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ABSTRACT

When William G. Perry (1968) developed his scheme of nine stages of cognitive development, most of which are experienced during the college years, he did not attempt to quantify it. Subsequently, T. D. Erwin (1983) constructed a scale that attempted to quantify the Perry scheme. His findings supported the overall conception of student development and supported the existence of three of the four superordinate stages suggested by Perry, as well as a less well-defined fourth factor. In this study, an attempt to quantify and validate the Perry scheme was made through an approach similar to Erwin's. A 45-item scale was developed and tested in 5 separate studies from 1983 to 1995. In all, 751 college students have responded to the scale. Factor analysis of the results from each of the separate studies has offered support for Perry's three superordinate stages: Dualism, Relativism, and Commitment. Findings, taken in conjunction with those of Erwin, provide evidence of the convergent validity of the Perry scale and support its temporal stability. An appendix presents the current scale version. (SLD)

A Scale of Cognitive Development: Validating Perry's Scheme

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In 1968 William G. Perry published Forms of Intellectual and Ethical Development in the College Years. In this book he reported on the overall results of a lengthy longitudinal study he had carried out with Harvard undergraduates over the four years of their undergraduate career. Each participant was interviewed in an open-ended fashion at the end of each academic year. From the response protocols Perry attempted to extract the essence of intellectual development as he had observed it. This resulted in his now widely known 'scheme.' Perry suggested that students pass through nine stages in their intellectual development, many or all of which will be experienced during the college years. These stages vary from a simplistic and immature 'Basic Dualism' in which the world of ideas consists of those that are 'right' and those that are 'wrong' to a sophisticated appreciation of the multiplicity of competing ideas with varying degrees of legitimacy coupled with the ability to make ethical and intellectual commitments in the face of uncertainty.

Perry himself did not attempt to quantify his scheme in any fashion, beyond simply citing in his work verbatim statements by the respondents themselves which he felt were representative of the various stages. Subsequently, Erwin (1983) attempted a quantification of the Perry scheme. Judges generated statements representative of the various stages in the Perry scheme. Erwin's resulting scale consisted of 119 items, which were attitudinal statements which were felt to most accurately reflect the thinking at the various hypothesized stages. Erwin's scale also simplified Perrry's scheme in that the scale was developed to reflect only the four 'super-ordinate' phases that had been suggested by Perry himself: 'Dualism' (Positions 1 and 2), 'Multiplicity' (Positions 3 and 4), 'Relativism' (Positions 5 and 6), and 'Commitment' (Positions 7, 8, and 9).

In order to assess the reliability and validity of the scale, Erwin had 3,321 entering freshmen university students respond to each of the scale items on a four choice Likert-type scale. Erwin subjected his data to factor analysis and concluded that a four factor solution was optimal. The four factors with eigen values ranging from 7.5 to 2.6 were interpreted as representing 'Dualism,' 'Relativism,' 'Commitment,' and 'Empathy' respectively. Erwin's 'Relativism' stage appears to combine the stages that Perry had labeled 'Multiplicity' and 'Relativism' respectively, while the fourth stage 'Empathy' represents an extension by Erwin, based on his analysis, which was not a part of Perry's original scheme. Based on a factor analysis, Erwin concluded that the four factors

accounted for approximately 70% of the variance. Erwin also reported reliability data for the four sub-scales as well as correlations between the empirically derived scales and several other scales designed to measure student development. Based on Cronbach's alpha coefficient of internal consistency, the reliability estimates for the separate stages ranged from 0.71 to 0.51.

Erwin's study, then, suggests the existence of three of the four super-ordinate stages suggested by Perry as well as a fourth factor the relationship of which to the other sub-scales is problematic. While it does not completely confirm Perry's scheme, Erwin's study is never-the-less striking confirmation of Perry's overall conception of student development. The sample size, the reliability estimates, and the information on convergent validity combine to make Erwin's interpretation of his data persuasive.

At about the same time, the present author also attempted to quantify and validate Perry's scheme using an approach similar to Erwin's. A scale was developed which was designed to mirror Perry's nine stages of development. The specific items consisted of statements made by Perry's subjects themselves as reported by Perry. Many of the statements were verbatim quotes from student protocols as reported by Perry (1970), although some were edited to eliminate grammatical errors, verbal pauses, etc., which were present in the transcripts. The resulting forty-five item instrument has been used for five separate studies in the past twelve years. A report on the factor analysis and reliability of the instrument follows.

METHOD

Item Development: Perry's (1970) report was reviewed and a total of forty-five statements were drawn from the transcript material for inclusion in the instrument. An attempt was made to choose equal numbers of statements from each of the stages. The resulting scale was reasonably balanced, but contained no statements reflecting Perry's final stage (Stage 9). Criteria for inclusion were clearness of expression and brevity. The items were randomly arranged on the instrument, and respondents were instructed to respond by indicating their degree of agreement with each statement on a five point Likert-type scale. These items along with their scale position and page reference (Perry, 1970) are presented in the appendix.

Procedure: The resulting instrument has been used as part of five separate studies in 1983, 1986, 1990, 1993, and 1995 respectively. In every case the instrument was used at a small, private liberal arts college located in the urban, northeastern section of the country. In all, a total of 751 students have responded to the scale, 375 freshmen, 161 sophomores, 100 juniors, and 45 seniors, along with 70 others for whom class had not been recorded.

Approximately equal numbers of men and women were used, although exact figures and not available since one study did not record subject gender. Of the subjects for whom gender was recorded, 194 were men and 204 were women.

RESULTS

Scale data from each of the separate studies have been factor analyzed. Since in each individual case the results of the factor analysis are closely parallel, the individual factor analyses are not reported. Instead, all five data sets were combined for a total of 751 cases, and the factor analysis was carried out on the combined data. Overall results of the initial principal components analysis indicated by means of a scree test that a two factor solution was appropriate. However, following Erwin's results, the data were first analyzed for a four factor solution. The four factors accounted for 33.3% of the variance, with factors 1 and 2 accounting for 13.2% and 11.6% respectively. An equimax rotation was then applied to the factors which converged in 16 iterations. Factor 1 consisted of 16 items, of which 11 items were from stages one and two, one each from stages three, four, five, six, and eight. Factor 2 consisted of 10 items, of which 7 were from stages seven and eight, with the three remaining items from stages five and six. Factor 3 consisted of 11 items, 5 of which were from stage 4, two from stage 5, and one each from stages 3, six and eight. Factor 4 was the most heterogeneous with eight items from stages one through eight and no stage being represented by more than two items. In this analysis Factor 1 appears to reflect Perry's dualism since the majority of the items are from stages one and two. Factor 2 reflects commitment with the majority of items drawn from Perry's stages six, seven, and eight. Factor 3 appears to reflect Perry's Relativism stage, with the majority of items being drawn from stages three, four and five. Factor 4 in this solution appears to be anomalous; the items are too diverse to interpret.

Because of the anomalous fourth factor, the analysis was repeated for a three factor solution still utilizing all 45 items. An equimax rotation converged in thirteen iterations. The three factor solution essentially replicated the first three factors of the four factor solution. Factor 1 consisted of nineteen items, eleven of which were from stages 1 and 2. In addition four items were from stage 3, and one item apiece from stages 4, 5, 6, and 8. As in the first solution this seems to predominately reflect Perry's Dualism stage. Factor 2 consisted of twelve items, ten of which were from stages 6, 7, and 8 with one stage 5 item and one stage 4 item. This clearly reflects Perry's third or 'Commitment' stage. Factor three consisted of 14 items, nine of which were from Perry's stages 3, 4, and 5. In addition there was one item apiece from stages 2, 7, and 8 and two items from stage 6. Again, the item loadings for this stage seem to reflect Perry's second or 'Relativism' stage.

DISCUSSION

This study offers support for Perry's three superordinate stages of cognitive development in college students: Dualism, Relativism, and Commitment. The forty-five scale items produced three factors which were consistent with Perry's scheme, and with the first three factors found by Erwin in his research. These findings support two conclusions. First the independent confirmation of the Perry scheme by two conceptually similar instruments which, however, differ in actual content provides striking evidence for the convergent validity of the Perry Scale itself. Second, the fact that in the present study similar findings were obtained with samples taken a decade apart argues that the scheme has good temporal stability as well; i.e., it is not limited to a particular generation of students and their experiences.

Taken together, Erwin's findings and the present findings support the use of such instruments in developmental research on college populations. The instruments have obvious potential as well for use in outcome analyses of educational programs. Researchers and administrators contemplating the use of these instruments should note that for Erwin's scale 70% of the variance was accounted for by the four factors, approximately twice as much of the variance as the present scale accounted for. The reasons for this difference are unclear, but there are a number of points of difference between the two studies and instruments. First, the two instruments differ in length; Erwin's scale is slightly over twice as long as the present scale. In general, of course, reliability increases with instrument length. The two samples also differ greatly in size; Erwin's sample is approximately four times the size of the present sample. Third, Erwin's sample was drawn from a large university, whereas the present sample was drawn from a private liberal arts college. The former sample was almost certainly more heterogenous, with the result that the greater variability of the sample may have enabled the instrument to account for a greater proportion of the variance.

REFERENCES

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Perry, William G. Jr. Forms of Intellectual and Ethical Development in the College Years: A Scheme. Holt, Rinehart, and Winston, 1970.

APPENDIX

Cognitive Development Scale

1. Professors know exactly how much time it takes to do so much work and how much effort. They don't usually give too much, but just enough work. (p. 62, 1)

2. If you really get into the material, what you find is that nobody understands it. (p. 98, 4)

3. In a paper or essay nothing seems to matter but good expression. I haven't caught on exactly to what instructors want. (p. 90, 3)

4. Answers aren't in the textbooks for a reason. Students are supposed to think and come up with the answer. (p. 78, 2)

5. I find I'm questioning a lot of basic assumptions. It's interesting because I'm seeing basic differences, things that never occurred to me to question before. (p. 117, 5)

6. I'm not really sure there is anything to follow, any basics to make a decision. There's not much of any absolute standard you can rely on. (p. 116, 5)

7. You never decide on one set answer. You add and detract as you go along. You never really make a single decision as to what is best and what is worst. You've got to make some sort of decision, but this decision isn't final. (p. 146, 6)

8. It seems to me that an important factor that determines success must be the ability to take a position, to articulate one side of one issue. (p. 141, 6)

9. I believe everything my professors say because they are the authorities. (p. 61, 1)

10. I'm beginning to see that you don't ever get anywhere unless you do work. You just can not lie back and expect everything to come to you. (p. 139, 6)

11. I wish instructors would come right out with the right answers instead of dragging in all the extra details. They just end up confusing me. (p. 74, 2)

12. I don't think it's fair that instructors grade one student's answer against another, even when the right answer is unknown. (p. 90, 3)

Cognitive Development

13. Many professors know their subjects, but have trouble getting it across. They think on a different level. (p. 67, 1)

14. You kind of focus on the type of career you want and if you're going to work toward it, it has to own imperatives. It means you have to drop certain things and focus more on others. (p. 156, 7)

15. I know that if I really wanted to do something I could find a way of doing it, so I feel much more at peace with the world. (p. 150, 6)

16. Professors often drag in a lot that isn't directly related to what they're talking about. It's nice if you can appreciate it but it's sort of a huge amorphous mass of junk thrown at you. (p. 87, 2)

17. There seems to be so many conflicting opinions that the tendency is just to keep quiet until you really know just what the answer is. (p. 87, 2)

18. I think that I'm a little more objective in formal thinking now, than in the past, and I'm more aware of what I'm doing. (p. 127, 5)

19. I find I can detach myself emotionally from problems and look at their various sides in order to formulate a judgement. (p. 126, 5)

20. I have a little more confidence in those outside me and I don't feel bad about going for help when I have a problem. (p. 124, 5)

21. I'm frankly amazed that I have such firm convictions on many things and I'm able to back them up with what I consider logical reasoning. (p. 157, 7)

22. I'm out in the big world more or less. And I've come to things and decisions I've never had to make before and I've made them. (p. 156, 7)

23. I feel that whatever I do, there's going to be more to do. I know I will make mistakes, but I have a sense of being able to cope. (p. 160, 8)

24. I have a sense of purpose and a certainty in my goals. (p. 156, 7)

25. I feel I can do things and have power over myself and can effect any change I think right. (p. 158, 7)

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26. There's a lot of variety in point of view which I just don't understand. I can't understand how many people could think that way. (p. 76, 2)

27. Professors tell you to explain or interpret an assignment and I'm not very good at that. I can tell them what it says, but I'm not good at reading between the lines. (p. 80, 2)

28. I've come to a fairly settled idea of what I want to do as far as my career is concerned and my general values have kind of settled. I feel at home. (p. 165, 8)

29. I have my own standards or code, but I don't look down on people with different standards. (p. 163, 8)

30. It doesn't seem fair that marks aren't proportional to work. Many times people get better grades on papers they haven't worked very hard on than they do on ones they've really worked on. (p. 90, 3)

31. I feel I have a center or focus in my life, my inner life which is independent of where I am or what I'm doing. (p. 162, 8)

32. I've found in my courses that I have to make my own interpretations. I don't know how good I am at it but I think it's better than getting a recipe for the course. (p. 106, 4)

33. If you present more theories you can sometimes arrive at a better answer. If you only present one side of the question, you're just left up in the air on one side. (p. 108, 4)

34. College is different. All the responsibility is on you. If you want to pass a course, get a good mark, you're going to have to really study. (p. 104, 4)

35. A sense of responsibility is something which is never pronounced until you're on your own and until you're making your own decisions and then you realize how very important it really is. (p. 138, 6)

36. If teachers would stick more to the facts and do less theorizing one could get more out of their classes. (p. 67, 1)

37. I realize now that there's a lot of answers for a certain question. By reasoning it through, you can come to a variety of answers; it depends in which way you are looking at it. (p. 102, 4)

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38. It seems to me that instructors are trying to get you to look at something in a complex way, and to try to weigh more factors than one, and talk about things in a more concrete manner. (p. 101, 4)

39. I find that if I use the approach outlined in a course, I think in more complex terms; I weigh more than one factor. Somehow, what I think about things now is more sensible, even if there's no right or wrong answer. (p. 100, 4)

40. There are all kinds of pulls, pressures, etc., but there comes a time when you have to say, "Well, I've got a life to live--I want to live it this way. I make up my mind and I'll take the consequences." (p. 161, 8)

41. I don't think any question can have more than one answer. (p. 64, 1)

42. I've made a commitment with the possibility of withdrawing which I think is the only realistic kind of commitment I can make. (p. 161, 8)

43. Classes here get away from straight facts and put an emphasis on reading between the lines and interpretation. And I can't do that. (p. 77, 2)

44. Introductory courses are supposed to teach you to reason better. But you get the idea that the field is terribly confused and nobody knows what's coming off anyway. (p. 74, 2)

45. Professors like to find a paradox whether one exists or not, and they will twist the material so they can say something ironic. (p. 79, 2)