

Correspondence between Some Life-span Stage Theory Developmental Sequences of Stages and Levels

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### Abstract

Good comparisons of development sequences have been made in the past but only for late childhood through adult. The Model of Hierarchical Complexity is one among those developmental sequences which has often been compared to other developmental sequences including: Piaget & Inhelder (1969); Fischer & Bidell (1998); Colby and Kohlberg's (1987a, 1987b) 9 point stages and Moral Maturity Scores (MMS) of Moral Judgment. However, the 13 point scale has never been assessed in making comparisons to other scales. The current paper constructed a comparison table of all five models, including the 13 point scale, which cover the developmental stages of an entire life-span. Adjustments had to be made to the 9 point and 13 point scales. The formula,  $OHC = 3 + 2 * (\text{Stage of Colby \& Kohlberg's})$ , was introduced to demonstrate the relationship between the Orders of Hierarchical Complexity and Kohlberg's Stages of Development.

*Key words:* Developmental Stages, sequence, Model of Hierarchical Complexity, Moral Judgment, Kohlberg, Piaget, Moral Maturity Scores, Fischer, conversion, cognitive

## Correspondence between Some Life-span Stage Theory Developmental Sequences of Stages and Levels

There are many good comparisons of developmental sequences from the perspective of different theories. However, they do not cover the entire life-span. Commons, Trudeau, Stein, Richards, & Krause (1998) constructed a table showing the relationship among stage models including the models of Commons, Richards and Armon, 1984; Commons et al. (1998); Fischer and Bidell (1998), Colby and Kohlberg (1987a, 1987b); Case (1985), Campbell and Bickhard (1986); and Piaget and Inhelder (1969). More recently, Dawson-Tunik, Commons, Wilson and Fischer (2005) constructed a comparison table of development sequences comparing developmental stages of Dawson-Tunik (2004), Piaget and Inhelder (1969), Fischer and Bidell (1998), Commons et al. (1998); Colby and Kohlberg's (1987a, 1987b) 9 point scale; Armon (1984); and King and Kitchener (1994). Among these models, Colby and Kohlberg's (1987a, 1987b) 9 point and 13 point scales have been widely used (e.g. Kegan, 2002) as Kohlberg's theory expands on Piaget's work. Kohlberg determined that the process of moral development was primarily concerned with justice, and claimed that it continued throughout an individual's lifetime (Kohlberg, 1981). Many comparisons have been made among various stages of development previously but, researchers have only used Colby and Kohlberg's 9 point scale for the comparisons. There has not been any work that shows how Colby and Kohlberg's 13 point scale translates into other developmental sequences. Kohlberg's model is limited to assessing the development of moral judgment only. The Model of Hierarchical Complexity (MHC) (Commons et al. 1998) is a general stage model that assesses development in any domain. The model helps score how hierarchically complex a behavior is (Commons, Trudeau, et al. 1998). It has 16 developmental stages. This paper shows the correspondence among Orders of Hierarchical Complexity (OHC) and the 13 point scale of Moral Judgment, the corresponding 9 point scale, Fischer and Bidell's Cognitive development level and Piaget and Inhelder's Cognitive Development Stages. These five models of development were chosen because the stages in these models cover the developmental processes that occur in an entire life-span of an individual. Other developmental models were excluded as they do not cover the entire life-span. There have been several tests that validate these models. Here, we construct such a comparison that goes lower and higher than those in the literature cited above.

Table 1 presents the stages of the Model of Hierarchical Complexity (MHC) and the corresponding stages of Fischer and Bidell (1998), Piaget and Inhelder (1969), Colby and Kohlberg's (1987a, 1987b) 9 point scale and 13 point scale and their respective Moral Maturity Scores (MMS). MMS was described by Colby et al. (1983) as a measure of the Moral Judgment stages. The score is a

continuous variable representing the proportion of moral reasoning done by individuals at each stage of Kohlberg multiplied by the ordinal number of that stage. For example, an MMS of 200 indicates that all of the individual's reasoning is at stage 2 of the 9 and 13 Point Scales of Moral Judgment and an MMS of 300 indicates that all of the individual's reasoning is at stage 3 of the 9 and 13 Point Scales of Moral Judgment. However, in the current paper, the distribution of the MMS to the stages of Kohlberg and descendants has been adjusted. The stages of Fischer and Bidell and Piaget & Inhelder corresponding to the Orders of Hierarchical Complexity were adapted from the conversion tables provided by Commons, Trudeau, Stein, Richards & Krause (1998) and Dawson-Tunik, Commons, Wilson, & Fischer, (2005). The conversion of Kohlberg and decedents' 9 Point Scale of Moral Judgment and 13 Point Scale of Moral Judgment into the Orders of Hierarchical Complexity (OHC) was made on the basis of the following three assumptions.

1. Model of Hierarchical Complexity is model that measures development and shows sequence of actions for a task. There has been a lot of empirical evidence that substantiate not only the face validity of this model but the extremely high predictions of Rasch Scaled performance from the Orders of Hierarchal Complexity of tasks – up to  $r = .984$ .
2. 50 point rule: The Moral Maturity Scores (MMS) of each Order of Hierarchical Complexity are 50 scores apart. For example, an MMS of 100 indicates that an individual is performing at stage 5. An MMS of 150 indicates that an individual is performing at stage 6. An MMS of 200 indicates that an individual is performing at stage 7 and so on. Hence, as Orders of Hierarchical Complexity increase by 1, the corresponding MMS score increases by 50 points. As Pascual-Leone (1972) showed, all the half stages of Piaget and therefore of Kohlberg are really full stages. Thus, each half stage of Kohlberg would be 50 MMS apart.
3. The Model of Hierarchical Complexity (MHC) applies to Inhelder and Piagetian (1958) theory of stage that two or more lower order actions constitutes one action of a higher order of complexity. Those actions have to be coordinated. However, MHC also adds that the ordering of the lower order actions should be non-arbitrary.

The conversion of Kohlberg and descendants' 9 Point Scale of Moral Judgment to the Orders of Hierarchical Complexity was derived by scoring the definitions used in Kohlberg's Moral Judgment Instrument. If it was not absolutely clear, the example from the Colby and Kohlberg manual were used.

The equation was  $3 + 2 * (\text{Stage number of 9 point Colby and Kohlberg}) = \text{OHC}$  where, 2 and 3 are constant numbers. The constant 3 aligns the OHC and Colby and Kohlberg stage. Multiplying by 2 converts the half stage numbers of Kohlberg stages that were really full stages into full number. For the 9 point scale, there were only a few major changes. On the high end, stage 4/5 was scrapped from Kohlberg's stages because stage 4 of Kohlberg corresponds to Systematic stage (Stage 11) of MHC and the transition to stage 5 of Kohlberg corresponds to Metasystematic stage (stage 12) of MHC. According to the 50 point rule for MHC, stages 11 and 12 of MHC are supposed to be 50 MMS apart which means that stages 4 and 5 of Kohlberg would also have to be 50 MMS apart. However, according to Kohlberg, stages 4 and 5 of the Kohlberg stages are 100 MMS apart. Also, following the 50 point rule, the half stage, 4/5, of Kohlberg's had to be scrapped. Sonnert and Commons (1994) found that Stage 5 and 6 were actually part of a single stage and were consolidated into a single stage 6 which has an MMS of 500. Thus, new Moral Maturity Scores were assigned to stages 5 and 6 of the 9 point scale to preserve the consistency of the 50 point rule. For example, according to Kohlberg and his descendants, stage 5 is assigned 500 MMS, stage 6 is assigned 600 MMS and so on. However, after our adjustments, stage 5 of the 9 point scale was assigned 450 points, stage 6 was assigned 500 points and stage 7 was assigned 550 points.

Three higher stages were introduced, including most importantly the paradigmatic stage 13 which is stage 6 in Colby and Kohlberg's stages of Moral Judgment (Sonnert & Commons, 1994). Kohlberg's speculative stage 7 did not meet any of the stage considerations required for hard stages or for the MHC. Thus, it was rejected. The stage 7 of Colby and Kohlberg in Table 1 was an added stage which corresponds to the cross-paradigmatic stage of OHC. Similar adjustments were made to the 13 point scale. On the low end of the scale, below stage 1 (Colby & Kohlberg, 1987), almost everything had to be redone. We again applied the 50 point rule to the corresponding orders of hierarchical complexity. Colby & Kohlberg's stages begin at stage 1. Stage 1 of Colby and Kohlberg corresponds to stage 5 of the MHC. Thus, we extended the Kohlberg stages down to stage (-1) using the 50 point rule of MMS.

The 9 point scale and the 13 point scale refer to the same stages of Moral Judgment. They differ only in the way their substages were divided. For example, on the 9 Point Scale, the transitional stage between 2 and 3 is 2/3 whereas in the 13 point scale, the transitional stages between 2 and 3 are 2(3) and 3(2). The stages on the 9 point scale are divided by half whereas the stages in the 13 point scale are divided by one third. Thus, the conversion of 13 Point Scale of Moral Judgment to the stages of Model of Hierarchical Complexity was induced by following the 50 point rule.

### **Conclusion**

In this paper, a correspondence table that compares five life-span developmental sequences was presented. In addition, their corresponding Moral Maturity Scores were also given. The table included the Orders of Hierarchical Complexity, Fischer and Bidell's (1998) Stages of Cognitive Development, Piaget and Inhelder's (1969) Stages of Cognitive Development, Colby and Kohlberg's (1987a, 1987b) 9 Point Scale of Moral Judgment and Colby and Kohlberg's (1987a, 1987b) 13 Point Scale of Moral Judgment. Adjustments were made to Colby and Kohlberg's stages. The 13 point scale of Colby and Kohlberg was presented in a correspondence table for the first time. This table allows one to intelligently use Kohlberg's scoring manual and easily see how stages of different stage models of developmental sequences correspond to each other.

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Table 1

*General Description of Sequence*

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Discriminations	Order of Hierarchical Complexity Commons et al. (1998)	Fischer & Bidell's Stages of Cognitive Development (1998)	Piaget & Inhelder's Stages of Cognitive Development (1969)	9 Point Scale of Moral Judgment Colby and Kohlberg (1987)	13 Point Scale of Moral Judgment Colby and Kohlberg (1987)	Moral Maturity Scores
Calculatory	0					
Sensory or Motor and not Both	1	0		-1**	-1**	-100
					-1(0)**	-66.66
Circular Sensory Motor	2	1	a Sensorimotor	0/-1**		-50
					0(-1)**	-33.33
Sensory Motor	3	2	b Sensorimotor	0**	0**	0
					0(1)**	33.33
Nominal	4	3	Ia Preoperational	0/1**		50
					1(0)**	66.66
Sentential	5	3-4*		1	1	100
					1(2)	133.33
Preoperational	6	4	Ib Preoperational	1/2		150
					2(1)	166.66
Primary	7	5	IIa Preoperational	2	2	200
					2(3)	233.33

Concrete	8	6	IIb Concrete Operational	2/3		250
					3(2)	266.66
Abstract	9	7	IIIa Concrete Operational	3	3	300
					3(4)	333.33
Formal	10	8	IIIb Formal Operational	3/4		350
					4(3)	366.66
Systematic	11	9	IIIc Formal Operational	4	4	400
					4(5)*	433.33
Metasystematic	12	10	Postformal**	5*	5*	450
					5(6)*	466.66
Paradigmatic	13	11*	Postformal**	6*	6*	500
					6(7)*	533.33
Cross-paradigmatic	14	12*	Postformal**	7**	7**	550
					7(8)**	566.66
Meta-paradigmatic	15	Non-existent	Not observed			600

*Notes:* \*Speculated stages that correspond to the Orders of Hierarchical Complexity. \*\* Stages that do not exist in the models but added here based on how they would correspond to the Orders of Hierarchical Complexity.

