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ABSTRACT

The School Anxiety Questionnaire (SAQ) is a 105-item, multiple-choice instrument designed to measure five aspects of anxiety behavior: 1) Recitation Anxiety; 2) Test Anxiety; 3) Report Card Anxiety; 4) Achievement Anxiety; and 5) Failure Anxiety. The five scales are typically 13 or 14 items in length and have reliability in the middle to high .80's. The factor structure of the SAQ is relatively well defined, and replicates across age groups in the upper elementary school grades. Means and standard deviations of SAQ score by grade level are reported. In the age span studied (grades 3 through 6) significant increases with age are noted in Recitation Anxiety, a slight decrease with age is seen in Test and Failure Anxiety, and slight sex differences are seen in Report Card Anxiety. A significant relationship between teacher behavior and children's school anxiety is reported. There also appears to be a trend toward predictable variation in school anxiety as a function of the school year. Results indicate continued use of SAQ as a tentative research instrument. A bibliography, an appendix describing test administration procedures, and a factorial analysis of questions are included. (Author/AE)

THE SCHOOL ANXIETY QUESTIONNAIRE: THEORY, INSTRUMENT, AND SUMMARY OF RESULTS

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American Institutes for Research

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THE SCHOOL ANXIETY QUESTIONNAIRE:
THEORY, INSTRUMENT, AND SUMMARY OF RESULTS

In The Meaning of Anxiety, Rollo May (1950) credits Freud as being the first in the scientific community to postulate a fundamental, dynamic relationship between anxiety and human behavior. He also cites the contributions of such philosophical predecessors of Freud as Kirkegaard, Nietzsche, and Schopenhauer. Regardless of whether Freud was indeed the first member of the scientific community to seriously consider the theoretical relevance of anxiety to human behavior, there is little doubt that, in the years since Freud, anxiety has been an area of considerable psychological attention.

The relative amount of attention given to anxiety in the psychological literature covered by the Psychological Abstracts has roughly doubled every ten years since 1930. In the period 1950 to 1965 well over 1500 publications on anxiety were cited in the Psychological Abstracts, not to mention an even greater number of publications cited only in the psychiatric literature (Spielberger, 1966).

Generally speaking, anxiety research can be dichotomized into that body of research deriving from concern with the psychopathology of anxiety, its symptomology and amelioration, which is essentially clinical in nature, and that body of literature which derives from a concern with the dynamics of anxiety and the role it plays in initiating, shaping, and mediating behavior. Each of these areas can of course be further subdivided into categories such as experimental neuroses, drug-induced anxiety states, anxiety as a generalized drive state, and the like.

Despite the relatively longstanding interests of psychology in anxiety, as witnessed by the early work of Freud, Pavlov, and Watson, until only recently relatively little systematic attention has been directed to the study of anxiety in normal children (Ruebush, 1963).

Levy (1951) has suggested that a major factor in determining the extensity of anxiety research has been the availability of convenient instrumentation. In support of his thesis Levy has pointed to a marked increase in anxiety research immediately following the publication of Taylor's

Manifest Anxiety Scale (1951, 1953).

It may be argued that it is not really the introduction of a new scale that precipitates research but rather the introduction of new conceptualizations that are occasionally associated with new scale publication. Cattell and Scheier (1958) reported counting over 120 personality-type anxiety tests, the great majority of which were published prior to 1951. Unlike many scales, the Taylor Scale was related to the introduction of a new conceptualization of the role played by anxiety in the organization of human behavior.

A similar but somewhat less intensive increase in anxiety studies may be seen in connection with the publication of the work of Sarason and colleagues (Sarason, Davidson, Lighthall, Waite, and Ruebush, 1960). Sarason took the position that if one were interested in the study of the effects of anxiety on children's performance, the anxiety instrument should measure anxiety which was relevant to that performance. This position reflects what might be referred to as a theory of specific situations. Sarason and colleagues selected the testing situation as the situation of interest and test anxiety and test performance as the variables to receive attention. In this regard their approach represented a basic change away from the general drive theory concept of anxiety which underlay the work of the Iowa group.

The present work, like that of Sarason, builds on the assumption that, in the investigation of anxiety, it would be better to concentrate on fairly discrete, circumscribed, and situationally specific anxiety rather than on general, free floating, "chronic," anxiety. Five situationally specific types of anxiety, which together were held to represent an area called school anxiety, were selected for study. They were: 1) Recitation Anxiety; 2) Test Anxiety; 3) Report Card Anxiety; 4) Achievement Anxiety; and 5) Failure Anxiety.

THEORY

Work with the School Anxiety Questionnaire (SAQ) has been guided by four assumptions: 1) that anxiety is an experience common to all individuals; 2) that it is a reaction elicited by stress conditions; 3) that the relationships between anxiety reaction, its eliciting stressor stimuli, and an

individual's modes of coping with that reaction are, in part, learned; and 4) that an individual has a specific potential for anxiety arousal for each type of situation he encounters.

Whether or not an anxiety reaction develops depends on two things: 1) the strength of the potential, and 2) the type of cues provided by the situation encountered by the individual. In other words, anxiety arousal is held to be a function of reaction potential and type of situation, A = f(P,S.) The occurrence of an anxiety reaction is presumed to affect behavior. Thus, if behavior is in part a function of anxiety, then, by substitution, behavior is, in part, a function of an individual's reaction potential and the situation in which he finds himself, B = f(P,S,...).

Anxiety arousal is expected to be maximal when the stressor conditions are directly relevant to the individual's type of anxiety potential. It is assumed, for example, that test anxiety is more apt to be aroused by test stress cues than by some other class of stressor stimuli, e.g., recitation cues.

Further, given a state of anxiety arousal, the effect of anxiety on behavior is expected to be maximal when the anxiety produced is directly relevant to the behavior required of the individual. For example, test anxiety would be expected to have a greater effect on test performance than on recitation performance. Similarly, recitation anxiety would be expected to have a greater impact on recitation performance than on test performance.

The model, then, predicts a maximal relationship between anxiety and performance when type of anxiety potential, type of stress, and type of behavior are in parallel; that is, all other things equal, effect on behavior will be maximal when B = Bj, P = Pj, and S = Sj (Dunn, 1968).

THE SCHOOL ANXIETY QUESTIONNAIRE

Prototype 1. Initial attention was directed toward developing a large pool of items expected to cluster around the five *a priori* factors of theoretical interest. From this pool 160 items were selected, randomized and administered to 83 fourth and fifth grade public school children in a small suburban city

school.

Student responses were factor analyzed and those items that had high communalities and loaded well on single factors were retained to form the nucleus of a new instrument. The retained items were then supplemented with new items written to parallel the obtained factor structure, which in turn reflected the theoretical dimensions of interest.

Prototype 2. This new set of items, again 160, was administered to a new sample of 56 children drawn approximately equally from grades 4, 5, and 6.

Unit weighted factor scores were computed using a special ipsative scoring procedure developed for the SAQ by Bergan (1966, 1968). Spearman-Brown reliability coefficients calculated from a formula proposed by Guilford (1965), ranged from .90 to .96 for the scales. Correlation coefficients with scores on the California Achievement Test, were on the order of .47 and, when the effect of age was permitted to operate, ranged as high as .64, with appropriate directionality (Schelkun and Dunn, 1967).

Once again, those items with high communalities and strong loadings on single factors were retained and the instrument further refined and reduced to a total of 105 items.

The SAQ. It was this third version which was labeled the School Anxiety Questionnaire and which has formed the basis for subsequent work.

The School Anxiety Questionnaire is a five scale, 105 item multiple choice questionnaire. Items are of the type, "How much does it bother you when you stand up and talk in front of the class?" "How nervous do you feel when you start to look at your grades?" "How nervous do you get when the teacher announces you are going to have a test tomorrow?" "How often do you worry that you might do a poor job on your school work?" and so forth. A full text of the items is included as an Appendix. The subject responds on a 5-point Likert scale from "frequently," to "seldom," or "a lot" to "not much."

FACTOR STRUCTURE

Data were collected from 321 children drawn from three classrooms at each of grades 3, 4, 5, and 6 for the purpose of studying the SAQ factor structure. Pupil responses were factor analyzed using a principal axis factor analysis with a normalized verimax rotation.

Five factors, representing 58% of the items in the battery, accounted for 54% of the common variance. They were: Report Card Anxiety, 12%; Failure Anxiety, 12%; Test Anxiety, 11% Achievement Anxiety, 12%; and Recitation Anxiety, 7% (this last scale had only six items). The items loading most heavily on these factors are presented in the Appendix.

The balance of the common variance was accounted for by the 44 items comprising the Response Bias Adjustment Scale, an intentionally, and necessarily, heterogeneous rather than homogeneous scale.

In order to answer the question of factor stability over age, the data for the third and sixth grade subjects were factored separately and their rotated structures compared using Kaiser's coefficient of factor similarity. The results are summarized in Table 1.

On the bases of these results it was concluded that the SAQ is a rather clean instrument, as far as factor analysis is concerned, and that its factor structure is reasonably stable over the upper elementary school grades.

TABLE 1

Comparison of Factors Obtained from 3rd and 6th Grade Data

Anxiety Factor	Percent of Total Matrix Common Variance		Kaiser Coefficient of Factor Similarity
	3rd Grade	6th Grade	
Report Card	10	9	.84
Failure	11	8	.74
Test	8	8	.75
Achievement	8	14	.84
Recitation	6	8	.74

ADMINISTRATION AND SCORING

The SAQ is group administered to children in their classroom with the teacher absent. The instrument is divided into two parts, Form A and Form B. The parts are given no less than 3 nor more than 5 days apart. The student is given a pencil, an SAQ booklet, and an IBM mark sense sheet. The instructions, and the test items, are read aloud by a tape recorder. Items are spaced at approximately 5-second intervals. The tape recording procedure paces progress through the SAQ; it tends to minimize the effects of individual differences in reading ability, and to standardize the subjects' time per response. The student marks his response directly on a mark sense sheet which is then read by an optical page scanner which automatically punches data cards. The cards, in turn, serve as input for a special computer scoring program. See the Appendix for Administration Procedures.

This procedure has been used successfully with subjects as low as the third grade. By using simpler mark sense procedures, eliminating the use of SAQ booklets and relying simply on the tape-recorded presentation, the procedure would still seem to be appropriate for use with subjects in second, and perhaps even in first, grade.

The traditional method of scoring questionnaire responses has been either simple summation across items or some form of factor scoring where a transformation based on factor loadings is applied to item responses before summation takes place. Factor scoring, regardless how sophisticated however, cannot minimize response bias inherent in an individual's protocol.

The more common types of response bias which researchers have attempted to deal with in the past have been: position set, acquiescence, social desirability, defensiveness, and the like (see Hand, 1964; Foster & Grigg, 1963; Bendig, 1962; Hand & Brazzell, 1965; Rosenwald, 1961; and Ruebush, 1963, for example). The standard method of dealing with the problem when data from certain subjects was felt to have an extraordinarily high amount of such bias, was simply to partition the data bank and deal with the suspect data separately, or, in more sophisticated paradigms, to use the method of covariance control.

Inasmuch as response bias was presumed to vary with the individual, special scales, such as "lie scales," were frequently imbedded in anxiety

instruments in order to identify individuals with highly atypical score patterns; the theory being that data offered by such subjects was spurious and hence should be segregated. It should be obvious, of course, that at least a certain amount of atypicality might in fact be due to "honest" differences in how individuals subjectively interpret the meaning of the points on the rating scales they are asked to use. Thus it would seem the basic problem in such cases would be how not to eliminate data from individuals who do not conform to a more common response pattern.

Apparent "bias" differences might also be due to an individual's tendency toward response lability, that is, the degree to which he tends to be expansive or constricted in the use of rating scales. One simple interpretation of response lability can be made in terms of the respondent's subjective interpretations of the meaning of the end-points of the scale.

Bergan (1968) has developed a scoring procedure that tends to accommodate these bias effects. In essence, the procedure standardizes individuals' SAQ scale scores from other data within the individuals' response protocol before comparing SAQ scores across individuals. It is analogous to the standardization of test scores before comparing across tests. By making individual adjustments for individuals' response bias, the predictive validity of the SAQ is raised markedly (Bergan, 1968; Dunn, 1968).

RELIABILITY AND VALIDITY

Reliability and validity results have been collected in two major, independent studies, one by Dunn in the Midwest, and the other by Zimmerman (1969) in the Southwest. The procedures were identical in both studies. Both were based on middle-class, suburban school children. The sample sizes were 320 and 331 children, respectively. In both studies the subjects, representing approximately equal numbers of boys and girls, were drawn approximately equally from grades 3, 4, 5, and 6.

Conservatively derived reliability coefficients are summarized in Table 2. The reliability estimates for the 13-item scales ranged from .82 to .88. The estimates for the 14-item scales ranged from .84 to .91. The estimates for the 6-item scale ranged from .69 to .80. It should be

noted that Spearman-Brown reliabilities are especially conservative.

With regard to validity estimates, the samples for each study were partitioned by grade level to avoid age and school experience contamination and to afford a series of independent, replicated, studies. In both the Midwestern and Southwestern studies, one grade level of data had to be eliminated because the necessary statistical assumptions for analysis could not be met.

Summary correlations of SAQ scales with IQ and academic achievement are presented in Table 3. A more complete table of intercorrelations of age, sex, IQ, achievement, and SAQ anxiety scores is presented as Table 4.

Recitation Anxiety, Failure Anxiety, and either Test Anxiety or Report Card Anxiety give a multiple correlation with academic achievement on the order of .45. If both Test Anxiety and Report Card Anxiety are used in connection with Recitation and Failure Anxiety the multiple correlation is increased slightly to .47 (see Table 5).

The magnitude of this correlation is quite high considering that CMAS-achievement and TASC-achievement correlations are ordinarily on the order of .15 to .25. Similarly, the correlations of Wechsler and Binet IQ scores with academic achievement typically are only on the order of .50 to .60.

If, in addition to SAQ scores, IQ is also included, the multiple correlation with academic achievement is raised to .58. This raises the amount of variance accounted for by the SAQ scales by 12%. (The multiple correlation between the five SAQ scales and IQ is .23). The point to be noted, however, is not how much better one's academic achievement predictions are, given IQ as one of the predictors (indeed, knowing student anxiety scores contributes relatively little to the prediction of achievement when IQ is known), but rather the relatively strong predictive capability afforded by knowing a student's responses to just 35 simple questions about the degree of nervousness he recollects experiencing in a series of specifically identified school situations.

In general it may be concluded that in spite of their brevity, the SAQ anxiety scales reflect reasonable levels of reliability, and have

TABLE 2

SAQ Scale Lengths and Reliabilities

SAQ Scale	Report Card	Failure	Test	Achieve-ment	Recita-tion	Sample Size
Scale Length	14	13	13	14	6	
Spearman-Brown*	87	82	84	84	69	320
Kuder-Richardson 20**	88	88	88	91	80	331

*Tryon's (1957) approximation.

**Cronbach's (1951) generalization to Likert Scales.

TABLE 3

SAQ Correlation Coefficients

with IQ and Achievement Test Performance

	SAQ 5 Scale Multiple R	SAQ Anxiety Scales[1]					Total SAQ Raw Score[2]	Sample Size
		Report Card	Failure	Test	Achieve-ment	Recita-tion		
CTMM - IQ (Total)	23**	-18**	-14**	-17**	-04	06	-12	320
Iowa Achievement	47***	-30**	-29**	-24**	01	23**	-16**	320
3rd Grade	29	-16	02	-38**	-07	06	-19	64
5th Grade	42**	-46**	-26*	-22*	-00	-01	-01	88
6th Grade	39*	-28**	-25*	-30**	12	-10	-11	82
Metropolitan Achievement[3]								
4th Grade	45***	-27**	-17*	-03	-20	13	---	116
5th Grade	48***	-31**	-15	00	-38**	04	---	108
6th Grade	45***	-39**	-07	-10	10	11	---	107

* $p \leq .05$

** $p \leq .10$

*** $p \leq .001$

[1] Using Bergan scores for SAQ Scales

[2] 105 items

[3] From Zimmerman, 1969

TABLE 4

PEARSON PRODUCT-MOMENT INTERCORRELATION COEFFICIENTS: SAMPLE L_1

		1	2	3	4	5	6	7	8	9	10
1.	Test Anxiety										
2.	Report Card Anxiety	28**									
3.	Recitation Anxiety	-00	02								
4.	Achievement Anxiety	19**	08	06							
5.	Failure Anxiety	09	23**	07	24**						
6.	Age	-08	-08	20**	-08	-20**					
7.	Sex	-09	-26**	03	06	-02	-05				
8.	IQ	-17**	-18**	06	-04	-14*	06	11			
9.	Language Achievement	-25**	-33**	19**	03	-26**	43**	20**	50**		
10.	Arithmetic Achievement	-22**	-23**	23**	-04	-28**	56**	08	47**	83**	
11.	Total Achievement	-24**	-30**	23**	01	-29**	46**	14*	55**	94**	90**

* $p \leq .05$

** $p \leq .01$

predictive validities that are in theoretically meaningful directions and of a magnitude not commonly reported. Further, the results obtained seem to be replicable, both across age groups and across studies.

TABLE 5

SAQ MULTIPLE CORRELATIONS WITH ACADEMIC ACHIEVEMENT*

SAQ SCALE	MULTIPLE R**
Test, Recitation	33
Test, Failure	36
Report Card, Failure	38
Report Card, Recitation	38
Failure, Recitation	38
Test, Recitation, Failure	44
Report Card, Recitation, Failure	45
Test, Report Card, Recitation, Failure	47

* Iowa Test of Academic Achievement-Composite.

** Computed using approximation procedures developed by O. H. Roberts.

AGE AND SEX DIFFERENCES

When the relationship of age to school anxiety was considered, a variety of significant differences were found. These results are summarized in Figure 1.

Test Anxiety and Failure Anxiety decreased significantly (.001 and .0001 respectively) with age. Report Card Anxiety also tended to decrease with age (.05). Children's concern over doing well in school, i.e., Achievement Anxiety, remained relatively constant with age; but Recitation Anxiety increased significantly with age (.001).

For the most part, the configuration of the graphs in Figure 1 are

TABLE 6

SAQ SCALE MEANS AND STANDARD DEVIATIONS, BY GRADE LEVEL*

			BERGAN SCORES										RAW SCORES	
Testing Date	Grade Level	N	Report Card $\bar{X}$	Report Card SD	Failure $\bar{X}$	Failure SD	Test $\bar{X}$	Test SD	Achievement $\bar{X}$	Achievement SD	Recitation $\bar{X}$	Recitation SD	All Items $\bar{X}$	All Items SD
Oct	3	58	50.54	4.29	55.34	3.70	47.68	3.88	51.59	3.29	52.26	6.09	6.97	.572
	4	64	50.58	5.64	53.29	3.24	49.10	4.73	51.70	4.04	51.60	5.67	6.78	.885
	5	83	48.24	4.68	53.47	4.15	47.52	3.49	51.89	3.56	54.78	6.31	6.70	.563
	6	78	49.60	5.55	52.54	3.38	46.88	3.22	51.37	4.20	57.23	5.91	6.69	.522
	Combined	300	49.69	5.13	53.60	3.12	47.66	3.32	51.59	3.27	54.22	5.90	6.77	.650
Jan	3	57	49.52	4.27	54.53	3.24	46.60	3.54	51.35	3.45	50.33	4.79		
	4	62	50.34	5.05	52.49	3.21	47.70	3.20	50.90	3.08	52.14	6.12		
	5	84	48.58	4.29	52.48	2.79	47.04	2.40	50.69	3.30	54.68	5.75		
	6	78	49.06	4.78	52.06	3.08	47.10	2.47	51.20	3.18	52.48	5.12		
	Combined	297	49.46	4.66	52.77	3.23	47.07	2.89	50.95	3.20	52.65	5.62		
Mar	3	59	50.74	5.72	54.34	3.68	48.91	3.70	52.74	3.66	52.74	6.77		
	4	53	50.71	4.26	53.17	3.43	48.61	3.31	51.99	3.78	52.02	5.00		
	5	77	48.50	4.48	52.01	3.45	48.30	3.01	51.93	3.99	53.66	6.42		
	6	81	50.30	6.26	51.83	3.54	47.62	3.39	51.76	4.28	52.82	6.23		
	Combined	287	50.11	5.74	52.78	3.70	48.22	3.40	52.03	3.92	53.02	6.24		

*Harvard Data-Text Analysis

fairly stable and replicate on three-month and then on six-month follow-up data collected from the same subjects.

In general, there were no sex differences in scores on four out of the five SAQ scales. The only scale that yielded significant sex differences was Report Card Anxiety. Girls reported less Report Card Anxiety than boys; presumably because of their generally higher level of academic achievement (significant at the .01 level).

Table 6 presents means and standard deviations for each SAQ scale by grade level, for the Midwestern study.

ANXIETY AND TEACHER BEHAVIOR

Zimmerman used Flander's interaction analysis procedure to identify rates at which 17 teachers provided verbal reinforcement to the children in their classrooms, i.e., rates at which the teachers indicated they accepted students' feeling; praised or encouraged student behavior; generally supported and encouraged the ongoing activities of students; accepted or used the ideas of students; etc. A teacher's score was the ratio of verbal reinforcements she offered students in her class to the total number of verbal acts she emitted.

In general, Zimmerman found that students in those classes where teachers gave relatively little positive reinforcement, reported significantly higher levels of SAQ school anxiety than those students in classes where teachers provided relatively frequent positive feedbacks. These same results obtained during a follow-up testing of the same subjects three months later.

CHANGES IN CHILDREN'S SCHOOL ANXIETY OVER THE SCHOOL YEAR

In the Midwestern study SAQ data were collected in October, January, and March in order to explore changes in school anxiety over the school year. It was expected that initially all SAQ scale scores would be reasonably high due to the early ambiguous nature of the classroom. It was expected that mid-year anxiety scores would be generally lower than their corresponding

FIGURE 1

AGE DIFFERENCES IN SAQ SCORES

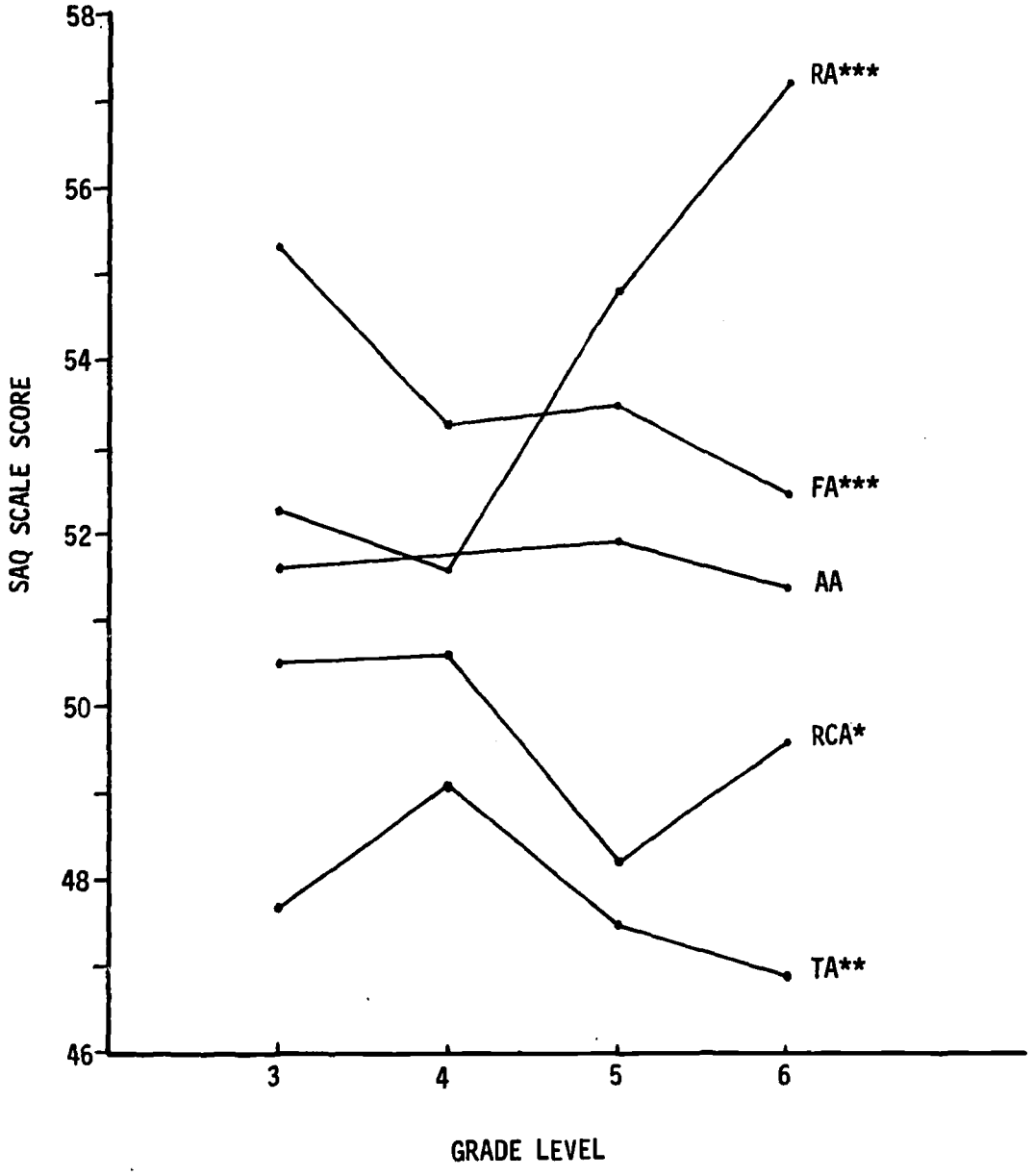
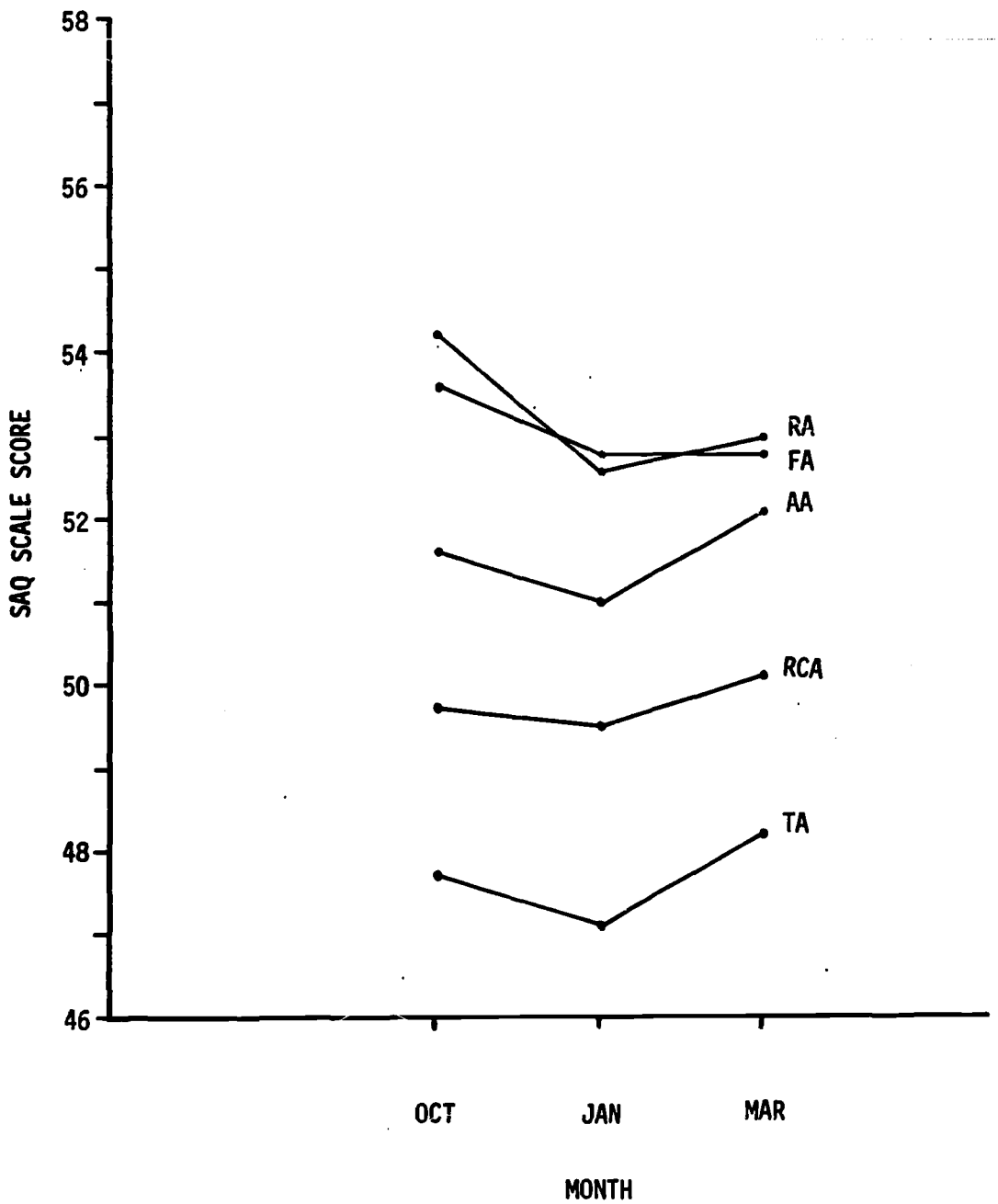


FIGURE 2

CHANGES IN SCHOOL ANXIETY AS A FUNCTION OF SCHOOL YEAR



Fall counterparts. As time went on, and students became more and more familiar with their peers, it was thought that Recitation Anxiety would continue to drop, but that, as the end of the school year came closer, Test Anxiety, Report Card Anxiety, and Failure Anxiety would again increase.

Mean SAQ values, calculated across all subjects, are plotted in Figure 2. Additional analyses of these data have not yet been made. The data do suggest, however, that initial expectations seem to be generally confirmed. In all instances, mid-year anxiety levels are below Fall anxiety levels (sign test significant at .02 level).

SUMMARY

In summary, the SAQ is a third version instrument that has been through a number of preliminary pilot studies and two independent studies of moderate scope.

The SAQ yields scores on five dimensions of children's school anxiety. The scales typically are 13 or 14 items in length and have reliabilities in the middle to high .80's. Multiple correlations between the SAQ scale and academic achievement are on the order of .45. Multiple correlation with IQ as measured on the California Test of Mental Maturity is .28.

The factor structure of the SAQ is relatively well defined, and replicates across age groups in the upper elementary school grades. Means and standard deviations of SAQ scores by grade level, are reported.

In the age span studied (grades 3 through 6) there is a significant and pronounced increase with age in Recitation Anxiety. There is a modest decrease, with age, in Test and Failure Anxiety. The only sex difference in SAQ scores was in Report Card Anxiety; girls reported less.

A significant relationship between teacher behavior and children's school anxiety was also found. Children's school anxiety levels are generally lower in those classes where teachers emit positive reinforcement cues.

Finally, there appeared to be a trend toward predictable variation in children's school anxiety as a function of the school year. In general, the results obtained with the SAQ to date strongly suggest its continued use as a tentative research instrument.

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