) and phylogeny (history of development) (Ho, 2010; Jablonka & Lamb, 2005). These implications involve the concept of epigenesis (the process of qualitative change that emerges across the life span through the integration of organism and contextual levels of organization; Lerner, 1984, 2002), as well as the presence of relative plasticity in phylogeny and ontogeny that occurs because of the embodied acts that lead to change. In other words, relative plasticity characterizes the relations between organisms and contexts (Lerner, 1984) that, across time, create epigenetic (gene ↔ context) processes within and across generations (Cole, 2014; Lerner, 2015; Meaney, 2010; Slavich & Cole, 2013).

For instance, the bidirectional process involved in human social signal transduction discussed by Slavich and Cole (2013), and described earlier, means that not only does gene expression influence a developmental system that includes social behavior but also the social world contributes to a developmental system that includes changes in gene expression. These changes not only affect an individual but also may affect the individual's children and even grandchildren.

Such relative plasticity of the individual ↔ context relational system means that one may be optimistic that, beyond description and explanation, researchers can identify or promote changes that contribute to the optimization of human development. In other words, practitioners and policymakers may be optimistic about enhancing human life through supporting or creating beneficial relationships between children and families and their broader social and cultural worlds.

To what extent is such optimism about the potential use of models of individual ↔ context relations in attempts to describe, explain, and optimize human development found in the ideas about the child-family system discussed by Lerner and Spanier (1978b)? Do the ideas they discussed parallel or at least presage those found in contemporary RDS-based models, or are there ideas that they discussed that are no longer seen as appropriate within or relevant to such models? Addressing such questions is of interest beyond describing the history of a field; it may tell us how the relational developmental paradigm and metamodel have framed both constancy and change in contemporary developmental science across the past 30 years. As such, it is useful to revisit the presentation made by Lerner and Spanier (1978b) regarding child influences on marital and family relationships.

Revisiting Lerner and Spanier (1978)[2]

Lerner and Spanier (1978b) began their chapter by noting that "processes of individual development have rarely been used to explicate those of family development, and family change similarly has been ignored by those interested in understanding intraindividual change" (p. 1). Similarly, they noted that "at the core of any concern for either individual ontogeny or family development is a "new" unit of analysis: the individual within a family system" (p. 4).

In some ways, these statements reflect the aphorism that "the more things change, the more they stay the same." Many of the ideas presented by Lerner and Spanier are essential features of contemporary RDS-based approaches to human development. In other equally important ways, some of the ideas that Lerner and Spanier presented are no longer components of RDS thinking, thus illustrating the evolution of this metamodel and its use in developmental theories. In contemporary developmental science and, in particular, life-course RDS-based models (e.g., Buchmann & Kriesi, 2011; Diewald & Mayer, 2009; Elder, 1998; Elder & Shanahan, 2006; Elder et al., 2015; Mayer, 2009) contemporary theory emphasizes the importance of studying the relational links between individual and contextual levels or, as phrased by Buchman and Kriesi (2011), between the micro and macro levels of analysis within the developmental system. Often, this focus is in fact implemented explicitly as the relational links between the child and the family (e.g., Settersten & Ray, 2010).

Nevertheless, reviews of this literature continue to note that such integration is not often reflected in actual research about life-course trajectories (e.g., Buchmann & Kriesi, 2011; Mayer, 2009). Buchmann and Kriesi (2011) attribute this poorness of fit between theory and empirical work to the absence of methodological tools appropriate to dynamically link micro and macro changes, or—in the terms of the present discussion—to study the individual ↔ context relation in general or the child ↔ family relationship in particular. However, recent innovations in developmental systems methods (Molenaar, et al., 2014; Molenaar & Nesselroade, 2012, 2015; Urban et al., 2014) have begun to populate the toolbox of researchers interested in studying the dynamics of these interlevel relations, and qualitative methods have been found to be key for capturing these dynamics (Burton, Garrett-Peters, & Eaton, 2009; Zvonkovic, Sharp, & Radina, 2012). We discuss these methodological innovations and tools again after reviewing the concepts used by Lerner and Spanier to discuss the development of child ↔ family relationships.

Concepts of Development

The Lerner and Spanier chapter used the life-span model of human development (e.g., Baltes, 1997; Baltes et al., 2006) as the frame for discussion of child ↔ family relationships. Lerner, Hershberg et al. (2015) have acknowledged the life-span perspective articulated by Baltes and his colleagues as one instance of an RDS-based model. Accordingly, Lerner and Spanier's statement that "description in human development research focuses on the systematic representation of intraindividual change and of interindividual differences in intraindividual change as such change may occur across the life span" (p. 5), is still accurate. In turn, their contention, that "to explain life-span development, a pluralism involving a wide array of theories and empirical strategies pertinent to both the developing individual and his or her evolving social milieu must be followed" (p. 6), is a mandate adhered to in principle (e.g., Barton & Bishop, 2014; Lerner, 2012; Mayer, 2009) and, increasingly, in practice (e.g., Bornstein & Leventhal, 2015; Lamb, 2015; Small, 2005). Indeed, this trajectory of conceptual and methodological innovation reflects the three moments of research discussed by Overton (2013) as part of the process-relational paradigm.

Lerner and Spanier were aware that, within a life-span perspective, the goals of developmental scholarship involve description, explanation, and optimization (Baltes, Reese, & Nesselroade, 1977). Interestingly, however, there is no specific section of their chapter devoted to "optimization of developmental change." In contemporary developmental science, such absence would be considered a major omission (Fisher et al., 2013; Lerner, Easterbrooks, & Mistry, 2013).

Attempts to optimize the course of individual ↔ context relations, and child ↔ family relationships in particular, are an essential facet

[2]Unless otherwise noted, all references to Lerner and Spanier in this section are to Lerner and Spanier (1978b).

of contemporary developmental scholarship because a science with the knowledge and skills to improve the course of human development is ethically obligated to do so (Fisher et al., 2013; Lerner & Overton, 2008). In addition, because human development "happens" through the coactions between an individual and his or her ecologically valid contexts, theoretically predicated research designed to optimize human development constitutes *both* an explicit test of an intervention as well an implicit test of the tenets of RDS-based models (Lerner, 1995, 2002; Lerner & Callina, 2014). Thus, consistent with other facets of the RDS metamodel, the Cartesian split between basic and applied research is replaced by an integrative understanding of these two moments of developmental science scholarship (Lerner, 2015; Overton, 2013, 2015).

In addition to omitting explicit mention of the optimization within developmental science, Lerner and Spanier's discussion included some concepts that were vestiges of Cartesian, split thinking. For instance, in discussing the "components" of development, they introduced the terms maturation and experience (following Schneirla, 1957). The term *component* itself reflects a split, reductionist, and mechanist approach to human development, as it implies that development is something made up of separable parts (Keller, 2010; Overton, 2013). However, in contemporary developmental theory associated with the RDS metamodel, terms such as *maturation* (or *growth*) are not seen as different from the overall notion of development. These aspects are viewed as a fused and mutually influential process involving all levels of organization within and external to an organism (Overton, 2015; Overton & Lerner, 2014). Hence, even the term *experience* would lose meaning as a distinct facet of the developmental system. Only the system, then, and its self-organizing (autopoietic) processes would be discussed in regard to the course of developmental change (e.g., Witherington, 2014, 2015).

In short, contemporary understanding about the embodiment of the human development process means that language that splits this process into components (e.g., maturation, experience) is not useful. Indeed, an embodied conception of human development is used within contemporary evolutionary biology (e.g., Bateson, 2015; Gissis & Jablonka, 2011; Ho, 2010; Lickliter & Honeycutt, 2015); in the study of epigenetics (e.g., Meaney, 2010; Misteli, 2013; Roth, 2012); and in the new, burgeoning field of social genomics (e.g., Cole, 2014).

In turn, however, Lerner and Spanier were at their strongest (i.e., most consistent with contemporary RDS-based models) when discussing organism individuality and its role in development. Their writing underscored the central role of agency in human development. For instance, on the basis of the ideas of comparative psychologist T. C. Schneirla (1957), Lerner and Spanier discussed the concept of circular functions in development. Noting that all organisms have characteristics of individuality (e.g., involving genetic, epigenetic, neuronal, psychological, and behavioral facets of the organism; see also Kluckhohn & Murray, 1948; Molenaar, 2007; Molenaar & Nesselroade, 2012, 2014, 2015), they explained that individually different organisms elicited differential reactions from other organisms that were based on these characteristics of individuality. Applied to humans, this concept means that people bring out different reactions in different people on the basis of both their own and the other person's individuality. These differential reactions then feed back to the people involved, promoting their further individual development.

The process of individual ↔ context relations depicted in the idea of circular functions supports the view that human development is a nonergodic phenomenon, as discussed earlier. In addition, this role of the individual as providing a source of his or her own development reflects the agency of the individual and the autopoietic character of the developmental system emphasized in the process-relational paradigm (Overton, 2015). These emphases are found in several current models of human development linked to RDS metatheory (e.g., Agans et al., 2013; Lerner, Lerner et al., 2015; Witherington, 2014, 2015; Witherington & Heying, 2013). In summary, the Lerner and Spanier discussion of circular functions and of both the dimensions of the individual-social interface, generally, and the dynamics of the child-family relationship, more specifically, predicted the integrated levels of the developmental systems discussed in contemporary RDS-based models of human development (for examples, see Lerner, Lerner et al., 2015; Lerner, Hershberg et al., 2015).

Implications for Methodology and Research About Child ↔ Family Relationships

Finally, the discussion by Lerner and Spanier of the implications of their views about child ↔ family relationships for methodological innovations and research directions are consistent with corresponding, contemporary discussions regarding RDS-based models. Indeed, in this facet of their presentation, their "mandates" for progress have in great part been actualized. For instance, in discussing the import of their ideas for theory-predicated research about child ↔ family relationships, they argued that "if developmental is conceptualized in a circular manner, then the utility of linear statistic models seems limited" (p. 15); they also emphasized that "new questions need to be addressed, and, as we shall note, the invention of new methodological and data analytic techniques may be required to provide the data necessary to address these questions" (p. 14).

Consistent with our preceding discussion of the methodological implications of the RDS metamodel, developmental science recently has experienced a burgeoning of quantitative methods, involving both linear methods (which remain prominent parts of the tools of researchers) and, more recently, nonlinear approaches to the assessment of the developmental process (Molenaar et al., 2014; Molenaar & Nesselroade, 2015). These new tools have enabled researchers to conduct person-centered research appreciating the idiographic, nonergodic character of human development while, at the same time, recognizing the commonalities that exist across differential subgroups of individuals and the nomothetic features of human development (Emmerich, 1968; Kluckhohn & Murray, 1948). The methodological work of Molenaar and Nesselroade (2012, 2014, 2015) involving tools such as dynamic factor analysis and the idiographic filter, as well as the increasing use in developmental research of systems science methods (Mabry, 2011; Mabry & Kaplan, 2013; Urban, Osgood, & Mabry, 2011; Urban et al., 2014), are exemplars of such progress.

In addition to these quantitatively oriented techniques, within the broad range of qualitative data collection and analysis methods are several person-centered techniques that can be used within RDS-informed research. Ethnographic analysis is one example of such a method (Burton et al., 2009). Narrative inquiry is another example, one that provides a way to examine the experiences of, and stories told by, "particular actors, in particular social places, at particular times" (Abott, 1992, p. 428). In addition to focusing on the particular, this idiographic approach allows researchers to highlight the diverse ways in which individuals produce their own development.

As well, Lerner and Spanier may have presaged the important role of methods such as structural equation modeling within developmental science. They argued that, "in addition, the methodological repertoire of the life-span researcher may be expanded through the use of *causal modeling procedures*" (p. 15, italics added). They emphasized also that these processes needed to be used to gauge change and not constancy, noting that, "rather than the social universe being seen as constant and permanent—and change being the to-be-explained phenomenon—this model assumes that change is the rule. The problem for developmental research, then, is to derive an index of developmental change within constantly changing contexts" (p. 16). They concluded that "in order to address the issues raised by our model, we have to relinquish notions of universal, permanent laws and instead conceptualize development as a probabilistic phenomenon. That is, the nature, direction, and extent of developmental change are relative to the changing boundaries imposed by the ever-changing context within which it exists" (p. 17). This observation remains a cornerstone of RDS-based models of human development. It reminds us that individual and their settings—children and their families—are and will always be dynamically related across place and time (Elder et al., 2015).

Conclusions

For more than 30 years, theory in developmental science has pointed to the dynamically changing relations between individuals and contexts, and—arguably most important—between children and families. In 1978, these ideas were embedded in a metamodel and, superordinately, a paradigm that was neither traditional nor widely accepted (Damon, 2015; Lerner, 2015). The ideas expressed by Lerner and Spanier were innovative at best, and (perhaps) wildly speculative at worst. Certainly, their statements went far beyond existing data and were not

coupled with methods appropriate to test their assertions about the developmental process.

However, the zeitgeist was changing (e.g., as a result of the contributions of scholars such as Baltes, Reese, & Nesselroade, 1977; Bell, 1968; Bronfenbrenner, 1974, 1977, 1979; Lamb, 1976, 1977a, 1977b; Lewis & Rosenblum, 1974; Overton, 1973; Overton & Reese, 1981; Riegel, 1975, 1976; Schaie, 1965; Schneirla, 1957; Thomas, Chess, Birch, Hertzig, & Korn, 1963; Tobach & Greenberg, 1984; von Bertalanffy, 1968). In at least a small part, Lerner and Spanier (1978 a, 1978b) were both products and producers of this zeitgeist.

The RDS metamodel that has crystallized today is now regarded as the fundamental frame in developmental science for theory-predicated research and associated methodological innovations, and for enacting applications aimed at optimizing human development and promoting social justice (e.g., Bornstein & Leventhal, 2015; Damon, 2015; Lamb, 2015; Lerner, 2015; Liben & Mueller, 2015; Molenaar et al., 2014; Overton & Molenaar, 2015). However, these "successes" are not without their challenges, especially in regard to using theory to study individual and family life. We believe that one of the attractions of the RDS-based approach to human development and family studies is the aspiration of scholars to produce evidence-based research that matters in the real world—a goal often coupled with the desire to reduce or, ideally, eliminate the challenges to healthy, positive development facing diverse children, families, and communities in the 21st century.

As such, the famous Kurt Lewin (1952) quote that "there is nothing so practical as a good theory" (p. 169) is particularly apt for scholars working within an RDS-based model. Accordingly, the value of their work will be judged on the basis of both its scientific and societal value. If the theoretical models and methodological tools produced by such scholars are ultimately useful in promoting thriving among diverse children, families, and communities, then both developmental and family sciences as well as social justice will be enhanced. Such an outcome would be a wonderful legacy for the work involved in the production of the Lerner and Spanier (1978a) volume.

In the final sentence of the Lerner and Spanier (1978a) book, in a concluding, summary chapter authored with William Aquilino, they wrote, "To the extent that this book is a successful presage of the future, a future historian of science will see this volume as only one initial attempt" (Spanier, Lerner, & Aquilino, 1978, p. 343). Given the links between their work and the current place of their ideas in the RDS metamodel, we believe that it is fair to conclude that such a step was certainly taken.

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