

COMBINING TRAIT CONSISTENCY AND LEARNING SPECIFICITY APPROACHES TO PERSONALITY, WITH ILLUSTRATIVE DATA ON FACULTY TEACHING PERFORMANCE

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Summary—Data on personality and teaching performance in university professors are brought to bear on the debate about the consistency of social behaviour. We argue: (a) that traits can best be inferred by sampling from a domain of specific acts and then aggregating across them to gain a representative composite; and (b) that the modification of behaviour largely represents the alteration of specific acts. In particular, we report data showing: (a) that extraversion correlates 0.51 with teaching effectiveness; (b) that this relationship is mediated by specific classroom behaviours; (c) that extraversion correlates 0.33 (on average) with single teaching behaviours, as compared to 0.50 with an aggregate of behaviours; and (d) that training on specific classroom behaviours improves teaching effectiveness. We conclude that both consistency and specificity exist in behaviour and that each provides a useful focus for analysis. Schematic models representing different levels of explanation are provided.

INTRODUCTION

The question of whether people's behaviour is sufficiently consistent across different situations to make the trait concept useful remains a central issue in contemporary personality theory. As Mischel and Peake (1982) point out:

“The position one takes on [this issue] profoundly affects one's view of personality and the strategies worth pursuing in the search for its nature and implications”
(p. 730).

This paper offers data supporting a potential resolution of this historic debate. We suggest that both those who focus on the consistency of behaviour (often trait theorists) and those who focus on its specificity (often learning theorists) are correct in much of what they assert but wrong in what they leave out. We provide an elementary statistical model for comprehending how there is both consistency *and* specificity in behaviour and how the utility of each perspective depends on the purpose at hand. We provide data on the personality and classroom behaviour of university professors to illustrate our model. We begin with a consideration of the trait of intelligence which can serve as a useful example for understanding the issues involved.

INTELLIGENCE AS A MODEL TRAIT

The first major individual difference variable to be adequately measured was intelligence, and there is now general agreement that individual differences in IQ test scores show both durability over time and consistency across situations (Anastasi, 1982). Thus, regarding durability over time, Husen (1951) found a Pearson correlation of 0.72 between the test scores of 613 third grade schoolboys and the scores obtained by the same persons 10 years later on their induction to military service. Harnqvist (1968) reported a correlation of 0.78 between tests administered at ages 13 and 18 years to over 4500 young men. As far as consistency across indices is concerned, many investigators of IQ have noted the operation of a large “g” or general factor across different measures. Brown (1970, pp. 342–343), for example, in his discussion of the Differential Aptitude Test (DAT), notes correlations of 0.51 to 0.69 among such supposedly separate dimensions as ability to perceive spatial relations, abstract reasoning ability, and numerical ability.

IQ tests demonstrate more than just consistency and durability. They are also highly predictive of other measures. IQ test scores usually correlate between 0.50 and 0.80 with a wide range of scholastic achievement measures (Jensen, 1980). If IQ and achievement scores are obtained at each grade level and average over 3 to 5 years, the correlation between aggregated IQ and achievement scores approaches 0.90, or nearly the reliability of IQ tests. Using IQ in grade 4 as the predictor, the following typical correlations with various criteria are found (Jensen, 1980): achievement in grade 6 (0.75); current oral reading ability (0.60); current teachers' ratings of pupils' intelligence (0.60 to 0.80); rank in high school graduating class (0.44); grade point average in various colleges (0.30 to 0.70); highest level of education obtained by age 40 (0.50); occupational prestige for young men ages 18–26 (0.50), and for men over 40 (0.70).

The success that psychometricians found in producing tests of durability and consistency in the field of intelligence spurred similar efforts in the field of social behaviour. From the 1930s to the 1980s major efforts have been made to find paper and pencil equivalents of the IQ test for such traits as anxiety, empathy, extraversion, dependency, dominance, honesty, social maturity and psychopathy. The attempt to measure such traits was often atheoretical. Nonetheless, as in the attempt to measure intelligence, the enterprise rested upon a commonsense view of individual differences going back to ancient times. Unfortunately for the trait perspective, however, scholarly reviews concluded that the available evidence failed to support the basic tenets of the trait approach (Mischel, 1968; Vernon, 1964). In particular, reviewers pointed to evidence that the correlation typifying the degree of cross-situational consistency in social behaviour was 0.20 to 0.30, too small a figure, it was argued, to support the trait perspective.

The generality of intellectual and cognitive variables has not been at issue to critics of the consistency of social behaviour. For example, in *Personality and Assessment*, Mischel (1968) notes:

“... cognitive and intellectual measures often turn out to have reasonable cross-situational generality and stability... the generality of [personality] dispositions usually is far less...” (pp. 20–21).

If the apparent paradox of differential consistency between intellectual and non-intellectual traits had been scrutinized more carefully a different conclusion might have resulted. While cross-situational measures of intelligence are typically 0.50 to 0.70, these figures are based on aggregate measures of both predictor and criterion. Single items on IQ tests intercorrelate only about 0.15. Subtests based on 4 to 6 items correlate 0.30 or 0.40, and batteries of items comprising, for example, Verbal and Performance subscales correlate approx 0.80. Thus, even with IQ tests, if the focus is on single items, low correlations occur (Green, 1978). The parallel is true of social traits: low correlations ensue when single items are the focus but higher correlations occur when items are combined into more representative composites. Critiques of trait theory, inappropriately examined intelligence at the aggregate level and social behaviour at the item level, and thereby committed an egregious error.

THE PRINCIPLE OF AGGREGATION

The variance of scores on individual items can be thought of as consisting of three uncorrelated components: *true score variance* (measured by the degree to which the item correlates with the total score), *item specificity variance* (a unique source of variance entirely specific to a particular item), and *error variance* (random measurement error). Measurement error is normally distributed and usually, in reality, so is specificity variance. In constructing tests, specificity variance and error variance are usually lumped together as error variance. As a result of the error and specificity variance associated with each item (and also because of the limited range of possible scores on each item), single items only intercorrelate between 0.10 and 0.30. When items are aggregated into batteries, however, more substantial correlations emerge. This greater predictability occurs because the ‘error variance’ associated with any one item is usually large compared with the non-random component of interest. By aggregating over items, the error variance tends to average out because it is random and therefore not cumulative, whereas behavioural consistency (true score variance) accumulates systematically across items.

The point that multiple-item predictors correlate as highly with multiple-act criteria in the social domain as they do in the cognitive domain has often been made before (e.g. Eysenck, 1953), but apparently is one that requires constant reiteration (Epstein and O'Brien, 1985; Jackson and Paunonen, 1985; Rushton, Brainerd and Pressley, 1983). While many adopted the basic intelligence testing model in constructing personality tests, the same attention was not always devoted by users of the tests to the selection of criteria to be predicted. Many researchers attempted to predict single items of behaviour. But typically it makes no more sense to use a single act as an index of a criterion than it does to employ a single test item as a predictor. Specificity variance in both predictor and criterion measures should usually be treated as error variance and aggregated out. Before examining some very real limitations to this principle, we briefly review the demonstrable benefits that accrue from aggregation.

Eaton (1983), for example, assessed the activity level of 3 and 4 year olds using single versus multiple actometers attached to the children's wrists as the criterion, and teachers' and parents' ratings of the children's activity level as the predictor variables. Activity scores based on ratings correlated relatively modestly (0.33) with measures from single actometers but considerably more strongly with those based on multiple actometers (0.69). Similarly, Fishbein and Ajzen (1974) found that although various attitude scales did not correlate highly with single behaviours (0.14 to 0.19), their correlations with aggregated behavioural measures ranged from 0.70 to 0.90. Comparable findings were reported by Jaccard (1974), who demonstrated that personality scales predicted self-reported dominance behaviours better in the aggregate than they did at the single item level. While the personality scales each had mean correlations of 0.20 with individual acts, the aggregated correlations were 0.58 and 0.64.

To sum up this section, evidence indicates that when the principle of aggregation is applied to predictor and criterion variables, the correlations rise from a typical 0.20 to a more substantial 0.50 to 0.90. Thus the data reviewed in this section support the psychometric measurement model which proved so effective in dealing with IQ tests. In the next section we provide additional data that independent estimates of personality substantially predict social behaviour. We then discuss conditions under which the psychometric 'consistency' model proves less useful than the specificity one.

THE UNIVERSITY OF WESTERN ONTARIO STUDY OF PSYCHOLOGY PROFESSORS

Over the last several years, an extensive set of personality and teaching performance measures collected from university professors has been available at The University of Western Ontario. We report here data pertinent to the issues discussed above. Additional accounts have been reported elsewhere (Erdle, Murray and Rushton, 1985; Murray, 1975, 1980, 1983; Rushton, Murray and Paunonen, 1983). In this article we examine the trait of extraversion among psychology professors in relation to (a) their specific classroom teaching behaviours as reported by trained observers; and (b) their overall teaching effectiveness, as measured by student instructional ratings. The choice of extraversion was thought appropriate for it constitutes one of the most widely researched traits in the field of personality, and there is already a literature linking individual differences in extraversion to expressive behaviours similar to the classroom teaching behaviours to be considered here (Campbell and Rushton, 1978; Eysenck and Eysenck, 1985; Wilson, 1981).

METHOD

Subjects

Complete data were available for 35 male and 2 female full-time psychology professors of varying rank who were, or recently had been, at the University of Western Ontario. Because of the small number of women, all analyses were collapsed across sex.

Measure of extraversion

All faculty members in the department were mailed a set of 29 trait adjective names, along with trait definitions and instructions on how to rate several named colleagues on 9-point scales. The

instructions emphasized that ratings were to be based solely on personal observation and were to be made relative to other university professors rather than to people in general. The description of the trait 'extraversion', adapted from Eysenck and Eysenck (1975), was: "has many friends; craves excitement; fond of practical jokes; is carefree, easy going, optimistic." The number of peer raters per faculty member ranged from 8 to 15, with a mean of 11, which corresponds to an overall return rate of 70%.

Observation of classroom behaviour

Each professor was observed during three separate 1-hr class periods over a 3-month period by an average of 6 trained observers. Thus, each faculty member was observed for an average of 18 hr (range = 9 to 33 hr). The observers, students enrolled in an educational psychology course, were randomly assigned a sample of 5 teachers each, with instructions to unobtrusively visit regular classes taught by these individuals and observe low inference behaviours. Observations were recorded on a standardized rating form, the *Teacher Behaviours Inventory* (Murray, 1983), comprising 95 specific classroom behaviours rated on a 5-point frequency of occurrence scale from 1 = never to 5 = always. Eleven of these, comprising a category of 'expressiveness', were chosen for analysis here (see Table 1).

Measure of teaching effectiveness

Performance in teaching was determined from archival student rating data collected in the Department since 1969. The University of Western Ontario requires annual, end-of-course student evaluation of instructors in all courses. In the Department of Psychology, students evaluate teachers on ten 5-point scales assessing various aspects of classroom performance. The last item, "How would you rate your instructor in terms of general, overall effectiveness as a teacher?", was used as the criterion of teaching effectiveness in the present study. Effectiveness ratings for each professor were averaged over all undergraduate courses taught between 1974 and 1979 ($M = 11$). A split-half reliability coefficient of 0.91 was obtained for this measure by correlating ratings from odd- and even-numbered courses and correcting by the Spearman-Brown formula. The validity of student ratings in measuring teaching effectiveness has been discussed by Murray (1980). The weight of evidence on this issue suggests that student ratings are consistent with similar ratings made by alumni, colleagues, and trained classroom observers, and are significantly correlated with more objective measures of teaching effectiveness such as student exam performance.

Reliability of measures of extraversion and classroom behaviour

The corrected split-half reliability of peer ratings of the trait of extraversion was 0.88, indicating considerable agreement among faculty members in their ratings of colleagues. Moreover, peer-ratings of extraversion demonstrated convergent validities of 0.57, 0.58 and 0.57 with assessments of the same trait based on professors' self-ratings, scores on the *Eysenck Personality Questionnaire* (Eysenck and Eysenck, 1975), and student ratings of extraversion, respectively (Rushton *et al.*, 1983).

Table 1. Correlation of classroom teaching behaviours with extraversion and teaching effectiveness

Teaching behaviours	Extraversion	Teaching effectiveness
1. Moves back and forth in front of class	0.15	0.23
2. Gestures with hands and arms	0.10	0.29*
3. Exhibits facial gestures or expressions	0.28*	0.27*
4. Avoids eye contact with students	-0.32*	-0.45*
5. Smiles or laughs while teaching	0.52*	0.31*
6. Speaks in a 'dramatic' or expressive voice	0.44*	0.57*
7. Voice lacks proper modulation (speaks in a monotone)	-0.44*	-0.57*
8. Speaks softly	-0.35*	-0.32*
9. Stresses important points by pausing, speaking slowly, raising voice etc.	0.14*	0.37*
10. Tells jokes or humorous anecdotes	0.50*	0.39*
11. Talks with students before or after class	0.36*	0.30*
Aggregate of teaching behaviours	0.50*	0.56*

* $P < 0.05$.

Split-half reliabilities, corrected by the Spearman–Brown formula, were similarly computed for observer ratings of each of the 11 expressive teaching behaviours. These ranged from 0.44 to 0.74 with a mean of 0.58. When aggregated into a battery, the 11 behaviours had an alpha coefficient of 0.87. Item-rest correlations (i.e. corrected item – total correlations) ranged from 0.19 to 0.86, with a mean of 0.58.

Relation of extraversion and classroom behaviour to teaching effectiveness

As shown in Table 1, correlations between extraversion and each of the 11 specific classroom behaviours ranged from 0.10 to 0.52 and averaged 0.33. An unweighted linear sum of ratings of the 11 behaviours, however, correlated 0.50 with extraversion. Correlations between teaching effectiveness and each of the 11 classroom behaviours are also shown in Table 1. These ranged from 0.23 to 0.57, and averaged 0.38. As with the variable of extraversion, teaching effectiveness shows a substantially higher correlation of 0.56 with the aggregate measure of classroom behaviour. Extraversion also correlated 0.51 with teaching effectiveness and a path analysis revealed that 41% of this relationship was mediated by the aggregate of expressive teaching behaviours.

INTERFACING LEVELS OF EXPLANATION

The data presented above demonstrate that the trait concept can be useful in predicting social behaviour, especially when single items are aggregated to form more representative predictor and criteria variables. Although inspection of the table reveals single behaviours which correlate higher than the aggregate with extraversion and teaching effectiveness, it is important to note that on average individual behaviours correlate substantially lower than the aggregate. Furthermore, path analysis revealed that 41% of the association between extraversion and teaching effectiveness was explained by the inclusion of the aggregate of expressive teaching behaviours as a mediating variable. On average, any single expressive behaviour, analyzed in place of the aggregate, accounted for much less of the correlation. Thus, when the requirements for valid measurement are fulfilled, it appears that personality traits are observed to predict social behaviour with accuracy approaching that with which IQ tests predict achievement.

It appears that extraverts have an advantage in being the more effective communicators in the classroom. As we have discussed, the correlation of 0.51 between extraversion and teaching effectiveness demonstrates the predictive utility in this context of broadly-based personality constructs. On other occasions, however, a finer grained analysis of specific behaviour is useful. Although extraversion may predict which teachers will be most successful in terms of overall effectiveness, this type of analysis provides no indication as to the specific things that successful teachers actually *do* in the classroom. In the absence of the type of information itemized in Table 1, instructors who receive poor ratings from students may have little idea of the specific behaviours that led to those ratings or the specific changes that should be made to bring about improvement.

Murray (1983) has argued that a number of specific behaviours contributing to 'teacher expressiveness', serve to elicit and maintain student attention, and thereby to enhance motivation and learning. Given that actors are skilled in the use of similar expressive behaviours to communicate ideas on the stage, it might be hypothesized that college teachers could be trained to communicate more effectively through a speech and drama programme aimed at improvement of lecture skills. Murray and Lawrence (1980) carried out a study to test this hypothesis. Twelve teachers responded to a request for volunteers while another 12 were selected using a careful matching procedure. The volunteers participated in a series of sessions on acting technique given by an experienced speech and drama instructor. Specific activities included breathing and voice exercises, reading of monologues and speeches, acting out of short scenes from plays, practice in the use of vocal variation, pausing, eye contact, facial expression, and body movement to reinforce meaning, and videotaping with corrective feedback from the instructor and other participants.

Classroom teaching performance in the Murray and Lawrence (1980) study was measured by a 42-item student rating-form administered near the beginning (pretest) and again near the end (posttest) of a 20-week period. To check that improvement did not reflect a generalized placebo effect, the rating-form included both 'target' items, which were expected to change as a result of

training, and 'nontarget' items, which were not expected to change. The results demonstrated that speech and drama training produced significant improvement in target teaching behaviours, but not in nontarget behaviours. This effect was most marked for specific items such as 'shows facial gestures or expressions,' but was also present for global items such as 'ability to maintain student attention.' Thus Murray and Lawrence (1980) demonstrated that university teaching could be improved through training focussed on specific classroom behaviours.

The advantage of emphasizing specific behaviours rather than general traits can now be made explicit. As Bandura (1969), Mischel (1968), and others have demonstrated, 'problem behaviours' are often highly particularized, and much therapeutic ineffectuality (and harm) has stemmed from conceptualizing them in global terms. Thus bed-wetting (enuresis) is better viewed as a failure to learn a distinctive stimulus-response relationship (full bladder-wake up) than as a symptom of an underlying pathology (Lovibond, 1964). Similarly, people suffering from fear of public speaking are better treated by helping them over this express lack of competence than by treating them for generalized anxiety (Paul, 1967). In the cognitive domain, a focus on the acquisition of definite goals can result in mastery of mathematical operations and a sense of intrinsic interest not achieved by more global efforts (Bandura and Schunk, 1981). The specificity perspective therefore has provided a service by emphasizing that responses vary as a result of learning within discriminable situations. As Wiggins (1973) wrote:

"Regardless of the virtues or limitations of a strict 'situationist' stance, the initial writings of the social behaviorists have served to underscore the relative neglect of situational factors by most trait theorists" (p. 368).

Perhaps a long overdue consensus or rapprochement is growing between trait and learning theorists to the effect that, depending on the purpose at hand, both doctrines of specificity and consistency are correct. Recently, for example, Mischel agreed that when responses are aggregated across situations, stable mean levels of behaviour (i.e. traits) will be found. He wrote:

"We do not doubt the occurrence of stable means, but we are equally impressed by the occurrence of substantial variance around those means. Sampling behavior extensively in a domain often allows useful predictions of individuals' aggregated mean levels of behavior in that domain . . ." (Mischel and Peake, 1982, pp. 747-748).

We believe the data presented in this paper furnish empirical support for this emerging consensus. The challenge now is to build upon theories of personality functioning that usefully incorporate all of the levels involved. One early system exemplifying this integration is the hierarchical model proposed by Eysenck (1947) extending from single acts to habitual responses to traits to types (see Fig. 1). While the model is applied to introversion, its relevance is obviously general, including the data presented here.

Another schematic representation of the different levels of analysis is portrayed in Fig. 2. Here causal accounts vary on a time dimension (Rushton, 1984). When explanations move from distal

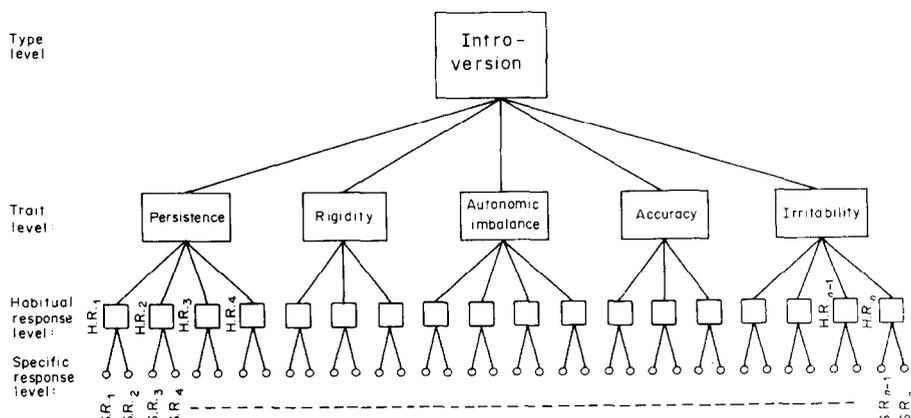


Fig. 1. Diagrammatic representation of hierarchical organization of personality (after Eysenck, 1947).

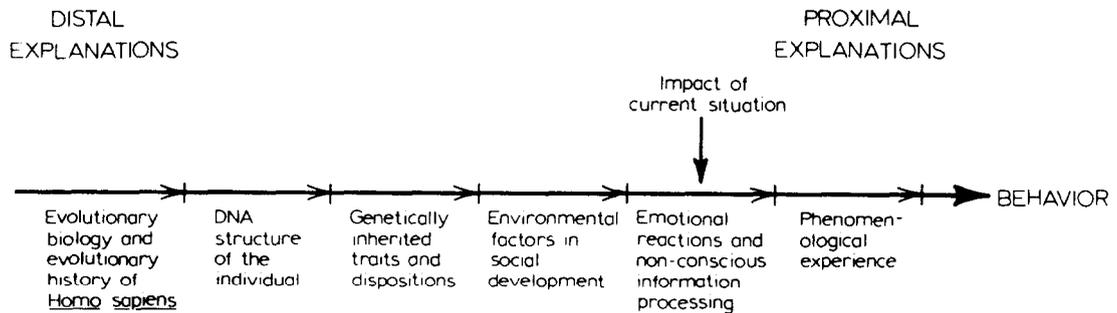


Fig. 2. Diagrammatic representation of the distal-proximal dimension and levels of explanation in personality psychology (after Rushton, 1984).

to proximal, controversy does not normally ensue. Evolutionary biologists do not find the heritability of traits problematic, and trait theorists usually accept that dispositions are modified by later learning. In addition, learning theorists believe that the products of early experiences interact with subsequent situations to produce emotional arousal and cognition prior to behaviour. Disagreement is more likely, however, as explanation moves from proximal to distal levels. Some phenomenologists, situationists, and cognitivists, focussing on processes just prior to behaviour, mistrust the view that these processes are partly the result of previous learning. Learning theorists, in turn, do not always accept that a person's development may have been guided by inherited traits. Often behaviour geneticists ignore the evolutionary history of the animals they study. When different explanatory models are seen as complementary, greater progress may ensue.

New challenges now present themselves. When for example is it more useful to focus on inter-individual differences, and when is it more useful to adopt the intra-individual perspective? At a theoretical level, interesting questions arise as to the origins of generalized dispositions and specific behaviours. Is it the case that traits tend to be largely inherited while specific behaviours tend to be socially learned? If so, are people inclined to acquire those patterns of behavior most congruent with their genotypes (Lumsden and Wilson, 1985; Rushton, Littlefield and Lumsden, 1986)?

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