

Explaining the Adult Careers of Dyslexic Boys: Variations in Critical Skills for High-Level Jobs

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Several hundred boys who were diagnosed as dyslexic (specifically reading disabled) in adolescence and who attended a private college preparatory school for dyslexics were followed up in adulthood. The occupations of these men, who were above average in both intelligence and socioeconomic background, were compared to those of both a control group and the general white male population. As hypothesized, the dyslexic men had higher level jobs than the average man but they were much less likely than the controls to become professionals. They rarely entered jobs such as physician, lawyer, or college teacher which require higher degrees; instead most became managers or salesmen. The occupational differences between the dyslexic and control men were related to, but not completely accounted for, by their large differences in educational attainment. Data on the competencies rated as critical to good job performance in different occupations were consistent with the hypothesis that dyslexic men would establish themselves in relatively high-level jobs emphasizing nonacademic rather than academic on-the-job skills. Nondisabled professionals rated getting information through reading among the most critical of the skills required on their jobs. In contrast, managers and salesmen rated reading as less important than nonacademic competencies such as taking initiative and responsibility or being persuasive. The results illustrate the value of knowing more about the particular competencies required in different jobs in order to help members of special groups, particularly those such as dyslexics who have specific and enduring handicaps but who are otherwise intellectually normal.

Vocational and counseling psychologists have shown an increasing concern in the last decade with the career development of special groups (e.g., Atkinson, Morten, & Sue, 1979; Harmon, Birk, Fitzgerald, & Tanney, 1978; Picou & Campbell, 1975). The term special groups is frequently used to refer to subpopulations in our society who are assumed

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to face special problems because of their socioeconomic, physical, mental, or emotional handicaps or disadvantages.

Women, blacks, Hispanics, Indians, and Chinese Americans have received the most attention. These groups are generally characterized as socially or economically disadvantaged and their barriers conceived as being externally generated. Indeed, these groups are sometimes referred to as oppressed groups (e.g., Atkinson, Morten, & Sue, 1979). There are individuals, however, whose handicaps are clearly mental or physical in origin. Their primary handicap can be characterized as a functional deficit with direct implications for career development, although they may also suffer secondary social handicaps as a result of their dysfunction. Deafness is one example (Lacey, 1975).

Explaining and improving the career development of some special groups therefore requires close attention to the skills and traits different occupations require and those they do not. Although social and economic barriers cannot be ignored, there must first be a clear understanding of the kinds of jobs that different types of physically or mentally handicapped individuals are *able* to do and, importantly, of the jobs for which they are still *competitive*.

This paper concerns the career options of dyslexic youngsters. Dyslexia is a specific type of reading disability, and the term is generally applied to people who fail to learn to read with facility despite normal intelligence, good health, and ample opportunity (Benton & Pearl, 1977). Its origins are not well understood and it appears to encompass several subtypes of reading disability with different origins and different specific auditory and language deficits. Data on the persistence of dyslexia are consistent in showing that it is fairly intractable (Spreen, 1982; Trites & Fiedorowicz, 1976), and even that "backward" readers (i.e., low reading ability in concert with low IQ) make better progress in reading than do more intelligent youngsters who are specifically reading retarded (Yule, 1973).

Dyslexia has become of increasing concern to researchers, educators, and parents during the last two decades (Benton & Pearl, 1977; Malatesha & Aaron, 1982). Estimates of the prevalence of dyslexia in the general population range up to 10 percent (Finucci, Isaacs, Whitehouse, & Childs, 1982; Stevenson, Stigler, Lucker, Lee, Hsu, & Kitamura, 1982, p. 1173; Yule, Rutter, Berger, & Thompson, 1974), with one and a half to four times as many males as females affected (Finucci & Childs, 1981). However, little is known about the impact of this handicap on career development. Because of the lack of large, well-controlled research on educational, occupational, and other adult outcomes, past studies have led to both pessimistic and optimistic conclusions about the futures that dyslexic youngsters face (Herjanic & Penick, 1972; Schonhaut & Satz, 1983).

Colleges are increasingly making efforts to help dyslexic students succeed educationally (Winslow, 1982). College personnel are not as well equipped,

however, to help intellectually able dyslexic students identify occupations that are appealing to them, but for which their reading handicap will not be a significant obstacle.

APTITUDE REQUIREMENTS OF DIFFERENT OCCUPATIONS

Despite the vast amount of job analysis research in industrial psychology, we still do not have a comprehensive picture of the types of competencies required in different fields and levels of work. Many classifications or typologies have been developed using data on the skills required by jobs, but they generally include only a small number of jobs (see reviews by Dunnette, 1976; Pearlman, 1980; Sjogren, 1971). The two most promising candidates for developing a classification with comprehensive coverage of occupations are the archives of the Position Analysis Questionnaire (PAQ; McCormick, Jeanneret, & Mecham, 1972; Mecham, McCormick, & Jeanneret, 1977) and the job ratings available for the 12,064 civilian occupational titles in the *Dictionary of Occupational Titles* (DOT; U.S. Department of Labor, 1977).

These two systems of data, however, share a deficit common to most other job analysis data—they do not provide comprehensive coverage of the general types of competencies required by jobs. The PAQ focuses on tasks performed and the working conditions under which they are performed rather than on the aptitudes or skills jobs require (see Dunnette, 1976, and Fleishman, 1975, on the difficulty of relating task requirements to the ability requirements of jobs). Although 11 of the 46 rating scales of the DOT deal specifically with worker aptitudes (see Miller, Treiman, Cain, & Roos, 1980, for a description of all 46 scales), one important domain of worker competencies is not well represented in the DOT ratings—interpersonal as opposed to cognitive or psychomotor aptitudes. Finally, neither the PAQ nor DOT sufficiently distinguishes reading and writing demands from general verbal aptitude or overall intelligence. In the general population, these cognitive abilities are highly correlated. Dyslexics, however, are distinctive precisely because their reading and writing skills are so discrepant from their general intellectual ability.

Research in the reading field has more recently begun to detail the reading demands of different occupations, including the materials used, time spent, purposes for reading, and difficulty level. The most extensive research program on job literacy to date (Sticht, 1975) studied job reading demands in depth but it dealt with military jobs, only a few of which have civilian counterparts (cook, supply clerk, and repairman). Mikulecky (1982) examined the reading demands faced by workers in a wider variety of civilian jobs, but his sample was small ($N=150$) and the particular occupations included in his study were not clearly identified. Kirsch and Guthrie (1983) collected more detailed data on the content and uses of reading done by 99 workers in four broad occupational groups (managers/

professionals, technicians/skilled, clerks, and semiskilled/service), but they provided no data on the difficulty or importance of these activities, nor did they identify which specific occupations they studied. In summary, the foregoing studies fail to include the range of specific occupations or type of data on job skills that would be useful for the career planning of dyslexics. There is evidence that lower-level jobs require lower verbal skills and less use of written materials (Gottfredson, 1981), but it would be more helpful to be able to identify jobs that are challenging but for which poor reading skills need not be a barrier to entry or satisfactory performance.

The present report provides information about the types of occupations in which dyslexics tend to be employed and those they do not, as well as information about the job skills that are critical in these different kinds of work. The first objective is to summarize the results of a long-term followup in which we examined the adult occupations of dyslexic boys (Gottfredson, Finucci, & Childs, 1983b). The second and major objective is to present evidence about the competencies that are rated as critical for good job performance, evidence that reveals why some high-level jobs provide better opportunities for dyslexics than do others.

The following sections (a) describe the hypotheses of the study, (b) summarize the major aspects of the data collected, (c) summarize data concerning our hypotheses about the career patterns of dyslexic men, and (d) describe the tests of our hypothesis about the job skills that are critical in different types of work. Additional details about the data and methods of the study, about the occupational attainment of dyslexic versus nondyslexic men, and about other hypotheses tested in the larger study are provided elsewhere (Gottfredson, Finucci, & Childs, 1983a, 1983b).

HYPOTHESES

A specific reading disability can directly affect the occupation a person pursues in two principal ways: (a) by making it difficult to get the education or training required to *enter* many jobs, and (b) by making it difficult to perform well any reading and writing tasks actually required *on the job*. It is important to distinguish between the two types of barrier, because they are not necessarily equally severe for any given job. Indeed, some writers (e.g., Berg, 1971) have argued that educational credentials bear little relation to actual job demands and that educational requirements are often inflated. Many dyslexics may be able to obtain a BA or advanced degree despite their disability if they persist long enough, take a light course load, study at nonselective schools, choose easy majors, enlist special help, or compensate in other ways. And, in fact, about half the dyslexic men in our sample obtained BAs, although they tended to take longer to get their degrees and they attended less selective colleges than

did comparable nondyslexic men (Finucci, Childs, Pulver, & Tielsch, 1983). However, taking longer to do one's *job*, enlisting special help from family or co-workers to complete one's job duties, avoiding difficult tasks, and other similar compensatory mechanisms may be unrealistic or unacceptable on the job. Thus, even though it may be possible for many dyslexics to overcome educational hurdles, it may be more difficult to compensate for on-the-job reading demands, whether or not they are comparable to those experienced in education or training.

Some evidence suggests that even relatively high-level jobs can be characterized as academic versus nonacademic, and thus that demands for academic aptitude both in training and on the job may be higher in some types of high-level jobs than in others. Previous research has shown that some fields of work require considerably less education for the rewards they provide (Gottfredson, 1978; Gottfredson & Brown, 1981). In particular, sales and management work often pay as well or better than some types of professional work with higher educational requirements. For example, in 1970 workers in Holland's (1973) enterprising category of work who had just 12 years of education (i.e., workers in sales and management) earned more than workers in Holland's social category who had 17 or more years of education (i.e., workers in education and social service). It is reasonable to speculate that the formal educational system is not the conduit to sales and management work that it appears to be for other relatively high-level work because sales and management work emphasizes nonacademic rather than academic talents even though it often requires considerable intelligence. Conversely, sales and management work can be considered a frequent route to success that circumvents the higher educational requirements of many other moderate-to-high-level jobs.

The foregoing research suggested the following two hypotheses relevant to the careers of dyslexic men.

Hypothesis 1

Dyslexic men will enter jobs requiring less education than will non-disabled men. Therefore, (a) they will be found relatively more often in lower- versus higher-level jobs, and (b) when they are employed in higher-level jobs, they will be found more often in management and sales jobs versus professional jobs. This will be true even after controlling for differences in socioeconomic background and educational attainment.

Because the sample of reading disabled men studied here is considerably above average in both general ability and socioeconomic status (as will be discussed below), it was expected that this group's occupational achievements would be at least as high as those of men in general but not as high as those of their nondisabled peers. Most high-SES and high-IQ men are employed in professional or managerial jobs, which are the

highest levels of work in our society, so it was expected that the dyslexic men would also pursue these two broad types of work. However, they were expected to be underrepresented in professional and overrepresented in managerial work compared to their peers. In short, they would be at least as successful as the average man but would fall short of the attainments which otherwise would have been expected of them and they would find success more often in entrepreneurial work than in the more education-intensive professional jobs.

Hypothesis 2

The reading and writing skills required on the job will be higher in the jobs in which dyslexic men are underrepresented than in the jobs in which they are overrepresented. In particular, reading and writing are less important and nonacademic skills are more important in managerial and sales than in professional work.

METHOD

Samples

A large sample of boys who were diagnosed as dyslexic in adolescence and a large sample of nondisabled boys were followed up as adults, many in middle and late adulthood. Their career outcomes were compared to each other and to men in general to determine the types of careers in which dyslexics do and do not become established. Ratings by the control men of which skills are most critical in their jobs were then examined to see if reading is in fact more important in the jobs in which dyslexics are underrepresented.

The sample of dyslexics consisted of men who attended the Gow School, a college preparatory school for dyslexic boys in South Wales, New York. The Gow School, which was founded in 1926, draws students from all over the United States and offers a curriculum equivalent to other college preparatory schools, even while providing language and reading remediation. All 965 men leaving Gow from 1940 through 1977 were targets of the follow-up. Of these 965 men, 293 had either died, could not be located, or were known not to have received the follow-up questionnaire. Of the remaining 672 who received questionnaires, 579 (86.2%) responded either by mail or telephone.

The modal grade of entry to Gow was 9, and over two-thirds of the boys attended Gow for at least 2 years, many of them returning to regular high schools after leaving Gow. The respondents had an average IQ of 118 (standard deviation 9.6) on the Stanford-Binet and only 3.3% had IQ scores of 100 or below. The Stanford-Binet was administered once, just before entry to Gow. Three-quarters of the boys were tested between the ages of 13 and 16, with the most common age being 14 (25% of the boys).

When characterized according to severity of reading disability, three-quarters were considered severely disabled upon entry to Gow. By the time the boys left Gow, over half were still severely disabled. Test scores prior to leaving Gow indicated that on the average the boys were about 2 years below grade level on a test of oral reading and 3 below in spelling. (These two tests measure the sorts of problems with the mechanics of reading and writing that typify dyslexia.) When expected performance levels are based on IQ as well as on age and grade placement, test scores indicated that the boys were performing on the average more than 3 years below expectation in oral reading and 4 below in spelling (Gottfredson et al., 1983b).

The follow-up questionnaire, which was sent in the spring of 1979, contained questions about education, occupation, family characteristics, and adult reading habits and attitudes. Of most relevance to this particular report, the respondents were asked about degrees obtained, their father's occupation, and a more detailed description of their own occupation.

In order to put their career outcomes in proper perspective, the Gow men's occupational outcomes were compared not only to a control group but also to men in general. Data collected by the Census Bureau were used to describe the general population of white male workers aged 16 and above in the United States in 1970 (U.S. Bureau of the Census, 1973, Table 2).

Alumni of the Gilman School, a highly regarded private college preparatory school for boys in Baltimore, were selected as a control group because that school maintained records on alumni graduating between 1940 and 1979, and because it seemed to draw students from similarly high social class and IQ levels as did the Gow school. Of the 753 men to whom questionnaires were sent, 612 (81.3%) responded by mail or telephone. The Gilman men received essentially the same questionnaire as did the Gow men, except with the addition of the question on job skills described below. The questionnaire was sent out during the spring of 1980.

Both the Gow and control samples were well above average in intelligence and socioeconomic status background. IQ scores were not available for the control men, but a mean of 127 (standard deviation 10.2) was estimated from SAT verbal scores. As already noted, the Gow men averaged 118 on the Stanford-Binet. It has been suggested that intelligence tests which have a large verbal component underestimate the intelligence of dyslexics even though they may be orally and individually administered, as is the Stanford-Binet. Thus, the apparent 9-point difference in mean IQs may overestimate any real difference between the Gow and control men. In any case, both samples are at least 1 standard deviation above the general population average. Because of the potential importance of any difference in IQ between the Gow and control samples, several analyses are reported that examine this issue.

Father's occupation was used to measure socioeconomic status background. When classified according to major census occupational category, 31% of the Gow fathers and 48% of the Gilman fathers were professional or technical workers (versus 15% for white men in general); 53 and 40%, respectively, were managers (versus 12% for the general white male population); and 12 and 10% were salesmen (versus 7% for the general white male population). More Gow fathers were managers and more control fathers were professionals, but both sets of fathers clearly had high-level jobs compared to the general population.

Analyses focused on men who were not students at the time of survey and who were between the ages of 26 and 55. These sample restrictions were imposed to ensure that most of the men had already embarked on their careers and were not merely holding temporary jobs while they pursued education or training. This narrowed the samples to 339 Gow men and 387 Gilman men.

Measurement of Occupational Skill Requirements

In order to determine which competencies are most critical on the job, the control men were asked the following question: "Imagine that you are giving advice to someone who is thinking of entering a *job like yours*. How important is it for this person to have each of the following abilities and personality traits in order to be good at the job?" They were then asked to rate each of 37 items on a 4-category scale ranging from "makes no difference" to "is critical for doing a good job." The 37 items were designed to tap the major domains of job demands that have been documented or proposed in the job analysis, human abilities, and sociological literatures (e.g., see Dunnette, 1976). Intellectual, interpersonal, and psychomotor skills, as well as some social attributes or resources, are represented. The items, which are listed with results in Table 2, focus primarily on interpersonal and intellectual traits, however, because most men were expected to report professional or managerial jobs.

This question provides only a global assessment of reading and writing demands, but it does assess their importance relative to other skills which may be important on the job and it does distinguish them from other high-level cognitive skills such as analytical thinking. In addition, the question focuses on the importance of the job skills for job performance. Abilities are frequently measured according to their difficulty level or frequency of use, but their criticalness (i.e., their relation to job performance) is more relevant here. This is an important distinction because a reading disability may not constitute a serious handicap if a high-level or frequently used reading skill is not particularly crucial to good job performance. Conversely, it is not clear that reading demands have to be frequent to be a serious barrier to dyslexics. Consistent with this, Mikulecky (1982) found that scope and importance of reading but not

amount, depth, or difficulty level distinguished the reading demands experienced by high school students, technical school students, professionals, middle-level workers, and blue-collar workers.

In the interest of minimizing the reading demands of their questionnaire, Gow men were not asked this question. The data therefore represent the job demands experienced by nondisabled men. Although some reading disabled men may be able to compensate on the job for abilities they lack, these data at least indicate which jobs would demand the greatest effort at compensation.

RESULTS

Hypothesis 1

Table 1 highlights the outcomes of the tests of the first hypothesis. This table shows the percentages of Gow and control men and also of white civilian males in the labor force who were employed in each of the Census Bureau's 12 major groups in 1970. The mean prestige levels of the job titles in those groups are also shown in order to provide an idea of how desirable they tend to be in the eyes of the general public. Gow men are found in professional occupations (17.7%) to about the same extent as men in general (15.0%); percentages in the farmer category are also similar for the two groups (3.2 vs 3.0%). However, Gow men are found four times as often in managerial work (49.6 vs. 11.9%), a category of relatively high prestige. They are found twice as often in sales work (15.3 vs 7.3%) but only a third as often in clerical work (2.1 vs 7.5%). The Gow men are much less likely to be in the various categories of blue collar work; especially striking differences are found for craftsmen (5.3 vs 21.9%), operatives, except transport (0.6 vs 13.2%), and laborers, both farm and nonfarm (1.2 vs 5.9%). Compared to men in general, then, these dyslexic men are quite successful on the whole, because they are equally often represented in professional work and more highly represented in management and sales, but they are much less often employed in the lower levels of work which employ most of the male population.

Comparing Gow men to the control men, it appears that Gow men are less likely to be in professional work (17.7 vs 53.0%). They are more likely to hold managerial or sales jobs (64.9 vs 42.4%) or blue collar jobs such as craftsman (5.3 vs 1.3%), transport operative (e.g., truck driver, 3.2 vs 0.0%), or service worker (e.g., bartender, 2.4 vs 0.8%).

Table 1 also shows results for more specific occupational titles within the categories employing most of the Gow and Gilman men—professional, managerial, and sales. The most striking finding is that the control men are most often either lawyers or physicians (24.8%), but only 1.2% of the Gow men are employed in such jobs, a rate which approximates that for the general white male population. It is also revealing to note that the Gow men were much more discrepant from their fathers in this regard;

TABLE 1

Percentage of Men in Different Occupations: Gow and Control Men Aged 26-55 and White Men in General^a (Column Percentages)

	Unweighted mean prestige of titles ^b	White men in general	Respondent	
			Gow	Control
Professional/technical		15.0	17.7	53.0
Accountant (001) ^c	61	1.2	0.6	0.8
Architect (002)	71	0.1	0.9	1.8
Computer specialist (003-005)	65	0.5	1.5	1.8
Designer (183)	56	0.2	1.5	0.5
Engineer (006-023)	66	2.8	1.2	3.1
Lawyer/judge (030, 031)	77	0.6	0.9	14.5
Physician/dentist (062, 065)	83	0.8	0.3	10.3
Reporter/editor (184)	65	0.2	0.6	2.6
Scientist, physical & math (035-054)	69	0.4	0.6	1.3
Scientist, social (091- 096)	69	0.2	0.3	1.3
Social work, clergy (086, 100, 101)	57	0.7	1.5	1.3
Teacher, college (102- 140)	72	0.8	0.0	3.9
Teacher, noncollege (141-145)	57	1.8	2.1	5.2
Technician (150-173)	49	2.0	2.9	0.3
Other professional	55	2.7	2.9	4.4
Managerial		11.9	49.6	32.6
Bank officer/financial manager (202)	60	0.6	5.3	5.7
Buyer/purchasing agent (203, 205, 225)	50	0.7	1.1	0.5
Manager, n.e.c. (245)	50	7.2	23.0	9.6
VP/President/CEO			11.2	9.6
Other				
Public official/inspector (215, 222)	51	0.6	0.9	1.3
Sales manager (231, 233)	54	1.0	5.0	2.1
School administrator (235, 240)	70	0.3	0.6	1.6
Other manager	51	1.5	2.4	2.3
Sales		7.3	15.3	9.8
Insurance, real estate (265, 270)	49	1.3	4.7	4.1
Retail sales (283-285)	37	3.1	1.8	0.5

TABLE 1—Continued

	Unweighted mean prestige of titles ^b	White men in general	Respondent	
			Gow	Control
Sales representative (281-282)	45	2.3	5.9	1.3
Stock & bond (271)	66	0.2	2.4	3.4
Other sales	30	0.4	0.6	0.5
Clerical	38	7.5	2.1	1.6
Crafts	38	21.9	5.3	1.3
Operatives, ex. transport.	28	13.2	0.6	0.0
Transport operatives	28	5.6	3.2	0.0
Laborers	18	5.9	1.2	0.3
Farmers	35	3.0	3.2	0.8
Farm laborers	20	1.5	0.0	0.0
Service, ex. household	26	7.2	2.4	0.8
Private household (N)	11	0.04	0.0	0.0
		(~2,118,250)	(339)	(387)

^a Calculated from data on white men age 16 and over in the 1970 experienced civilian labor force (U.S. Bureau of the Census, 1973, Table 2). These data represent a 5% sample of the U.S. population. Men not reporting a codable occupational title are excluded here.

^b Calculated from data in Gottfredson & Brown (1978).

^c Numbers next to the occupational titles are the codes assigned by the Census Bureau to occupational titles in its 1970 occupational classification (see Gottfredson & Brown, 1978).

17.6% of the Gow fathers and 28.2% of the Gilman fathers were themselves lawyers or physicians. Control men are also more likely than Gow men to be engineers (3.1 vs 1.2%), reporters and editors (2.6 vs 0.6%), or college professors (3.9 vs 0.0%). Gow men are found clearly more often than the control men only in the technician category (the lowest level professional job listed in the table) and in the designer category (which is also a lower prestige job among professionals). Overall, then, the most striking difference between the Gow and control men in the professional category of work is the failure of the Gow men to obtain professional jobs requiring advanced degrees—law, medicine, and college teaching. These jobs are not common among men in general but they are among men of high intelligence and high socioeconomic background. Thus, the professional jobs Gow men do hold tend to be the lower level ones rather than those we most readily associate with the term professional.

As shown above, Gow men are employed more often than the control men in managerial work. This difference stems primarily from the Gow men's greater representation in only one of the more specific managerial categories. Almost one-quarter of the Gow men list themselves as vice

presidents, presidents, or chief executive officers, which is over twice the rate for control men. (Similar data are not available for men in general.) Gow men are as likely as the control men to be employed as bank officers, a relatively high-level managerial job (5.3 vs 5.7%), which is nine times the rate for the general white male population.

Within the sales group, Gow men are more likely to be sales representatives than are control men (5.9 vs 1.3%), which largely accounts for their greater representation in the broader sales category (15.3 vs 9.8%).

Table 1 shows that differences in employment were as hypothesized: dyslexic men are employed more often as managers and salesmen and less often as professionals than are nondyslexic men. Few Gow men hold blue-collar jobs, but the rate is still much higher than for the control men. When differences in social background are controlled by looking at the results separately for the sons of professionals, managers, and salesmen, the Gow-control differences are reduced somewhat, but the dyslexic men are still employed more often as managers (see Gottfredson et al., 1983b, for detailed analyses).

The occupations men enter are highly related to the educational levels they have attained, and we have shown elsewhere (Finucci et al., 1983; Gottfredson et al., 1983b) that dyslexia depresses educational attainment. About as many Gow men have only a high school diploma as have bachelor's degrees. Only 8% have advanced degrees. This is in contrast to the control men, 94% of whom have BAs and over half of whom also have MAs or higher degrees. The chances of entering professional work are much reduced if one does not have an advanced degree, which accounts for a large part of the employment difference between Gow and control men. However, even when Gow and control men with BAs but no higher degree are compared (this is the only educational level at which there are sufficient numbers in both groups to make a comparison), their employment patterns are still different; control men with BAs are twice as likely to be professionals as are the Gow men (31.4 vs 16.0%), whereas they are less likely to be managers (41.6 vs 55.1%). Thus, dyslexia appears to affect careers both by depressing the educational attainment required for much professional work and by decreasing the likelihood of entering professional work even if one is as well educated as other men. These results are consistent with the hypothesis that dyslexic men are overrepresented in managerial work partly because managerial work provides reasonably high-level work with less education than does professional work. The data to be shown below are consistent with the hypothesis that Gow men are also overrepresented in such work, even when holding the same degrees as do nondisabled men, because non-academic skills and traits rather than reading and writing are more critical in them.

As noted earlier, the mean IQ of the Gow sample may be lower than that of the control sample. Although we cannot control for IQ as we could for social class, additional analyses suggest that, were we able to do so, such controls probably would not reduce Gow-control differences in outcomes much, if at all (see Gottfredson et al., 1983b). For example, even the men with the *lowest* estimated IQs in the control sample (IQs of 111 to 120) obtained more education than did the Gow men with the *highest* IQs (IQs of 131 to 140). Moreover, the pattern of Gow-control differences in education and occupation are mirrored by differences between the severely versus the mildly disabled Gow men, and disability level is uncorrelated with IQ (or social class) within the Gow sample.

Hypothesis 2

Table 2 provides evidence that there are substantial differences among jobs in their on-the-job requirements for reading, writing, and other skills. That table shows the percentages of control men in professional, managerial, and sales jobs who considered each of 37 abilities or traits critical to performing their jobs well. Results are also shown for four specific occupations found to be of particular interest: physician, lawyer, VP/president/CEO, and other manager. As noted above, Gow men rarely become lawyers or physicians but they are twice as likely as the control men to be VP/president/CEOs and they are equally likely to be "other" managers. The 37 job-related demands are listed in descending order according to the percentages of professional men who responded that they are critical for good job performance. All abilities or traits that were considered critical by at least 40% of the men in the major occupational groups are boldfaced; for specific occupations, items marked by at least 50% of the men are boldfaced. The numbers of respondents in each of the groups range from 32 to 175 and are shown in Table 2.

Getting information and giving information through talking and having integrity are listed as critical by most men in all job categories, but this is not true for any of the other 34 job demands. For the three general job categories, getting information by reading is the fourth most important demand for professionals, but it ties for 13th place in importance among salesmen and 18th place among managers. Among managers, reading is less critical than such nonacademic skills as taking initiative and responsibility, being persuasive, and representing their companies well to the public. Giving information by writing reports, memos, etc., is less critical than reading, but the pattern is the same. It rates 11th for the professionals and ties for 20th place among the managers and 23rd among the salesmen. Having a higher degree or credential is ranked 9th by the professionals, is 36th by the managers, and is at the bottom of the list for salesmen.

When compared to either professionals or salesmen, it is more critical

TABLE 2
Percentage of Control Men Aged 26-55 Rating 37 Job-Related Abilities or Traits as Critical for Doing their Own Jobs Well: For Major Occupational Groups and Several Specific Occupations

Job-related ability or trait	Major occupational groups				Specific occupations			
	Profes- sional	Mana- gerial	Sales	Sign. level	Law- yer	Physi- cian	VP/pres/ CEO	Other mana- ger
Get information by talking with people	68	70	61	.659	71	89	58	81
Give information by talking with people	66	63	71	.666	68	81	71	66
Have integrity	62	61	77	.233	71	78	62	53
Get information by reading	61	30	36	.000	77	60	25	34
Think logically and analytically	59	46	38	.026	76	54	38	66
Pay attention to details	53	40	56	.046	73	54	22	47
Be dedicated and conscientious	51	44	59	.224	48	65	45	56
Handle several tasks at one time	51	67	36	.002	58	54	66	66
Have higher degree or credential	45	3	0	.000	69	67	0	0
Plan ahead and anticipate problems	44	53	38	.203	43	51	62	62
Give information by writing reports, memos, etc.	42	29	19	.008	57	32	12	38
Spot and tackle problems quickly	38	48	38	.221	45	51	50	59
Take initiative and responsibility	37	61	31	.000	35	27	58	69
Learn quickly	35	29	19	.175	36	40	31	31
Concentrate in distracting or stressful situations	34	29	25	.408	41	51	22	32
Be fair and impartial	34	30	12	.050	26	22	25	34
Visualize things before completion	32	35	22	.364	31	30	41	50
Coordinate and schedule activities	30	40	41	.221	29	22	25	53
Be persuasive and motivating	26	44	56	.000	45	16	62	41
Think of new approaches to problems	26	32	16	.182	29	22	31	38
Make decisions quickly	25	32	19	.198	18	51	25	41
Evaluate, discipline, praise others	24	46	16	.000	6	16	56	34
Have a good memory	22	17	19	.512	20	30	12	16
Represent company well to the public	22	38	50	.001	23	16	38	34
Have poise	21	25	34	.257	28	22	19	31
Cooperate with co-workers	21	29	12	.087	8	16	22	34
Be tactful and considerate	20	19	31	.325	8	35	16	19
Have a lot of ideas	18	16	28	.270	16	8	16	19
Be competitive	14	23	47	.000	21	11	25	25
Have good contacts	14	18	31	.046	12	11	38	6
Have manual dexterity	10	4	0	.034	0	35	0	6
Be good at math	9	18	10	.063	0	0	19	19
Have physical coordination	6	4	0	.244	0	22	0	9
Follow orders and support company policies	4	12	16	.011	2	0	13	9
Be attractive and well groomed	3	5	22	.000	6	3	9	0
Have attended the right college	3	1	3	.492	2	3	0	0
Have physical strength and endurance	2	6	0	.111	0	5	3	9
(N)	(175)	(114)	(32)		(47)	(37)	(32)	(32)

Note. All percentages ≥ 40 are boldface for major occupational groups; all percentages ≥ 50 are boldface for specific occupations. Professionals include job titles from the 1970 census major group Professional, Technical, and Kindred Workers; managers are job titles from the census major group of Managers and Administrators, except Farm, and from the group Farmers and Farm Managers; salesmen include job titles from the census major group Sales Workers. The specific occupations are also included in the results for the major groups: lawyers and physicians are professionals and the two other titles are from the group of managers. The "other manager" category includes all job titles in 1970 census code 245, excluding vice presidents, presidents, and CEOs. One judge is included with the lawyers, one dentist with the physicians, and three farmers with the managers. Significance levels of differences were determined with *F* tests.

for managers to spot and tackle problems quickly, take initiative and responsibility, and evaluate, discipline, and praise others. Both managers and salesmen, especially the latter, must be persuasive and motivating. The distinctive demands of salesmen are to be competitive and represent their companies well to the public. Overall, then, reading, writing, and educational credentials are more critical for professionals than for managers or salesmen. On the other hand, nonacademic but not necessarily low-level skills such as taking initiative and being competitive or persuasive are more critical in the more entrepreneurial work.

Turning to the four specific occupations, the demands on lawyers and physicians are much the same. Reading, writing, and educational credentials are clearly more important in these two jobs than they are for the two types of managers. Fewer of the VP/president/CEO managers than "other" managers cite these attributes as critical. Only one quarter of the former say that reading for information is critical compared to 77% of the lawyers and 60% of the physicians. That the VP/president/CEO group is less likely than other managers to find reading, writing, and education critical is interesting because a greater proportion of the dyslexic than control men were in this former category (23 vs 10%). The two sets of managerial jobs also tend to differ in their other requirements. It is more important for the VP/president/CEO group to be persuasive and motivating and to evaluate, discipline, and praise others, whereas being analytical, dedicated and conscientious, and coordinating and scheduling activities are more critical for the other managers.

In summary, reading ranked among the most critical job requirements for lawyers, physicians, and professionals in general, but it ranked below a variety of nonacademic skills in the sales and managerial jobs. It was rated particularly low by VP/president/CEOs in the managerial category. Although not as important as reading, the pattern for writing was the same. When compared to the controls, the dyslexic men were overrepresented in occupations where reading and writing demands were not especially important, but they were underrepresented in the occupations where these skills were critical. Although we cannot rule out the possibility that these differences are due in part to possible IQ differences between the Gow and control men, supplementary analyses indicate that IQ controls would not erase the educational and occupational differences between the two groups.

DISCUSSION

Although the dyslexic men we studied rarely became lawyers, physicians, or college teachers, jobs which are common among nondisabled men of equally high intelligence and social background, they were quite successful compared to the average man in the United States. More importantly, however, the data provide evidence that many of them achieved their

success by pursuing a different career route than they probably would have had they not been dyslexic. Most became managers.

The work in which the dyslexic men were overrepresented relative to their nondisabled peers—managerial work—not only has been found to require less education for the rewards it provides but, as the data here show, it also deemphasizes the reading and writing abilities that dyslexic men lack. Instead, managerial and sales work emphasize nonacademic skills such as being persuasive and motivating. The differences in the patterns of job demands for professional versus sales and managerial jobs may also help explain why educational credentials are less important in the latter and, indeed, why formal education may not even provide the most important skills these jobs require.

These results should not be interpreted as showing that reading competence is unimportant in managerial and sales jobs, because some minimal reading level may be required to function even in jobs where reading is not considered a critical skill. Rather, they suggest that a serious reading problem is not necessarily a major barrier to success for otherwise qualified or talented people, because management and sales work place a particular premium on nonacademic skills that many dyslexics may either already possess or can develop. Nor does the study provide an answer to the question of how much of a disadvantage dyslexia is to men who are less advantaged intellectually and socioeconomically or who do not receive an intensive treatment program such as that provided by the Gow School. (See Gottfredson et al., 1983b, for a discussion of this issue.) Although the outcomes of the Gow men were favorable compared to the average man, their dyslexia was indeed a handicap; even these relatively advantaged men were essentially barred from the most attractive professional jobs that many of their nondisabled peers held.

More positively, the results suggest that variations among jobs in their academic versus nonacademic skill requirements provide opportunities for people with severe reading handicaps, but who are otherwise intellectually normal, to obtain relatively attractive and high-level occupations. Other types of students can also profit from this pattern of skill requirements. For example, less academically inclined students with good cognitive and social skills or capable students who are unable for financial or family reasons to pursue lengthy educational careers can also turn to sales and management jobs as promising alternatives to the professional occupations to which they might have aspired.

More generally, the results suggest that our ability to assist any special group, particularly those with handicaps that are not always remediable, would be improved by learning more about which cognitive, social, and physical skills are most critical in different occupations. Not only would this provide information about which jobs are good bets for youngsters with specific handicaps, but it would also provide information about the

skills they can develop or augment to become more competitive for those jobs.

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