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EDITORIAL

The Fundamental Issues With Behavioral Development

In this issue, besides a few stage related articles, there are articles highlighting periods of development, behavior analytical training and psychometric approaches to stage. The issue shows the breadth and depth of behavior developmental approaches. In this issue of *Behavioral Development Bulletin*, as well as other recent issues, Stage-related models and scoring schemes other than the model of hierarchical complexity (MHC) have been presented (Commons, Gane-McCalla, Barker, & Li, 2014; Commons & Richards, 1984; Commons, Trudeau, Stein, Richards, & Krause, 1998). To facilitate comparisons between the different articles, here and elsewhere (Commons, Richards, & Armon, 1984), I include a correspondence table and stage schemes.

There are two correspondence tables. Table 1 shows the correspondence between MHC, Fischer skill theory (Fischer, 1980; Fischer, Hand, & Russell, 1984; Fischer & Hencke, 1996; Fischer & Lazerson, 1984), and Inhelder and Piaget theory (Inhelder & Piaget, 1958; Piaget, 1952, 1954, 1964) for infant and preschool stages. Not all stage theories include the early developmental stages. Table 2 shows the correspondence between MHC, skill theory, and other theories for stages between Order 7: Preoperational and Order 16: metacrossparadigmatic. No other stage theories were determined to have definitions for the highest Order 16 and only one for Order 15. The authors of the stage theories of early concrete (primary) and above have been asked to review the correspondence table and in most cases they have done so. In number of cases the people were deceased so their students and followers have been asked to look at the correspondence table.

Although many of the theories and schemes are strongly stage-based or psychometric in nature, there are many schemes that are not based on modern stage theories and are induced from experience. Even in psychometric cases like Loevinger's theory, Cook-Greuter has suggested stage correspondence. Some of the scoring schemes such as that of Elliot Jaques are based more on other variables than just on stage variables. Because of these factors, correspondence across different stage theories has limits in its interpretation.—Michael Lamport Commons, Editor

Table 1
Infant and Preschool Stage Concordance Table

Age	Model of hierarchical complexity	Fischer skill theory	Inhelder & Piaget (1958)
0	Computational: Follow a programmed set of instructions. Example: computer program	Missing	Missing
1 month	Automatic: tropisms, sensitization, habituation, unconditionable reflexes. Example: *Paramecium* moves away from light. (Mingee, 2013)	Single reflexes (Rf1): Infants can make arm movements in the direction of objects. Infants actively look at an object placed in front of them. Reflex mapping (Rf2): active but poor coordination of two or more reflexes to touch or grasp objects	Substage 1: various, simple reflexes that determine the infant's interaction with the world are at the center of its cognitive life.
2 to 4 months	Sensory or motor: Respondent conditioning. Example: On hearing mother's voice, infant turns head in that direction, begins rooting.	Reflex systems: (Rf3): Infants gain the capacity to coordinate multiple reflex mappings into reflex systems. Able to hit target with aid and propor positioning. Single sensory motor action (Rf4/Sm1): This coordinates two reflex systems into a system of reflex systems. Infant can reach for the object while looking at it.	Substage 2: First habits and primary circular reaction, through with infants begin to coordinate what were separate actions into single integrated activities.
4 to 12 months	Circular sensory motor: operant conditioning. Example: When infant babbling is followed by vocalizing and smiling from adult, infant babbles more.	Sensorimotor mapping (Sm2): Infant able to intercept moving object, through visual motor planning, can overcome obstacles placed between them and target.	Substage 3: Secondary circular reactions whereby infants take major strides in shifting their cognitive horizons beyond themselves and begin to act on the outside world. Substage 4: Coordination of secondary circular reactions whereby infants begin to use more calculated approaches to producing events, coordinating several schemes to generate a single act. They achieve objects permanence during this stage.

Table 1 (*continued*)

Age	Model of hierarchical complexity	Fischer skill theory	Inhelder & Piaget (1958)
12 to 18 months	Sensory motor: forms concepts. Example: Animals from a variety of species learn discriminations of concepts, such as same/different.	Sensorimotor systems (Sm3): Infants can coordinate two or more sensorimotor mappings into a system and are able to coordinate multiple acts of looking and reaching to explore object from different angles. Infant can systematically vary position and orientation of toy to get it through bars of the crib.	Tertiary circular reactions: Infants develop what Piaget regards the deliberate variation of actions that bring desirable consequences. Rather than just repeating enjoyable activities, infants appear to carry out miniature experiments to observe the consequences.
18 to 24 months	Nominal: Child relates two (or more) concepts, including relating a concept to its name. Example: Child can say the word *same* or name other concepts, such as "boy."	Single representation (Sm4/Rp1): Child can coordinate two sensorimotor systems into a system of sensorimotor systems. Child uses one sensorimotor system to stand for or represent a single concrete meaning. Example: Movement of doll represents the act of walking.	Substage 8: beginnings of thought. The capacity for mental representation or symbolic thought starts to develop. Piaget argued that only at this stage can a child imagine where objects that they cannot see might be.
2 to 3.5 years	Sentential: Combines names into short sequences or sentences. Example: A child says the names of a few numbers or letters, in order, and says short sentences.	Single representation (Sm4/Rp1): child can tell a story about a character who is "nice" or "evil." They will juxtapose "nice" and "evil." Example: Child will tell a story in which a doll will give candy to another and later will be mean again without connecting the two events.	Missing
4 to 6 years	Preoperational: combines sentences into sequences. As a result, the child makes simple deductions that follow a list of sequential acts. Does not relate these to reality. Example: Child tells a story of a few sentences.	Representational mapping (Rp2): Infant can coordinate two representations to establish relationships such as reciprocity, causality, temporality, etc. Example: One doll gives candy to the other doll who returns the favor with a hug.	Preoperational: Child is capable of symbolic functioning. Language development occurs. Child is influenced by his perception of the surrounding but is not able to take the perspective of others.

Table 2
Concordance Table

Commons & Richards (1984)	Sonnert & Commons (1994)	Fischer, Hand, & Russell (1984)	King & Kitchener (1994)	Inhelder & Piaget (1958)	Kohlberg (1981); Selman (1971)
Order 7: Preoperational		Representational mapping		Preoperational I-B	1 to 2
Order 8: Primary				Early Concrete II-A	2
Order 9: Concrete		Representational systems	Stage 3: Knowledge is uncertain in some areas and is justified on the basis of authority or on what feels right.	Concrete II-B	2 to 3
Order10: Abstract	Group	Single abstractions	Stage 4: Knowledge is generally uncertain and is justified on the basis of own viewpoint and situation.	Formal III-A	3: Mutuality
Order 11: Formal	Bureaucratic	Abstract mappings	Stage 5: Knowledge depends on the context and is justified on the basis of viewpoint and situation.	Formal III-B	3 to 4
Order 12: Systematic	Institutional	Abstract systems	Stage 6: Knowledge is constructed from comparisons across viewpoints and contexts and is justified on the basis of comparison.	Postformal	4: Social system

Table 2 (*continued*)

Commons & Richards (1984)	Sonnert & Commons (1994)	Fischer, Hand, & Russell (1984)	King & Kitchener (1994)	Inhelder & Piaget (1958)	Kohlberg (1981); Selman (1971)
Order 13: Metasystematic	Universal	Single principles	Stage 7: Knowledge is generated from a generalizable process of inquiry and is justified on the basis of the most complete or most compelling interpretation of available information, limited by uncertainties.	Polyvalent logic; systems of systems	5: Prior rights/social contract 6: Universal ethical principals
Order 14: Paradigmatic	Dialogical				

Commons & Richards (1984)	Kegan (1983)	Armon (1984)	Skoe (2014): Ethic of Care Interview, which is based on Gilligan (1982)	Belenky et al. (1986): Womens' Ways of Knowing
Order 7: Preoperational			1.0: Survival	
Order 8: Primary		2: Instrumental egoism	1.5: Transition from self-care to responsibility	
Order 9: Concrete	Stage 3: Interpersonal. Child coordinates own needs and interests with others; unable to prioritize.	2/3: Affective mutuality	2.0: Self-sacrifice (caring for others)	Position 3: Subjective. Distrusts conventional authorities; trusts experience, intuition.
Order 10: Abstract	3 to 4: Transition. Shaky sense of self-as-authority, self-sufficiency.	3: Individuality	2.5: Transition to reflective care	3 to 4: Transition. Beginning to appreciate objectivity; procedures for sharing and evaluating knowledge.

(*table continues*)

Table 2 (*continued*)

Order 11: Formal	Stage 4: Institutional. Self-sufficiency, authority; identification secure. Knows where one stands.	3 to 4: Subjective relativism	3.0: Balanced care for self and others	Position 4: Procedural (Separate and connected) 4 to 5: Transition. Concerned with methods and procedures for obtaining and sharing knowledge. Interested in objectivity. Learns by doubting game (separate) or believing game (connected).
Order 12: Systematic	Stage 5: Interindividual. Sees limits of self-sufficiency. Somewhat aware of isolation. Moving toward intimacy and directness. Relates to others directly. Not role-bound. Intimacy. Recognizes reality as co-constructed and self as continuously created by multiple relationships.	4: Autonomy	3.5: Integrated care for self and others	Stage 5: Constructed Beginning to see self and others as creators of knowledge. Knowledge as situated. Integration of subjective and procedural. Sees self and others as creating and co-creating knowledge.
Order 13: Metasystematic		5: Universal categories		
Order 14: Paradigmatic				

Commons & Richards (1984)	Perry (1970) as shown by Dawson (2004)	Sternberg (1984)	Beanck (1984)	Pascual-Leone (1984)	Labouvie-Vief (1984)
Order 7: Preoperational					
Order 8: Primary					
Order 9: Concrete			3	Concrete	Symbolic
Order 10: Abstract	Position 1: abstract Position 2: abstract/ formal transition		4	Late Concrete	

Table 2 (*continued*)

Order 11: Formal	Position 3: formal Position 4: formal/systematic transition	First-order relational reasoning	5	Formal and late formal	Intrasystematic
Order 12: Systematic	Position 5: Systematic Positions 6 to 7: Systematic/metasystematic transition		6	Predialectical	Intersystematic
Order 13: Metasystematic	Positions 8 to 9: Metasystematic	Second-order relational reasoning	7	Dialectical	Autonomous
Order 14: Paradigmatic				Transcendental	

Commons & Richards (1984)	Arlin (1984)	Sinnott (1984)	Basseches (1984)	Koplowitz (1984)	Powell (1984)
Order 7: Preoperational					
Order 8: Primary					
Order 9: Concrete	2b: High concrete	Concrete	Phase 1a: Preformal early foundations		Advanced concrete
Order 10: Abstract	3a: Low formal (problem solving)		Phase 1b: Formals early foundations		Early formal
Order 11: Formal	3b: High formal	Formal		Formal	Formal
Order 12: Systematic	4a: Postformal problem finding	Relativistic/relativized systems, meta level rules	Phase 2: Intermediate d.s. appear	Systems	Stage 4a: Interactive empathy
Order 13: Metasystematic	4b: Relativisms of thought 4c: Overgeneralization	Unified theory/interpretation of contradictory levels	Phase 3: Two out of three clusters of advanced d.s. appear Phase 4: All clusters present; d.s. framework coordinated	General systems	Category operations

(*table continues*)

Table 2 (*continued*)

Order 14: Paradigmatic	4d: Displacement of concepts	Unitary concepts
Commons & Richards (1984)	Elkind (1970)	Fowler (1981)
Order 7: Preoperational	Stage I (usually ages 5 to 7 years): Includes children having "a global, undifferentiated" quality of thinking and, for this reason, their conception of religious identity also is undifferentiated.	Stage 1: Intuitive−projective faith, characterized by productive imaginative processes filled with fantasies, and by the awakening of moral emotions.
Order 8: Primary		
Order 9: Concrete	Stage II (usually ages 7 to 9 years): Characterized by a remarkable progress made in the conceptualization of religious identity.	Stage 2: Concrete mythic−literal faith, which takes the form of story, drama, or myth. Logic begins to separate the real and actual from fantasy and beliefs.
Order 10: Abstract	Stage III (usually ages 10 to 12 years): Children begin formal thinking about their religious denominations. Stage III is characterized "as one of reflection." The child looks for manifestations of religious identity "in the evidence of his or her innermost beliefs and convictions."	
Order 11: Formal		Stage 3: Synthetic−conventional faith. Experience of the world starts to extend beyond the family. At this stage, faith has to synthesize values and data.
Order 12: Systematic		Stage 4: Individuative-reflective faith, whereby one explicitly recognizes one's identity and differentiates one's own worldview from those of others. Commitments have to be consciously chosen and critically examined. For this reason, it is a "demythologizing" stage in which symbols, rituals, myths, and beliefs are critically evaluated.

Table 2 (*continued*)

Order 13: Metasystematic			Stage 5: Conjunctive faith often appears at midlife or beyond and involves the reintegration of elements of strength from childhood faith (Fowler, 1981, p. 194). It also involves "the embrace and integration of opposites or polarities in our lives" (Fowler, 1981, p. 40). In the religious instance, symbols must be reunited with conceptual meanings. Stage 6: The persons best represented by it have generated faith compositions in which they feel a sense of ultimate environment which is inclusively of all being. "Persons in this stage are grounded in a oneness with the power of being or God." Universalizers have completed the process of decentralization
Order 14: Paradigmatic			
Commons & Richards (1984)	Oser (1991)	Korniejczuk & Jackson (1993)	Cook-Greuter (2013)
Order 7: Preoperational	Stage 0: Children are still incapable of distinguishing between different forces outside of themselves.	During the preoperational period, the elements of salvation are not conceptualized; they are perceived intuitively.	Stages 2 to 3: Self-protective or opportunistic stage
Order 8: Primary	Stage 1: Characterized by an absolute religious heteronomy orientation, and it extends mainly until ages 8 and 9 years		Delta/3: Rule-oriented stage
Order 9: Concrete	Stage 2: Predominantly from ages 9 to 11, when God still is viewed as being external, but "can be influenced by goods deeds, promises, and vows."	Conceptualization begins during the concrete thought period, but in concrete and literal terms.	Stage 3: Conformist stage
Order 10: Abstract			Stages 3 to 4: Self-conscious or expert stage

(*table continues*)

Table 2 (*continued*)

Order 11: Formal	Stage 3: People manifest absolute autonomy, because they consider God as "an entity outside the human realm."	In the formal period, individual children can think in abstract terms, use interpropositional logic, and deal with hypothetical situations.	Stage 4: Conscientious or achiever stage
Order 12: Systematic	Stage 4: Emerges mainly during late adolescence and young adulthood, presents a mediated autonomy where "persons now have a decision-making self that they can bring into a correlationally mediated relation with the Ultimate"		Stages 4 to 5: Individualist−pluralist stage
Order 13: Metasystematic	Stage 5: Distinguished by an orientation to religious intersubjectivity and autonomy. According to Oser's model, in Stage 5 "transcendence and immanence permeate one another and thereby establish the possibility of universal solidarity of all people."		Stage 5: Autonomous stage (Strategist)
Order 14: Paradigmatic			Stages 5 to 6: Construct-aware and ego-aware (magician, alchemist)
Order 15: Cross-paradigmatic			Stage 6: Unitive stage

Note. d.s. = dialectical schemata.

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