

## An OAD LLC Article **OAD Survey Validity Study for the US and the UK**

OAD takes great pride in being the only word list survey that meets the test construction requirements of the Equal Employment Opportunity Commission (EEOC), the Canadian Psychological Association, and the British Psychological Society.

The OAD Survey has undergone factor analysis in four languages American English, UK English, Canadian English, and Canadian French to make certain that the words measure what they are intended to measure. Simply translating words is not sufficient for validity. The connotation of a translated word may mean something quite different in another culture than what was intended. Also, scoring scale or norm adjustments have to be made within each culture and, finally, reliability or stability measures have to be determined.

OAD retained an independent authority to review the OAD Survey used in Britain. Paul Brewerton BA (Hons), MA, MSc, C.Psychol (Occup), Ph.D and Managing Director of Organizational Solutions, a UK based occupational constancy, undertook a comprehensive study of our Survey. The techniques he used coincide with the validation requirements of the EEOC, BPS, and the CPA. Below are excerpts of his findings:

When administering any questionnaire based instrument, the user needs to be sure that the tool is actually able to measure what it purports to measure (i.e. it is valid) and that it is consistent over time (i.e. it is reliable).

### **Reliability**

Internal consistency reliability analyses were carried out with the UK dataset (N=2,842) using both Cronbach's alpha criterion and corrected split half reliability estimates for OAD (Trait). US results were made available from OAD LLC's training manual (but were not derived from the original dataset), and they drew on a sample size of 234. Results appear in Table 1, below.

**Table 1: Internal consistency reliability estimates for the six principal scales of QAD (Trait) for US and UK datasets**

<u>Construct</u>	<u># of Items</u>	<u>Alpha (US)</u>	<u>Alpha (UK)</u>	<u>Split-Half (UK)</u>
Assertiveness	17	.838	.835	.841
Extraversion	16	.812	.793	.782
Patience	13	.771	.687	.664
Detail-orientation	22	.832	.814	.793
Emotional control	18	.828	.695	.735
Creativity	16	.879	.823	.837

All scales exceed the minimum of .7 suggested by Nunnally (1978) and Kline (1986, 1993b, 1994) other than the Patience scale for the UK data set. It is possible that the length of the Patience scale compared with the length of other component scales contributes to the lower reliability estimate for this scale.

### **Construct Validity**

Demonstration of construct validity is crucial in ensuring the theoretical and empirical strength of a psychometric instrument's component dimensions. A number of techniques are available for the investigation of a personality instrument's construct validity; most notably conducting correlational studies with well established measures of personality, and investigating the internal factor structure of the instrument using factor analytic methods.

Two major studies have been undertaken by OAD LLC to investigate the relationships between OAD (Traits) component scales and the Cattell 16PF and the NEO FFI. The correlations between the OAD Survey and I6PF appear in Table 2 below. Please note that only those correlations exceeding  $p=.001$  are included in the table for the sake of clarity.

**Table 2: Correlational analysis - OAD (US) and I6PF**

	OAD Scales					
	<u>A</u>	<u>E</u>	<u>P</u>	<u>D</u>	<u>EC</u>	<u>CR</u>
<b><u>I6PF Scales</u></b>						
A (Warmth)		.253				
E (Dominance)	.456					.303
F (Liveliness)		.392				
G (Rule consciousness)				.438		
H (Social boldness)	.359	.416	-.206			.233
M (Abstractness)						.479
01 (Openness to change)	.309					.439
02 (Self-reliance)		.266				
03 (Perfectionism)				.245	.412	

To summarize these findings,

- OAD Assertiveness/Autonomy ('A') is significantly correlated with I6PF's Dominance, Social boldness, and Openness to change factors. It might also be expected that OAD 'A' would correlate with 16PF's Liveliness factor (and this was the case at the .01 level).
- OAD Extraversion ('E') correlates significantly with 16PFs Warmth, Liveliness, Social boldness and Self reliance factors. Interestingly, these are precisely the factors used by NFER Nelson (publishers of the I6PF series) to calculate the global factor of "Extraversion". This provides excellent evidence for the discriminant and convergent validity of OAD's 'E' dimension.
- OAD Patience ('P') significantly correlates with 16PF's Social boldness (negative loading), suggesting that those respondents reporting high "Patience" are less likely to feel at ease in social situations. It might be expected that OAD 'P' would negatively relate to 16PF's Liveliness and Dominance factors and this is true at the .01 level. Additionally, at this level OAD P also loads positively on I6PF's Perfectionism and (lack of) Tension factors.
- OAD Detail orientation ('D') correlates significantly with I6PF's Rule consciousness and Perfectionism factors. This is in line with a prior expectations since these factors address traits such as meticulousness, forward planning, and self-discipline. Good evidence, then, is found for OAD 'D's convergent and discriminate validity with 16PF.
- OAD Emotional Control ('EC') correlates significantly with I6PF's Perfectionism. This makes some intuitive sense since several of the 'EC' items address self discipline, distractibility, absentmindedness, etc. It would be expected that OAD 'EC' would report significant relationships with I6PF's Emotional stability and Apprehension factors. Since these 16PF dimensions were not included in the validation study, it is difficult to draw clear conclusions on the validity of OAD 'EC'.
- OAD Creativity ('CR') correlates significantly with 16PF's Dominance, Social boldness, Abstractness, and Openness to change. Relationships with Abstractness and Openness to change are in line with expectations, since these dimensions address creativity of thinking and openness to new ideas.

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The second major correlational study commissioned by OAD LLC saw 134 UK participants complete OAD (Trait) and NEO FFI. All five of the NEO's component dimensions were included in the study, as follows:

- Neuroticism - anxiety, hostility, self consciousness, impulsiveness, vulnerability;
- Extraversion - warmth, gregariousness, assertiveness, activity, excitement seeking;
- Openness - fantasy, feelings, actions, ideas, values;
- Agreeableness - trust, straightforwardness, altruism, compliance, modesty;
- Conscientiousness - competence, order, dutifulness, achievement striving, self-discipline.

Please note that only those correlations exceeding  $p=.01$  are included in the table for reasons of clarity.

**Table 3: Correlational analysis - OAD (Trait) and NEO-FFI**

	OAD Scales					
	<u>A</u>	<u>E</u>	<u>P</u>	<u>D</u>	<u>EC</u>	<u>CR</u>
<b><u>NEO Scales</u></b>						
Neuroticism	-.35					
Extroversion	.40	.54				.25
Openness					.36	
Agreeableness			.36			
Conscientiousness				.43		

To summarise these findings,

- OAD Assertiveness/Autonomy ('A') loads as expected on the NEO's Neuroticism and Extraversion factors. The OAD 'A' scale contains components of both NEO's Extraversion (e.g. assertiveness, positive emotions) and Neuroticism (lack of anxiety, lack of vulnerability). *Note: The OAD Survey author, Michael Gray, disagrees with the research findings exhibited in the NEO whereby extroversion and assertiveness are viewed as one construct or trait.*
- OAD Extraversion ('E') loads, as expected, on NEO's Extraversion factor. OAD 'E' demonstrates its convergent validity by failing to load significantly on any other of the NEO's five factors.
- OAD Patience ('P') loads on NEO's Agreeableness factor only. Again, this is to be expected since both scales address such traits as straightforwardness, trust, and compliance.
- OAD Detail orientation ('D') loads solely on NEO's Conscientiousness scale, demonstrating good convergent validity on traits such as self discipline, meticulousness, and competence.
- OAD Emotional Control ('EC') loads positively on NEO's Openness. This is not an expected relationship and throws into question 'EC's discriminant validity for this sample. In addition, it could be expected that OAD 'EC' would load negatively on NEO's Neuroticism factor, but this relationship is not apparent, which flags concerns regarding 'EC's convergent validity when compared with NEO FFI.
- Finally, OAD Creativity ('CR') loads positively on NEO's Extraversion factor. This is unexpected since OAD 'CR' is more closely related to NEO's Openness factor and, from a prior viewpoint, has little relationship with NEO's extraversion factor. This throws into question the discriminant and convergent validity of the OAD 'CR' scale when compared with NEO FFI. *Note: The OAD author believes there is a significant correlation between creativity and autonomy/assertiveness; as do many other researchers. As NEO equates extroversion with autonomy, it would follow that OAD's Creativity construct would correlate with NEO's Extroversion construct.*

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### Factor analysis of OAD (Trait): UK dataset

Factor analytic techniques can be used to explore the underpinning structure of items comprising a psychometric instrument such as OAD (Trait). Using the entire UK dataset (n=2842) all the requirements for factor analysis are upheld.

The solution shows good evidence for the existence of five independent constructs underpinning the OAD (Trait) instrument. The following dimensions, then, exhibit independence and high item factor loadings in line with a prior expectations

- Detail orientation
- Extraversion
- Patience
- Emotional Control

The two remaining dimensions Assertiveness / Autonomy and Creativity load together on a single factor.

### OAD and Experienced Stress

One of Gray's principal tenets is that the OAD scale "Versatility" is able to indicate the extent to which an individual is able to cope under conditions of uncertainty, threat, or change. A research study was carried out to investigate this proposition by correlating Versatility with two scales of Cooper, Sloan and Williams' Pressure Management Indicator:

- Effects: contentment - degree of contentment/ anxiety reported;
- Effects: resilience - extent to which the individual is able to "bounce back"

Relationships between these variables appear in the table below:

	Contentment	Resilience
OAD Versatility	r =.276	r =.286
	p =.003	p =.002

The table shows that respondents who reported greater levels of Versatility also reported higher levels of contentment (lower anxiety) and a greater degree of resilience (were more able to "bounce back" when necessary). This is consistent with Gray's original proposition that the Versatility scale assesses resilience under conditions of perceived stress.

### Criterion Validity – Introduction

Criterion related validity pertains specifically to the relationship between an instrument's dimensions and external criteria such as work performance, satisfaction or commitment.

A number of studies have been taken by OAD LLC to assess the criterion validity of OAD (Trait). Most of these are small scale and sample specific, in that they attempt to link OAD dimensions with company specific performance criteria. These studies provide a useful insight into the power of OAD in predicting performance at work.

Criterion related validity is crucial to ensure that an instrument used for selection and/or development is statistically related to the "real world" criteria it sets out to predict.

The studies provided for review provide an indication of the potential of OAD in predicting performance within various occupational and organizational environments. Clearly, users of OAD benefit most greatly from the instrument by undertaking their own "local" validation study in order to link performance directly to OAD findings within their own organization. OAD LLC provides this service as part of the OAD annual retainer.

### References:

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