

Stage Models of Adult Development: A Critical Introduction to Concepts, Debates, and Future Directions

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Abstract: Diverse approaches have modeled and characterized a number of trajectories of adult psychological development that originate in stage models of developmental psychology. The number of these approaches has increased significantly in recent decades as stage models have become more popular and been applied outside of the academe, along with innovations occurring within the academe. Additionally, multiple stakeholders have sought knowledge about the types of thinking and psychological development suited for contemporary contexts and needed by individuals and communities to adequately respond to present and anticipated circumstances; this has gone hand-in-hand with psychological developmental models being increasingly applied across disciplines. The challenges involved in this research area have led to novel critical debates and developments. However, details about the theoretical and methodological foundations of these approaches are often underexamined, which can lead to misinterpretation and misapplication. This article sets out to survey some of these theoretical and methodological issues. Surveyed concepts and issues include functional, soft, and hard stages; metrics, models, constructs, and domains; and the relationship of stage models to the broader field of developmental science. Finally, suggestions about the study of adult development beyond stage models are provided including the need for interdisciplinary research and frameworks.

Keywords: Adult psychological development, applied developmental science, postconventional development, postformal development, problem-focused methodological pluralism, relational developmental systems.

Introduction

Many terms refer to trajectories and stages of psychological development that occur throughout adulthood. *Postformal* and *postconventional*, named in relation to Jean Piaget's (Inhelder & Piaget 1958) formal operational and Lawrence Kohlberg's (1984) conventional stages, may be the most common. Other suggested terms include, but are not limited to, *integrative*, *relativistic*, and *dialectical* (e.g., Kallio, 2011). Simply referring to these trajectories as adult development is another alternative. However, in most populations studied, individuals exhibiting characteristics of the most advanced stages are rarely found (e.g., Cook-Greuter, 2011); therefore, *exceptional* adult development can be a useful descriptor. Corresponding to these terms, a wide range of frameworks include a focus on adult development. This wide range lends itself – upon a close

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examination – to overlap, isomorphism, synonymity, parallelism, as well as differences (both nuanced and radical), bifurcations, contentions, and misunderstandings. By and large, these adult development frameworks stem from a tradition of developmental psychology with a primary heuristic of stages going back to James Mark Baldwin (1895) and Piaget in the early 1900s with many approaches branching along the avenues paved by other historical and contemporary researchers (e.g., Basseches, 1984; Case, 1985; Erikson, 1982; Fischer, 1980; Gilligan, 1982; Kegan, 1982; Labouvie-Vief, 1982; Loevinger, 1976; O’Fallon, 2020; Pascual-Leone, 1970; Sinnott, 1998; Wade, 1996). Because a grasp of developmental stage models in general is needed to understand contemporary stage models of adult development, this article spans stage models at large while focusing on exceptional adult development; postformal and adult development are sometimes used as catch-all terms, although others are used when referring to specific frameworks.

This article presents a selective literature review in order to introduce concepts and distinctions relevant to evaluate and compare adult development frameworks – and particularly to provide an understanding of stage models that can support integrative and applied projects related to adult development. The study of adult development beckons integrative and synthetic frameworks from diverse fields. I set out to weave a condensed narrative that can introduce readers to important considerations of stage models and their context within developmental science. I use broad brushstrokes in an attempt to provide an overarching orientation to components of stage models of adult development and select examples in order to flesh out implications of how these components interact – although in many cases alternative examples could have been used. As a brief overview and introduction to a diverse territory, this article does not do justice to any particular model. It also omits concepts important to more detailed comparisons of some models, as well as alternative directions of future development. It is hoped that it provides a general orientation to debates and future directions of stage models of adult psychological development and their relevance to integrative developmental theory. It may be of most benefit to readers who have some familiarity with a developmental stage model.

An overarching conclusion is that continued work is needed addressing integrative visions of adult development that move beyond developmental psychology, and beyond stage models in particular – and that assessing how stage models of adult development function within broader cross-disciplinary integrations will be crucial to their future development. Due to the philosophy of science, methodologies, and evidentiary basis undergirding stage models of adult development, cross-disciplinary comparisons can be vital for their evaluation and interpretation. Relatedly, these considerations can help to hone their pragmatic and ecological validity – how developmental constructs fair when applied in open systems in the real world, and how stage models can and should be used.

First, Cook-Greuter’s (1999) expansion of Jane Loevinger’s (1976) model, a widely used framework of adult development, is briefly summarized as a case study in order to contextualize and provide a foil with which to compare further distinctions, in addition to introducing contemporary trends. Next, distinctions between functional, soft, and hard stage models are introduced, followed by debates about metrics, models, constructs, and domains. Then, an underdiscussed relationship of stage models of adult development to a recent paradigm shift (termed Relational Developmental Systems) in the broader field of developmental science is considered. Last, a discussion about what these findings regarding stage models mean for broader,

potentially transdisciplinary, approaches to adult development is provided, including suggestions about future directions. Interested readers can see Gidley (2016) for a wide-ranging overview and comparison of descriptive characterizations of postformal models.

Loevinger and Cook-Greuter

In her doctoral dissertation, Cook-Greuter (1999) built on Loevinger's (1976) Ego Development Theory and measuring instrument, The Washington University Sentence Completion Test (WUSCT) to research hypothesized further stages of postconventional development. Cook-Greuter accomplished this goal by comparing postconventional development categories in Loevinger's model to a number of other developmental theories. This project was motivated by rare outlier WUSCT results from previous studies that could not be meaningfully interpreted within Loevinger's model. In addition, Cook-Greuter tested her new conceptualization of stages by analyzing 145 postconventional WUSCTs to refine theoretical categories and 60 WUSCT protocols to assess for statistical validity and reliability.

An ego stage according to Loevinger's theory can be described as a particular cohesive view of reality – of self, external circumstances, and existential situation – that is part and parcel of one's sense-making (Cook-Greuter, 1999). Development is posited to occur through hierarchically complex and differentiated stages as an individual matures, as it is conceptualized in most stage theories. The WUSCT tests for ego stage by asking an individual to freely complete sentence stems (usually 36), which are then assessed by a researcher using a manual that categorizes elements of language corresponding with the various stages. According to Cook-Greuter, the WUSCT was thoroughly tested for reliability and validity at the time of its development; it has also continued to be tested and critiqued (Manners & Durkin, 2001).

In 2011, Pfaffenberger, Marko, and Combs published an edited volume that focused on Cook-Greuter's work and legacy, *The Postconventional Personality*. In this volume, Cook-Greuter (2011) described several developments that occurred since the publication of her dissertation. The WUSCT database continued to grow, which led to further nuanced findings that were important in refining the measurements of postconventional stages, since protocols scoring at these stages are rare. Protocols scoring at stage 10 (the highest stage) were found in an average of only .06% of sample populations. Cook-Greuter reflected on the relationship between a growing database and the models and methods used to assess it:

The question is whether and to what degree to tailor the psychometrics to best reflect the findings or whether to *honor* a method now seemingly suboptimal in light of the data. How to do this in a valid psychometric fashion without employing Bayes' theorem is the challenge. As a developmental measure, based on empirical evidence, the SCT requires new theory and new measurement approaches when the data changes. Another pertinent and practical question is at what point in time does one introduce radical changes to an established measure including new metrics and recalculate, readjust older samples in light of the new evidence? (p. 61)

This quotation describes the interdependent relationship between research, theoretical models, and metrics, in addition to touching on several points that are discussed in greater detail below. Cook-

Greuter further stated that Loevinger's measure continued to be applied in new contexts, including longitudinally and across cultures. Several doctoral dissertations tested and applied Cook-Greuter's post-conventional stages (e.g., Boyer, 2005; Hewlett, 2004). Cook-Greuter (2011) considered additional differentiated stages and recently hypothesized a new substage (Ego-aware) that would help to explain certain discontinuities between the highest stages she originally proposed. New sentence stems and their scoring manuals were introduced in order to better fit contemporary contexts. Cook-Greuter developed a training program for scoring the tests and utilizing developmental perspectives for researchers and "coaches, consultants, and change agents" (p. 67). Cook-Greuter also discussed how Ken Wilber's (2000) integral theory and the integral community helped to popularize her work, and how this moved her away from research and toward applications in professional development. Relatedly, the WUSCT was increasingly adapted for applied versus research settings. Last, Cook-Greuter discussed how the WUSCT's growing popularity in applied settings had in turn led to a greater demand for trained individuals capable of scoring tests in the post-conventional stages and differentiating between new patterns in test results from high achievers knowledgeable about developmental theories versus the genuine stages indicated by them.

The foundations and developments Cook-Greuter (1999, 2011) described in many ways parallel those of other approaches to adult development. To summarize, Loevinger (1976) developed a theory of development rooted in the psychoanalytic theories of Henry Stack Sullivan (1968) and Erik Erikson (1982), and then refined several constructs of that theory, which remarkably could be validated and tested for using a relatively simple test that takes about a half hour to complete. Similarly, Cook-Greuter called upon additional theories that seemed to imply further stages of adult development, and continued to refine ego development theory and its operationalization through the WUSCT. Loevinger's and Cook-Greuter's process is representative of approaches to stage models of adult development in that particular theories of development rooted in broader psychological models, revolving around a certain aspect and construct of a given approach, are validated and tested through traditional psychometric methods, statistical analyses, and instruments.

The qualifications and grains of salt that go along with these processes, and powerful but limited methods, are often left in the background. However, these models have led to a variety of useful ways to conceptualize, research, and apply adult development. These include different takes on domains (what develops) and stages (with what structure), as well as how and why development occurs. They also include similarities and isomorphisms that lend themselves to the common practice of creating a diagram that aligns alternative models' conceptualizations of stages with one's own. This is commonly used to support the coherence and theoretical development of a given model; however, there is also a danger of conflation – the variety of viewpoints contained leads to a challenge of appropriately considering the gamut of theoretical and methodological variables in a syncretical or organizational project. The image of a kaleidoscope with shifting, interacting shapes and angles surfacing as one gazes at adult development goes some way to describe the state of the field and the difficulty of interpreting what one actually sees.

Functional, Soft, and Hard Stages

Many of the continued debates within the field of adult development relate to general debates and theoretical distinctions pertinent to the field of developmental psychology at large. They have been ongoing since the foundations of the developmental field and are best understood within that context. For example, Lerner's (2018) overview of the history of developmental theory included an explication of distinctions between continuous versus discontinuous change, nomothetic versus idiographic models, and elementarism versus holism. Lerner stated,

The point of these examples is that, despite a relatively high degree of consensus about development being a theoretical concept that, at the least, connotes systematic and successive change in an organization, there is a good deal of disagreement among developmental scientists about what particular ideas need to be added in order to define the term adequately. These differences in definitions are associated with philosophical and theoretical differences which also divide scientists. (p. 11)

Although it is outside the scope of this article, a thorough comparison of approaches to postformal development would necessarily call upon these foundational distinctions and an examination of how they are employed in other areas of developmental psychology. For instance, stage models are largely nomothetic, generalizable across individuals, and omit idiographic considerations unique to each individual's development; however, this distinction also plays out differently within various stage models, and there are possible routes of synthesis as will be outlined below.

Perhaps the most foundational distinctions between postformal approaches are those between functional, soft, and hard stage models. Reams (2014) outlined four criteria attributed to Piaget that are used to make these distinctions: (a) stage models display a qualitative difference in the structures of stages, (b) stages develop in an invariant sequence, (c) there is an underlying organizational structure of the stages as a whole, and (d) later stages include and integrate previous stages while also displaying progressive differentiation of their contents. Functional stage models meet the fewest of these criteria, hard stage models meet all, and soft stage models fall in between. Erik Erikson's (1982) widely known model is an example of a functional model in that it is culturally relative, organized around responses to common life experiences particular to a society, and not structurally hierarchical in a strict sense (Reams, 2014). Functional stage models may be relevant and valuable to a specific community, but lack evidence supporting them as a veritable model of universal developmental structures.

Loevinger (1976) and Cook-Greuter's (1999) models, on the other hand, are examples of soft stage models. Their structures are derived hypothetically from the measurement of a construct inferred from categories of content on the WUSCT. Those categories are mixtures of content and structure thought to indicate a stable set of personality and ego functions. In this way, Loevinger's stages are "ideal type[s] based on [a] theoretical representation" (Reams, 2014, p. 129). While they have structural qualities, such as qualitatively different hierarchical organizations that meet much of the above criteria, they fall short of hard stage models in the following ways: The method and evidence by which the model is arrived at are more indirect and speculative; stages are defined by functions of a holistic self and its motives, as well as by linguistic content, rather than strict

structures. This leeway enables soft stage models to formulate their characteristic broad, far-reaching theories, for instance, constructs that delimit universal patterns of meaning-making, yet may also tend to lose the trees in the forest, not be as rigorously defensible as harder stage models, or prove with further research to be as coherent and cohesive as their theories claim.

Hard stage models involve the delimitation of structures within discrete domains (Reams, 2014). For instance, in contrast to an ego developmental model, hard stage models would examine the specific acquired skills that the self experiences as unified (e.g., physical, emotional, and cognitive tasks) that relate to “empirically observable and measurable actions in direct ways” (p. 129), and by doing so, according to Reams, perhaps articulate more defensible, and universal, developmental logics that would continue to be applicable with the advancement of psychological knowledge. Lourenço (2016) offered a similar characterization of hard and soft stages of development and further qualifies that hard structural stages are

necessary rather than optional tracks of development..., embody operative reasoning which represents interiorized and reversible forms of action..., distinguish content from the form or structure of thought..., can be formalized within a rational, normative model..., [and] appeal to an epistemic, or rational, general subject as opposed to a psychological, individual subject. (p. 124)

It is notable that characterizations of postformal development tend to blossom from soft stage models. The greater flexibility of soft stage models may serve in formulations of exceptional adult development. Postformal stages tend to highlight reflexivity; awareness of constructs; relativity; and a grasping of multiple points of view, systems, and paradigms. Perhaps structures explanatory of these functions are challenging to operationalize within the strict criteria of hard stage models. Along these lines, Stein (2008) suggested that developmental evaluations can be considered as “rational reconstructions of a kind of deep-seated intuitive knowledge that is *always already* a part of the network of practices and beliefs that constitute the lifeworld” (p. 3). In other words, there may be a tacit knowledge and “groking” of developmental trajectories, at least those of thought and language, at large in human interactions that are brought to consciousness in various ways by different developmental models and evaluations. Stein conducted an exploratory study to research this hypothesis by asking 181 non-specialist participants to rate the developmental levels of interview transcripts. In support of the hypothesis, Stein found general agreement between raters with each other, as well as between raters and the Lectical Assessment System’s formalized metric of development. Soft stages’ more speculative and holistic models may allow a greater operationalization of this intuition. However, particularly in soft models developing outside of academia, there are challenges in formulating defensible academic knowledge. There have also been major strides in hard stage approaches to postformal development in recent decades. These developments have led to current debates on properly differentiating and utilizing models, metrics, and constructs.

Models, Metrics, and Constructs

What does it really mean when an individual scores at Cook-Greuter’s (1999) Autonomous stage on the WUSCT, or at another stage on an alternative developmental system? How should those scores be interpreted? What are the standards and quality control procedures of

developmental systems? Ross (2008) traced how information about developmental systems can become increasingly distorted when that information is distanced from the academic research contexts where it originates. For instance, qualifications of developmental systems that are implicitly obvious to researchers – who are trained in the specific psychometrics used to arrive at them – can be lost as that research is consumed, reinterpreted, and communicated by others. Ross used the metaphor of telephone games and outlined the particular example of how figures in Wilber’s (2006) *Integral Spirituality* promulgated distortions and errors both in the discourse of academics specializing in other areas and especially outside of the academe.

Psychometric models, metrics, and measures are the lifeblood of postformal developmental systems and commonly underlie the misinterpretation of those systems (Stein & Heikkinen, 2009). Stein and Heikkinen set out to demystify these facets of psychometrics in order to offer a quality control framework. This framework is particularly valuable for users of developmental stage models who do not specialize in them. In addition, Stein and Heikkinen provided a “limited, exploratory” review assessing metrics currently in use by various developmental approaches, and found a “conspicuous lack of psychometric rigor on the part of some developmental approaches” (p. 5). Supporting the keystone quality of metrics, Stein and Heikkinen outlined that in developmental psychology, metrics are calibrated via psychometrics (in contrast to measuring methodologies of other fields such as biometrics or sociometrics). These metrics inform the discipline’s discourse about models, which in turn inform applied technologies, such as testing in education.

Metrics and models can both be considered the development discipline’s representational devices: symbol systems, methods, and propositions claimed to refer to actual developmental processes (Stein & Heikkinen, 2009). Metrics are used to determine the quantity or degree of a psychological attribute that is found in a set of performances. Metrics can take the form of calibrated measures or soft measures (not to be confused with soft stages). Calibrated measures rely more-so on quantitative protocols in their development, whereas soft measures rely more-so on qualitative protocols. Models account for and characterize – explain and describe – the presence of psychological attributes. Furthermore, Stein and Heikkinen distinguished different quality control devices for metrics and models. Metrics are controlled via psychometric tests of validity (reasonableness of inferences and claims) and reliability (quality of performance and error proneness). Models are controlled via disciplinary discourse, a community’s critical interchange of arguments and evidence, both theoretical – targeting the “truth, coherence, and reasonableness of models” – and practical – targeting their “ethics, efficacy, and implications” (p. 7).

In developmental psychology, metrics are essentially “inter-subjectively codified modes of systematic differential classification” (Stein & Heikkinen, 2009, p. 10) that are proclaimed to be indexes of development. The degree and type of calibration a metric has undergone determines its status as a soft or calibrated measure. Stein and Heikkinen pointed out that the history of cognitive developmental research has been “a history of techniques for the classification of various performances and behaviors” (p. 11). Additionally, although there are some outliers such as Piagetian balance beam tasks, nearly all developmental metrics interpret linguistic performances. However, the modes and analyses of linguistic performances can vary subtly and substantially. For instance, Kohlberg’s (1984) moral stage model relied on analyzing the content of interviews, Loevinger’s (1976) model relied on the analysis of projected sentence completions, and other

metrics such as hierarchical complexity (discussed below) analyze deep structures of linguistic performances rather than their content. Stein and Heikkinen summarized the general procedure used to develop a metric:

the codification of a metric begins with a research team issuing relatively informal judgments about how the various performances in a dataset should be organized developmentally. That is, they argue about why one performance is more developed than another, suggesting various properties of the performances that should function as indexes of development. Then through iterative procedures for garnering intersubjective agreement, an explicit hierarchical taxonomy emerges and specific properties of the linguistic performances are promoted to the status of being indexes of development. That is, developmental metrics are built to function as *representational devices*; they are created to help us *see* development by privileging specific properties of linguistic performances that have proven useful for the purpose of reliable differential developmental classification. (p. 11)

When codification results predominantly from researchers iteratively surveying large longitudinal data sets until reaching an intersubjective agreement about their “inventory of level-specific conceptual content” (p. 12), it is a soft measure. Calibrated measures go through further quantitative analysis to refine the metric and ensure the validity and reliability of fine-grained individual distinctions. The soft/calibrated categories are relative to a degree. Metrics can be more specifically described in relation to the variety of types of validity and reliability, the claims of the model they correspond to, and the context in which they are used. Additionally, soft measures can become calibrated, and calibrated can become soft, depending on the quantitative evidence available at a given time. However, in general, metrics that are noisy (vary from rater to rater) within a reasonable range of error are soft measures. These differences can make soft measures unsuitable for applied settings, especially when purporting to draw conclusions about individuals. However, they are suitable for research purposes, especially when searching for patterns across sample populations. On the contrary, calibrated measures are more suited for applied settings and making distinctions at the individual level in addition to research. For instance, although Loevinger’s metric was better calibrated than many soft measures, Stein and Heikkinen claimed that Loevinger explicitly stated “it was *not* [Stein and Heikkinen’s emphasis] to be used for rendering measurements of individuals” (p. 9). Stein and Heikkinen also found that the Hierarchical Complexity Scoring System and Lectical Assessment System were the only truly calibrated metrics at the time, “using quantitative indexes of internal consistency” (p. 19).

As for the quality control of models, Stein and Heikkinen (2009) proposed that multiple frameworks of evaluation can be useful in determining a model’s value. As an example, they suggested Charles Sanders Peirce’s (1998) distinctions between *utility*, *security*, and *uberty*. Utility refers to a model’s fitness as a means to an end. Security refers to what types of evidence a model is based on and how coherent is the model and this evidence. Uberty refers to the magnitude of a model’s “world-disclosing power” (p. 14) and suggestiveness. A model may, for instance, have a low security value, lacking evidence, but a high uberty value, being comprehensive and shining a light on a variety of disparate situations. Thus, distinctions between soft and calibrated metrics (as well as soft, hard, and functional stages) do not imply value judgments in themselves, and should not motivate a homogenization or marginalization of metric and model types. Furthermore, Stein and Heikkinen suggested an “integral and problem focused metrological pluralism” (p. 20), a

pragmatic ideal involving reflections on developmental metrics and their uses, including detailed validity and reliability profiles, to inform decisions about which metrics are suited for which purposes. This ideal can also be extended to other aspects of developmental approaches.

Soft, hard, and functional stages interact intimately with soft and calibrated metrics (e.g. functional stage models tending to use no metrics, soft models tending to use soft metrics, and hard models tending to use calibrated metrics), as well as with further distinctions outside of the scope of this article, resulting in advantages and disadvantages, including potential misapplication (e.g., soft measures inaccurately assessing individuals in applied settings, such as at work or school, and leading to negative outcomes for those individuals). In this way, there are a host of qualifications that should be brought to light about any developmental approach before it is put to use, perhaps the most important being qualifications about its metric and the metric's relationship to its model.

Additionally, there is a further layer that can be brought into the discussion of metrics and models: addressing construct validity theory itself. The categories of content, structure, and performance attributed to stages in developmental models are notably abstract constructs, especially those of later adult developmental stages. While metrics are designed to measure psychological attributes, they do so through constructs. For instance, Slaney (2017) stated, "Loevinger contended that while traits exist in people, constructs 'exist in the minds and magazines of psychologists...*Construct* connotes construction and artifice'" (p. 3). Therefore, more accurately stated, metrics measure the amount of a construct reflected in test performances assumed to refer to actual attributes based on limited statistical evidence. Some of these statistical limitations are further discussed in a following section. Statistical methods and criteria related to construct validity have continued to develop since their formulation. Current arguments go as far as to question the validity of the overarching paradigm of these statistical methods in certain contexts, particularly their relationship to environmental validity and applications in developmental psychology (Diehl, Wahl, & Freund, 2017; Lerner & Callina, 2013).

Of course, it is precisely the function of testing theories and studying hypothesized attributes with characteristics that are to a large extent unknown that necessitates the use of constructs. However, the potential conflation with their referents; the false ontology attributed to constructs (and thereby metrics, models, and whole approaches to development); the lack of qualifying their limitations, including their openness to further tests of validation and invalidation; and a potential blending of confirmatory and exploratory objectives and implicit circular reasoning (Slaney, 2017), can lead to an additional false security of developmental approaches. Furthermore, the reliance on psychometrics and relatively brief linguistic performances limit the developmental stage approach as a whole. In light of these considerations, it may be worth musing on how the oft-quoted Bronfenbrenner (1979) statement referring to methodological limitations in developmental psychology might apply to developmental stage approaches: "developmental psychology...is the science of strange behavior of children in strange situations with strange adults for the briefest possible periods of time" (Bronfenbrenner, 1979, p. 19).

Domains

Perhaps the most discussed distinction within developmental stage discourse is between domain general and specific models. Domains refer to the particular area that stages apply to. Do stages apply to the total structure of an individual's psychology, to specific skills and capacities, or is the structure of development somehow separate from any content, being able to be applied to any domain, general or specific? Are there primary domains necessary to develop before others? Are there particular domains that interact in patterned ways, following a more or less universal path across a lifespan? Or is the concept of domain itself simplistic, obscuring the complex, contingent, ever-shifting, individual webs of skills and capacities interdependent with one's environment that one can perceive more generally or specifically within different contexts, frameworks, and objectives? These are some of the questions scholarly discourse has examined. As it may be clear, conceptions of domains are interdependent with other aspects of developmental structures. Because of this, a brief account of stages themselves is called for.

As mentioned, that development occurs in discontinuous stages or through continuous change has been a dichotomy motivating reoccurring debate throughout the history of developmental psychology. Some continue to question the relevancy of stages (e.g., Truhon, 2012); others argue that there cannot be a developmental psychology without some concept of stages, whether going by stages or another term, such as "periods, levels, phases, cycles, seasons, [or] layers" (Lourenço, 2016, p. 126). Lourenço explicated several additional questions relevant to this controversy: Do stages exist? Where are they? What features define a sequence of developmental stages? What factors and processes underlie change, be it either continuous or discontinuous? Dawson-Tunik, Fischer, and Stein (2004) argued that stages should not be at the center of developmental theory, even of stage theories, nor did Piaget intend them to be. On the contrary, the psychological processes of equilibration and reflective abstraction were the centerpiece of Piaget's theory, and stages are a heuristic tool to aid the description and understanding of behavior developing from these and similar processes.

These are potentially muddy waters with different avenues for seeking clarity. Different domains and their conceptualizations can align to different sets and numbers of stages; relatedly, different domains can highlight different conceptions of change and stability, process and stage. Additionally, approaches focused more on content or structure attempt to integrate one another, with structural models being more apt and likely to do so. It is a diverse and shifting kaleidoscope indeed. For instance, Dawson-Tunik, Commons, Wilson, and Fischer (2005) pointed out that research has supported both continuous and discontinuous models of development and variations of them, and that development can appear continuous or discontinuous depending on the conditions.

To further research the contested "shape of development" using a domain-general approach – specifically Dawson-Tunik's Lectical Assessment System, which is based upon Commons' Model of Hierarchical Complexity (Commons, Trudeau, Stein, Richards, & Krause, 1998) and Fischer's Skill Theory (Fischer, 1980) – Dawson-Tunik, Commons, Wilson, and Fischer (2005) analyzed 747 moral judgement interviews for broad changes in conceptual development. A domain-general approach uses criteria that are independent of particular content and can therefore be used across domains of specific content (Dawson, Xie, & Wilson, 2003). Dawson-Tunik's system, Commons'

model, and Fischer's theory have developed somewhat in parallel, spearheading contemporary versions of the domain-general approach. Dawson-Tunik et al. (2005) suggested that while most researchers acknowledge that different domains may develop at different rates, and different processes and structures may correspond to different domains, there may still be a more general developmental process and structure that applies across domains, which they termed *hierarchical integration* and/or *complexity*. They concluded that their results suggest "development [across the lifespan] proceeds in a series of spurts and plateaus across six complexity levels" (pp. 26-27). This, in addition to other examples of their research comparing the Hierarchical Complexity Scoring System with other domains and metrics further supports their domain-general approach (e.g., Dawson, 2001, 2002). Dawson-Tunik et al. (2005) provided the caveat that while hierarchical complexity explains a great deal about a performance (e.g., its form and order of abstraction), it makes no claim about explaining its content. Rather, its content must be assessed independently and then integrated with information about hierarchical complexity. It should be noted that this broad-brushed survey, in its attempt to introduce a variety of ways to conceptualize domains, is liable to leave a number of details unpacked that are vital for assessing an individual approach; for instance, important distinctions between the Lectical Assessment System, Fischer's Skill Theory, the Model of Hierarchical Complexity, and the Hierarchical Complexity Scoring System (e.g., see Commons, 2009). These details would require digging into a particular model and its supporting research.

It may be helpful to distinguish between general or specific domains (referring to the breadth of their content) and domain-general or specific approaches (referring to whether the developmental approach as a whole applies only to a particular content). For instance, Loevinger's (1976) model is general at a content level, encompassing the totality of a personality, while not addressing specific, individual skills. On the other hand, the Model of Hierarchical Complexity can be applied to any content domain, broad or specific. However, it does not necessarily imply a more general content domain. For instance, Mascolo (2008) stated that

Individuals do not operate "at a stage of development." They operate at a range of different levels of hierarchical complexity depending on skill area, task, context, degree of support, and other variables. It is thus necessary to postulate the concept of *domain* to refer to the particular conceptual, behavioral, or affective area within which activity operates. (p. 330)

Yet, the Model of Hierarchical Complexity can also apply to general content domains. Wolfson, Ross, Miller, Commons, and Chernoff (2008) described how it can account for the evolution of general intelligence:

the evolution of humans required performing increasingly hierarchically complex tasks within multiple domains. Hierarchical complexity increases task by task. Tasks occur within, and differ by, determinable domains, their stages of performance measurable using the Model of Hierarchical Complexity. How well one performs within single and multiple domains is considered to indicate intelligence. (p. 416)

Murray (2009) questioned whether the Lectical Assessment System and Hierarchical Complexity can really apply across domains as coherently as their theorists suggest. Are certain metrics, even certain paradigms informing the development of assessments, limited to certain types

of domains? Murray took what can be considered a softer stage approach and argued that some formal models, particularly ones that are cognitively-and-linguistically-oriented may be limited to a “cognitive line,” which he partially characterized as the information processing and logical-rational functions of thought. Further, he suggested that these models might overlook an umbrella of “wisdom skills,” functions he characterized as letting go, emptying, opening, un-learning, as well as “ego awareness, construct awareness, socio-emotional-relational skills, dialectical intelligence, negative capability, empathy, and compassion” (p. 353). He also suggested that perhaps the term *cognitive line* is more-so a term used to contrast with the host of functions overlooked by some formal models, and that other models such as Loevinger’s (1976) might encompass some of these left-out wisdom skills.

Heikkinen (2009) countered Murray’s argument. Heikkinen suggested that while many important changes in “body/mind/soul” (p. 369) such as Murray described, and other important human trajectories, may occur according to different logics than underlie a model like hierarchical complexity, arguing that those changes are equivalent to development rests upon one’s definition of development and more-so on the evidence for that definition; otherwise, any sort of change could potentially be confused with development. Trickier still is operationalizing and measuring a concept of development to further test it, for instance, to differentiate it from confounding variables and assessing the validity and reliability of such a concept. When done so, alternative concepts of development may in fact be found to not follow a developmental pathway, or they might be found to be attributed to another underlying developmental logic, such as hierarchical complexity. Heikkinen argued that Murray’s fundamental questions are empirical. She then provided an example of how hierarchical complexity could be controlled for in studies to differentiate it from ego development theory, or Kegan’s (1982) constructive-developmental model, to explain how much of the variance of scores are explained by hierarchical complexity versus other systems, and to effectively see whether those alternative systems tap into hierarchical complexity or other truly different aspects of development.

To conclude this section, it is hoped that this brief overview of perspectives about domains has provided a sketch of their relationship with other aspects of developmental approaches, some contemporary avenues of debate and research, and the stakes of conceptualizing and operationalizing domains in the overall meaning of a developmental approach. Furthermore, it is hoped that the overarching review of functional, soft, and hard stages; and models, metrics, constructs, and domains, has been evocative of the complexity of interpreting and applying developmental stage models – to arrive more at open questions and possibilities of interpretation rather than a set of fixed conclusions.

Relational Developmental Systems

To open further beyond stage models: The stage model tradition of developmental psychology is a relatively distinct branch. This distinctness is emphasized by the particularity of constructs, models, and metrics of specific approaches. Once a specific model is formulated it can become an isolated tradition in and of itself, revolving around its own constructs and metric. While there has been continued refinement of methods and theories particular to stage traditions, there has been a paradigm shift within the broader field of developmental psychology that few stage models have grappled with.

Nearing the turn of the millennium the term *developmental psychology* began to be eclipsed by the term *developmental science* (Bronfenbrenner & Evans, 2000), including the renaming of journals and handbooks tied to the field. This rebranding went along with a heightened interdisciplinary focus, as well as reflection and debate about the fundamental assumptions, paradigms, theories, and methods of the field, which finally resulted in what has widely been heralded as a paradigm shift termed the Relational Developmental Systems Paradigm (Lerner, Overton, & Molenaar, 2015). This paradigm is characterized only very briefly and partially here. It is predicated upon a process-relational philosophical perspective thought to transcend Cartesian dualism, atomism, and positivist reductionism. It rejects “all splits between components of the ecology of human development (e.g., between nature- and nurture-based variables, between continuity and discontinuity, and between stability and instability)” (p. xviii.). It replaces these dichotomies with holistic syntheses using an “integration of three relational moments of analysis: the identity of opposites, the opposites of identity, and the syntheses of wholes” (p. xviii), which can have a profound impact on the methodology and interpretation of research traditions – in part by processually integrating dichotomies that the field of developmental psychology has struggled with at large. It emphasizes that “all levels of organization with the ecology of human development are integrated or fused” (p. xviii), that basic units of analysis are individual-context relations and co-actions of these, and that organisms are “inherently active, self-creating, self-organizing, and self-regulating nonlinear complex adaptive systems,” which develop through embodied activities (p. xviii). Development is inherently context-sensitive, plastic, subject-specific, and stochastic (probabilistic or random) (p. 3). Interested readers can see Overton (2015) for a succinct overview of the Relational Developmental Systems Paradigm and its corresponding metatheory, and Dick and Müller (2017) for further exploration of the Relational Developmental Systems Paradigm and its application in different areas of developmental science.

Describing the paradigm in depth and unpacking the particular implications of this paradigm shift for stage models of adult development is largely outside of the scope of this paper due to its complexity and the number of possibilities of stepping down the paradigm into specific theories and approaches. While unpacking the implications of the paradigm for stage models of psychological development is needed – should stages explicitly be conceptualized as abstracted, partial moments embedded into a vision of an integrated, processual whole? – each individual stage model might also grapple with this paradigm in unique ways. However, the implication of the Relational Developmental Systems Paradigm for the integration of basic and applied research should be noted:

in contemporary developmental science any splits between basic and applied research are regarded as anachronistic representations of the reductionist, Cartesian approaches of earlier eras. In short, the application of developmental science (optimization) is a co-equal partner with description and explanation within developmental science as it now exists. (Lerner, Overton, & Molenaar, 2015, pp. xvii-xviii)

The more distanced basic research and theorizing about stage models are from ecologically valid, applied contexts, the more suspect.

Furthermore, human development – the subject of developmental science – is now thought to be predominantly nonergodic. Ergodicity describes mathematical and statistical qualities of

systems that must apply for standard statistical analyses to be accurate: “In developmental research, almost all functions of natural development and intervention processes are nonergodic. Therefore, standard statistical analysis of aggregate-level data is bound to result in descriptions of developmental structures that fail to describe the individual” (Lerner, Overton, & Molenaar, 2015, p. 803). This has led to a surge of methodological innovation and borrowing, as well as critique focused on the fundamental limitations and errors of traditional statistical methods applied in developmental psychology (Little, Gorrall, Panko, & Curtis, 2017). Two specific emphases are on the individual as a unit of analysis and the ecological validity of experimental designs (Diehl, Wahl, & Freund, 2017; Nesselroade, 2017). The outcomes of this paradigm shift have yet to reverberate throughout the kaleidoscopes of stage models and conceptions of postformal development, and that their evidence, methods, and models may look profoundly different in coming years. The Relational Developmental Systems Paradigm can also provide a new context from which to qualify, interpret, and apply stage models of development – and to scaffold the integration of stage models of adult development with other domains of developmental science and allied projects from other fields.

Discussion and Conclusions

Adult development can be seen through the kaleidoscope of diverse models and metrics, as well as their triangulations. It can be approached in versions of hard, soft, and functional stages; soft and calibrated metrics; and general and specific domains. While arguments can be made that certain stage models measure aspects of bona fide psychological development, we have seen that delimiting processes of development and its measurement within stage model discourse also requires contextualization, debate, and interpretation. Relatedly, the relative insularity of stage model discourse can tend to reify notions of adult development, as constructed within stage model discourse, as more comprehensive or substantive than they would appear with a more open and cross-disciplinary discourse about adult development. Different approaches and models have different uses, which an analysis of their components can help to identify. Many of these qualifications also apply to approaches to adult development stemming from other branches of psychology and other disciplines – although potentially requiring alternative criteria for making evaluations. Notably, many diverse models closer to or within the realm of psychotherapy can be thought to include their own theories of adult development (e.g., Maslow, 1971; Rogers, 1961; Jung, 1964). Furthermore, literatures within fields such as wisdom research, spirituality, self-development, health and wellness, contemplative studies, education, leadership, and epistemology, among many others, contain threads that closely relate to adult development. These examples are primarily intended to evoke the potential for more integrative models of adult development, and secondarily for more pragmatic, contextual models to suit certain purposes – that knowledge provided by stage models can be used to inform customized, integrative conceptualizations of adult development, which paradigms like Relational Developmental Systems can help to support. Stein’s (2008) notion of how developmental evaluations relate to “rational reconstructions of a kind of deep-seated intuitive knowledge” (p. 3) can again be applicable here. The potential to abductively infer conceptualizations of adult development best suited to a given context could be promoted via broader integrative frameworks and specialized customizations.

From this broader perspective, stage models of adult development can largely be characterized, as Stein and Heikkinen (2009) suggested, as the branch of adult development that specializes in

psychometrics and construct validation. We have overviewed some of the methods and forms of evidence this entails. Of particular relevance here is Murray's (2009) and Heikkinen's (2009) debate regarding forms of development that stage models might leave out – or from the alternative view, perhaps should leave out. Furthermore, constructs such as learning, growth, self-actualization, individuation, change, wisdom, and transformation overlap closely with development. However, are there underlying logics, processes, and structures that are more defensible to claim as bona fide development? Are methods of construct validation, and even psychometrics at large, the best ways to certify that bona fide development? While there continue to be strides in psychometric methodology, there have also been challenges to some of its core assumptions. Walking the tightrope that these questions entail requires applying broader frameworks of assessment, akin to those Stein and Heikkinen (2009) suggested. This might include making criteria of hard stage models explicit in each case. It might also include applying metatheoretical distinctions such as Charles Sanders Peirce's (1998) utility, security, and uberty, or those from Relational Developmental Systems, or an alternative to the overarching scope of stage models itself.

Yet, from other disciplinary perspectives and paradigms, the assessment of security, utility, and uberty can shift. This includes when other methods and forms of evidence are incorporated into current stage models. It was suggested how the Relational Developmental Systems Paradigm may serve the integration of these points of view within developmental science. Other paradigms and disciplinary approaches may be relevant as well. With so many perspectives currently available, further work on adult development will likely entail comparing, integrating, and evaluating theories at a metatheoretical level (e.g., Edwards, 2010; Wallis, 2016); as well as the development of applied interdisciplinary specialists and frameworks of assessment (e.g., Bammer, 2013; Hvidtfeldt, 2018).

An important related consideration is that as scholars attempt to describe some overarching characterization of adult development at more abstract, synthetic orders, they can quickly enter the realm of philosophy and speculation – with its own set of strengths and limitations. Much of the work on adult development at this time is motivated by a search to grasp the types of thinking, and ways of being, needed for our particularly complex world and its related crises. The philosophizing that attempts to characterize this mode of thought is both inherent to many of the models and constructs in the study of adult development, as well as separate speculative work inspired by it. Basseches (2009) discussed the relationship between philosophical argument, systematic measurement, and forms of empirical data in these endeavors. He suggested that no “amount or form of empirical data can substitute for philosophical argument” (p. 312), and that the study of development is inherently philosophical. For example, he stated “Piaget's contribution was to offer observations of ontogenesis as a novel way of addressing existing epistemological questions, ontogenetic data were used in the service of philosophical argument and demonstration, rather than offered as a substitute” (312). Philosophical approaches are essential and inevitable; appropriately delimiting them and their relationship to empirical data are vital to their success.

This predicament – having multiple disciplinary and interdisciplinary approaches and paradigms relevant to the study of adult development, a need to understand the modes of thought most useful in contemporary contexts, and a need to evaluate these projects – emphasizes both the continued need for more typically hard science advances (for instance, generalizable

measurement), and softer, functional, philosophical advances related to synthesis and contextual application – and greater coordination between the two. One side of this is bound to be greater incorporation of mainstream advances in developmental science. Another is likely to include applied problem-focused methodological pluralism, action research, and equivalent endeavors. One example along these lines is developmental maieutics (Dawson & Stein, 2011), which operationalizes a stage model of development in cycles of research and practice to produce usable knowledge in the context of educational assessment and in crafting effective learning sequences. Another is Collaborative Developmental Action Inquiry (Torbert, 2013), which although referring to a meta-paradigm of social science and social action, can in part be understood to operationalize stage models of development in the context of organizational change.

There are many paths forward for the study of adult development. This article primarily overviewed concepts necessary to evaluate stage models in general; thereby making suggestions about their continued refinement. Secondary functions of the overview were to set up a comparison to other paradigms – both in and outside of the developmental science discipline – and to emphasize a need for metatheory, metascience, and interdisciplinarity in the study of adult development. Hand-in-hand with this was an emphasis on problem-focused methodological pluralism – as humans are increasingly understood as embodied, context-ridden, becomings-in-process, many signs point to a need for interactive, ecologically-embedded, applied methods to develop an effective understanding of development, and to appropriately apply that understanding. As the popular interest in stage models of adult development is likely to continue, as well as their translation to academic and public discourses further afield, it is particularly important to delimit and qualify them – including the potential unknowns involved in the current most validated models.

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