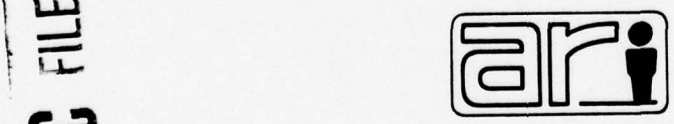
LEVEL II

Research Memorandum 74-13

DEVELOPMENT OF THE BACKGROUND AND OPINION QUESTIONNAIRE 72

D. B. Bell, S. F. Bolin, and T. J. Houston

SOCIAL PROCESSES TECHNICAL AREA



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(6) DEVELOPMENT OF THE BACKGROUND AND OPINION QUESTIONNAIRE 72

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DEVELOPMENT OF THE BACKGROUND AND OPINION QUESTIONNAIRE 72

This Research Memorandum provides a technical background for the development and initial field testing of the Background and Opinion Questionnaire (BOQ-72) (PT 4877). The report covers: (1) history of and rationale for the instrument's development, (2) construction, scoring and normative data, and (3) validity data available at this time.

→ p. 12

HISTORICAL BACKGROUND

In the fall of 1971, the Office of the Deputy Chief of Staff for Personnel, Department of the Army, requested an evaluation of the effectiveness of a new system for reducing discipline problems in Basic Combat Training (BCT). The system had been developed by Army Chaplain Berbiglia based on his experience with stockade prisoners at Ft Bliss, TX. Berbiglia noted that soldiers incarcerated for AWOL offenses exhibited a distinctive pattern of scores on the Taylor-Johnson Temperament Analysis (TJTA).[1] AWOL soldiers described themselves as nervous, depressed, quiet, inhibited, hostile, or impulsive. Extreme scores on four or more of these six traits constituted the "AWOL Syndrome."[2]

At Ft Polk, Chaplain Berbiglia initiated a program to reduce AWOL and other discipline failures. New trainees were screened by means of the TJTA, and those who exhibited the AWOL syndrome were interviewed by their company commanders. Subsequently, they were referred to Berbiglia, who provided counseling and, when appropriate, referral to additional services on post (e.g., finance officer, legal officer, Red Cross Community Service, mental hygiene). Discipline failures decreased, but subsequent research has cast doubt upon the generalizability of Berbiglia's findings. Fraas and Fox[3] were not able to cross-validate Berbiglia's finding of a specific syndrome among AWOL prisoners. ARI research among BCT troops did not show the TJTA to be (1) a valid predictor of AWOL,[4] (2) a valid predictor of

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[1] Taylor, M., L. P. Morrison, W. L. Morrison, and R. C. Romoser. Taylor-Johnson Temperament Analysis manual. Los Angeles: Psychological Publications, 1968.

[2] Berbiglia, J. C. The AWOL syndrome supplement 3: Taylor-Johnson Temperament Analysis manual. Los Angeles: Psychological Publications, 1971.

[3] Fraas, L. A., and L. J. Fox. The Taylor Johnson Temperament Analysis "AWOL Syndrome": A further evaluation. Fort Riley, Kans.: U.S. Army Correctional Training Facility, 1972.

[4] Bell, D. B., D. M. Kristiansen, and T. J. Houston. An evaluation of two systems for reducing discipline failure in BCT. ARI Technical Paper, in press.

discipline failure in general,[5] nor (3) that it was useful in reducing discipline failure by referring men for company commander interview.[6]

CONSTRUCTION, SCORING AND NORMS

The BOQ-72 was devised as part of the ARI research on discipline. It was designed not only as a means of selecting individuals for special treatment, but also to aid the first step in the referral process, a structured interview by the man's company commander, using the questions and responses in the BOQ-72 as a guide. The instrument is short (25 items), arranged into four topical areas, and contains both questions and response blanks on a single form.

Twenty-two of the 25 items of the BOQ-72 were derived from two previous ARI instruments: the Background and Opinion Questionnaire - 1 (BOQ-1) (PT 4647),[7] and the Personal History Form (OA-1) (PT 3556).[8] These 22 items are scored dichotomously: one, if the response was given in previous research by persons who tended to experience discipline failure, and zero, if not. The remaining three items are unscored fillers added especially for this instrument. Table 1 shows the content, source, and topical grouping of all 25 items.

Normative data exists from three sources for the 22 scored items. A national sample of 4,034 men entering BCT the first week of March 1967 took the 140-item BOQ-1 in which the 22 items were embedded.[9,10] The items were given as part of the BOQ-72 to 5,333 men in BCT at Ft Polk between 1 June and 30 November 1972 as a part of ARI's effort to evaluate Berbiglia's "AWOL syndrome" approach.[11] The BOQ-72 was also given to a sample of 8,250 men in BCT at Ft Knox between 1 August 1972 and 30 April 1973[12] to cross-validate the findings for the BOQ-72 obtained at Ft Polk.

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[5] Bell, D. B., S. F. Bolin, T. J. Houston, and D. M. Kristiansen. Predictions and self-fulfilling prophecies of Army discipline. Proceedings of the 81st Annual Convention of the American Psychological Association, 1973, 743-744.

[6] Bell et al., 1973, op. cit.

[7] Kristiansen, D. M. and E. F. Larson. Development of a background and opinion questionnaire for predicting military delinquency. ARI Research Memorandum 67-3. October 1967.

[8] Rosenberg, N., E. Brown, and J. DeJung. Development of a background data questionnaire for identifying military delinquents. ARI Research Memorandum 58-10. 1958.

[9] Kristiansen and Larson, 1967, op. cit.

[10] Larson, E. E. and D. M. Kristiansen. Prediction of disciplinary offenses early in Army service. ARI Technical Research Note 210. April 1969.

[11] Bell et al., 1973, op. cit.

[12] Bell, D. B., D. M. Kristiansen, and T. J. Houston. Predictions and self-fulfilling prophecies of Army discipline: A follow-up evaluation. Paper presented at American Psychological Association Annual Convention, New Orleans, August 1974.

Table 1

CONTENT, SOURCE, AND GROUPING OF THE 25 BOQ-72 ITEMS

Grouping and Content	BOQ-72 Item No.	BOQ-1 Item No.	OA-1 Item No.
School			
High school graduation	1	1	20 (28)
School suspension or expulsion	2	23	91
School dropout	3	-	-
Working rather than attending school	4	-	-
Accepting orders	5	64*	191
Home			
Running away from home	6	62	106
Willingness to work around home	7	41*	191
Evaluation of parental adequacy	8	-	-
Attitude toward family relocation	9	21	208
Work			
Early employment	10	61*	73
Possessing a social security card	11	2	11
Willingness to accept rules	12	36*	168
Tolerance of work interruptions	13	44	224
Performing uninteresting tasks	14	121	215
Being fired from a job	15	81	14
Having a bank account	16	3	72 (10)
Life on the Streets			
Number of childhood friends	17	22*	29
Attending beer parties	18	124*	135
Smoking regularly	19	42*	108
Hitch-hiking	20	24	129
Being tattooed	21	43	84
Gang fights	22	101	94
Being arrested	23	122	98 (35)
Staying overnight in jail	24	102	113
Preference for urban duty station	25	4	228

Note.--Starred items (*) have been extensively modified.

The three samples are of particular interest because of the differences in the circumstances under which they were gathered. The 1967 national sample and the Ft Polk data were gathered when the draft was in force; the Ft Knox sample was taken during the transition from the draft (which ended 1 January 1973) to the all-volunteer Army. Thus differences might be expected among these samples both because of changes in instrument format (from BOQ-1 to the BOQ-72) and differences in the types of men entering the Army once the draft ceased to provide an incentive to enlist. Table 2 shows the total scores obtained by men in each of the three samples, expressed in the form of cumulative percentiles.

Table 2

CUMULATIVE PERCENTILE NORMS FROM THREE SAMPLES

Score	National[a] Sample (n = 4,034)	Ft Polk[b] Sample (n = 2,196)	Ft Knox[c] Sample (n = 3,462)
0	0.4	0.1	0.0
1	0.5	0.1	0.1
2	0.7	0.3	0.2
3	1.8	1.4	0.8
4	5.7	4.3	2.8
5	13.1	11.8	8.0
6	25.4	23.8	18.1
7	39.0	39.2	30.8
8	52.9	53.3	45.5
9	65.3	64.2	59.5
10	75.6	74.1	70.5
11	83.8	81.5	80.1
12	89.6	87.4	87.0
13	93.9	92.0	91.5
14	97.1	95.9	95.6
15	98.4	98.1	97.8
16	99.3	99.1	99.1
17	99.6	99.6	99.7
18	99.9	99.9	100.0
19	100.0	100.0	100.0
20	100.0	100.0	100.0
21	100.0	100.0	100.0
22	100.0	100.0	100.0

[a] Source: Larson and Kristiansen, 1969, op. cit.

[b] Source: Bell et al., 1973, op. cit.

[c] Source: Bell et al., 1974, op. cit.

A comparison of the distributions in Table 2 using the Kolmogorov-Smirnov test for cumulative proportions[13] shows that, within the two draft-period samples, no change occurred as the result of changing the item format from the BOQ-1 (used in the national sample) to the BOQ-72 (used in the Ft Polk sample). However, within the two samples where the BOQ-72 was used (the Ft Polk and Ft Knox samples) a significant norm shift did occur ($p \leq .001$). The shift may be attributable to the difference in educational levels of the two samples.[14]

The scoring system for the BOQ-72 had to meet three requirements. First, as a selection device the instrument had to be capable of separating the sample into a group which would be interviewed and a group which would not. Second, the group to be interviewed had to be no larger than the expected size (10%) of the group which would experience discipline failure in BCT. Third, the system had to reflect previous ARI findings that young dropouts (YDOs)--men who did not graduate from high school and who joined the Army before their 18th birthdays--run a higher risk than other men of getting into trouble. Fuchs[15] had found that YDOs were twice as likely as other first-term soldiers to be confined to an Army stockade for infraction of Army regulations.

A small sample of men at Ft Polk were specifically tested to provide an empirical basis for the scoring system. From analysis of that data, high-risk individuals were defined as YDOs who answered 9 or more items in the keyed direction and non-YDOs who answered 15 or more items in the keyed direction. Table 3 shows the frequency distribution (expressed as percent and cumulative percentiles) for YDOs,[16] non-YDOs, and both groups combined--in the sample most like the all-volunteer Army of today: the Ft Knox sample.

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[13] Siegel, S. Nonparametric statistics for the behavioral sciences. New York: McGraw-Hill, 1956.

[14] The percentage of high school graduates in the Ft Polk sample is much higher than in the Ft Knox sample. High school graduation, in turn, is highly correlated with BOQ-72 scores ($r_{bis}=-.70$, $p \leq .001$).

[15] Fuchs, E. F. Characteristics of stockade prisoners--Summary of major findings (FOUO). ARI Research Study 69-3. March 1969.

[16] For both the Ft Polk and Ft Knox studies, age at entry was dichotomized into "young," those who joined the Army prior to age 18 years 1 month, and "old," all others. Thus the YDOs in these studies were not exactly comparable with the group in Fuchs' (1969) study where the cutoff point was at the 18th birthday.

Table 3

PERCENT AND CUMULATIVE PERCENTILE DISTRIBUTION OF BOQ-72 SCORES
(FT KNOX SAMPLE)

BOQ-72 Scores	YDO (n = 606)		Non-YDO (n = 2,856)		Total (n = 3,462)	
	Percent	Cumulative Percentile	Percent	Cumulative Percentile	Percent	Cumulative Percentile
0	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.1	0.1	0.1	0.1
2	0.2	0.2	0.1	0.2	0.1	0.2
3	0.0	0.2	0.7	0.9	0.6	0.8
4	0.0	0.2	2.7	3.3	2.0	2.8
5	0.8	1.0	6.1	9.4	5.2	8.0
6	1.2	2.2	12.0	21.4	10.1	18.1
7	6.6	8.8	14.0	35.4	12.7	30.8
8	7.6	16.4	16.2	51.6	14.7	45.5
Low (00-08)	16.3	16.3	51.6	51.6	45.5	45.5
9	11.1	27.4	14.6	66.2	14.0	59.5
10	13.9	41.3	10.4	76.6	11.0	70.5
11	15.2	56.5	8.4	85.0	9.6	80.1
12	12.2	68.7	5.7	90.7	6.9	87.0
13	8.3	77.0	3.7	94.4	4.5	91.5
14	10.1	87.1	2.9	97.3	4.1	95.6
Moderate (09-14)	70.6	87.1	45.8	97.4	50.1	95.5
15	6.4	93.4	1.4	98.8	2.3	97.8
16	3.6	97.0	0.8	99.6	1.3	99.1
17	1.8	98.8	0.3	99.9	0.6	99.7
18	1.0	99.8	0.1	100.0	0.3	100.0
19	0.2	100.0	0.0	100.0	0.0	100.0
20	0.0	100.0	0.0	100.0	0.0	100.0
21	0.0	100.0	0.0	100.0	0.0	100.0
22	0.0	100.0	0.0	100.0	0.0	100.0
High (15-22)	13.0	100.0	2.6	100.0	4.4	100.0

Note.--Due to rounding errors, the cumulative percentiles do not always equal the subtotals.

VALIDITY OF THE BOQ-72

The discussion of the validity of the BOQ-72 is divided into (1) a discussion of its validity using the YDO scoring system, and (2) a discussion of its potential validity using the elements of the YDO system (age at entry, education, and BOQ-72 score) in isolation and in various combinations.

Validity of the YDO scoring of the BOQ-72

The ability of the BOQ-72 (modified by the YDO scoring system) to predict discipline failure in BCT was tested in the Ft Polk and Ft Knox studies. In both investigations, the criterion data consisted of disciplinary infractions and adverse ratings recorded on past records or on special end-of-cycle rating forms administered as a part of the research. This information was used to reduce the sample to three classes of men: (1) those who were AWOL or whose actions resulted in any recorded punishment under the Uniform Code of Military Justice (e.g., "Article 15s"), convictions by special or general court martial, or separation from the service under other-than-honorable conditions; (2) those who were rated by their platoon sergeants as insubordinate or recalcitrant but who had no official record; and (3) those who had no such punishment or rating. These three classes were called "official," "marginal," and "clean," respectively.

Table 4 presents the partitioned chi square analyses[17] used to analyze the criterion information available in the two studies. The results show that, as currently used, the BOQ-72 is a valid predictor of discipline failure in BCT. In both investigations, the chi squares were significantly greater than chance and the tetrachoric correlations were in the moderate range (r_{tet} = .30 and .32 for Ft Polk and Ft Knox, respectively).

Although statistically significant, the levels of validity which the BOQ-72 showed in these two studies are too small to be useful in administrative decisions. For example, if the BOQ-72 had been used to screen at entry the men in the Ft Knox sample, the following would have resulted. Approximately 160 men per 1,000 would have been eliminated. Of these men, 15 would have been officially disciplined while the remaining 145 would have given acceptable service had they entered the Army. Among the 840 men per 1,000 to have entered the service, 27 would have experienced discipline failure and 813 would have rendered acceptable service. Few administrators would consider eliminating more good men than bad and yet keeping more bad men than had been eliminated.

The question which remained was whether or not the YDO scoring system maximizes the predictive validity inherent in the three variables which contribute to it: (1) educational attainment, (2) age at entry, and (3) BOQ-72 scores.

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[17] Castellan, N. J. On the partitioning of contingency tables. Psychological Bulletin, 1965, 64, 5, 330-338.

Table 4

PREDICTIVE VALIDITY OF THE BOQ-72 AT TWO BCT INSTALLATIONS

Analysis Group	Discipline Record				Chi-square Partitions	
	Clean	Marginal	Official	Total	Marginal vs Clean	Official vs Other
Ft Polk Sample (n=1689)						
High Risk Group (11% of the sample)	75%	14%	11%	100%	19.09*	20.32*
Reduced Risk Group (89% of the sample)	90%	6%	4%	100%		
Ft Knox Sample (n=3464)						
High Risk Group (16% of the sample)	78%	13%	9%	100%	21.07*	42.92*
Reduced Risk Group (84% of the sample)	89%	8%	3%	100%		

* $p < .001$

Validity of the Individual Elements of the YDO System

Table 5 presents the predictive validities of each of the three variables in isolation. The analyses in Table 5 show that all three variables--education, age at entry, and BOQ-72 scores--were significantly valid predictors of discipline failure in BCT. However, these variables are not independent of one another: the tetrachoric correlation between education and age at entry is .89, the biserial correlation between education and BOQ-72 scores is -.70 and the biserial correlation between age at entry and BOQ-72 scores is -.47.

Educational attainment is the best predictor (r_{tet} = .36), followed by age at entry (r_{tet} = .28) and then BOQ-72 scores (r_{tet} = .22). Education has two advantages over YDO scoring of the BOQ-72 as a predictor of discipline failure. First, it is more predictive in the observed samples. Second, it is much easier to obtain, since it is already a part of the administrative process.

Starting with education, combinations of variables were tested to determine if prediction could be improved. Table 6 shows the predictive validity among dropouts and high school graduates which can be obtained by also considering their age at entry. For graduates, age at entry does not appear to be a significant item.

Table 5

PREDICTIVE VALIDITY OF EDUCATION, AGE AT ENTRY, AND BOQ-72 SCORE COMBINED (FT KNOX SAMPLE)

(n = 3462)

Analysis Group	Discipline Record				Chi-square Partitions	
	Clean	Marginal	Official	Total	Marginal vs Clean	Official vs Other
Education						
High School Dropout (43% of sample)	80%	12%	8%	100%	41.17**	88.05**
High School Graduate (57% of sample)	92%	6%	2%	100%		
Age at Entry						
Less than 18 (18% of sample)	77%	14%	9%	100%	32.96**	36.71**
18 and over (82% of sample)	89%	8%	3%	100%		
BOQ Score						
13 and above (13% of sample)	78%	11%	11%	100%	7.33*	43.24**
Less than 13 (87% of sample)	88%	8%	4%	100%		

* $p < .01$

** $p < .001$

Table 6

PREDICTIVE VALIDITY OF EDUCATION AND AGE AT ENTRY COMBINED (FT KNOX SAMPLE)

(n = 3462)

Analysis Group	Discipline Records				Chi-square Partitions	
	Clean	Marginal	Official	Total	Marginal vs Clean	Official vs Other
Dropout (n = 1477)						
Old (59% of sample)	82%	10%	8%	100%	5.41*	1.78
Young (41% of sample)	77%	14%	9%	100%		
Graduate (n = 1985)						
Young (2% of sample)	88%	12%	0%	100%	0.88[a] n.s.	0.00[a] n.s.
Old (98% of sample)	92%	6%	2%	100%		

[a] Computed using Yates corrected formula (Guilford, J. P. Fundamental statistics in psychology and education. New York: McGraw-Hill, 1965).

* $p < .05$

The analyses for the dropout sample show that the addition of age at entry has a statistically significant effect upon the prediction of which individuals will be in the marginal rather than clean outcome category. The overall precision of the prediction obtained by this combination is small ($r_{tet} = .12$), with an adverse effect upon prediction in the larger sample. For example, if the high risk group is defined as YDOs and the reduced risk group as all others, the resulting prediction is less valid than that obtained using education alone ($r_{tet} = .28$ versus .36). This finding can be seen more clearly in Table 7.

The result of adding BOQ-72 scores to education is shown in Table 8. For these retrospective analyses, the cutting scores for the dropouts (high risk = 14 and up) and graduates (high risk = 12 and up) were arbitrarily set to yield the same proportion of high-risk persons as actual "marginal" and "official" cases combined.

Table 7

YOUNG-DROPOUT STATUS AS A PREDICTOR OF DISCIPLINE EXPERIENCE (FT KNOX SAMPLE)
(n = 3462)

Analysis Group	Discipline Outcome				Chi-square Partitions	
	Clean	Marginal	Official	Total	Marginal vs Clean	Official vs Other
Young Dropouts (YDO) (17.5% of sample)	77%	14%	9%	100%	32.84*	42.48*
All Others (82.5% of sample)	89%	8%	3%	100%		

* $p < .001$

Table 8

PREDICTIVE VALIDITY OF EDUCATION AND BOQ-72 SCORE COMBINED (FT KNOX SAMPLE)
(n = 3462)

Analysis Group	Discipline Record				Partitioned Chi-squares	
	Clean	Marginal	Official	Total	Marginal vs Clean	Official vs Other
Dropouts (n = 1477)						
High Risk Group (18% of sample)	75%	15%	10%	100%	4.38*	2.00 (n.s.)
Reduced Risk Group (82% of sample)	81%	11%	8%	100%		
Graduates (n = 1985)						
High Risk Group (7% of sample)	85%	12%	3%	100%	8.71**	1.84 (n.s.)
Reduced Risk Group (93% of sample)	93%	6%	1%	100%		

* $p < .05$

** $p < .01$

The addition of BOQ-72 scores to educational attainment in the comparison of clean with marginal cases produced a small increase in the predictive validity for each of the two samples (r_{tet} = .13 and .21 for the drop-out and graduate samples, respectively). In both samples, the partition of chi square was statistically different from chance.

Again, the result of a combination of variables was a loss in predictive validity. Therefore, the best predictor seems to be the single variable: high school graduation.

In view of the time and effort required to administer the BOQ-72 and its failure to add to the predictive validity of the simple background variable of high school graduation, serious questions can be raised as to whether or not its continued use is justified. The only justification possible would be that through additional research, its validity might be increased to a point where it would add to what is already known, i.e., variables associated with graduation from high school are the best prediction of discipline failure in BCT.

CONCLUSIONS

The BOQ-72, scored by the (YDO) system, is a statistically valid instrument. It is better than currently available instruments for predicting discipline failure in BCT. However, it is far from perfect and no better than high school graduation as a predictor. The majority of those who score in the high-risk group do not experience discipline failure and a good many of those in the reduced risk group do. Regardless of whether the YDO system is used, the instrument is not administratively useful as a predictor. However, present research does provide the basis for improving the instrument. First, the instrument should be restandardized in an all-volunteer sample. Next, more attention should be paid to non-school items (see Table 1), since school experiences, although good predictors, do not yield high validity.

The finding that social background variables, particularly the completion of high school, are better predictors of discipline failure than paper-and-pencil tests provides the starting point for future efforts. No one is seriously suggesting that the Army discontinue recruiting high school dropouts, since the majority of them seem to make good soldiers, and since the Army cannot afford the loss of manpower which that decision would entail. Rather, the relationship between high school graduation and discipline failure helps to point the way for future research and suggests that, in the absence of any fundamental change in the Army, discipline failure rates can be expected to rise whenever the proportion of non-graduates increases.

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