A Brief Overview of Developmental Theory, or What I Learned in the FOLA Course

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Abstract: This article describes the history and development of developmental theory from a lay person perspective. It covers some of the main strands of how developmental theory has grown, focusing on ego stage theories and dynamic skill theory as the main examples of soft and hard stage models. It also touches on how measures of these models relate to the theories. Reflections on the relative merits of each strand are considered, as well as implications for broadening the scope of awareness of developmental theory among the larger population of integrally informed practitioners.

Keywords: Developmental theory, dynamic skill theory, ego development, metrics.

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Introduction

I was first exposed to developmental theory in 1996, in a course on leadership and imagination in the master in organizational leadership program I took at Gonzaga University, where we read Hall and Thompson's (1980) *Leadership Through Values.* Fast forward 17 years, and in the fall of 2013 I took the Foundations of Lectical Assessment (FOLA) course from Lectica.[2] Up until this time my range of knowledge about developmental theory had been primarily shaped by my exposure to Wilber's *Integral Psychology* (2000) and likes of Kegan, Torbert, Cook-Greuter and such. While I had examined the eleven pages of comparative tables Wilber did to show the range of work in the field, I had not looked into many of them with any seriousness. The FOLA course expanded my range of familiarity and exposure to developmental theory and theorists, and deepened my appreciation for the complexity and nuances alive in the field.

In this article my aim is to give a lay person's overview of what I now consider to be salient points along the history of developmental theory. In a sense, I will construct a story, based on my sorting and sifting through the myriad of material available to draw on, selected according to my sense of what will paint a sufficiently accurate and informative tale for a range of readers who might benefit from it.[3] While this aspect provides the bulk of what I will describe here, I also wish to use this opportunity to offer some perspectives on what I consider to be important questions to consider in the sometimes problematic use of developmental theories in a more casual manner. I also aim to offer some views on how the various approaches to development might be utilized to give a more comprehensive picture of human experience.

The Roots of Developmental Theory

To understand how and why developmental theory has come to the place it has, it can be useful to review the historical context from which the current diversity has grown. What we will soon see is that the developmental view has deep roots in psychology. It has evolved from a theoretical basis, through early work to develop an understanding of the processes involved in development and methods for its study, to a rich and diverse set of empirically grounded models and metrics for supporting how we can look at human experience.

Baldwin

While many look to Freud as the father of modern psychology, concurrently in America people like William James, John Dewey and James Mark Baldwin were also developing

[2] This course is the main introduction and orientation to the work of Lectica, whose mission is to change the way testing is done in education. It was taught by Zak Stein, with support from Zachary Van Rossum, online using pre-recorded video lectures and asynchronous video meeting technology for class discussions. It contained a significant body of literature as the foundation for the curriculum. The majority of this article is drawn from that literature, with additional material for some sections.

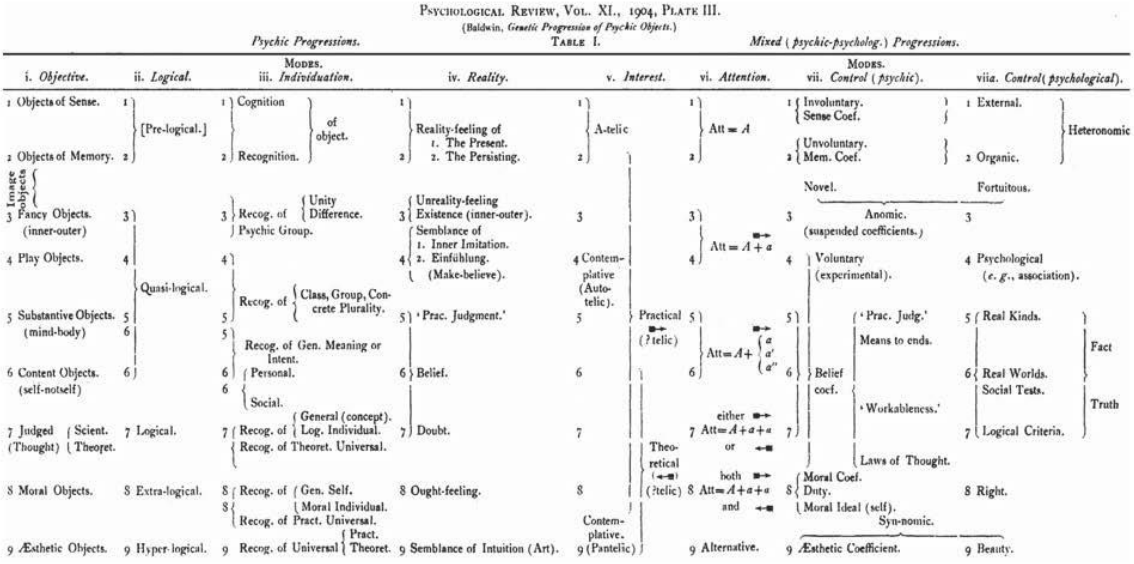
[3] I would like to express my gratitude for the significant feedback I received from Thomas Jordan, Zakary Stein and Theo Dawson. They helped clear up a number of details and misunderstandings I had along the way, and added valuable insights that furthered my learning. Remaining mistakes are my own.

foundational ideas that would have a major influence on the field's development. In particular, Baldwin's (1895, 1906) ideas were seminal in how development was understood and his works have had wide ranging impact, most notably by heavily influencing the works of Piaget and Vygotsky. Although he is a relatively unknown figure today, an examination of Baldwin's work can help us see the deep roots that a developmental approach has in the field of psychology.

Baldwin taught psychology at Princeton (1893-1903) and John Hopkins (1903-1908), served as president of the American Psychological Association (1897), and was co-founder of the journal Psychological Review in 1894. When a scandal forced him to move to Paris in 1908, editorship of the journal went to John B. Watson, who shifted the focus from developmental psychology to behaviorism, driving developmental perspectives underground for decades.

While in Paris (until his death in 1934) he influenced the young Piaget, and the marks of this influence are clear in Piaget's work. He also shared a more dynamic process-oriented view of stage development with Alfred Binet. Another example of his influence can be found in how his concept of imitation evolved into Albert Bandura's concept of modeling.

In terms of his ideas, he had a very specific stage model of development (see figure 1) and used the concept of "subject object theory" explicitly (long before Kegan's use of it, which is much more familiar today). His stage model broke from reductionistic views at that time. It was influenced by evolutionary biology and took an organismic approach to development, using the term genetic epistemology to indicate the *genesis*, or developmental orientation. He also showed how apparent foundational acts can be more basic steps and stages that have gone through their own developmental process. Baldwin also moved away from the contemporary convention of judging child/infant consciousness purely from the vantage point of adult consciousness. The complexity and foresight of Baldwin's conception of stages of development is shown in this table from an article he published in 1904.



PSYCHOLOGICAL REVIEW, VOL. XI., 1904, PLATE III.

(Baldwin, *Genetic Progression of Psychic Objects.*)

TABLE I.

	Psychic Progressions.					*Mixed (psychic-psycholog.) Progressions.*		
		MODES.				MODES.		
i. *Objective.*	ii. *Logical.*	iii. *Individuation.*	iv. *Reality.*	v. *Interest.*	vi. *Attention.*	vii. *Control (psychic).*	viia. *Control (psychological).*	
1 Objects of Sense.	[Pre-logical.]	1 Cognition of object.	1 Reality-feeling of 1. The Present.	1 A-telic	1 Att = *A*	1 Involuntary. Sense Coef.	1 External.	Heteronomic
2 Objects of Memory.		2 Recognition.	2 2. The Persisting.	2	2	2 Unvoluntary. Mem. Coef.	2 Organic.	
Image objects						Novel.	Fortuitous.	
3 Fancy Objects. (inner-outer)		3 Recog. of Unity / Difference. Psychic Group.	3 Unreality-feeling / Existence (inner-outer).	3	3	3 Anomic. (suspended coefficients.)	3	
4 Play Objects.	Quasi-logical.	4	4 Semblance of 1. Inner Imitation. 2. Einfühlung. (Make-believe).	4 Contemplative (Autotelic).	Att = *A* + *a*	4 Voluntary (experimental).	4 Psychological (*e. g.*, association).	
5 Substantive Objects. (mind-body)		5 Recog. of Class, Group, Concrete Plurality.	5 'Prac. Judgment.'	5 Practical (?telic)	5	5 'Prac. Judg.' Means to ends.	5 Real Kinds.	Fact
6 Content Objects. (self-notself)		6 Recog. of Gen. Meaning or Intent. Personal. Social.	6 Belief.	6	6 Att = *A* + *a*, *a'*, *a''*	6 Belief coef. 'Workableness.'	6 Real Worlds. Social Tests.	Truth
7 Judged (Thought) Scient. Theoret.	7 Logical.	7 Recog. of General (concept). Log. Individual. Recog. of Theoret. Universal.	7 Doubt.	7 Theoretical (?telic)	7 Att = *A* + *a* + *a* either / or	Laws of Thought.	7 Logical Criteria.	
8 Moral Objects.	8 Extra-logical.	8 Recog. of Gen. Self. Moral Individual. Recog. of Pract. Universal.	8 Ought-feeling.	8 Contemplative.	8 Att = *A* + *a* + *a* both / and	8 Moral Coef. Duty. Moral Ideal (self). Syn-nomic.	8 Right.	
9 Æsthetic Objects.	9 Hyper-logical.	9 Recog. of Universal Pract. / Theoret.	9 Semblance of Intuition (Art).	9 (Pantelic)	9 Alternative.	9 Æsthetic Coefficient.	9 Beauty.	

Figure 1. Table of developmental stages from Baldwin (1904).[4]

[4] This table can best be understood by thinking of it in a similar manner to Wilber's (2000) tables in Integral Psychology. Here, given that there were not other researchers and theorists in the field to

Piaget

We can see that the core ideas of developmental psychology were laid out by Baldwin over 100 years ago. What remained was to find a way to apply an appropriate method for research in this area. Thus we move on to Piaget (1932, 1954, 1970) who, influenced by Baldwin's ideas of stage development, took up research on ideas about genetic epistemology. He was inspired by working with Binet on intelligence testing, and adapted Freud's use of clinical interviews in psychoanalysis to develop the method of semi-structured interviews to study how epistemological structures evolved. Thus his unit of analysis was epistemic structures, not individuals. What he actually did to apply this was to talk to kids about playing marbles.

> Piaget demonstrated how to look for and discover the structural properties of linguistic performances that are indicative of development. … [T]he radical innovation here was the careful and systematic classification of performances in terms of their developmental level. Piaget … built a hierarchical taxonomy of cognitive-structure types for classificatory purposes. (Stein & Heikkinen, 2009, p. 11)

Observations of how young boys in his town in Switzerland played the game of marbles (and hide and seek among girls) provided the setting for examining how epistemological reasoning develops. As an example, I will examine how Piaget began to make distinctions between how children adapt to or practice rules, and how they become conscious of them. For Piaget practice began at the stage of motor skills, with children repetitively going over certain actions to learn specific motor skills. This motor skill practice led to the adoption of habits that are quickly made into schemas and reproduced as a "game." This egocentric practice comes from receiving rules from the outside (parent, older kids) that the child imitates while still playing alone, even if in the presence of others. The next step is cooperation, where some mutuality, with awareness and consideration of others entering the picture. This is eventually followed by the codification of rules, with mutuality engaged more in discussing the rules than the actual motor skills of playing marbles. Breaches of the rules were considered to be in the domain of application rather than about the rules themselves.

While Piaget's focus on development was around its processes, he also described stages he observed. For example, he identified three stages for how consciousness of rules develops. Rules start as unconscious in the first stage. They then become sacred, received from external or transcendent sources. In the third stage, they arise from mutual consent. He explored the movement from concrete reasoning to more subjective and principled reasoning, as well as the movement from obeying external authority to notions of fairness and justice among peers. Understanding these processes led to the creation of learning sequences. The core processes derived from these observations were; assimilation, accommodation, equilibration and reflective abstraction.

In the end, Piaget actually contributed much more about the process of the development of epistemological structures than the stages of child development he is so well known for. What

compare, Baldwin laid out what he perceived as the various facets of development and how they related across stages.

Piaget considered as the "American problem," had to do with Americans' focus on the stages themselves, and a fascination with finding how to speed up progression through the stages.[5] This focus on stages did however help to lay foundations for pedagogical sequences in K-12 contexts in America. Yet in reality, stages for Piaget were only symptoms. His deeper interests were in the processes that enabled epistemological structures to develop.

Transition to the Neo-Piagetian World: The Development of Diverse Streams of Thought

As various people picked up Piaget's work, diverse approaches and strands of developmental theory began to appear. These were also the result of researchers being influenced by a variety of themes going on in psychology at any given time. Subsequently, more recent researchers have taken up different threads and mixed them in different ways. From this the trails of influence on research become broader and more diverse, leading to a less fixed and direct sense of lineage from one researcher to the next. It is not possible in the scope and context of this article to attempt to do justice to all of these strands. What I will do is follow the development of some of the players in what I consider to be two main strands which can be described as Neo-Piagetian, in that they build in various ways upon Piaget and Baldwin's seminal work.

The directions these different strands followed has led to what has been loosely characterized as "soft" and "hard" stage models of development. Another descriptive distinction could be between ego development theories, domain specific theories, and domain general theories. Ego development theories have roots in the work of Jane Loevinger (who built upon the work of Harry Stack Sullivan), and is built upon by Robert Kegan and Susanne Cook-Greuter among others. These models contribute significantly to our self-understanding, or how we function as a self. The second strand of hard, or domain specific theories, follows from Kohlberg and the work of a number of students and researchers he influenced. This will also lead us to examining the notion of a common core metric and model of development that shows how all the domain specific research on development is actually based on a common core structure of development. As well, there are what Lawrence Kohlberg termed functional stage models from Erik Erikson and Harry Stack Sullivan that have been influential in the field. I will address these briefly even though they are not "developmental" in a strict sense.[6]

What we can see upon first glance is that ego stage models tend towards describing a center of gravity, a structure of self-understanding and meaning making that is relatively stable with periodic transformations, and within which variability happens, but is harder to account for. Fischer's dynamic skill theory, on the other hand, starts from two different sets of empirical findings. One is that variability is central to performance, understanding etc. and that this

[5] Evidence of this focus can be seen in the current Wilberian integral community's near obsession with accelerating processes of development, especially to so called "second tier" or integral stages.

[6] This use of the term *functional* stage models is derived from Kohlberg et al.'s (1984) review of the current (at that time) state of the field. In the FOLA course, these were described simply as soft and hard stage models. Erikson was seen to meet some of the stage criteria in a soft way, and Sullivan was a direct influence on Loevinger. This is discussed more later in this article.

variability is both moment to moment within an individual and across individuals.[7] Thus statistical norming or establishing a center of gravity is not in focus. The other is that the unit of analysis is the skill being performed and the hierarchical complexity of it, not an individual ego and its stage of development. Individuals are simply the means through which we can observe these structures.

Context of the Transition

As I examined the larger context behind how the field has evolved, I came across writing by Robbie Case (1987a), who noted that conceptions of stages and structures had come under intense scrutiny, critique and disfavor in academic discourse and research, especially in North America in the period after Piaget's initial influence. As a new generation of Neo-Piagetian researchers took up the task of rehabilitating developmental understandings of psychology, they attempted to address a number of issues (noted below) arising from these critiques.

Case (1987b) also deeply analyzed the deeper historical roots and trajectories of three major intellectual traditions that have influenced the study of development in psychology; empiricist (coming from Locke and Hume), rationalist (coming from Kant) and historico-cultural (coming from Goethe, Hegel and Marx). The empiricist influence is seen most clearly in behaviorist and neo-behaviorist theories of learning, as well as information processing theories. They share epistemological assumptions that lead to a view of learning and development as essentially equivalent. The rationalist tradition encompasses assumptions about intellectual development as being rooted in how order is generated from structures that children come equipped with and that change with age. (Case notes that Baldwin and Piaget are in this category). The historico-cultural tradition emphasizes the unique cultural circumstances of a social group and how knowledge acquisition is grounded in these circumstances and the tools developed for coping with them. (Vygotsky is an example here).

In this context, Case (1987a) has also presented an overview of the specific challenges facing Neo-Piagetian research in sorting out what was essential to retain from Piaget's work and how to best move the field forward. It was commonly accepted that the strength worth keeping was the theories' ability to explain what were considered as universal structural features of cognitive development. This can be seen in the eventual discovery and description of common core structures that can be measured with great accuracy. Specifically, Case listed general agreement around there being three or four structural levels, that the higher levels include the lower ones, and that there is a characteristic age range for the acquisition of these levels. It was also agreed that there is a cyclical recursion of sublevels within each level. As the further research of neo-Piagetians was included, Case observed agreement around domain specificity in the rate and content of structural growth, the presence of inter- and intra-individual differences (variability) and the discovery of a wide range of domains of application of developmental models.

What were considered not worth keeping were the aspects that were not universal. This led to "more dissimilarities among the new theories than there are similarities" (Case, 1987a, p. 773). These can be summarized as questions about what the criteria are for distinguishing stages and

[7] Piaget and Kohlberg both explicitly denied variability.

how to distinguish sub-stages from them, as well as the nature of the basic structural units (i.e. are they schemes, skills, conceptual frameworks etc.).

As well, there were areas of agreement and disagreement around the transformational processes involved in development. Agreement focused around each structure being assembled independently, the importance of cultural and environmental factors in the process, and common constraints imposed by working memory. Disagreement centered around identifying the process which produces long term structural changes and the processes which produce changes in processing capacity. This divergence has manifested in the numerous domain specific models and metrics of development. I will now turn to examining some distinctions among these strands.

An Examination of Stage Criteria: Functional, Soft and Hard Stages

Above I noted different strands being distinguished according to criteria for functional, soft and hard stage models. In this section I will examine how these distinctions arose. In particular, I will draw on Kohlberg, Levine, and Hewer (1984), who set out to address a number of criticisms of Kohlberg's work and in this process engaged in clarification of criteria for what constitutes a stage model. They talk about a "differentiation between 'soft' developmental models of social and moral reflection and 'hard' Piagetian operative stages of reasoning" (p. 212). There is also a third distinction they make of functional stages, which is outside of the main focus of our discussion here but worth mentioning.

Four general criteria, coming from Piaget, have been used to classify the range of developmental models, with the functional stage models meeting the fewest criteria, and the hard stage models meeting all of them to qualify. The soft stage models are then seen as somewhere in the middle of this continuum. The first criterion is that models display a qualitative difference in the structures being used. The second criterion is that these structures have an invariant sequence. Third is that they form a structural whole, or an underlying organization of thought. The fourth criterion is that these stages are hierarchical integrations, taking in previous stages while also increasing differentiation.

Thus the stages laid out by Erikson (1982) and Sullivan (1968) do not meet these criteria in that they are; culturally relative, not strictly hierarchical, and organized around responses to typical life situations at different ages in western culture. In this way they are at one end of the spectrum of developmental models. They do have stages[8] but the way these stages are constructed, as noted above, mean that their focus is not on the same level of rigor around these criteria. This does not mean that they do not have value or influence, as we have seen, just that if we wish to look deeply into the core structures of human development, we need to turn our attention to the latter two distinctions.

[8] I am mindful that the term stages is a broad one, most often used in casual discourse with assumed common meaning. Within this literature various theorists use the term in much more specific and varied ways. I have chosen not to get into the work of making my own definition of the term, as that would go beyond the scope and intentions of this article. I recommend readers simply be aware not to project assumed meaning into this and other terms like structure, cognition etc. I do however go into more detail around these terms in relation to some of the theorists covered.

Kohlberg et al. (1984), in their discussion of the current formulation of the theory (as of the time of writing in 1984), noted that there were many areas of agreement between their primary examples of soft and hard stages; that is, Loevinger and Kohlberg. These were noted as; claims for structured wholeness, invariant sequence and hierarchical integration. Yet a closer examination revealed important differences.

This entailed going deeper into specific definitions and distinctions around how stages are conceived and understood. "For Piaget (1970), a structure is a system of transformational laws that organize and govern reasoning operations. This formalized governing system is reflected or manifested in individuals' actual responses to conflicts or problems" (Kohlberg et al., p. 242). In addition, there is a need to add distinctions between content and structure, as well as competency and performance, in order to use the Kohlberg's scoring methodology in identifying structures.

Kohlberg et al. (1984) described how they perceived a number of these issues. "Loevinger's scheme considers structure less as a form of thinking and more in terms of fairly stable personality functions and contents" (p. 242). Structure is hypothetically derived as an underlying construct, inferred from signs taken from the categories of content in the sentence completion data, which are mixtures of content with structure. Looked at this way, the classifications for each stage are an ideal type based on the theoretical representation of the stage. "Loevinger defines her stages partly in terms of structures, but also partly in terms of functions and motives pertaining to the whole self and its enhancement and defense" (p. 243). Thus while soft stages like Loevinger's do appear to have stages with qualitatively different organizations, they are arrived at by a more indirect means. They note that while soft stages also have Piagetian structural qualities, they also include "elements of affective or reflective characteristics of persons" (p. 237). Soft stages are also characterized as existential or self-reflective stages involving an ego making meaning for and about itself. This self is a kind of totality; a system of meaning and characteristics that then encounters and engages the world outside itself, including other egos.

In contrast to these holistic models of the self, the hard stage approach requires the division into discrete domains of what self or ego experiences as unified within itself (such as acquisition of specific physical, emotional or cognitive skills). "What hard structures gain by this is precision in their articulation of a structural logic of stages that will survive the ever changing growth of psychological knowledge about the self, its functions and its development" (Kohlberg et al., 1984, p. 238). In addition, they "define structures in a way consistent with the Piagetian construction of structure, that is, as an organization of manifest thought operations" (p. 244). Thus hard stages are considered to relate to empirically observable and measurable actions in direct ways.

Another difference between soft and hard stages worth discussing is one of normativity.[9] This arises from examining how each approach deals with the criterion of hierarchical integration.

[9] The use of the term normativity here is related to the distinction between describing what is, or saying what ought to be. The nuances of this distinction are beyond the scope of this article. It is however interesting to note that Kohlberg's sense of what the endpoint of moral development should be can be seen as the genesis of the "growth to goodness" issue I comment on in my concluding reflections. (Dawson, personal correspondence, March 2, 2014).

The criterion requires each new stage to transform the functioning of the previous stage. This invokes a normative end point "based on a conception of human rationality" (Kohlberg et al., p. 246) where "each stage in the hierarchy represents an increase in correspondence with the end point or highest stage" (p. 246). Piaget and Kohlberg both have this normative conception in how the stages develop.

In contrast, Loevinger is clear that she does not claim any normativity in her model of ego stages. Each stage is seen to add new aspects to the previous stage which makes for a more cumulative model than a transformational one, and she does not claim that higher or later stages are necessarily better. "Soft stage development depends neither on the emergence of new functions nor on the performance of new tasks. Instead, soft stage development depends on formal reflection" (Kohlberg et al., p. 249). Thus the differences in this point can be seen to impact how stages are seen to evolve.

For all of the debate and fine grained distinctions that went on in the above analysis of distinctions between soft and hard stage models, one of the reflections arising from this was to see a possible need to go beyond Piaget when it comes to adult development, and grant value to the soft stage, or ego development models.

> The strict Piagetian stage construction may need to be abandoned in the study of adult development, but the idea of soft stages of development in adulthood should not be. … Soft stage models present a new way of doing research in the subject area of adult development, a way that has emerged from the Piagetian paradigm. (Kohlberg et al., p. 249)

This quote points to the need to find good ways to integrate the findings of both soft and hard stage models.[10]

Following the above work to lay out the distinctions that emerged in the early post-Piagetian era, I will now lay out brief descriptions of exemplars of the functional, soft and hard models. I will start with the work of Erikson and Sullivan, describe aspects of Loevinger's work, and finally move on to Kohlberg's work.

Functional Models: Erikson and Sullivan

Erik Erickson's (1982) developmental model has had a very visible influence on the field of psychology with his life span stages and the identity development and crises associated with them. These are "functional stages" according to Kohlberg's criteria, and are focused on a psychodynamic view of the self-system. The idea is that the self-system navigates its way through a series of crises resulting from the interface between the personality and socio-cultural environment. As each crisis is passed or resolved, (there can be different levels of "success" in terms of how well these are resolved and implications for how the next and subsequent stages

[10] While making fine distinctions has a utility in terms of clarification of issues in the field, it can also distract and divide us into favorite theoretical camps. In the end, I find this to be of less use than finding ways to integrate theory and research for the sake of better applications and methods for supporting healthy development.

play out based on that), a new stage of ego development appears that is considered to be more mature and have a more complex and integrated self-system. The following figure illustrates Erikson's stages.

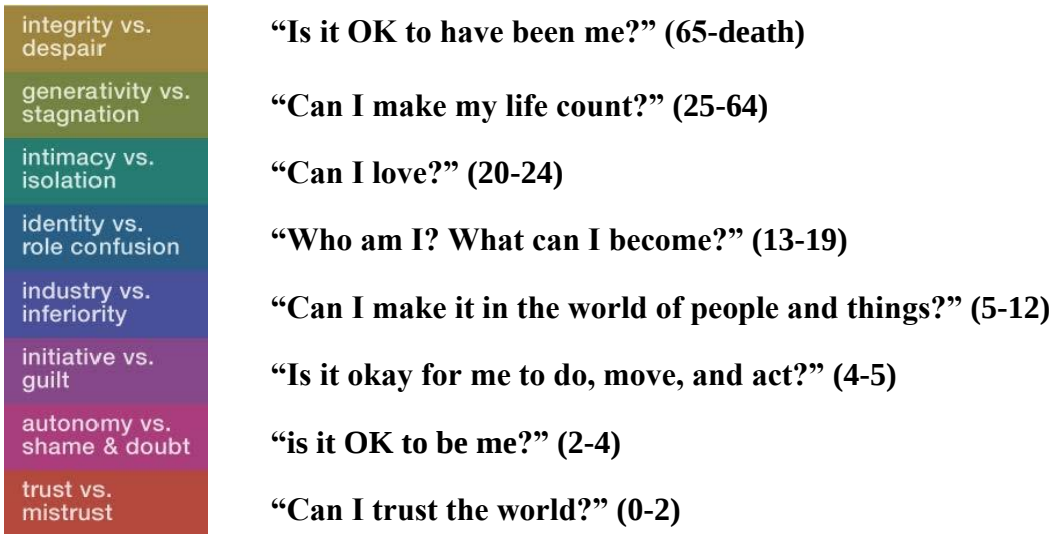


Figure 2. Erikson's stages of development. From Stein (2012). Used with permission.

This model of stages meets some of Kohlberg's criteria for a stage model in that factors such as transcend and include are there, (mostly through his way of talking about how later stages go back and revisit or re-conceptualize the issues of the earlier stages) and that sequentialness is explicit. It also appears that Erikson is viewing cognitive development from a psychosocial dynamic lens.

Harry Stack Sullivan (1968) was one of the neo-Freudians who worked from a psychodynamic framework to develop a better understanding of the individual as being based in a network of relationships. The notion of a self-system was central to his work. This self-system was seen to develop through factors such as social relationships, the psychodynamics of need satisfaction and motivation, and emotional self-regulation in social-cultural and biological contexts. Sullivan's work on interpersonal relationships became the foundation of interpersonal psychoanalysis, a school of psychoanalytic theory and treatment that stresses the detailed exploration of the nuances of patients' patterns of interacting with others. Sullivan proposed four levels of interpersonal maturity and integration; impulsive, conformist, conscientious, and autonomous.

While he published very little, (a series of lectures he gave was posthumously edited to capture the essential content of his work), his influence was significant. Jane Loevinger, Abraham Maslow, Ken Wilber and Kurt Fischer all drew on his ideas in the development of their thinking.

Soft Models: Loevinger

Jane Loevinger (1976) began her academic career by doing research on women's experiences in the post-world war two period in America, becoming one of the first psychologists to focus on the problems facing women and mothers. Her early work in women's attitudes towards family produced results that resisted analysis by traditional methods. Loevinger then drew on Sullivan's (1968) description of levels of interpersonal maturity. She moved into the area of ego development, where she built upon Sullivan's four stage model to create a more nuanced model including eight sequential stages, each of which represents a progressively more complex way of perceiving oneself in relation to the world. In contrast to her predecessors, Loevinger relied heavily on psychometric modeling in the definition and validation of these levels.

Loevinger's model of ego development describes personality in terms of cognitive, affective and behavioral components. It "assumes that all human beings evolve toward greater complexity, coherence and integration" (Cook-Greuter, 1999, p. 33). Ego is considered not as a function or thing, but as a process; "the organizing or synthetic function is not just another thing the ego does, it is what the ego is" (Loevinger, 1976, p. 5). Ego development is seen to represent the development of "structures" in the cognitive developmental sense of "an inner logic to the stages and their sequence" (p. 11). Further, "it is a process, a *structure*, *social* in origin, functioning as a *whole*, and guided by *purpose* and *meaning*" (p. 67. Italics in the original). The essence of ego development "is the search for coherent meaning in experience" (Loevinger & Wessler, 1970, p. 8)

Loevinger's (1976) model of ego development was grounded in her creation of a method for measuring differences in how people respond to a set of sentence stems. The tool she created for her work on measuring ego development was the Washington University Sentence Completion Test (WUSCT) (Hy & Loevinger, 1996; Loevinger & Wessler, 1970). Loevinger used a bootstrapping method (as described by Kohlberg) for iteratively developing a method for scoring data and building a theory in parallel. The assessment instrument enabled her and other researchers to empirically identify and validate these stages. Stein & Heikkinen (2009) note that Loevinger "aimed to devise a metric for looking at ego-development. Specifically, she was looking to build a calibrated measure. By merging quantitative methods with qualitative ones and adhering to strict psychometric parameters, she constructed a scale of sentence-stem response-types" (p. 9). The terms Loevinger gave to the stages were; pre-social, impulsive, self-protective, conformist, conscientious-conformist (later changed to self-aware), conscientious, individualistic, and autonomous and integrated.

The WUSCT uses written linguistic performance based on responses to 36 sentence stems. Shifts in this kind of performance are noted as something that people can intuitively order or rank along a developmental continuum. Cook-Greuter (1999) notes that the WUSCT "measures performance, unlike Kohlberg's instrument, which indicates competence" (p. 25). She also comments on the use of language in these assessments. "The centrality of language or 'verbal behavior' as a medium through which we manifest our conception of reality is the basis of any verbal projective test" (p. 26). The issue with language as a means for assessment of cognitive functioning is noted by Cook-Greuter (1999) as having to do with such assessments being "heavily derived from empirical evidence and based on a probabilistic rationale for data [which]

is prone to specific problems. It cannot account for data that come from the extremes of the scale (lack of evidence) or are 'novel' in other ways" (p. 29).

Criticism over this approach has focused on two main areas. One is this dependence on linguistic articulation as the only means of being able to assess an individual with this measure. In addition, it is a written response, not allowing for inquiry and clarification of meaning that other forms of assessment enable. A second critique has been one that is in common with critiques of Kohlberg and other researchers' work; that it confuses content with structure. (This issue will be explored more fully later on). There has also been criticism about the lack of a logic that can explain why one stage is higher or more mature than another.

From looking at Loevinger's ego development model we take away some key points. One is that personality structures can evolve[11] (Dweck, 2011; Dweck, Chiu, & Hong, 1995) and that this is affected by social dimensions. Emotion and how it motivates learning also evolves in ways that have pedagogical impact. Thus unresolved personality issues from earlier stages can impact how we relate to environments designed for learning. The implication of this is the need to create safe holding environments (McClure, 2005; Winnicott, 1965) and support through scaffolding for dealing with emotional issues.

Hard Models: Kohlberg

Lawrence Kohlberg (1975, 1984) integrated Piaget's developmental stage model with philosopher John Rawls' (1971) work in moral philosophy, building on Piaget's methodology to bring more rigor in assessing the domain of moral development. "Kohlberg's fusion of Piaget and Rawls excited many researchers because of its interdisciplinary approach" (Rest, Narvaez, Thoma, & Bebeau, 2000, p. 381). He used Piaget's two stage notion of moral development (heteronomous and autonomous) and refined it, developing a model of moral development with six stages that has been extensively tested across cultures.

Kohlberg also identified the gap between reasoning and action along with multiple sources or factors influencing it. He examined the relations between cognition, affect and conduct in social development, thus broadening the scope of influences on moral development (compared to how moral development had been examined previously). This led him to propose that cognitive development is necessary but not sufficient for moral development, and to explore ways in which cognitive and moral development relate. His theoretical perspective can be described as phenomenalistic, structuralistic and constructivist.

One of Kohlberg's major contributions was to take Piaget's methodology and his notion of stages, and adapt them to develop a systematic methodology for scoring stages of moral judgment. The evolution of the scoring manual, from the 1958 first edition which focused on

[11] There is still debate over this point. There is significant evidence that for the majority of people, ego structures do not evolve after reaching adulthood in their mid-twenties. Yet adult cognitive development theory is based on a body of evidence that for some adults, these ego structures do evolve. This leads some theorists to believe that it is possible for everyone to develop into later stages, yet how much of this development is due to favorable circumstances such as intentional support, or to some latent or even inheritable characteristics is as yet unknown. (Jordan, personal correspondence, February 16, 2014).

"holding together all normative content by stage and inferring structure as an ideal type from this content" (Kohlberg et al., 1984, p. 245), through two iterations, led to a system where form and norms are differentiated to better distinguish between content and structure (Kohlberg et al., 1984).[12] Issues are understood as mostly external and moral values. Elements are principled reasons for these moral judgments. The manual also distinguishes between modal and value elements. Modal elements affirm norms without deeper reasoning. Value elements are final justifications of such modalities. Kohlberg began to make better distinctions (that evolved through the iterations of his scoring manual) between content and structure. He did longitudinal studies (with notable limitations in his sample) and did Piagetian style interviews around specific moral dilemmas with standard probes. While for Piaget stages were secondary to his focus on process, Kohlberg made stages important through the codification of what a stage meant. His stages came in three basic categories (with two levels within each category), pre-conventional, conventional and post-conventional.

Pedagogical implications of Kohlberg's work included recognizing the need to pay attention to the structure and environment as well as the moral atmosphere of educational environments. From Dewey (1997) he also highlighted the need to combine action or experience and reflection. He had a good deal of involvement in various educational experiments to implement his ideas. Kohlberg's influence was tremendous, with his stages of moral development entering into use or conversation in schools, prisons, the military and even politics. His students rank among the most influential neo-Piagetian, who together, building on Kohlberg's work, helped to build much more robust understandings of development (e.g. Selman, Armon, Gilligan, Case, Fowler, Commons, Fischer).

Later Neo-Piagetians

The above description of the works of Kohlberg and Loevinger can be considered as the early neo-Piagetians, building on Piaget's seminal research and extending it in various directions. Also coming out of this milieu were a number of other researchers who have carried on work in this tradition. In the following section, I will give a brief mention to a few of the many researchers contributing to the expansion of Neo-Piagetian developmental research.

William Perry (1970, 1981) made extensive studies of epistemological growth in college students that generated a stage model that went from absolutist perspectives of truth being a form of right or wrong, to relativist perspectives where conflicting versions of "truth" can be seen to represent legitimate alternatives and a nuanced perspective of right and wrong. In a way similar to how Loevinger began her research, Perry's original intent was "a purely descriptive formulation of students' experience," rather than a "prescriptive program intended to 'get' students to develop" (Perry, 1981, p. 107). His work has been further extended in the domain of student services work by Marcia Baxter Magolda (1999, 2001, 2009) who focused on how

[12] An important point to make about the manual is that although Kohlberg claimed his system captured structure, his manual requires, to at least some extent, a concept matching strategy, which is problematic because of the limited nature of the construction sample used to create the manual (Dawson, personal communication, March 2, 2014).

educational environments and experiences could be conducive to growth into self-authoring epistemologies.

A student of Kohlberg, Cheryl Armon (1984) wrote her dissertation on *Ideas of the Good Life: A Longitudinal/Cross-Sectional Study of Evaluating Reasoning in Children and Adults.* In this research she was able to apply the Piagetian standards for structural stage models to evaluative reasoning about notions of the good life. She developed a scoring manual for this domain which, like Kohlberg's, distinguished between structure and content. Her participants ranged from 5-72 years of age, and correlations between stages and age were found to be strong among children and less so among adults.

Later research on moral development in adults (Armon & Dawson, 1997) helped to confirm and extend the focus of Kohlberg's work further into adulthood. Armon (1998) also used a training intervention to close a gap that was found between levels of reasoning and active engagement with social issues. In this, the "emphases on intense affective experience and personal relationships took precedence over enhanced justice reasoning per se" (p. 345). This points to the importance of emotion in learning and development, which will be addressed later.

Robert Selman has conducted extensive research on social role taking (Selman & Byrne, 1974). He focused on this in relation to Kohlberg's work on the development of moral judgment in children (Selman, 1971a) and to role taking in early childhood, where he identified a significant correlation between levels of role taking and age, linking it to stages of socio-cognitive skill in role taking (Selman, 1971b). Reflections from his research led Selman to describe something I found important about the nature of the research process in the field of human development.[13]

> The process of discovery is particularly exciting in the field of personality development. Anyone who works in this field learns not only about the phenomena at hand but about the self. Seldom, however, does theoretical work in this area spring from new discovery. It is more often rediscovery, gaining insight into what others may already know, but which one must discover for oneself. (Selman, 1993, p. 49)

Rest (1973, 1980; Rest et al., 2000) modified Kohlberg's approach, using ideas like schema theory from cognitive science to develop a model of moral schemas that could address many of the criticisms of Kohlberg's work. He took a more flexible notion of stage with development seen as "a matter of changes in the frequency of usage, moving from the less to the more complex" (Rest et al., 2000, p. 384).

Carol Gilligan (2005a) is most famous for her work investigating how moral issues are experienced by girls and women. Her (1982) *In a Different Voice: Psychological Theory and Women's Development* generated a strong feminist paradigm shift in understanding how female development proceeds. While her work critiques many aspects of existing developmental theories, based on their use of primarily male subjects and their interpretation of female responses in light of them, she shows clear stages of development for women as well.

[13] I included this quote, although it is somewhat tangential, as I find many students doing master thesis research encounter this phenomenon. Thus I hope that it can clarify this aspect of the research process.

In examining the failure of modern developmental psychology to take into account the perspectives of women, Gilligan (2005b) commented, about Freud, that his "difficulty in fitting the logic of his theory to women's experience leads him in the end to set women apart, marking their relationships, like their sexual life, as 'a dark continent' for psychology" (p. 693). She aimed similar criticisms to Kohlberg, whose construction sample was comprised exclusively of men.

King and Kitchener (1994, 2004) built on Piaget and Kohlberg to examine how reflective judgment evolves. This is perceived as especially important and relevant to higher education, as critical thinking is closely tied to reflective judgment. Reflective judgment arises when a person encounters an ill-structured problem (Churchman, 1971), or adaptive challenge (Heifetz, 1994) which "cannot be defined with a high degree of completeness, and that they cannot be solved with a high degree of certainty" (King & Kitchener, 2004, p. 5). Their three broad levels are pre-reflective, quasi-reflective and reflective judgments are broken into seven stages, which were found to significantly overlap with other developmental stage models. Reflective judgment goes from assuming that knowledge is certain, to recognizing that knowledge creation involves uncertainty, to using evidence and an understanding of context to support judgments.

Their work criticized two major assumptions underlying "simple stage" models. One was that people were believed to operate at one specific stage at any given time. The second critique was that these stages were cross culturally valid. Focusing on the first assumption, they aligned their work with Fischer's skill theory model, (1980) and did research to understand and confirm developmental variability. This was framed in terms of Fischer's notions of functional and optimal performance.[14] They also discussed domain specificity, which can be seen in contrast to ego stage models where development can be perceived as a more central, cross cutting stage applied to all domains, with their notion that performance levels are domain specific (which also fits with Fischer).

Robert Case (1985, 1993) took up Piaget's work and its application in education, and devised experiments that used one tightly controlled and designed activity to investigate precise steps in infant and child development. He developed models with very clear sub-stages for each main developmental stage. He also helped to develop concepts around "chunking"[15] of skills as part of the process of developing higher order skills.

James Fowler (1981, 2001, 2004) built on Erikson and Kohlberg's work, as well as drawing on theological sources, by applying a stage development model to meaning making in relation to religious faith. His seven stage model moved from primal or undifferentiated faith, through intuitive-projective, mythical-literal, synthetic-conventional, individuative-reflective and conjunctive, to universalizing faith. One can imagine going from naïve belief in Christian Sunday school stories from the bible to constellations of faith such as Unity church, where a cross cutting mix of narratives and ideas are woven into a more complex theology. He noted Kohlberg's rationalistic orientation and his turn away from incorporating emotions into his research, making for a missed opportunity to incorporate Mead's (1934) social interactionist

[14] See the section on Fischer below for descriptions of these terms.

[15] Chunking refers to taking a number of skills at a given level and grouping them into one higher order skill or representation.

view of the self. It is these issues, the need to address the role of emotion in development, and the role of the environment, as well as a move away from universalizing to studying variation that finds its nexus in the works of Kurt Fischer, whose work I will examine shortly.

This brief overview of a few of the many researchers in developmental theory can only highlight a few interesting points of interest in the field. For a broader overview of the field, I recommend Oliver Robinson's (2013) *Development though Adulthood: An Integrative Sourcebook*.

Cook-Greuter

In addition to the above mentioned researchers, I want to spend a brief time describing my understanding of the work of two figures familiar to many in this field; Susanne Cook-Greuter and Robert Kegan. Their work also falls into the category of Neo-Piagetian, with Cook-Greuter building specifically on the work of Loevinger, and Kegan building on Piaget and Kohlberg. In this way, examining their work could be seen as a continuation of the focus on these early figures as described above.

Suanne Cook-Greuter (1999, 2010) is an independent scholar who, following many years working with the WUSCT, noticed a set of results she perceived as being able to illustrate distinctions within the last stage of Loevinger's model. She, along with others (Kohlberg & Armon, 1984), noted that Loevinger's last two stages were not sufficiently differentiated. She also had collected examples of sentence stems that neither fit the scoring manual nor the upper range of existing ego development theory.[16]

These observations led to refinements in the WUSCT (Cook-Greuter, 1999) and collaboration with Bill Torbert (2004) in developing what became the Leadership Development Framework (LDF) and Leadership Maturity Profile (MAP), which examine stages of cognitive and ego development among managers. Research on manager's stages of development revealed the dominance of conventional stages in that population, in contrast to literature stating that modern organizational complexity requires more post-conventional stages.

In Cook-Greuter's dissertation (1999) she discussed the possibility of stages beyond Loevinger's autonomous stage. She took 1800 late stage protocols gathered over many years and replaced Loevinger's integrated stage with the two new categories, construct aware and universal or unitive, as a way of "striving for a theoretically coherent and plausible explanation of SCT data" (p. 32). This focus on later stages led to an understanding that "one way of looking at postconventional ego development is to suggest that it is characterized by an increasing awareness of the constructed nature of knowledge, and a concomitant, step-wise deconstruction of the assumptions undergirding conventional views of reality" (p. 31).

A fundamental principle used in the scoring of these assessments is to determine what a person can take a perspective on. Perspective taking is seen here as a central component of ego

[16] Given that the field of integral studies often concerns itself with later structures of ego development and meaning making, this work has become of great interest for many.

development (in contrast to how it is seen in Dawson's work – to be discussed later) and evolves in taking what one is subject to and making it an object of reflection. Perspective taking evolves from a purely first person perspective, through second and third person perspective taking and on into fourth and fifth person perspective taking capacities, following this subject object progression. The highest stages in Cook-Greuter's model includes the notion of construct aware consciousness, which has been of interest to researchers in various fields, including myself (Reams & Caspari, 2012). At the same time, it is noted that there are many misconceptions about these later stages (Cook-Greuter, 2010).

Kegan

Robert Kegan (1982, 1994) built on the foundations that Piaget and Kohlberg, among others established, and articulated a sophisticated model of how the self evolves through a series of "evolutionary truces" or orders of consciousness. His work integrated three major intellectual strands; the humanistic and existential humanistic work of people like Rogers, Buber, Maslow and May, the neo-psychoanalytical tradition from Anna Freud, Erickson, Winnicott and Bowlby, and finally the constructivist developmental approach we have been describing here.

The core mechanism behind development involves the tension between challenge and support. Challenge comes from encountering environmental contexts in which the complexity of the task demand is beyond that of current meaning making. Support comes in the form of a holding environment (drawing on Winnicott's (1965) use of the term) that provides safety and security for taking risks and experimenting with untried and unknown forms of meaning making and subsequent action. Kegan, along with colleagues, developed a more interactive[17] method of assessing these orders of consciousness, described as the subject object interview (Lahey, Souvaine, Kegan, Goodman, & Felix, 1988). This method does not rely solely on written responses, but engages people in a dialog in which they are encouraged to reveal the structure of their meaning making by explaining their responses to specific probes. This semi-structured interview format is similar to those of Piaget and Kohlberg.

Kegan (1994) also has examined the perceived implicit expectations of modern life in a wide range of domains (e.g. parenting, diversity, teaching, psychotherapy and leadership) in relation to these orders of consciousness, finding that these demands place the majority of people "in over their heads." Subsequent work with longtime colleague Lisa Laskow Lahey led to the development of a process for revealing a person's "immunity to change" (Kegan & Lahey, 2001; 2009). This process focuses on helping people perceive the hidden values and commitments driving unwanted behavior, making it difficult to change. By being able to make visible (i.e. take a perspective on what has someone has previously been subject to) and test out the assumptions behind such commitments, progress can be made towards evolving a more adequate and complex meaning making system.

Kegan's orders of consciousness are systematically organized by a series of hierarchically integrated sets of subject object transformations. These are; impulsive, imperial, interpersonal, institutional and finally inter-individual. Focusing on the adult development stages, Kegan has

[17] Relative to assessment methods utilizing only textual responses to prompts.

also called the last three of these the socialized mind, the self-authoring mind, and the self-transforming mind. Much of the focus of the immunity to change work is on helping the majority of the population who are operating from the socialized mind and enabling them to engage in the journey of moving towards the self-authoring mind. In this way the immunity to change process functions as scaffolding that provides a structured way to gain perspective on what one has previously been subject to. (You can read more about this in Reams (2009)).

Kurt Fischer and Dynamic Skill Theory

Thus far we have reviewed the early roots of developmental theory, its divergence in the post Piagetian period along lines of soft and hard stage models, as well as a diversity of domain specific models and measures. We now look to focus on Kurt Fischer's work on dynamic skill theory to go deeper into a specific hard stage model that also begins to move beyond a domain specific focus. This will also set the stage for the evolution of a common core metric for measuring stage development independent of specific domains as well as generating domain specific learning sequences.

Kurt Fischer (1980; Fischer & Bidell, 2006; Mascolo & Fischer, 2010; Rose, Rouhani, & Fischer, 2013) was a student of Kohlberg's, and looked to build on his and Piaget's work by better understanding the dynamic relationship between organism and environment. This helped to integrate many cognitive development theories' emphasis on the self with behaviorists' (Skinner, 1938, 1969) understanding of the role of operant conditioning from the environment on development. In order to do this, he began with the core concept of skill. "Skill theory provides an abstract representation of the structures of skills that emerge in cognitive development, together with a set of transformation rules that relate these structures to each other" (Fischer, 1980, p. 479). Like Piaget, who used epistemological structures as his unit of analysis, Fischer uses psychological structures as his unit of analysis. "We define integrative psychological structures as a basic unit of conceptual and empirical analysis"(Mascolo & Fischer, 2010, p. 150).

This model is not explicitly about a self or ego like some of the other developmental theorists described above, and in fact Fischer never uses the term ego in his work. It is a very interactive model, taking biology, structure of mind, social relationships and environmental influences all into account, to develop a general model of development that can be applied in any domain or context.

> To speak of the development of psychological structures is not the same as speaking of the development of a person. There are no general or "all purpose" psychological structures. Although they undergo massive development over the life span, psychological structures consist of localized skills that are tied to particular situational demands, psychological domains, and social contexts. (Mascolo & Fischer, 2010, p. 155)

There are four key aspects of dynamic skill theory that we will examine here; the conception of skills, the role and place of variability, the role of emotion in development, and five transformation rules.

Skills

Fischer's conception of skills is that they are "the capacity to act in an organized way in a specific context. Skills are thus action-based and context specific" (Mascolo & Fischer, 2010, p. 321). He "assumes that cognitive skills can be described effectively and precisely in terms of elementary intuitive set theory" of which "the general definition of a set is a collection of things" (Fischer, 1980, p. 481). He explains that "When people control sources of variation in what they do or think, each such source is a collection, or set, since it is a class of variation" (p. 481).

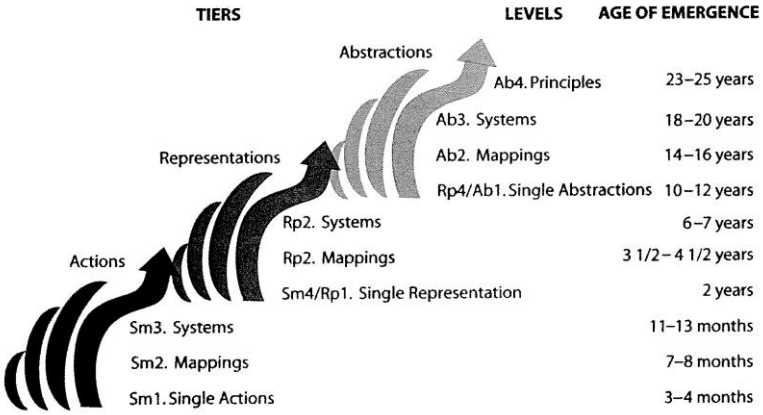


Figure 3. Fischer's Levels of cognitive development. From Fischer & Bidell (2006). Used with permission.

Fischer (1980) links this to his definition of cognition within skill theory as "the process by which the organism exercises operant control … over sources of variation in its own behavior. More specifically, a person can modulate or govern sources of variation in what he or she does or thinks" (p. 481). Exercising control is an action, always acting on an object, or set (described below). This cognition also adapts to the object or specific thing being acted on. Fischer links thought with action or behavior by showing how abstract or representational thought is built on complex sets of sensory motor cognitions. These levels move in iterative tiers, from sensory-motor, to representational, to abstractions, to principles (see figure 3).

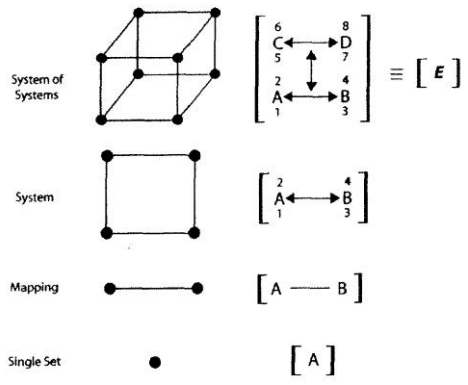


Figure 4. Fischer's set transformations. From Fischer (1980). Used with Permission.

The labels for these levels are designed to represent psychological structures. Decades of research, across different domain specific models has also identified approximate ages at which each stage usually appears. It is also known that the correlation between age and stage lowers at later stages. Fischer then built an iterative model of four repeating processes that form these tiers of sensory motor, representational and abstract skills (see figure 4).

Variability

The development of psychological structures is significantly influenced by context. "Psychological structures are the products of individual adaptation to particular social and environmental demands" (Mascolo & Fischer, 2010, p. 159) and they "consist of dynamic integrations of motive-relevant meaning, feeling, and motor action as they emerge within particular behavioral domains and contexts" (p. 150). While this description of what skills are

and a map of how they develop give us abroad outline of development according to skill theory, the picture is in reality much more complex. Central to Fischer's understanding is that statistical averages, the broad generalizations that are the norm in many models of development and psychology, and that lead to static notions of stages, can mislead us into marginalizing, or rationalizing away data about variability. We know from experience that our performance on any given task can fluctuate from moment to moment.

The conception of psychological structures mentioned above is the central unit of analysis in skill theory. However it can be easy to misunderstand how Fischer uses the term. For him, a psychological structure is conceived of as different from a form. "Structure refers to the system of relations by which complex entities such as biological organisms and psychological activities are organized" (Fischer & Bidell, 2006, p. 314). Fischer and Bidell note that a lack of distinction between form and structure has been at the root of major issues in stage theories. Conceptions of static forms, as an "abstraction from structure" (p. 315), have contributed to expectations of "patterns of thought and action to conform to an independent existing form, such as a stage, cognitive competence, or core knowledge" (p. 315). Understanding this issue leads them to foreground the notion of dynamic structuralism to describe how people construct dynamic systems of thought and action. "Psychological structures consist of dynamic integrations of motive-relevant meaning, feeling, and motor action as they emerge within particular behavioral domains and contexts" (Mascolo & Fischer, 2010, p. 150).

Fischer and his colleagues see psychological structures as having their origins in action and clarify how this is to be understood.

> Although the term action is often used as a synonym for 'overt behavior' or movement, the concept of action transcends the distinction between inner and outer movement. The concept of action implies some capacity for agency or control. … Psychological structure is mediated by meaning and experience; meaning and experience are aspects or forms of action. (Mascolo & Fischer, 2010, p. 151)

Thus action becomes a fundamental unit to observe and even measure. It is also emphasized that actions always occur in relation to contexts. Contexts can provide varying degrees of support, and from this you get distinctions between functional and optimal performance levels. Skill performance can fluctuate over a short period of time. Fischer and colleagues make a distinction between high and low support from scaffolding, another degree of contextual support, which allows another to "help" or perform part of a given task along with the person.[18] This enables an intermediate position between simple modeling and observation and learning by doing alone. They also talk about emotional scaffolding and coaching as domains where scaffolding can occur.

This complex set of conceptions leads into the metaphor of development as a web. This is distinguished in 6 ways from the commonly used ladder metaphors.[19] Fischer and colleagues include the concept of developmental pathways which are dependent upon distinct circumstances, context etc., as well as variations within the individual and the choices they make.

[18] It is worth noting here the influence of Vygotsky (1978) here.
[19] For example, see Wilber (1996).

They also discuss how the web can represent both variation within an individual as well as different pathways taken by different groups of people.

> It is not appropriate to say that an individual functions at a single developmental level – even for a particular skill. Instead, it is more appropriate to say that an individual's skills function at a range of levels depending on context, domain, time of day, emotional state, and other variables. (Fischer & Bidell, 2006, p. 163)

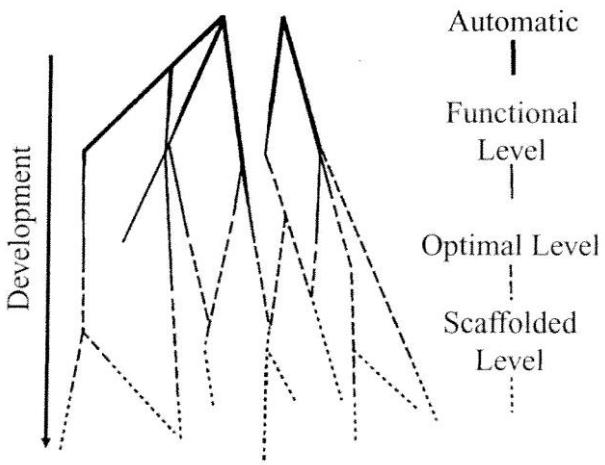


Figure 5. Fischer's web of development. From Fischer & Bidell (2006). Used with permission.

This is illustrated here in the notion of development as a constructive web with layers of; automatic, functional levels, optimal levels and scaffolded level (see figure 5). Research has shown that in performance on a given task, a person can function at range of skill levels. Under conditions of stress, high fatigue or interference, a person might only be capable of the automatic level of functioning. Under normal conditions they can operate at a functional level, which is a well-established level of skill organization, but not yet automatic, so it requires a degree of attention. Modest contextual support such as modeling or prompting, or ideal internal conditions such as peak alertness, confidence etc., can generate an optimal level of performance. Scaffolded levels of skill performance require direct assistance such as co-participation from someone with more skill. The sequence of skill acquisition varies according to many factors (Fischer & Bidell, 2006), one of which involves the role of emotion in development.

Emotion

Emotion is seen to have an essential role in dynamic skill theory. In this section I will draw heavily on the detailed description of emotion in Mascolo and Fischer (2010) to provide a view of how comprehensive the research in this area is. To begin, "any action necessarily involves an integration of cognitive, connotative, and emotional processes" (Mascolo & Fischer, 2010, p. 152). Emotions are determined to involve three classes of components; appraisals, feeling tone, and motive action tendencies. Appraisal processes run unconsciously and are ongoing, and "affect amplifies, organizes and selects these same appraisals for conscious attention. … With development, appraisals become increasingly mediated by higher order meanings" (p. 153). The use of scripts that are programmed responses to changes in environment shows how emotions drive cognition. "Affective changes thereupon select, organize, and amplify one's motive-relevant appraisal for conscious awareness whereas simultaneously activating broad classes of adaptive action" (p. 153). It becomes apparent that emotion is very active in the development of habits of thought and choice that become the basis for action. "With development, through such interconnected circuitry, emotional reactions come to be mediated by increasingly higher order

meanings and vent appraisals, whereas implicitly active affective processes continue to organize higher order thought and action" (p. 155).

Next, feeling tone is about the phenomenal or subject experience of emotional states. They are most often described in terms of circumstances prompting the feeling, or as metaphors. Motive action tendencies "consist of voluntary, involuntary, and communicative actions that function in the service of the appraisals involved in the emotional experience" (Mascolo & Fischer, p. 153). These are functional, in that they operationalize the motives, whether they are desired, espoused or actual habits of behavior.

Mascolo and Fischer discuss how all this is integrated, and how higher order cortical control is organized by the lower order processes like emotion/affect which generally function outside of conscious awareness.[20] They also link this to the notion of a triune brain; reptilian, limbic and cortex (Maclean, 1990). The organization of higher order control processes by emotional processes shows the tremendous influence of the earlier formed limbic brain structure.

Transformation Rules

We have thus far looked at cognition, emotion and action, and now we will examine how patterns of organization among them are developed through transformation processes. A simple example of this would be how a young child learns a number of specific sensory motor skills at a systems level. At some point, things like putting on pajamas, brushing teeth, getting into bed and so on go from a system of such skills to being represented under the concept of bedtime. For Fischer, developmental change is "defined in terms of structural transformation in patterns of thinking, feeling, and action within particular domains and context" (Mascolo & Fischer, p. 168). The nature of the transformational processes themselves can be seen as a set of rules. While the levels of development themselves describe the macro developmental process, transformation rules can provide micro, or within level descriptions. They "specify how a skill is transformed into a new, more advanced skill" (Fischer, 1980, p. 497). Fischer lists these as; intercoordination, compounding, focusing, substitution, and differentiation. Differentiation, substitution, compounding and focusing are micro-developmental skills leading and contributing to the macro-developmental transformation of intercoordination.

Differentiation is where what was a single set becomes separated into distinct subsets. The process can occur at either a micro or macro developmental level. This process can be useful when encountering a new task at a level of complexity where one already has skill in a related domain, but can benefit from breaking the task down into subsets at an earlier skill level where there is a more functional level of performance readily available. Substitution involves the transference of a skill from one task to another. The environmental condition best supporting this process is one where all the other variables are held steady and only the specific task itself varies.

[20] A very interesting facet of this research has shown that it is possible for negative emotional experiences to skew development in relation to what are normally positive biases. This skewing can lead to more sophisticated cognition about negative situations than positive ones, and has significant implications for understanding behavior.

Compounding is the combination of two or more skills at the same level of complexity. Again, the presence of some environmental factor is required to induce this process. The difference from intercoordination is that the skills operate within a given level of complexity rather than involving a jump to a higher level of coordination. However this kind of compounding process is an important precursor to intercoordination.

Focusing on moment to moment behavior is an even finer grained microdevelopmental process. It is commonly understood as attention. In relation to a given domain of tasks, a person will have a specific set of skills available. Only one of these can be held in the foreground of attention at any one moment. The ability to control a shift in focus can enable a person to move between skills at a given level and contribute to the process of compounding them or even intercoordinating them.

Intercoordination, or reciprocal coordination, is about how a person combines skills to move from one level to the next, much like how we envision atoms with specific properties combining to form molecules with entirely new properties. This process utilizes the micro-developmental skills described above and is dependent on a dynamic interplay between the organism and the environment. As such it cannot be viewed as a purely intentional act of will, but conditions at the boundary interface of the two.

This description of some of the main elements of Fischer's dynamic skill theory highlights his complex view of development. While there is also complexity in the ego stage theories, and they contribute something vitally important to understanding ourselves, my perception is that they end up needing various refinements or add ons to address some of the core issues that become starting places in dynamic skill theory. Starting from a different unit of analysis and set of premises enables a different picture to emerge about human development. What is yet to be done, in my view, is to truly integrate how these strands of soft, or ego oriented theories and hard or domain specific theories exemplified by Fischer's dynamic skill theory can together provide a more integral understanding.[21]

Coalescing Around a Common Core Metric

Next, building on the strand of work Fischer and colleagues (and others not described here) have done, I will now focus on the development of metrics related to this conception of development. It was noted that earlier researchers like Loevinger and Kohlberg built their theories together with assessment methods to measure stages. In this section I will examine work done to develop a metric aligned with Fischer's domain specific model.

[21] While this is the view and interests that I have come to at my current understanding of the field, it has been noted that in various academic circles this discussion was ongoing in the 1980s. Currently there is more focus on the distinction between stagnant models, with metrics whose level definitions are content laden and reified, and dynamic models, with metrics that are built to continuously accommodate new knowledge about learning and development. (Dawson, personal communication, March 2, 2014).

Commons

Michael Commons was also one of the students of Kohlberg who perceived the need for a domain independent measure of the complexity of tasks. He developed a model of hierarchical complexity and the Hierarchical Complexity Scoring System (HCSS) (Commons, Trudeau, Stein, Richards, & Krause, 1998) as a way of organizing the complexity required to complete any task or to solve any problem. This model is focused on core structures of stages rather than content or surface structures, and has a mathematical focus. It uses an internally consistent mathematically based understanding of hierarchical complexity, a model that follows the same logics of differentiation through the entire spectrum of development. It uses a mathematical tool called Rasch analysis to assess coherence in responses. Commons (2006) describes what makes his model distinct by noting that:

> First, hierarchical complexity of tasks forms an absolute scale rather than one based on norms, or content. Second, it is formulated in a manner similar to other measures from measurement theory …. Third, it separates the empirical stage of performance from the largely analytic hierarchical complexity of tasks. Fourth, rather than basing stage on some inferred mental or logical operations; stage becomes the performances on tasks of a specified hierarchical complexity that are accomplished. (p. 88)

Commons even later applied this to a cross species perspective (2006), showing how the concept could be applied to tasks of any kind.

Dawson

Theo Dawson's research has

> focused on refining our understanding of the construct that underlies all longitudinally bootstrapped developmental scales (Piaget, Fischer, Kohlberg, K&K, Armon) and, with reference to the domain independent theories and metrics of Commons, Case, Fischer, and Piaget, translated these insights into a refined content-independent developmental assessment system and a set of methods that are used to describe detailed learning sequences in any domain of knowledge. (Dawson, personal communication, March 2, 2014)

This led to a calibrated metric that could be used to assess individual performance. This approach, arising from critiques that noted shortcomings in models that were bootstrapped from conceptual content based on a group of researchers' initial input, focuses on universal properties underlying developmental stages, derived from empirical work and model building. In this section I will attempt to outline the major steps and components in this work, as it provides a way of assessing development in relation to how Fischer and colleagues have modeled it.

Dawson began with a number of studies that examined the relationship and distinctions between existing metrics for assessing stage development. Dawson (2002) is a study comparing SISS, GLSS (Good Life Scoring System) and HCSS. She examined scores from 209 participants between the ages of 5 to 86 and found that all three scoring systems "to a remarkable extent,

assess the same dimension of performance" (p. 169). Further work on this was done in another study by Dawson, Xie, and Wilson (2003). In it, 378 moral judgment scores from SISS were also scored with the HCSS. The emphasis here was on separating conceptual content as a scoring element from using hierarchical complexity. The article points to the advantages of a domain general scoring system over systems connected to specific domains and dependent on content for making stage distinctions.

Dawson (2001) also developed a distinction between core structure, surface structure and conceptual content. She noted high levels of inter-rater agreement among different scoring systems and explains this "by positing that core structural features influence stage ratings in all three systems, whether or not these principles are made explicit in a given scoring system" (p. 12). This distinction between core structure, surface structure and conceptual content becomes essential for the development of a common core metric across what were previously researched as domain specific development. The following explains this distinction in more detail.

> The conceptual content layer is the layer referenced when a stage score is awarded based on the explicit presence or absence of a specific conceptualization without reference to any formal criteria. … The surface structure layer is referenced when a particular conceptual content is said to represent a more general principle or concept that is associated in a given scoring scheme with a particular stage. … The layer representing the core structure is referenced when form, organization or relations are in the foreground and particular conceptual content is seen only as indicative of a particular hierarchical order of abstraction. (pp. 9-10)

Dawson, Commons, and Wilson (2005) continued to develop this work and looked at the "shape" of cognitive development. They addressed the debate over whether development is continuous or discontinuous, as it could appear both ways. The result of this analysis was a clear picture of development as a series of spurts and plateaus, supporting the conception of stages of development as discontinuous.

Application

All of the work to support good developmental assessments has been aimed at offering a better way to do testing in education than the current high stakes system. (This is in relation to both K-12 and higher or adult education). Dawson and Stein (2011) talk about fundamental aspects of testing and its impact on students and learning. Questions like what is worth measuring and how it is measured are examined to make a case for shifting how testing is done. By building on Fischer's Dynamic Skill Theory, Dawson aims to provide "methods for building empirically grounded learning sequences in a variety of domains" (p. 9).

As part of this emphasis on education, Dawson (2004), in *A Good Education is …*, examined developmental concepts of education, focusing on epistemological structures. She examined a variety of phenomenological research on education, identifying five qualitatively different conceptions or types of learning. This led to detailed descriptions of how "learning" is conceived at each different level of complexity, and a map of conceptions of a good education at each level. Currently, Lectica (the company developing and administering Lectical assessments) has a

number of assessments designed for specific purposes and all built from this common core metric.[22]

The development of these assessments has followed a process of;

- establishing collaboration with other researchers, clients, content experts and end users,
- identifying assessment goals and specific target constructs,
- continuing to work with clients and end users,
- using the LAS to score performances and starting to develop learning sequences,
- organizing these results into rubrics,
- do early releases for field testing, and
- iterate continuously based on data and feedback from users.[23]

A goal of these assessments is for everyone involved to learn – test takers, teachers, analysts and test designers. This helps foster a dynamic assessment system that continually upgrades and incorporates what is learned in the system.

In a commentary on the broader field of developmental assessments in general, Stein & Heikkinen, (2009), noted the issue of how assessments developed with one purpose in mind gain widespread usage for other ends. It appears that not much attention has gone into this issue within the larger integral community of practitioners. The principle of how casual uses of formal theories can lead to misuse of those theories has been explored earlier by Ross (2008).

Reflections

Here I wish to step back and make some observations that have arisen from this journey through developmental theory. First of all I am glad that I invested the time and energy to become more familiar with this broader range of research and theories that taking the FOLA course exposed me to. It has enabled me to see connections between ideas I had encountered in other domains with developmental theory. As well, questions, nuances and limitations arising from the earlier range of theories I had encountered were addressed in ways that make it clearer to me that as a whole, the field of developmental theory has a good grasp on the nature of human growth.

That said, I also recognize that I now am more sensitive to some issues I notice being prevalent in the larger integral community (primarily Wilberian, as I am not as well versed in the discourses of other integrally oriented communities). I will start with one of the more technical issues that can arise. This is a need to clarify the difference between metrics and models. We

[22] I have recently had the opportunity to use two of the Lectical assessments, the LSUA (on self-understanding) and the LDMA (on decision making). In addition, as part of the FOLA course, I took the LDPA (a pedagogical skill assessment) twice. I learned a tremendous amount from taking the assessment, reviewing the client assessments, and engaging in a debrief with the clients. The clients all found the reports insightful and useful in offering ways to further reflect on their performance and self-images and undertake specific means for growth.

[23] A more detailed description can be found at https://dts.lectica.org/_about/devmaieutics.php.

often use metrics for different purposes than intended, or conflate the tools of measurement with the descriptive models associated with them. (See Stein & Heikkinen (2009) for a thorough discussion of this). Many practitioners use models and metric interchangeably without understanding the importance of the distinction.

As well, the desire to make use of the powerful lens that developmental theory offers can blind us to other lenses that may be more appropriate to understanding a given situation (Edwards, 2010). As well, the pragmatically oriented application of developmental theory and assessments by practitioners who newly encounter the field can lead to misrepresentations, reductionistic application and possible damage to clients. I know how hard it can be to avoid evaluating people and situations with this lens, yet there are more important things in life, (such as character, integrity, love) and we miss out when our vision is skewed by becoming overly enamored with it.

Next, I believe it is important to focus on normative issues in the use of developmental theory. One of the most visible ways this shows up was noted in the section on Piaget, with the (mostly American) tendency to almost obsessively at times pursue vertical developmental growth (which Piaget himself abhorred). While I will be one of the first to stand up in favor of the advantages such growth can bring, I also have begun to emphasize the importance of other considerations such as integrity (Reams & Caspari, 2012) and domain specific skill acquisition (Fischer, 1980; Reams, Gunnlaugson, & Reams, in press). The rush to cultivate vertical development could have an unintended consequence of leaving less than thorough foundations at a given level, or lead to more sophisticated means of justifying self-deception. The notion that such growth is good, and that "integral" stages of consciousness are inherently "good," thus making it desirable to focus on fostering such growth, can be seen as problematic (Stein, 2010). I am now clearer that the study of human development needs to include a much broader range of intelligences in order to be truly integral and healthy.

At a much more basic level, I have encountered, (and been prone to myself at times), falling prey to the tendency to reify the complexities of human existence into simplistic notions. A favorite is to use Spiral Dynamics (Beck & Cowan, 1996) color language to describe someone as if it was a personality type. This type of reification and reductionism is not limited to developmental stage theory terminology, but can be particularly problematic when it is. One of my aims for this article is that it would make it harder to fall prey to this kind of use of language.

Another issue I find important is the need to better understand the distinction between soft and hard stage models. (See footnote 21 above for a comment on this). I have pointed out above that I feel both of these have significant contributions to make to our understanding of human nature. The first step for me has been to better understand the differences, in both methods and starting places, of each approach. There is something fundamental operating inside each of us that somehow organizes and makes meaning out of human experience. The value of understanding how that evolves is critically important, especially as we aim to move into challenges of leadership is today's world and see the need for development in adults to more sophisticated and mature ways of engaging the world.

At the same time, our embodiment in this world is through specific experiences that are tremendously diverse. Our tendency to reduce the complexity of this diversity into simple generalizations often misleads us into limited understandings of people and situations. The understanding possible through dynamic skill theory can counter this, and give us a lens for looking in a finer grained manner at individual variation in the diverse contexts in which it occurs.

What I have gained from this journey is primarily a much more nuanced perception and understanding of the huge range of possible ways in which we grow as people. These preliminary observations about the value of and need for integrating these two main stands (ego and domain specific, or soft and hard stage theories) of developmental theory require work to flesh out. (I'm well aware that others may have already begun or done this work, but I've confessed to being a relative beginner at this up front). They are also only one step in a longer term process I aim to engage in. This has more to do with examining and reframing some of fundamental assumptions around the nature of human existence and then seeing what implications this has for the above reflections. Always more to do.

References

Armon, C. (1984). *Ideals of the good life: A longitudinal/cross-sectional study of evaluative reasoning in children and adults. (Doctoral Dissertation)*. Cambdridge, MA: Harvard University.

Armon, C. (1998). Adult moral development, experience and education. *Journal of Moral Education, 27*(3), 345-370.

Armon, C., & Dawson, T. L. (1997). Developmental trajectories in moral reasoning across the life span. *Journal of Moral Education, 26*(4), 433-453.

Baldwin, J., Mark. (1895). *Mental develoment of the child and the race*. London: McMillan.

Baldwin, J., Mark. (1904). The genetic progression of psychic objects. *Psychological Review, 11*, 216-221.

Baldwin, J., Mark. (1906). *Social and ethical interpretations in mental development*. New York: Macmillan.

Baxter Magolda, M. B. (1999). *Creating contexts for learning and self-authorship: Constructive-developmental pedagogy*. Nashville, TN: Vanderbilt University Press.

Baxter Magolda, M. B. (2001). *Making their own way: Narratives for transforming higher education to promote self-development*. Sterling, VA: Stylus Publishing.

Baxter Magolda, M. B. (2009). *Authoring your life: Developing an internal voice to navigate life's challenges*. Sterling, VA: Stylus Publishing.

Beck, D., & Cowan, C. (1996). *Spiral dynamics. Mastering values, leadership and change*. Malden, MA: Blackwell.

Case, R. (1985). *Intellectual development: Birth to adulthood*. New York: Academic Press.

Case, R. (1987a). Neo-Piagetian theory: Retrospect and prospect. *International Journal of Psychology, 22*(5/6), 773-791.

Case, R. (1987b). The structure and process of intellectual development. *International Journal of Psychology, 22*(5/6), 571-607.

Case, R. (1993). Theories of learning and theories of development. *Educational Psychologist, 28*(3), 219-233.

Churchman, C. W. (1971). *The design of inquiring systems: Basic concepts of systems and organization*. New York: Basic Books.

Commons, M. L. (2006). Measuring an approximate g in animals and people. *Integral Review*(3), 82-99.

Commons, M. L., Trudeau, E. J., Stein, S. A., Richards, F. A., & Krause, S. R. (1998). Hierarchical complexity of tasks shows the existence of developmental stages. *Develomental Review, 18*, 237-278.

Cook-Greuter, S. (1999). *Postautonomous ego development: A study of its nature and measurement.* Harvard University, Boston, MA.

Cook-Greuter, S. (2010). Second tier gains and challenges in ego development *Integral theory in action. Applied, theoretical, and constructive perspectives on the aqal model* (pp. 303-321). Albany, NY: State University of New York Press.

Dawson-Tunik, T. L. (2004). "A good education is ..." The development of evaluative thought across the life-span. *Genetic, Social, and General Psychology Monographs, 130*(1), 4-112.

Dawson, T. L. (2001). Layers of structure: A comparison of two approaches to developmental assessment. *Genetic Epistemologist, 29*(4), 1-10.

Dawson, T. L. (2002). A comparison of three developmental stage scoring systems. *Journal of Applied Measurement, 3*(2), 146-189.

Dawson, T. L., Commons, M. L., & Wilson, M. (2005). The shape of development. *The International Journal of Cognitive Development, 2*, 163-196.

Dawson, T. L., & Stein, Z. (2011). *Virtuous cycles of learning: A digital revolution*. Paper presented at the International School on Mind, Brain, and Education, Erice, Italy.

Dawson, T. L., Xie, Y. Y., & Wilson, M. (2003). Domain-general and domain-specific developmental assessments: Do they measure the same thing? *Cognitive Development, 18*, 61-78.

Dewey, J. (1997). *Experience and education*. New York: Simon & Schuster.

Dweck, C. S. (2011). Mindsets and human nature: Promoting change in the middle east, the schoolyard, the racial divide and willpower. *American Psychologist, 67*(8), 614-622.

Dweck, C. S., Chiu, C.-y., & Hong, Y.-y. (1995). Implicit theories and their role in judgments and reactions: A world from two prespectives. *Psychological Inquiry, 6*(4), 267-285.

Edwards, M. (2010). *Organizational transformation for sustainability. An integral metatheory*. New York: Routledge.

Erikson, E. (1982). *The life cycle completed*. New York: W. W. Norton & Company.

Fischer, K. (1980). A theory of cognitive development. The control and construction of hierarchies of skills. *Psychological Review, 87*, 477-531.

Fischer, K., & Bidell, T. (2006). Dynamic development of action, thought, and emotion. In W. Damon & R. Lerner (Eds.), *Handbook of child psychology: Theoretical models of human development* (pp. 313-399). New York: Wiley.

Fowler, J. (1981). *Stages of faith: The psychology of human development and the quest for meaning*. New York: Harper & Row.

Fowler, J. (2001). Faith development theory and the postmodern challenges. *International Journal for the Psychology of Religion, 11*(3), 159-172.

Fowler, J. (2004). Faith development at 30: Naming the challenges of faith in a new millenium. *Religious Education, 99*(4), 405-421.

Gilligan, C. (1982). *In a different voice: Psychological theory and women's development*. Cambridge, MA: Harvard University Press.

Gilligan, C. (2005a). From in a different voice to the birth of pleasure: An intellectual journey. *North Dakota Law Review, 81*(4), 729-737.

Gilligan, C. (2005b). Images of relationship. *North Dakota Law Review, 81*(4), 693-727.

Hall, B., & Thompson, H. (1980). *Leadership through values*. Mahwah, NJ: Paulist Press International.

Heifetz, R. (1994). *Leadership without easy answers*. Boston: Harvard University Press.

Hy, L. X., & Loevinger, J. (1996). *Measuring ego development. Second edition*. Mahwah, NJ: Erlbaum.

Kegan, R. (1982). *The evolving self. Problem and process in human development*. Cambridge, MA: Harvard University Press.

Kegan, R. (1994). *In over our heads. The mental demands of modern life*. Cambridge, MA: Harvard University Press.

Kegan, R., & Lahey, L. L. (2001). *How the way we talk can change the way we work: Seven languages for transformation*. San Francisco: Jossey-Bass.

Kegan, R., & Lahey, L. L. (2009). *Immunity to change. How to overcome it and unlock the potential in yourself and your organization.* Boston: Harvard Business Press.

King, P. M., & Kitchener, K. S. (1994). *Developing reflective judgment*. San Francisco: Jossey-Bass.

King, P. M., & Kitchener, K. S. (2004). Reflective Judgment: Theory and Research on the Development of Epistemic Assumptions Through Adulthood. *Educational Psychologist, 39*(1), 5-18.

Kohlberg, L. (1975). The cognitve-developmental approach to moral education. *The Phi Delta Kappan, 56*(10), 670-677.

Kohlberg, L. (1984). *The psychology of moral development: The nature and validity of moral stages*. San Francisco: Harper & Row.

Kohlberg, L., Levine, C., & Hewer, A. (1984). The current formulation of the theory *The psychology of moral development: The nature and validity of moral stages* (pp. 212-319). San Francisco: Harper & Row.

Lahey, L., Souvaine, E., Kegan, R., Goodman, R., & Felix, S. (1988). *A guide to the subject-object interview: Its administration and interpretation* Cambridge, MA: The Subject-Object Research Group, Harvard Graduate School of Education.

Loevinger, J. (1976). *Ego development: Concepts and theories*. San Francisco: Jossey-Bass.

Loevinger, J., & Wessler, R. (1970). *Measuring ego development*. San Francisco: Jossey-Bass.

Maclean, P. D. (1990). *The triune brain in evolution. Role in paleocerebral functions*. New York: Plenum Press.

Mascolo, M. F., & Fischer, K. W. (2010). The dynamic development of thinking, feeling, and acting over the life span. In W. F. Overton (Ed.), *Biology, Cognition, and Methods across the Lifespan* (Vol. 1, pp. 149-194).

McClure, B. (2005). *Putting a new spin on groups: The science of chaos*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Mead, G., Herbert. (1934). *Mind, self, and society*. Chicago: University of Chicago Press.

Perry, W. (1970). *Forms of intellectual and ethical development in the college years*. New York: Hold, Rinehart, and Winston.

Perry, W. (1981). Cognitive and ethical growth: The making of meaning. In A. W. C. a. Associates (Ed.), *The modern American college* (pp. 76-116). San Francisco: Jossey-Bass.

Piaget, J. (1932). *Moral judgment of the child*. New York: Free Press.

Piaget, J. (1954). *The construction of reality in the child*. New York: Basic Books.
Piaget, J. (1970). *Structuralism* (C. Maschler, Trans.). New York: Harper&Row.
Rawls, J. (1971). *A theory of justice*. Cambridge, MA: Harvard Press.
Reams, J. (2009). Immunity to change: A report from the field. *Integral Review, 5*(1), 170-182.
Reams, J., & Caspari, A. (2012). Integral leadership: Generating space for emergence through quality of presence. *German Journal for Business Psychology, 14*(3), 34-45.
Reams, J., Gunnlaugson, O., & Reams, J. (in press). Cultivating leadership through deep presencing and awareness based practices *Leading with Presence, Spirit, and Authenticity*. San Francisco: Jossey-Bass.
Rest, J. R. (1973). The hierarchical nature of moral judgment: A study of patterns of comprehension and preference of moral stages. *Journal of Personality, 41*(1), 86-109. doi: 10.1111/1467-6494.ep8969254
Rest, J. R. (1980). Moral Judgment Research and the Cognitive-Developmental Approach to Moral Education. *Personnel & Guidance Journal, 58*(9), 602.
Rest, J. R., Narvaez, D., Thoma, S. J., & Bebeau, M. J. (2000). A Neo-Kohlbergian Approach to Morality Research. *Journal of Moral Education, 29*(4), 381-395. doi: 10.1080/03057240020015001
Robinson, O. (2013). *Development though adulthood: An integrative sourcebook*. New York: Palgrave Macmillan.
Rose, T. L., Rouhani, P., & Fischer, K. W. (2013). The science of the individual. *Mind, Brain, and Education, 7*(3), 152-158.
Ross, S., N. (2008). Using developmental theory: When not to play telephone games. *Integral Review, 4*(1), 31-46.
Selman, R. (1971a). The relation of role taking to the development of moral judgment in children. *Child Development, 42*(1), 79-91.
Selman, R. (1971b). Taking another's perspective: Role-taking development in early childhood. *Child Develoment, 42*(6), 1721-1734.
Selman, R. (1993). Assessment of personality development: Which analysis when? *Psychological Inquiry, 4*(1), 49-53.
Selman, R., & Byrne, D. F. (1974). A structural-developmental analysis of levels of role taking in middle childhood. *Child Development, 45*(3), 803-806.
Skinner, B. F. (1938). *The behavior of organisms*. New York: Appleton-Century-Crofts.
Skinner, B. F. (1969). *Contingencies of reinforcement: A theoretical analysis*. New York: Appleton-Century-Crofts.
Stein, Z. (2010). *On the use of the term Integral: vision-logic, meta-theory, and the growth-to-goodness assumptions*. Paper presented at the Biannual Integral Theory Conference, John F. Kennedy Univeristy, Pleseant Hill, CA.
Stein, Z. (2012). Erikson, Sullivan, soft stages, and the psychodynamics of the life course. In F. o. L. Assessment (Ed.). Northhampton, MA: Lectica, Inc.
Stein, Z., & Heikkinen, K. (2009). Models, metric, and measurement in developmental psychology. *Integral Review, 5*(1), 4-24.
Sullivan, H., Stack. (1968). *The interpersonal theory of psychiatry*. New York: W. W. Norton & Company.
Torbert, W., & Associates. (2004). *Action inquiry. The secret of timely and transforming action*. San Francisco: Berrett-Koehler.

Vygotsky, L. S. (1978). *Mind in society. The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Wilber, K. (1996). *A brief history of everything.* Boston: Shambhala.

Wilber, K. (2000). *Integral psychology. Consciousness, spirit, psychology, therapy*. Boston, MA: Shambhala.

Winnicott, D. (1965). *The family and individual development*. London: Tavistock.