

HIERARCHICAL CLUSTER ANALYSIS OF FORMAL PERSONALITY THEORISTS: AN EMPIRICAL DESIGNATION OF THEORETICAL FAMILIES

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ABSTRACT

The emphasis, de-emphasis, or no emphasis of 20 dimensional categories (e.g., unconscious processes, purposive behaviour, early development) were compared by hierarchical cluster analysis for 15 formal personality theorists (e.g., Freud, Rogers, Bandura). Results uncovered three relatively unique families of theorists with 100% reclassification: (a) Adler, Erikson, Freud, Horney, and Murray were grouped as *Neo/Freudians*; (b) Allport, Bandura, Jung, Kelly, and Rogers as *Phenomenologists*; and (c) Cattell, Dollard/Miller, Eysenck, and Skinner as *Empiricists*. The first of two discriminant functions was based on positive loadings from each of purposive behaviour, multiple motives, and self-concept; and successfully discriminated among all three clusters (*Neo/Freudians* exceeded the *Phenomenologists* who exceeded the *Empiricists*). The second function was based on positive loadings from each of developmental continuity, early development, and learning; and negative loadings from purposive behaviour, uniqueness, organismic focus, and ideal self. This function successfully discriminated between the *Phenomenologists* and both *Empiricists* and *Neo/Freudians* (who did not differ).

INTRODUCTION

Students and scholars of personality psychology soon realize the vast number and diversity of theories available to explain the richness of human behaviour. Just as the DSM-IV constitutes a taxonomy of psychological disorders, similar attempts have been made to organize and synthesize the spectrum of formal personality conceptualizations by condensing related viewpoints into the fewest most comprehensive schools or camps. Several textbook authors propose a division according to five or six large camps (i.e., Freudian/NeoFreudian, Trait, Cognitive, Humanist/Existential, Social Learning and Behaviourist; see Funder, 2004; Hergenhahn, Olson, & Cramer, 2003; Monte & Sollod, 2003; Pervin, Cervone, & John, 2005), or discuss sets of theorists according to their specific assumptions of human nature (e.g., Maslow, Rogers, Allport, and Jung each

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discuss self-actualizing motives). Unfortunately, this conceptual taxonomy excludes any empirical justification for aligning a particular theorist with a particular camp. In addition to offering new pedagogic tools and historical insight into the lineage of personality theory development, an empirical summary could "highlight connections between theories and offer pointers to future lines of investigation" (Taft, 1960, p. 87).

To construct an empirical taxonomy, one requires empirical ratings or rankings of various elements in a formal theorists' conceptualization of personality. In each of three editions, Hall and Lindzey (1957, 1970, 1978) ranked the underlying assumptions of over a dozen personality theorists based on their relative endorsement of several evaluative dimensions (e.g., unconscious processes). Based on previous classification investigations, researchers have utilized cluster analysis (Everitt, Landau, & Leese, 2001) to group the personality theorists into the fewest (and most comprehensive) number of theoretical families. Taft's (1960) cluster analysis of Hall and Lindzey's (1957) ratings yielded the following five clusters based on their dimensional similarities: (a) Adler, Fromm, Horney, Murray, and Sullivan (focus on purposive/social factors); (b) Freud, Adler, and Jung (focus on developmental/unconscious factors); (c) Angyal, Goldstein, Jung, and Rogers (focus on innate organismic self-actualization); (d) Adler, Freud, Murray, and Sullivan (focus on developmental continuity in social interactions); and (e) Allport, Cattell, Eysenck, Freud, Jung, and Sheldon (focus on constitutional personality structures). Whereas Taft permitted multiple cluster membership (e.g., Freud, Jung, and Adler each appear in three clusters), Schuh's (1966) reanalysis with a mutually exclusive membership criterion identified only four clusters: (a) Adler, Fromm, and Horney (social emphasis); (b) Angyal, Goldstein, Rogers, and Dollard and Miller, (self-analysis); (c) Eysenck, Freud, Lewin, Murray, and Sheldon (unnamed; we suggest 'constitutional'); and (d) Cattell, Jung, and Sullivan (also unnamed; we similarly offer no label).

For Hall and Lindzey's (1970) ratings, Evans and Smith (1972) identified five clusters: (a) Binswanger and Boss, Rogers, Goldstein, Angyal, Allport, Miller and Dollard, and Cattell (self-analysis), (b) Fromm, Horney, Adler, and Freud (psychoanalysis), (c) Sheldon, Murray, Lewin, and Freud (biology), (d) Binswanger and Boss, Skinner, Miller and Dollard, Murray, and Allport (learning), and finally (e) Sullivan, Jung, and Freud (unnamed due to uninterpretability). Finally, Campbell's (1980) analysis of Hall and Lindzey's (1979) ratings revealed six clusters: (a) Freud and Erikson (early development), (b) Murray, Rogers, and Goldstein (emphasis on uniqueness), (c) Skinner and Cattell (de-emphasis of the psychological environment), (d) Dollard and Miller and Binswanger and Boss (de-emphasis of personality structure), (e) Horney and Angyal (self-concept or ideal-self), and (f) Allport, Eastern Psychology, and Sheldon (uniqueness of individual focus). Five theorists (Jung, Fromm, Sullivan, Lewin, and Adler) neither conformed to these clusters nor contributed to additional clusters.

The most recent analysis of personality dimensional ratings comes from Collins and Cramer (2003), who found two main clusters of theorists (each subdivided into two composite subclusters), partitioned according to their endorsement of social influence and unconscious determinism. The first main cluster consisted of Maslow, May, Kelly, Rogers, Allport, Adler, Rotter, Mischel, Fromm, and Bandura, and was subdivided into Maslow through Adler (*free will theorists*) and

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the remaining four (*social determinist*) theorists. The second main cluster consisted of Jung, Cattell and Eysenck, Freud, Dollard and Miller, Skinner, Sullivan, Klein, Horney, and Erikson, and was subdivided into Jung, Freud, and Cattell and Eysenck (*biological determinists*), and the remaining seven (*Neo/Freudian*) theorists.

Although unanalyzed to date, Hall, Lindzey, and Campbell (1998) provide a table of dimensional ratings for each of fifteen formal personality theorists. Since the first edition almost 50 years ago, dimensions have been added and subtracted, dimensional ratings have been modified, and theorists have been retained (e.g., Freud and Jung), included (viz. Bandura and Kelly), or excluded (viz. Angyal, Binswanger & Boss, Fromm, Goldstein, Lewin, Sheldon, and a composite labelled 'Eastern Psychology'). Admittedly, there has been limited use of these cluster analytic results to date, stemming in part from attention diverted away from the pursuit of taxonomic systems (with somewhat scattered social applications) instead to the delineation of implicit theories of personality — assumptions or naive belief systems about the associations among personality traits (de St. Aubin, 1996; Cheng & Hau, 2002; Kalliopuska, 1985; Martin, Blair, Nevels, & Brant, 1987; Silvera, Moe, & Iverson, 2000; Wrightsman, 1992).

In the present study, an hierarchical cluster analysis was similarly used to identify the most comprehensive yet parsimonious set of clusters among formal personality theorists. In an effort then to broaden the utility of these ratings for researchers and theoreticians, the most recent set of data were analyzed by cluster analytic techniques. Granted the present edition of ratings includes both new dimensions (e.g., molar emphasis) and new theorists (e.g., Kelly), a comparable pattern of theorist membership was still expected. Based on the results from past ratings (Campbell, 1980; Collins & Cramer, 2003; Evans & Smith, 1972; Schuh, 1966; Taft, 1960), we expected to observe theoretical families similar in composition across those reported previously: a cluster of Empirical theorists (those relying largely on empirical assessments of personality; e.g., Cattell and Skinner), a Neo/Freudian cluster (those advocating early childhood and unconscious factors; e.g., Freud and Erikson), and a Self-Actualist cluster (those endorsing free will and purposive behaviour; e.g., Rogers and Allport).

METHOD

Evaluation of Theorists

Hall et al. (1998, pp. 640-641) present a table of 15 personality theorists: Adler, Allport, Bandura, Cattell, Dollard and Miller, Erikson, Eysenck, Freud, Horney, Jung, Kelly, Murray, Rogers, Skinner, and Sullivan. Their underlying theoretical assumptions of human nature are summarized by the following 20 dimensions: abnormality, biological implications, competence, continuity of development, early development, field dependence, group influences, heredity, quest for an ideal or mature self, learning, molar focus, multiple motives, organismic focus, contribution of the psychological environment, purposive behaviour, self-concept, social science implications, structural emphasis, unconscious, and uniqueness. In their construction of this table, no information was available as to the number of raters who participated in the rankings, nor is it known whether any

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interrater-reliability estimates were derived. As in previous editions, each dimension was rated using a three-point scale, based on a theorist's emphasis ('3'), de-emphasis ('1'), or neither emphasis nor de-emphasis ('2') of a particular dimension. It was assumed that (a) these ratings are a sound interpretation of the total contribution of the writings of the theorist, (b) the rated aspects represent a reasonable collection of formal personality theorists, (c) the emphasized dimensions contribute equally to the essence of the theorist's thinking, and (d) the distance between ratings was not constrained as equal (cf. Campbell, 1980).

RESULTS

A 15 x 20 theorist by dimensional table of ordinal ratings was converted to correlation coefficients using Kendall's tau. Squared Euclidean distance algorithms were used to create the theorist dissimilarity matrix (see Table 1; higher numbers imply greater theoretical uniqueness). This table is useful for two reasons. First, it permits an assessment of the relative distinctiveness of each theoretical conceptualization (e.g., Adler is theoretically closer to Erikson than Freud; but further from Skinner, Dollard/Miller, and Eysenck). Moreover, it allows researchers at least the rudimentary tools to trace a theorist's historical roots and later influences (e.g., Horney's theoretical assumptions are closer to [more influenced by] Adler than either Freud or Jung).

Based on this dissimilarity matrix, an hierarchical cluster analysis (Everitt et al., 2001; Gordon, 1987) was used to designate unique groups of theorists, such that the similarity of each theorist's corresponding profile was maximized, and intertheorist correlations or similarities were high. Because cluster analysis is not beset by derivational assumptions, a variety of measure types may be used without concern of distributional shape (Everitt et al., 2001). Using the procedures and algorithms outlined by Ward (1963) which demands squared Euclidean distance estimates, visual inspection of the dendrogram yielded membership (of 15 theorists by 20 dimensions) into three clusters or families: (1) Erikson, Sullivan, Horney, Adler, Freud, and Murray (*Neo/Freudians*); (2) Allport, Jung, Kelly, Rogers, and Bandura (*Phenomenologists*); and (3) Cattell, Eysenck, Dollard/Miller, and Skinner (*Empiricists*).

After empirically assigning theorists to clusters, a discriminant function analysis (to reduce dimensional redundancy; Tabachnik & Fidell, 2001) evaluated whether the three clusters were stable, and whether the accuracy rate of assigning theorists to clusters was significantly better than chance. Although the sample size was admittedly small for this analysis, we believed it still appropriate given: (a) the chief aim of the analysis was classification rather than inference, and (b) the analysis was based on the population (rather than sample) of formal personality theorists. An initial assessment of the suitability of this analysis showed that Box's M test for homogenous group covariance matrices was not significant: $M = 5.448$, $F(6, 517) = 0.564$, $p = .759$.

Using both Mahalanobis distance and Wilks' Λ variable entry criteria, and without constraining group sizes as equal, a stepwise discriminant analysis was selected in an effort to reduce the number of constituent theoretical dimensions to its fewest. Two discriminant functions were calculated, with a combined $\chi^2(4, N$

Table 1. Personality Theorist Dissimilarity Distance Matrix

Theorist	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Alfred Adler	---	31	24	26	39	7	33	12	12	31	28	16	27	43	11
2. Gordon Allport		---	29	17	50	24	30	31	31	18	29	23	24	44	28
3. Albert Bandura			---	16	19	17	23	26	16	39	16	28	21	21	13
4. Raymond Cattell				---	25	21	11	24	24	23	28	20	31	21	21
5. Dollard/Miller					---	34	20	33	27	50	31	33	42	12	26
6. Erik Erikson						---	32	11	11	30	25	9	24	44	6
7. Hans Eysenck							---	27	31	28	29	27	36	12	30
8. Sigmund Freud								---	14	17	36	14	33	37	15
9. Karen Horney									---	25	18	20	15	39	7
10. Carl Jung										---	35	25	26	42	28
11. George Kelly											---	28	15	33	17
12. Henry Murray												---	31	45	11
13. Carl Rogers													---	42	16
14. B.F Skinner														---	38
15. Harry Sullivan															---

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Note. Squared Euclidean distance estimates; higher values imply greater theoretical uniqueness.

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= 15) = 38.71, $p < .001$, Wilks' $\Lambda = .035$, eigenvalue (λ) = 12.79. After removal of the first function, there was still a strong association between cluster membership and the theoretical dimensions: $\chi^2 (1, N = 15) = 8.53, p = .003$, Wilks' $\Lambda = .476, \lambda = 1.10$. Table 2 shows the loading matrix of correlations between theoretical dimensions and discriminant functions. The first function accounted for 92.1% of the between-group variability, and maximally separated all three groups: *Empiricists* (centroid = -4.68), *Phenomenologists* (-0.23), and *NeoFreudians* (3.31). Stepwise entry of dimensions showed that purposive behaviour was the chief contributor to this discriminant function. An analysis of variance of purposive behaviour by cluster was significant, $F (2, 12) = 31.68, p < .001, MSE = .129$. Student-Newman-Keuls multiple comparison tests showed that *Empiricists* ($M = 1.25$) de-emphasized the role of purposive behaviour significantly more than both the *Phenomenologists* ($M = 2.80$) and *NeoFreudians* ($M = 3.00$).

Table 2. Stepwise Discriminant Function Analysis and Descriptive Statistics

Dimension	Structure Matrix		Neo/ Freudians (n = 6)		Phenomen- ologists (n = 5)		Empiricists (n = 4)	
	D1	D2	M	SD	M	SD	M	SD
	Abnormal Behaviour	-.099	-.074	2.67	0.52	2.00	0.71	2.00
Biological Anchoring	.056	-.149	2.17	0.75	1.80	1.10	2.25	0.50
Competence	.273	.223	2.33	0.52	2.20	1.10	1.25	0.50
Continued Development	.079	.977	2.83	0.41	1.40	0.89	2.50	0.58
Early Development	.132	.718	2.67	0.52	1.20	0.45	2.25	0.50
Field Dependence	.134	-.160	2.50	0.84	2.20	0.84	1.50	0.58
Group Membership	-.110	.001	2.67	0.52	1.60	0.55	1.75	0.50
Heredity	.215	-.185	2.00	0.89	1.60	0.89	2.50	1.00
Ideal or Mature Self	-.010	-.493	2.67	0.52	2.20	1.10	1.00	0.00
Learning Process	-.131	.497	1.83	0.41	2.00	0.71	3.00	0.00
Molar Emphasis	.068	-.472	2.00	0.00	2.20	0.45	1.50	0.58
Multiple Motives	.554	-.195	1.67	0.82	1.60	0.89	1.75	0.96
Psychological Environment	.276	-.172	2.67	0.52	2.60	0.55	1.00	0.00
Purposive Behaviour	.598	-.802	3.00	0.00	2.80	0.45	1.25	0.50
Organismic Emphasis	.134	-.533	2.17	0.41	2.60	0.55	1.50	0.58
Self-Concept	.429	-.096	2.83	0.41	2.60	0.55	1.50	1.00
Social Science Anchoring	-.057	.397	3.00	0.00	1.60	0.55	1.50	1.00
Structural Emphasis	.130	-.228	2.50	0.55	2.00	1.00	2.00	1.15
Unconscious Determinants	-.068	-.416	2.50	0.55	1.60	0.89	1.75	0.50
Uniqueness	.181	-.587	2.33	0.52	2.00	0.71	1.50	0.58

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The second function (7.9%) maximally separated *Empiricists* (centroid = 0.73) and *Neo/Freudians* (0.62) from *Phenomenologists* (-1.33). Stepwise entry of dimensions showed that developmental continuity and the inverse of purposive behaviour were the chief contributors to this discriminant function. An analysis of variance of developmental continuity by cluster was significant, $F(2, 12) = 7.03, p = .010, MSE = .419$; wherein *Phenomenologists* ($M = 1.40$) de-emphasized developmental continuity significantly more than both *Empiricists* ($M = 2.50$) and *Neo/Freudians* ($M = 2.80$).

DISCUSSION

The present hierarchical cluster analysis of Hall and Lindzey's dimensional ratings of 15 formal personality theorists was undertaken to derive the fewest most comprehensive set of theoretical families or clusters. By maintaining the ordinal characteristics of the data (cf. Campbell, 1980), and utilizing discriminant functions as an assessment of cluster stability and interpretation, the present study is unique in its approach. Using just two dimensions (developmental continuity and purposive behaviour), results indicated three clusters of personality theorists: the *Neo/Freudians* (Erikson, Sullivan, Horney, Adler, Freud, and Murray); the *Phenomenologists* (Allport, Jung, Kelly, Rogers, and Bandura); and the *Empiricists* (Cattell, Eysenck, Dollard/Miller, and Skinner). Similar cluster composition has been observed in previous studies (Campbell, 1980; Collins & Cramer, 2003; Evans & Smith, 1972; Taft, 1960). For instance, a *Neo/Freudian* cluster was identified as the first cluster for both Schuh (1966) and Taft (1960), the second cluster for Evans and Smith (1972), and the fourth cluster for Collins and Cramer (2003). A *Phenomenologist* cluster was identified as the first cluster for both Collins and Cramer (2003) and Evans and Smith (1972), and the second cluster for Schuh (1966). Finally, an *Empiricist* cluster was identified as the third cluster for Campbell (1980), the fourth cluster for Evans and Smith (1972), and the fifth cluster for Taft (1960). In addition, both purposive behaviour and developmental continuity have been particularly important dimensions in the cluster analytic results of both Taft (1960) and Collins and Cramer (2003).

That optimal prediction of cluster membership was achieved with only two of the twenty evaluative dimensions is curious, since great lengths were taken to carefully evaluate theorists according to a score of dimensions, many of which appear by the present findings to be either redundant or superfluous. Very likely, the remaining dimensions would become useful when creating subclusters within a theoretical family. To use the *Empiricists* as an example, the learning dimension is emphasized by Dollard/Miller and Skinner, but by neither Cattell nor Eysenck. Theorists who emphasize developmental continuity suggest not only that events taking place in the present are systematically linked to events that took place in the past, but that development is a consistent process accountable in terms of a single set of principles (cf. Erikson, Freud, Murray, Bandura, Skinner, Dollard and Miller). Alternatively, other theorists (most notably Allport, Kelly and Rogers) stressed a lack of developmental continuity and relative independence of the functioning adult from the events of childhood or infancy. They suggest instead that different principles may be needed to account for what takes place at different stages of development. Alternatively, with respect to purposive behaviour, Hall et al. write (p. 631): "the importance of conceiving the human organism as a striving, seeking, purposive creature is less central today

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In summary, these findings offer personality researchers clear avenues to test the underlying assumptions of human nature for a family of personality theorists, since all theorists who similarly proposed a particular hypothesis can either jointly profit from its confirmation, or jointly suffer its disconfirmation. Moreover, new theorists of personality may utilize this taxonomic system as a starting point to ground their tenets in the foundations of previous theorists. Finally, the taxonomic system outlined in the present findings should offer useful tools to historians, philosophers, and instructors of personality theory — that there may be more similarity than difference in views of human nature.

NOTES

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