

## **Reliability of the Attitudes Toward Women Scale (AWS) and the Personal Attributes Questionnaire (PAQ)<sup>1</sup>**

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*The stability and internal consistency of Spence and Helmreich's Attitudes Toward Women Scale (AWS) and Personal Attributes Questionnaire (PAQ) are reported. An entire first-year class of 1,007 male and 78 female cadets at the U.S. Military Academy were given a battery of psychological tests before and after cadet basic training, a 2½-month period. The AWS and PAQ proved to be highly reliable, comparable to other frequently used psychological tests. This psychometric information encourages researchers to make further use of these gender-related instruments.*

In recent years, we have seen a dramatic increase in the empirical research directed toward the study of gender-related factors. Perhaps the most telling evidence for this trend is the presence of this journal, devoted exclusively to the topic. One important catalyst of this high level of activity has been the development of research instruments specifically designed to measure concepts im-

<sup>1</sup> This research was conducted under research grants from the Army Research Institute (Alan G. Vitters and Jerome Adams, Principal Investigators). The views expressed herein are opinions of the authors and do not necessarily reflect the policy of the U.S. Army, the U.S. Military Academy, or the Army Research Institute. The authors appreciate the editorial comments of Dr. Brenda Major.

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portant to understanding gender-related phenomena. Two of the most extensively used instruments of this type are the Attitudes Toward Women Scale (AWS) and the Personal Attributes Questionnaire (PAQ) (Spence & Helmreich, 1978, 1979).

The AWS measures attitudes concerning the rights, roles, obligations, and privileges that women should have in modern society. It provides scores along a continuum, ranging from endorsement of traditional sex roles to an egalitarian view of the roles of women and men.

The PAQ is a self-concept scale. Items in this scale can be classified into two general categories: (a) instrumental traits that are stereotypically regarded as being masculine and that are socially desired to some degree in both men and women (PAQ M), and (b) expressive qualities that are stereotypically ascribed as feminine and that are positively valued in both women and men (PAQ F).<sup>3</sup> Mean self-report scores of male and female respondents differentiated the sexes on the PAQ M and PAQ F in the expected direction. Additionally, it has been shown that the subscales are statistically independent (Spence & Helmreich, 1978; for an extensive discussion of the PAQ, see Locksley & Colten, 1979; Pedhazur & Teterbaum, 1979; Spence & Helmreich, 1979).

In their publications describing these two instruments, Spence and Helmreich have presented surprisingly limited reliability information (Spence & Helmreich, 1972, 1978; Spence, Helmreich, & Stapp, 1973, 1974). For the AWS, they reported only one estimate of internal consistency; coefficient alpha was .91 for a 15-item version of the scale for a college student sample of unspecified size (Spence & Helmreich, 1978, p. 39). Also, only one estimate of internal consistency has been available for the PAQ; Spence and Helmreich (1978, p. 35) reported coefficient alpha values of .85, .82, and .78 for the PAQ M, PAQ F, and PAQ M-F, respectively, in a college student sample of unspecified size. No test-retest reliability information has been provided for either the AWS or the PAQ. The objective of the present article is to further examine the reliability of these two measures.

The United States Military Academy's Project Athena (Vitters, Note 1) provided an especially good opportunity to examine the reliability of these two measures. The purpose of Project Athena is to examine the impact of admitting women to the military academy on both the institution and individual cadets. Part of this research project has involved repeated testing of the cadet population with a number of standard psychological measures, including the two Spence and Helmreich sex-role instruments. This longitudinal design provided the data necessary to assess the test-retest reliability of these measures, as well as their internal consistency at different points in time.

<sup>3</sup> A third subscale (PAQ M-F) consists of items for which ratings fell toward the opposite pole for the ideal man and the ideal women. No data on the M-F scale will be considered here.

The inclusion of several other well-known psychological measures in the Project Athena design provided an important comparative basis for evaluating the reliability of the AWS and PAQ measures. This variable set included both attitudinal and personality scales. The personality measures were the Rotter Locus of Control (I-E), the Tennessee Self-Concept Scale (TSCS), and Sarason's Test Anxiety Scale (TAS). There was also an attitudinal measure of organizational commitment.

## METHOD

### *Materials*

As several different versions of the Spence and Helmreich measures are now available, it is important to identify the scales employed. The 25-item AWS, identified by Spence and Helmreich (1972) as the short version of the scale, was used throughout this study. High scores indicate an egalitarian view, while low scores represent traditional attitudes concerning the role of women. The PAQ used in this study was the 24-item scale described by Spence and Helmreich (1978).

In addition to these two measures, the design included the following instruments: (a) Tennessee Self-Concept Scale (TSCS; "total positive" score; Fitts, 1965), (b) Test Anxiety Scale (TAS; 16-item scale; Sarason & Ganzer, 1962); (c) Rotter I-E (29-item Locus of Control scale; Rotter, 1966), and (d) Organizational Commitment (P; 15-item measure; Porter, Steers, Mowday, & Boulian, 1974).

### *Procedure*

The basic design of Project Athena called for administration of the tests in early July 1976 and again in mid-September 1976 to 1,007 male and 78 female freshman cadets. Cadet Basic Training, a stressful introduction to military life, intervened between these administrations. These numbers reflect some attrition (initially, there were 1,221 men and 119 women). In addition, the PAQ was administered to this entire class of cadets at five different times throughout a two-year period.

## RESULTS

The AWS and PAQ tests are reliable, as shown by the 2½-month test-retest reliabilities and coefficient alpha measures of internal consistency listed in Table

Table I. The Reliability of the Personality and Attitude Measures<sup>a</sup>

Measure	Test-retest reliability	Coefficient alpha		Means		t	df	p
		Time 1	Time 2	Time 1	Time 2			
AWS								
Males	.743	.831	.851	42.58	39.88	11.32	1006	.01
Females	.797	.810	.817	57.60	57.38	.35	77	<i>ns</i>
PAQM								
Males	.584	.773	.765	23.09	23.98	-7.21	1006	.01
Females	.623	.756	.738	22.05	22.08	-.07	77	<i>ns</i>
PAQF								
Males	.536	.697	.717	21.50	22.10	-5.14	1006	.01
Females	.668	.744	.651	22.22	23.14	-2.66	77	.01
TSCS total positive								
Males	.693	<i>b</i>	<i>b</i>	347.32	355.40	-10.18	1052	.01
Females	.713	<i>b</i>	<i>b</i>	346.21	352.78	-2.56	75	.01
Rotter I-E								
Males	.690	.707	.698	7.37	6.99	3.85	1006	.01
Females	.734	.678	.675	7.81	7.17	2.01	77	.01
TAS								
Males	.514	.714	.750	4.82	5.22	3.90	1006	.01
Females	.706	.757	.811	5.79	5.96	-.52	77	<i>ns</i>
P								
Males	.430	.696	.715	48.43	50.80	-7.62	1006	.01
Females	.347	.701	.683	48.56	51.47	-2.43	77	.01

<sup>a</sup>There is a 2½-month span between Times 1 and 2. The measures are: AWS—Attitudes Toward Women Scale; PAQ—Personal Attributes Questionnaire with its subscales, masculinity (M), femininity (F); TSCS—Tennessee Self-Concept Scale; Rotter I-E Locus of Control Scale; TAS—Test Anxiety Scale; and P—Porter's measure of organizational commitment. High scores represent high levels of the characteristic measured by the scale, externality for the Rotter, and egalitarian attitudes for the AWS. <sup>b</sup>Since the authors did not have access to the items of the TSCS, no coefficient alphas could be calculated. However, Fitts (1965) reports high internal consistency with other samples.

Table II. Test-Retest Reliabilities of PAQ M and PAQ F<sup>a</sup>

	Time 1	Time 2	Time 3	Time 4	Time 5
PAQ M					
Time 1	1.00	.62	.45	.62	.67
Time 2	.58	1.00	.52	.70	.70
Time 3	.49	.48	1.00	.63	.62
Time 4	.55	.55	.64	1.00	.68
Time 5	.41	.46	.58	.61	1.00
PAQ F					
Time 1	1.00	.67	.48	.57	.44
Time 2	.54	1.00	.47	.63	.62
Time 3	.46	.51	1.00	.65	.41
Time 4	.46	.46	.56	1.00	.41
Time 5	.43	.45	.51	.53	1.00

<sup>a</sup>The correlations for female cadets are listed above the diagonal (1.00) and for males, below it. Time 1 = June 1976 (pre-CBT), Time 2 = August 1976 (post-CBT), Time 3 = April 1977, Time 4 = August 1977, Time 5 = August 1978.

I. A comparison of these reliability coefficients with those of the other personality and attitudinal tests administered at the same times indicates that the AWS and PAQ sex-role measures are as reliable as these other generally used psychological tests. The test-retest reliability coefficients for the repeated PAQ testings, given in Table II, provide even stronger evidence of the stability of scores on these scales. Over a period of two years, these scores were quite stable.

It is also interesting to note changes in these measures across testings separated by Cadet Basic Training (CBT). Men became more traditional in their attitudes toward women after going through basic training with their female classmates (see Table I). Men rated themselves as being both more masculine (PAQ M) and more feminine (PAQ F) after training, while women only indicated increases in their ratings of femininity. After training, both women and men exhibited increases in their self-concept (TSCS), organizational commitment (P), and the internality of their locus of control (Rotter I-E). Men reported that their test anxiety (TAS) increased after training. In contrast, women consistently reported high levels of test anxiety, both before and after training. Without a comparison group, it is impossible to tell whether these changes are natural or — as is more likely — are the results of the intervening experience of Cadet Basic Training. Priest, Prince, and Vitters (Note 2) have described in detail these and other changes related to the cadet training experience.

## DISCUSSION

The decision to use any psychological measure requires adequate information about both its reliability and validity. The reliability assessment reported in the present article suggests that the reliability of both the AWS and PAQ is good. For both measures, the internal consistency coefficients were very high. This is important psychometric information for both tests. Moreover, this information, when combined with the results of a factor analysis of the total PAQ (reported by Spence and Helmreich, 1979, p. 1036) which reproduces the M and F subscales, strengthens one's confidence in the unidimensionality of the M and F subscales of the PAQ. Furthermore, the test-retest reliability coefficients suggest that both the AWS and PAQ measure relatively stable characteristics of the respondents, especially when one considers the quite dramatic nature of the experience during the test-retest interval. These reliability data, in conjunction with the construct validity data reported by Spence and Helmreich (1978), should encourage researchers to include these scales in future research requiring either a measure of attitudes toward women's role in society (AWS) or self-perceptions of masculinity and femininity (PAQ).

## REFERENCE NOTES

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