

## A PRELIMINARY COMPARISON OF SELECTED PRF AND DPQ SCALES

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### ABSTRACT

Seven pairs of personality scales were selected from Tellegen's differential Personality Questionnaire (DPQ) and Jackson's Personality Research Form (PRF) on the basis of similar or opposite scale definitions. It was hypothesized that the conceptual relationships that are seen in the scale definitions would be reflected in strong correlations between the selected scale pairs. The items which compose each pair of scales were examined to determine the degree of item similarity. Pearson correlations between the scale pairs showed strong and significant relationships in the directions predicted from scale definitions. These findings were presented in the form of an abbreviated Campbell-Fiske matrix and discussed in relation both to the degree of item similarity in the scale pairs and to convergent and divergent validity issues. An intercorrelation matrix of all DPQ and PRF scales was also presented.

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#### INTRODUCTION

Test validation is a complex task that requires a multiprocedural approach (Anastasi, 1986; Jackson, 1970, 1973; Guion, 1983). Ideally, validity should be built into a test from the beginning of test development and maximized at all stages of the test construction process. Methods that fulfill this criterion would be to begin with traits or constructs derived from a coherent theoretical framework, or from empirical research that identified significant relationships between constructs and behavior. Construct identification is then followed by empirical and psychometric item selection and analysis. Finally, validation studies would be constructed using external, situation-specific criteria, as well as alternate methods of measuring the theoretical construct (Anastasi, 1986).

Two multiscale self-report personality tests have been developed that have made use of the above validity considerations in their construction. One of these, the Personality Research Form (PRF), was developed by Douglas Jackson (1968) using Murray's topology to identify and define the measured personality traits. The PRF contains 14 individual scales: Achievement, Affiliation, Aggression, Autonomy, Dominance, Endurance, Exhibition, Harmavoidance, Impulsivity, Nurturance, Order, Play, Social Recognition, and Understanding. The second test that meets the criteria is the Differential Personality Questionnaire (DPQ) developed by Auke Tellegen (1982). The constructs measured by the DPQ were not derived from any particular theoretical framework, but were those that review of empirical research identified as being robust and conceptually independent personality traits. The eleven primary scales that make up the DPQ are Wellbeing, Social Potency, Achievement, Social Closeness, Stress Reaction, Alienation, Aggression, Control (vs. Impulsiveness), Harmavoidance, Traditionalism, and Absorption.

Although the personality traits measured by these two tests were selected using differing methods, conceptual relationships exist among many of their trait definitions. Some of the two tests' scales measure conceptually similar traits, while others measure traits that are conceptual opposites. Several of the scales even have identical trait names. Convergent validity of these theoretically related scales would be demonstrated if they were found to be significantly correlated in directions consistent with predictions based upon construct definitions. Divergent validity would concurrently be demonstrated if the conceptually related scales were shown to be more strongly related to each other than to conceptually unrelated scales. At the present time, no published studies have compared the DPQ and PRF or any scales selected from them.

A sometimes-overlooked, but important, issue in studying the validity of tests is the actual independence of the instruments used to measure the trait in question. This issue takes on even more importance when different measures of a trait are similar in format like the DPQ and the PRF. To be meaningful, comparisons among similarly formatted measures of a trait must be based on scales composed of different items. As the number of shared items increases, interpreting correlation statistics between test scores becomes more and more difficult. Therefore, when utilizing similarly formatted but supposedly independent measures of a trait for validation purposes, the degree of independence of the item pools should be ascertained.

The purpose of this study was to provide preliminary convergent and divergent validity data for pairs of DPQ and PRF scales selected on the basis of their conceptual relatedness. Prior to data collection, the items making up each pair of scales were examined to determine their actual degree of independence. It was predicted that scales with similar trait definitions would show strong positive relationships, while those with opposite trait definitions would show strong negative relationships. As no research comparing the DPQ and PRF has been published, the correlations among all of the scales in each test would be performed.

The trait definitions of the scales selected for study will be described below to illustrate the conceptual ties between the paired measures. Of the seven pairs chosen, six were found to have scales measuring conceptually similar traits, and one was made up of scales measuring conceptually opposite traits.

## DPQ and PRF COMPARISON

The first pair of scales consists of DPQ Achievement and PRF Achievement. Tellegen describes high scorers on his Achievement scale as individuals who work hard, like long hours, enjoy demanding projects, persist where others give up, put work and accomplishments before many other things, and are perfectionistic. Jackson describes high scorers on his Achievement scale in very similar terms, as individuals who aspire to accomplish difficult tasks, maintain high standards, are willing to work toward distant goals, respond positively to competition, and are willing to put forth effort to attain excellence.

The second pair of scales includes DPQ Social Closeness and PRF Affiliation. High scorers on the Social Closeness scale are described as sociable, liking people, taking pleasure in and valuing close interpersonal ties, warm and affectionate, and turning to others for comfort and help. Very similar terms are used to describe high scorers on Affiliation who are seen as enjoying being with friends and people in general, as being readily accepting of people, and as making efforts to win friendships and maintain association with people.

The next set of measures is made up of DPQ Aggression and PRF Aggression, both of which employ similar trait descriptions. High scorers on the DPQ Aggression scale are described as people who will hurt others for their own advantage, are physically aggressive, like to frighten and discomfort others, and like violent scenes. Individuals who score highly on the PRF Aggression measure are described as people who enjoy combat and argument, are sometimes willing to hurt people to get their way, and may seek to "get even" with people whom they perceive as having harmed them.

The fourth pair of scales consists of DPQ Social Potency and PRF Dominance. Tellegen describes high scorers on his scale as persons who are forceful and decisive, persuasive and like to influence others, enjoy or would enjoy leadership roles, and take charge of and like to be noticed at social events. Similarly, Jackson describes high scorers on his scale as individuals who attempt to control their environment, try to influence or direct other people, express opinions forcefully, and who enjoy the role of leader and may assume it spontaneously.

The fifth scale pair is made up of DPQ Harmavoidance and PRF Harmavoidance. Again, both scales employ similar trait definitions, with high scorers on the DPQ scale being described as not enjoying the excitement of adventure and danger, and preferring safer activities even if they are tedious or aggravating; while those on the PRF scale are described as not enjoying exciting activities, especially in danger is involved, avoiding risk of bodily harm, and seeking to maximize personal safety.

The next pair of scales also display similar trait definitions. These measures are DPQ Control and PRF Order. Individuals who score at the upper end on the Control scale are described as reflective, cautious, careful, plodding, rational and sensible, liking to anticipate events, and liking to plan their activities. High scorers on the Order scale are described as concerned with keeping personal effects and surroundings neat and organized; disliking clutter, confusion and lack of organization; and interested in developing methods for keeping materials methodically organized.

The last set of scales is DPQ Control and PRF Impulsivity. Unlike the other six pairs of scales, the trait definitions of these scales are conceptual opposites. High scorers on the Impulsivity measure, in contrast to those described above for

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Order, are described by Jackson as tending to act on "the spur of the moment" and without deliberation, readily give vent to feelings and wishes, speak freely, and as possibly being volatile in emotional experiences.

### METHODS

#### SUBJECTS

The sample consisted of 131 students enrolled at the University of Tennessee, Knoxville. Sixty-nine were enrolled in the College Scholars program, which is interdepartmental and allows students who meet certain academic criteria to design their own major. Sixty-two students were enrolled in Honors programs in the physics, chemistry, or psychology departments. Of the total sample, 65 were males and 66 were females. The mean age was 20 with a range of from 17 to 37 years.

#### INSTRUMENTS

Both the PRF and the DPQ consist of 300 true-false items. Forms A and B of the PRF, which have been demonstrated to be equivalent forms of the test, were administered to subjects in counterbalanced order. Only one form of the DPQ is currently available. Order of administration of the DPQ and PRF to subjects was counterbalanced. Adequate reliability has been established for both tests (Jackson, 1974; Tellegen, 1982).

#### METHOD OF ANALYSIS

An analysis of all the items in the seven paired scales was conducted on an item-by-item basis: each item in a scale was compared to all the items in its corresponding scale to determine degree of item similarity. Pairs of questions that were found to have a one-to-one correspondence in wording were identified as identical items, while those found to have essentially the same meaning, but with a few different words, were identified as similar items. A single rater, a graduate student who was not involved with the study, examined the item pools.

Pearson Product Moment correlation coefficients were computed among all the personality scales on the two tests. Selected coefficients reflecting the degree of relationship among the seven scale pairs were arranged into a Campbell-Fiske Multitrait-Multimethod Matrix (Campbell & Fiske, 1959). Separate analyses by gender were not conducted, because of the limits imposed by the sample size. Such an analysis would be of interest and may be the subject of a future study.

### RESULTS

The Campbell-Fiske Multitrait-Multimethod Matrix format was used to organize the correlations among the seven scale pairs to better illustrate the findings in terms of convergent and divergent validity issues (Table 1). As the tests were only

administered once to each subject, the test-retest reliability figures reported by the test developers were used to form the reliability diagonals (figures in parentheses). Split-half reliability coefficients were computed for each subscale using the study's data, which were not found to differ significantly from test-retest figures, although they tended to be generally higher as one might expect. Use of the test-retest figures was thus felt to be both more appropriate and conservative.

As can be seen in Table 1, the seven paired scales correlate significantly in the predicted directions (Figures in brackets). The high absolute value of these monotrait-hetromethod correlations is consistent with Campbell and Fiske's criteria for providing convergent validity.

Table 1 also demonstrates that the monotrait-hetromethod correlations are much higher than those listed in either the hetrotrait-hetromethod or the hetrotrait-monomethod triangles. Examination of Table 3 will show that this finding generally holds true when comparing the magnitudes of the correlations among those scales not examined in this study. In other words, the scale pairs show a greater degree of relationship with each other than they do with any other pair of scales regardless of trait or method. These findings provide evidence of the divergent validity of the selected scale pairs.

Table 2 contains the results of the item comparisons. As can be seen, the proportion of items common to both scales of a pair is relatively small, ranging from 5% (DPQ Social Closeness and PRF Affiliation) to 13% (DPQ Aggression and PRF Aggression; DPQ harmavoidance and PRF Harmavoidance). This small proportion of item similarity would not seem to be great enough to account for the magnitude of the correlations between the scale pairs.

The results of the intercorrelation of the 11 DPQ and 14 PRF personality scales are presented in Table 3. As can be seen, there are several significant, but relatively low, correlations between various pairs of scales. Given the large number of correlations run, however, it can be assumed that some of them may have occurred by chance. Because the correlations of interest in this study were so large in magnitude, and the other correlations were calculated to provide preliminary data for further research, no attempt was made to determine which correlations in Table 3 might be purely spurious.

## DISCUSSION

One conceptually and psychometrically sound element establishing the validity with which a test measures a specific trait is to compare it with other independent measures that have theoretically predicted relationships with the test. Such assessments are more rigorous when the measuring instruments were derived differently and involved different items, even if similarly formatted. The comparison of the DPQ and the PRF meets this criterion, because one (DPQ) was developed primarily from empirical research and the other (PRF) from personality theory. Since both tests, in part, purport to measure theoretically related constructs, this study was undertaken to examine some of these predicted relationships. Evidence of both convergent and divergent validity was demonstrated between the conceptually related scales as they were found to correlate highly

**TABLE 1**  
**MULTITRAIT-MULTIMODAL MATRIX OF CORRELATIONS AMONG THE 7 SCALE PAIRS**

	P R F							D P Q					
	Ach	Aff	Agg	Dom	Harm	Order	Impuls	Ach	SocClo	Agg	SocPot	Harm	Contr
Ach	(.80)												
Aff	-.13	(.79)											
P Agg	-.06	-.16	(.85)										
R Dom	*.27	*.28	*.40	(.88)									
F Harm	.12	.00	-.08	.09	(.90)								
Order	*.22	.05	-.03	.14	*.28	(.85)							
Impuls	*-.27	.10	*.27	.07	*-.44	*-.46	(.81)						
D Ach	[*.74]	-.12	-.10	*.20	.12	*.22	*-.25	(.88)					
D SocClo	*-.20	[*.77]	.01	*.21	.10	.09	.15	*-.18	(.92)				
P Agg	-.16	*-.17	[*.77]	*.29	-.16	-.14	*.29	-.16	-.11	(.82)			
Q SolPot	.16	*.30	*.33	[*.78]	.11	.15	.17	.13	*.24	*.30	(.82)		
Harm	.02	.15	*-.24	.03	[*.73]	.18	*-.34	.08	*.23	*-.27	.05	(.88)	
Contr	.16	-.02	*-.21	-.03	*.41	[*.53]	[*-.82]	.16	-.03	*-.22	-.14	*.39	(.82)

\*p < .05

**TABLE 2**  
**DEGREE OF SIMILARITY OF ITEM POOLS BETWEEN**  
**SELECTED DPQ AND PRF SCALES**

Scales	# Items in Scale	# Items Identical	# Items Similar	% of Items Common
DPQ Achievement	21			
PRF Achievement	20	2	3	12
DPQ Social Closeness	22			
PRF Affiliation	20	0	2	5
DPQ Aggression	20			
PRF Aggression	20	0	5	13
DPQ Social Potency	26			
PRF Dominance	20	0	5	11
DPQ Harmavoidance	28			
PRF Harmavoidance	20	0	6	13
DPQ Control	24			
PRF Order	20	0	3	7
DPQ Control	24			
PRF Impulsivity	20	1	4	11

TABLE 3  
CORRELATION MATRIX OF ALL DPQ AND PRF SCALES  
(N = 131)

		DPQ										
		Wellbeing	Social	Achievement	Social Closeness	Stress Reaction	Alienation	Aggression	Control	Harmavoidance	Traditionalism	Absorption
P R F	Achievement	.07	.16	.74 ***	-.20 *	-.04	-.04	-.16	.16	.02	.08	.17
	Affiliation	.60 ***	.30 ***	-.12	.77 ***	-.30	-.11	-.17 *	-.02	.15	.20 *	.10
	Aggression	-.26 ***	.33 ***	-.10	.01	.40 ***	.32 ***	.77 ***	-.21 *	-.24 **	-.08	-.04
	Autonomy	-.14	-.11	.06	-.58 ***	-.02	.08	.07	-.28 ***	-.30 ***	-.43 ***	.12
	Dominance	.28 **	.78 ***	.20 *	.21 *	-.14	.16	.29 ***	-.03	.03	.13	.10
	Endurance	.12	-.04	.60 ***	-.17	-.23 **	-.06	-.24 **	.29 ***	.14	.22	.18 *
	Exhibition	.28 **	.65 ***	-.04	.32 ***	-.06	.13	.36 ***	-.30 ***	.13	-.12	.19 *
	Harmavoidance	-.04	.11	.12	.10	.08	-.03	-.16	.41 ***	.73 ***	.18 *	-.26 **
	Impulsivity	.15	.17	-.25 *	.15	.14	.09	.29 ***	-.82 ***	-.34 ***	-.28 **	.20 *
	Nurturance	.50 ***	.23 **	.17	.46 ***	-.30 ***	-.03	-.32 ***	.04	.08	.33 ***	.27 **
	Order	.06	.15	.22 *	.09	-.08	-.14	-.14	.53 ***	.18 **	.28 ***	-.06
	Play	.26 **	.22 *	-.32 ***	.27 **	-.08	.12	.29 ***	-.33 ***	-.25 **	.00	.10
	Social Recognition	-.01	.30 ***	.08	.32 ***	.25 ***	.17	.19 *	.02	.12	.08	.07
Understanding	-.12	-.16	.32 ***	-.17	.05	-.03	-.14	.07	-.05	-.22 *	.23 **	

\* p ≤ .05      \*\* p ≤ .01      \*\*\* p ≤ .001

while being relatively independent from other trait measures both within and between tests. These results are strengthened by the finding that the tested scales are relatively independent with respect to item content, a particular concern when the measures of a trait are similarly formatted, as are the DPQ and PRF.

The presence of significant correlations among other pairs of scales both within and between the two tests would suggest that the relationship among the traits, and between the DPQ and PRF themselves, are fairly complex. An examination of the definitions of all the traits the two tests measure suggests several points of conceptual similarity that would provide the basis for future research, although none of the apparent relationships are as clear-cut as those investigated in this study. To study these implied relationships would require multiple regression or other multivariate techniques to identify and understand them. One method of inquiry would be to utilize latent trait theory and its highly sophisticated psychometric techniques to study the underlying personality dimensions measured by the DPQ and PRF (Samejima, 1980).

Two questions might be raised with respect to the subjects reported on: the nature of the subjects themselves and the sample size. The sample, consisting of talented college students, while not broadly representative is an appropriate sample for this form of research, because both tests were developed using this type of sample and each was designed to be used with a variety of different populations. Obviously, correlation coefficients and related measures will be population-specific, and no more is claimed or demonstrated other than robust relationships between independent measures. With respect to sample size, a related point can be made. Weak relationships might have been obscured with a small sample size, or, in other words, negative results would have been ambiguous, while the positive results obtained are unambiguous.

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