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ABSTRACT

The SAT I: Reasoning Test was introduced in March 1993 for the national testing program of academic preparation and ability of college applicants, including students with disabilities. A survey was administered to 1,001 students with disabilities participating in a field trial of the SAT I prototype test. Students' disabilities were in the areas of learning, hearing, physical, visual, and psychological, and the test formats used were regular type, large type, cassette tape, braille, and reader's script. The survey covered: accommodations provided in school, test preparation, perception of adequacy of timing, and calculator accessibility and use. Results indicated that: (1) the most common school accommodation given for classroom tests was extended time, followed by testing in a separate room and use of a reader; (2) 57 percent of students received the test preparation leaflet and of those, 59 percent found it helpful; (3) most students felt that they did not need more time on either the verbal section or the math section of the test and approximately 90 percent of students completed the sections; (4) 76 percent of students used a calculator; and (5) 33 percent of students found the calculator to be useful all of the time, and 59 percent found it useful some of the time. (JDD)

Reactions of Students with Disabilities to the New SAT

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Colleges have used scores on the SAT to determine the academic preparation and ability of applicants since the test was first administered in 1926. The skills and abilities of all students, both those without disabilities and those with disabilities, who are applying for admission to colleges can be measured using this "common yardstick." This past March, a new SAT, the SAT I: Reasoning Test (SAT I), was introduced for the national testing program as well as for students with disabilities. The purpose of this paper is to summarize the results of a survey of the reactions of students with disabilities to the SAT I.

Over the past several years a number of field trials have been carried out to investigate various technical and psychometric qualities of the changes to the SAT. A field trial conducted in December 1992 focused on the SAT I taken by students with disabilities. The purpose of this field trial was twofold: (1) to obtain information about the level of performance and amount of time used by students with different disabilities and (2) to solicit feedback from students, teachers, and counselors about the changes in the test, testing accommodations, and test format.

The design of the field trial and analysis of the timing data are discussed in the paper by Wright and Wendler (1994). This paper provides results of the survey administered to students participating in the field trial.

SURVEY DESIGN AND SAMPLE

Student Feedback Survey

The Student Feedback Survey was completed following the administration of the SAT I prototype test. Students were requested to complete the survey within two days after testing, in order to insure that the testing experience was fresh. Because of the timing required for some formats of the test, not all students could be expected to complete the survey on the same day as testing.

The survey contained two sections. The first section asked questions about the testing situation and the student's disability. Four general areas were covered: (1) accommodations provided in school, (2) test preparation, (3) perception of adequacy of timing, and (4) calculator accessibility and use. The second section asked questions related to the specific format of the test a student took. Included were questions on reactions to new question types, adequacy of equipment, and reactions to answer sheets. Analyses of responses from the second section are not yet completed; hence, this paper will only address questions from section one.

Sample

While responding to the survey was voluntary, over 85% of the students participating in the field trial completed it. Responses were obtained from 1,001 students from 101 schools nation-wide. Results from one school were returned too late to be included in the timing analysis, but were included in the survey analysis.

Two samples were used for analysis purposes. The first sample

contained all 1,001 students who responded to the survey. However, in order to obtain some information about students, such as format of test used, it was necessary to match students with their testing data. The resulting sample after matching contained 931 students. When possible, the complete sample was used in the analysis of the survey questions. Table 1 presents the sample sizes for the unmatched and matched samples for total group and for the sample grouped by disability group.

Disability Groups

Students were asked if they had a disability in five areas: learning, hearing, physical, visual, and psychological. Students were considered as belonging to a particular disability group if they indicated on the survey that they had a particular disability. Many students indicated they had more than one type of disability and were counted as being in more than one disability group. Thus, analyses run by disability group include students who had indicated that they had more than one type of disability as well as those who indicated they had only one disability.

RESULTS

Sample Description

Table 1 provides information on the unmatched and matched samples by total group, disability group, and gender (matched sample only). Approximately 7% of the students responding to the survey were lost as a result of matching, although the loss appeared evenly shared among the various disability groups. The

learning disability group contained the largest number of students, while the psychologically disabled group contained the fewest. There were far more males (67%) than females (33%) involved in the field trial. Males dominated every disability group with the exception of hearing and psychological disabilities, both of which contained a higher proportion of females than other groups.

While most of the students had taken the PSAT/NMSQT (66%), fewer had previously taken the SAT (27%). The SAT Verbal and Math scores for total group and by disability group (see Table 1) were somewhat lower than those reported in other studies (Ragosta & Wendler, 1992). This might indicate the inexperience of these students with the SAT, low level of motivation to do well on experimentally-administered tests, selection bias at the schools, or impact of the timing constraints, testing conditions, or test changes.

Most students (69%) opted for the regular-type test format, followed by the cassette version of the test (13%) (see Table 2). As would be expected, type of test format used appeared to be related to disability. For example, the great majority of students with hearing (91%) and psychological (90%) disabilities took the regular-type test. Students with visual disabilities, however, took a wider range of formats, including regular-type (68%), large-type (15%), cassette tape (12%), braille (2%), and script (2%).

The section timing used in the field trial had been designed to facilitate group testing. It appears that most students (87%) were tested in a group rather than individually (13%) (see Table

3).

School Accommodations

Students were asked a series of questions about the type of accommodations they generally receive at school. Table 3 displays the results of these questions.

Overall, most students (46%) attended school in a regular classroom containing nondisabled students. A high proportion of students (36%) attended a special school for students with their disability. While this pattern held true for the learning, physical, and visual disabilities groups, it was not true for the hearing and psychologically disabled groups. In both of these cases, most students indicated they attended a special school for students with their disability.

The most common accommodation given for classroom tests was extended time (57%). Testing in a separate room (23%) was the next most frequent accommodation, followed by the use of a reader (20%). Other accommodations, such as different tests, special test formats, and special equipment were used less frequently.

Most students (84%) indicated the use of a regular-type book when reading. However, large-type books (6%) and books on tape (10%) were also used frequently by students. This was especially true for those students with visual disabilities.

Test Preparation

Responses to questions related to test preparation information distributed prior to the field trial are provided in Table 5. While the majority of students (57%) indicated they had received

the test preparation leaflet, a good number (43%) did not. Of those who received the test preparation leaflet, 59% found it helpful and 54% felt additional test preparation information would have been helpful.

Section Timing

Student perception of adequacy of section timing is summarized in Table 6. Overall, most students felt that they did not need more time on either the Verbal sections (72%) or the Math sections (72%) of the test. This number was somewhat lower for students with hearing disabilities, where only 65% of the students felt there had been adequate time on the Verbal sections and 63% felt the time was adequate for the Math sections.

Students indicated overwhelmingly that they had completed the verbal sections: Verbal 1, 93% completion; Verbal 2, 92% completion; and Verbal 3, 91% completion. The same was true for Math: Math 1, 91% completion; Math 2, 87% completion; and Math 3, 90% completion. Patterns were generally consistent across all disabilities groups.

Calculator Use

A number of questions were related to calculator use and accessibility. Responses to these questions are summarized in Table 7. In general, students (76%) indicated that they used a calculator on the test. This number was the same over all disability groups, except for the hearing disability group where only 60% of the students indicated they used a calculator. Of those students using calculators, most students (63%) brought their

own calculator to the test (rather than having one supplied by the school). Again, this number was lower for the hearing disability group, where most students (52%) indicated they had not brought their own calculator.

Of those students using calculators, the majority (62%) used a four-function calculator, 35% used a scientific calculator, 8% used a graphics calculator, and 16% used a business calculator. The proportions of students by disability group using each type of calculator are fairly consistent.

Most students (59%) found the calculator to be useful some of the time, while others (33%) found it useful all of the time. A few (7%) found it not to be helpful. About 45% of students used the calculator on only a few questions, 22% indicated they used it on about 1/3 of the questions, 19% used it on about 1/2 of the questions, and 14% on most SAT-math questions.

Most students (93%) indicated they do not have a calculator with special adaptations. However, students with physical (19%) and visual disabilities (16%) are more likely to have special adaptations compared to the other disability groups.

Overall, most students (71%) have calculator use included as part of their Individual Education Plan. Many students (61%) indicated they used the calculator on classroom tests and more than three-quarters (78%) said they used the calculator on homework. Finally, most students (81%) indicated that they had been taught how to use a calculator.

DISCUSSION

The introduction of the SAT I provided the opportunity to revisit the way the SAT has traditionally been administered to students with disabilities. This paper summarizes results of a survey administered to students with disabilities participating in a field trial of the SAT I.

What did the students who participated in the field trial say about the SAT I?

First, it is reassuring to note that the accommodations offered by the SAT Program for Students with Disabilities parallel those used by students when taking classroom tests. Most students testing through the SAT Program for Students with Disabilities use extended testing time and request individual administrations of the test (through Plan A). A multitude of accommodations are requested -- and provided -- through this program.

Second, students' perceptions of timing were consistent with actual timing. That is, students believed they had adequate time to complete the test and indicated that, in general, they had completed each section of the test. Timing data found in Wright and Wendler (1994) showed that overall, students did complete the various sections of the tests. Although the field trial imposed section timing, a constraint not found in the real administration of the SAT, students still indicated they had adequate time. The issue of test timing, and in particular section timing, will continue to be explored as the SAT I becomes operational.

Proper test preparation information has always been important for students taking the SAT. The results of the field trial reinforce the need to provide students with adequate information prior to being given the test. One additional benefit of the field trial: The creation of the prototype SAT I in various formats for the field trial subsequently allows for practice forms of the test to be distributed to students prior to testing "for real."

Finally, the issue of calculator use and accessibility is important in that the SAT I allows students to use a calculator on the Math sections of the test. Other field trials have collected data regarding accessibility of calculators across various groups of students. The field trial for students with disabilities used similar questions as those used with previous field trials for non-disabled students. Knowing that three-quarters of the students used a calculator on the test, and the majority of students used their own calculator, points to accessibility of calculators for groups of disabled students. The great majority of students used a four-function or scientific calculator, paralleling what has been found with nondisabled students.

This paper provided preliminary analyses of the survey used with students participating in the December 1992 SAT I field trial. Additional analyses are warranted and are continuing. Responses to survey questions as they relate to the format of the test taken (regular-type, large-type, braille, cassette tape, or script) are important. In addition, data relevant to timing and testing accommodations will be routinely collected and analyzed as the new

test becomes operational.

REFERENCES

Ragosta, M., & Wendler, C. (1992). Eligibility issues and comparable time limits for disabled and nondisabled SAT examinees. (Report No. 92-5). New York: College Entrance Examination Board.

Wright, N., & Wendler, C. (1994, April). Establishing timing limits for the new SAT for students with disabilities. Paper presented at the annual meeting of the National Council on Measurement in Education, New Orleans.

Table 1
Sample Sizes and Mean SAT Scores

Group	Unmatched[1] Sample	Matched[2] Sample				
		Total[3]	Female	Male	SAT Verbal	SAT Math
	n	n	n	n	Mean	Mean
All Students	1,001	931	306	622	315 (10.12)	347 (9.80)
Disability Group[4]						
Learning	680	626	182	442	313 (8.89)	346 (9.14)
Hearing	128	121	52	68	257 (7.24)	303 (6.75)
Physical	124	111	39	72	317 (9.82)	349 (10.41)
Visual	103	98	37	61	330 (10.58)	352 (10.59)
Psychological	64	61	27	34	345 (10.63)	358 (9.03)

[1]Sample consists of all students who responded to survey.
[2]Sample consists of students who responded to survey and were matched to testing data.
[3]Total includes some students who did not indicate gender.
[4]Students who indicated multiple disabilities were included in more than one group.
Note. Numbers in parentheses are standard deviations.

Table 2
Percent of Students[1] Using a Particular Test Format

Group	Regular-Type Book Only	Large-Type Book Only	Cassette w/ Any Book	Braille Book Only	Script w/ Any Book
All Students	69	8	13	<1	2
By Disability:					
Learning	64	8	17	--	3
Hearing	91	5	5	--	--
Physical	73	6	17	--	4
Visual	68	15	12	2	2
Psychological	90	--	10	--	--

[1]Sample consists of students who responded to survey and were matched to testing data. About 8% of students were missing valid test form codes.

Table 3
Percent of Students[1] Testing Individually or in Groups

Group	Individual	Group
All Students	13	87
By Disability:		
Learning	12	88
Hearing	26	74
Physical	13	87
Visual	13	87
Psychological	8	92

[1]Sample consists of all students who responded to survey.

Table 4
Percent of Students[1] Using Specific Accommodations

Survey Question	All	Disability Group				
		Learning	Hearing	Physical	Visual	Psychological
Which best describes the school/ class you are attending?						
Special school	36	35	60	35	32	44
Special class	19	22	14	23	18	18
Regular class	46	43	26	42	49	22
Which accommodations have you received during class tests?						
Extra time	57	69	38	64	63	50
Separate room	23	29	16	32	34	23
Reader	20	26	13	16	24	17
Different test	8	9	9	8	10	11
Special equipment	7	8	7	10	17	3
Cassette test	5	13	1	4	8	2
Recorder/scribe	4	5	3	3	8	3
Large-type test	4	3	5	6	15	5
Braille test	<1	0	0	0	2	0
Which do you use when reading a book?						
Regular-type	84	87	78	83	77	89
Large-type	6	5	9	10	19	14
Braille	1	1	2	2	2	8
Cassette tape	10	9	6	10	16	13
A reader	7	6	13	9	8	9

[1]Sample consists of all students who responded to survey.

Table 5
Percent of Students[1] Responding to Test Preparation Questions

Survey Question	All	Disability Group				
		Learning	Hearing	Physical	Visual	Psychological
Did you receive a test preparation leaflet?						
Yes	57	56	62	60	52	52
No	43	44	38	40	48	48
Was it helpful?						
Yes	59	57	65	63	52	51
No	41	43	35	37	48	49
Would additional test preparation been helpful?						
Yes	54	54	48	55	61	55
No	46	46	52	45	39	45

[1]Sample consists of all students who responded to survey.

Table 6
Percent of Students[1] Responding to Test Timing Questions

Survey Question	All	Disability Group: Learning	Hearing	Physical	Visual	Psychological
Did you need more time on the verbal sections?						
Yes	28	29	35	30	30	22
No	72	71	65	70	70	78
Did you complete...						
the first verbal section?						
Yes	93	92	93	93	91	90
No	7	8	7	7	9	10
the second verbal section?						
Yes	92	92	91	92	92	91
No	8	8	9	8	8	9
the third verbal section?						
Yes	91	91	93	91	92	89
No	9	9	7	9	8	11
Did you need more time on the math sections?						
Yes	28	26	37	30	33	26
No	72	74	63	70	67	74
Did you complete...						
the first math section?						
Yes	91	91	91	89	88	83
No	9	9	9	11	12	17
the second math section?						
Yes	87	87	85	84	84	86
No	13	13	15	16	16	14
the third math section?						
Yes	90	92	88	88	91	84
No	10	8	12	12	9	16

[1]Sample consists of all students who responded to survey.

Table 7
Percent of Students[1] Responding to Calculator Questions

Survey Question	All	Disability Group: Learning	Hearing	Physical	Visual	Psychological
Did you use a calculator on the test?						
Yes	76	79	60	75	78	72
No	24	21	40	25	22	28
Did you bring your own calculator to the test?						
Yes	63	65	48	62	51	60
No	37	35	52	38	42	40
What type of calculator did you use?						
Four-function	62	59	53	64	67	85
Scientific	35	37	43	36	32	15
Graphics	8	1	0	0	0	0
Business	16	2	3	0	1	0
How helpful was the calculator?						
Not helpful	7	7	5	10	13	6
Helpful some time	59	60	56	54	49	68
Helpful most time	33	34	39	35	31	12
How often did you use the calculator?						
On a few questions	45	41	48	40	42	40
On 1/3 questions	22	24	23	13	18	24
On 1/2 questions	19	19	16	28	25	24
On most questions	14	16	13	19	15	11
Did your calculator include special adaptations?						
Yes	7	5	10	19	16	6
No	93	95	90	81	84	94

Table 7 Continued
Percent of Students[1] Responding to Calculator Questions

Survey Question	All	Disability Group				
		Learning	Hearing	Physical	Visual	Psychological
Does your IEP include permission to use a calculator?						
Yes	71	71	63	71	71	75
No	29	29	36	29	29	25
Do you use a calculator on classroom tests?						
Yes	61	67	58	61	61	35
No	39	33	42	39	39	65
Do you use a calculator for homework?						
Yes	78	81	84	75	76	65
No	22	19	16	25	24	35
Have you been taught how to use a calculator?						
Yes	81	79	82	84	82	77
No	19	31	18	16	18	23

[1]Sample consists of all students who responded to survey.