Computer Aversion Among Students With and Without Learning Disabilities

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The number of students with learning disabilities entering post-secondary programs has grown faster than any other disability classification for the past 15 years (American Council on Education, 1992). This phenomenon is probably a direct result of an increase in the percentage of children with specific learning disabilities from two to six percent of total public school enrollment (grades K-12) between 1977 and 1996 (National Center for Education Statistics, 1998). As many as 9% of first-time, full-time college freshmen reported having at least one learning disability, which represents a 300% increase since 1978 (Henderson, 1992).

Learning disabilities can involve visual processing speed, short-term memory processing, fluid reasoning, and long-term memory retrieval. Although there is disagreement about the definition of learning disabilities, it has been suggested that "these disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span" (Hammill, 1990, p.76). It was estimated that about 67% of high school students with learning disabilities were planning to attend college (White, Deschler, Schumaker, Warner, Alley, and Clark, 1982). However, questions of self-worth and competence in achieving success in higher education, common to all students, are especially critical to students with learning disabilities (Tamaren, 1993).

A student's confidence as a learner can be negatively affected as a result of realizing that he or she is not as capable of assimilating new concepts and skills as quickly or efficiently as someone else who is not learning disabled (Tamaren, 1993). It was proposed that people needed a certain level of motivation to initiate coping behavior, especially when dealing with threatening and unfamiliar tasks (Torkzadeh & Koufteros, 1994). Students with learning disabilities, by the nature of their learning difficulties, may have a high potential for experiencing anxiety and avoiding tasks that they perceive to be difficult to learn. Thus, there is a high likelihood that students with learning disabilities, who could potentially gain the most by being computer-literate, might also be the group that actively avoids contact with computers.

Researchers over the past 20 years have found consistently that many people display negative attitudinal or affective reactions to computers (Gardener, Young, & Ruth, 1989). These negative attitudinal reactions have been referred to as computer aversion and are characterized by fear of breaking the computer or being proven incompetent by it (Lambert, 1991). For a substantial number of students, their aversion toward computer use has been shown to interfere with personal and career choices (Weil, Rosen, & Wugalter, 1990). As posited by Bley (1987), students with learning disabilities probably encounter some unique problems in working with computers, such as misreading typed words and not associating meaning with the words appearing on the computer monitor. As a result, their feelings of intimidation and discomfort might be reinforced every time they used a computer.

As suggested by the discussion above, it was hypothesized that students with learning disabilities would show more aversion toward computers when compared to students without learning disabilities due to their visual and memory problems that interfere with the efficient operation of the computer. Furthermore, taking into consideration the vast amount of information that is disseminated through the computer (i.e., the internet), and also the fact that the computer

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TABLE 1.

Means and Standard Deviations for Students With Disabilities (LD) and Without Disabilities (N-LD) on the Likert-type Items

		LD Group	N-LD Group
Comfortable surfing the internet	M	2.80	2.97
	SD	1.26	1.36
Do not know how to use computer	M	4.14	4.06
	SD	1.17	0.94
Comfortable using Windows®	M	2.03	1.94
	SD	1.04	1.06
Not comfortable using word processing programs	M	3.74	3.94
	SD	1.04	1.00

is becoming an essential tool at almost every level of everyday functioning, students with learning disabilities who have an aversion toward computers could be putting themselves at a further disadvantage. However, the influence of learning disabilities in the aversion students may feel in using a computer has not been explored. There appears to be a need to investigate if learning disability does play a role in the aversion students may feel toward the use of computers when compared to students without learning disabilities. By gaining an understanding of this phenomenon, we might be better equipped to provide computer resources in an easily accessible manner to students with learning disabilities. This in addition should enhance our retention efforts of students with learning disabilities. The present study attempted to make a contribution to the existing literature in the use of computers by investigating the responses of college students with and without learning disabilities to computer use.

METHOD

Participants

From an entering first-year class of full-time students at a large eastern university, 35 students (1%) identified themselves as learning disabled.

The average age of all participants in this study was 18 (SD = .96). In order to reduce the discrepancy in numbers between students who reported a learning disability and students who did not report a learning disability, 35 students from the non-learning disability group were selected using a random computer program. Among the students who reported a learning disability, 14 (40%) were women and 21 (60%) were men. In terms of their race, four (11%) were African American, one (3%) was Asian, 27 (77%) were White, and three (9%) were Hispanic. Among the students who did not report a learning disability, 16 (44%) were women and 19 (54%) were men. In terms of their race, six (17%) were African American, eight (23%) were Asian, 20 (57%) were White, and one (3%) was biracial.

Measures

In order to assess students' receptivity to computer use, the University New Student Census (UNSC, 1997) was utilized. The UNSC is an 87-item questionnaire that consists of 40 multiple-choice items and 47 Likert-type items. Eight of the items (two multiple-choice, two fill-in-the-blank and four Likert-type items) assessed students' aversion towards computers. Responses to the Likert items were obtained using a five-point Likert scale ranging from 1 (*Strongly Agree*) to 5 (*Strongly Disagree*). High scores (4 or 5) on the Likert-type items indicated that the student was very receptive to the use of computers. The eight computer items were grouped for the purpose of analyses and a Cronbach's alpha of .82 was obtained for this sample.

Procedure

The annual UNSC was administered to 2,493 (90% of the class) entering first year students during the summer orientation at a large, eastern, four-year public university. The UNSC is an annual questionnaire that is administered to entering freshmen during the summer orientation programs at an eastern, four-year public university. The UNSC assesses the personal and academic, background, educational and work-related goals, interests and campus service needs, socio-political attitudes, and expectations about

the college experience of entering college students. Questionnaires were administered to college freshmen in a classroom during orientation by Counseling Center staff and graduate students. The administrators informed the entering students that the purpose of the questionnaire was to gather information to help anticipate what services would be most helpful during their college career. They were also told that their responses would be kept confidential. Students took approximately 20 minutes to complete the UNSC and there was a 98% return rate. The students with learning disabilities were identified through their responses to a multiple-choice item that asked them about their diagnosed learning disability. However, no special instructions were given for answering the learning disability item.

Data Analysis

Data were analyzed using chi-square and multivariate analysis of variance (MANOVA).

RESULTS

Analysis of data using MANOVA for the four Likert-type items did not indicate any significant differences among the items between the two groups. The participants indicated that they were comfortable using Windows on the computer ($M = 1.99$, $SD = 1.04$) and their response to the item that assessed their comfort in surfing the net ($M = 2.89$, $SD = 1.30$) was neutral. However, the participants disagreed with the items that stated they did not know how to use a computer ($M = 4.10$, $SD = 1.05$) and that they were not comfortable using word processing programs ($M = 3.84$, $SD = 1.02$).

Analysis of data using chi-square for the two multiple choice and two fill-in-the-blank items did not indicate any significant differences among the items between the two groups. Most of the participants (80%) indicated that they would be using their own computer for coursework. Furthermore, the participants indicated that they were more comfortable working with an IBM PC/IBM compatible (64%) as opposed to an Apple/Macintosh (27%). The number of hours the participants used a computer ranged from 0 to 30 hours per week. The two largest groups

consisted of participants who did not spend any time on the computer (13%) or students who spent three hours per week on the computer (13%). The number of hours the participants spent on the internet ranged from 0 hours to 10 hours per week. Most of the participants reported not spending any time at all on the internet (57%).

DISCUSSION

The results did not support the proposition that students with learning disabilities may have an aversion toward computers compared to students without learning disabilities. Furthermore, there were no indications from the results that students with learning disabilities lacked self-efficacy in the use of computers. It was encouraging to note that students in general owned a computer and were very comfortable using it. It was also encouraging to note that students with learning disabilities were just as comfortable in using computers as were students without learning disabilities. However, it is a cause for concern to note that 13 % of the students do not use a computer and that 57% of them do not use the internet. The reason for the lack of discrepancy in computer aversion between students with and without learning disabilities could be attributed to the proliferation of computer-assisted technology in schools throughout the country in the form of Computer Assisted Instruction (CAI).

The introduction of CAI to students with learning disabilities has probably exposed them to computers from a very young age. It is possible that any aversions that they might have felt toward the computer were completely eradicated by the time they attended college. As proposed by Lambert (1991), prolonged computer usage can lead to changes in computer aversion, and those changes can be in the direction of computer aversion reduction. A meta-analysis of 254 studies showed that CAI has raised the level of student achievement in a variety of settings, especially those involving students with learning disabilities (Kulik & Kulik, 1991).

Furthermore, many students with learning disabilities have probably come to the realization that computers function as normalizing agents

by allowing them to circumvent certain problems and making it possible for them to be on par with their peers who are not learning disabled. Various indications, such as the proliferation of CAI for students with learning disabilities at elementary and secondary schools, point to the fact that the enrollment of students with learning disabilities in universities and community colleges will continue to rise well into the 21st century (Rapp & Gittinger, 1993). In conclusion, it can be asserted that students with learning disabilities do not appear to have any more aversion toward computers than students without learning disabilities.

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