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ABSTRACT

A survey of 145 postsecondary programs for hearing-impaired students in North America gathered data pertaining to attrition rates. Estimated attrition rates were found to be lowest for the group of programs primarily offering diplomas, with a rate of 59 percent, and highest for those offering Associate degrees, with a rate of 79 percent. Open-ended interviews were conducted with 20 students who transferred from a mainstream postsecondary program to the National Technical Institute for the Deaf. Three reasons were identified to explain the students' withdrawal from their first college: inability to communicate with teachers, inadequate support services, and limited opportunities for social interaction with peers. It is concluded that accommodations to meet the special needs of hearing-impaired learners may not be adequate to ensure their graduation, and a reason for the high rates of attrition may be a lack of social and academic integration of hearing-impaired students into mainstreamed college life. (JDD)

Attrition and Accommodation of Hearing-Impaired College Students in the U.S.

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ABSTRACT

The numbers of hearing-impaired persons attending colleges and universities in the United States has increased tremendously since the end of World War II. This growth is evidence of the increased accessibility hearing-impaired persons have to colleges. This paper reports on national attrition rates of hearing-impaired persons and suggests that accommodations to meet the special needs of these learners may not be adequate to insure their graduation. The paper also reports on the results of an interview study in which students who had withdrawn from a college were asked to indicate why they withdrew from that college. It is suggested that a reason for the high rates of attrition may be a lack of social and academic integration of the hearing-impaired students into mainstreamed college life.

INTRODUCTION

The growth of postsecondary education since 1945 has been unprecedented in U.S. history. Returning World War II veterans, large numbers of whom might not otherwise have gone to college, entered universities and colleges from 1945 to 1950 in large part because of federal legislation commonly known as the "GI Bill." In the 1950's community colleges began to develop, opening college doors to large numbers of individuals who would not otherwise have had access to higher education.

During this same period the growth of higher education was fostered by changes in societal attitudes regarding college attendance. The launching of *Sputnik*, the goal to put a man on the moon, and the civil rights movement resulted in the emergence of concerns regarding *access* and *choice*. Access to postsecondary education, and choice of school by individuals, initially centered on the issue of college opportunities for minorities and children from families with low incomes. The passage of section 504 of the Rehabilitation Act of 1973, as amended in 1974, provided federal protection regarding access by handicapped individuals to higher education:

> "*No otherwise qualified handicapped individual in the United States...shall, solely by reason of his handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.*"
>
> *The United States Congress:*
> *Section 504 of the Rehabilitation Act of 1973. P.L. 93-112*[1]

The efforts of American society to provide access and choice in higher education has markedly influenced the numbers of hearing-impaired persons seeking postsecondary education. Enrollment of hearing-impaired persons in colleges has increased from approximately 250 in 1950 to more than 8,000 in 1986 (Rawlings and King, 1986). This growth resulted from the baby boom after World War II, changes in societal

[1]In its original version, Section 504 defined "handicapped individual" only with respect to employment. This was subsequently amended under the Rehabilitation Act Amendments of 1974 (P.L. 93-516) to include education.

attitudes toward providing educational opportunities to people with disabilities, and at least two significant Rubella epidemics during the same time period.[2]

The growth in enrollments of hearing-impaired students at colleges and universities indicates clearly that the issue of access is being addressed. However, it is not at all clear whether institutions have made adequate accommodations to meet the communicative and educational handicaps imposed by a severe to profound hearing impairment. Are the handicapping effects of hearing impairment so great as to cause a high level of attrition in this group of handicapped persons? A theoretical model presented by Spady (1970), elaborated by Tinto (1975; 1987), and tested in various college environments (Pascarella & Terenzini, 1979, 1980; Pascarella & Chapman, 1983, Bean & Metzner, 1985) suggests that students come to a particular institution with a range of background traits (e.g., achievement, communication, gender, socio-economic status, personality). These background traits influence not only how the students will perform in college, but also how they will interact with, and subsequently become integrated into an institution's social and academic systems. Other things being equal, the greater the students' level of social and academic integration, the more likely they are to continue their enrollment at the particular institution.

Depending on the severity of the hearing impairment, deaf students will have some unique difficulties being integrated into the social and academic mainstream of college life. Consider as examples the isolation of the hearing-impaired person who cannot hear a lecture, use a telephone, or interact with peers. Thus, while the hearing-impaired individual may meet all the minimal academic requirements for admission to college, we must question whether the environment has accommodated to the special needs of the handicapped individual in order to provide some level of social and academic integration. It is therefore possible that, while the intent of the law to provide access is being met, many hearing-impaired individuals continue to remain isolated both socially and educationally from the mainstream. If the theory posited by Tinto is accurate and these individuals are not being integrated, then attrition rates will be much higher than for the non-handicapped individuals.

[2]The epidemics occurred in 1957-59 and 1963-65. It is estimated that the 1963-65 epidemic resulted in more than 8,000 additional births of people with congenital hearing impairments.

For many decades, the small number of deaf persons attending postsecondary education has made this a difficult question to address. With the escalating enrollments of the past two decades, it is now possible to study the question of withdrawal from college in a more meaningful way.

The purpose of this paper is threefold: *first*, to report on the level of attrition among hearing-impaired college students in the United States. Sufficient accommodation to the special needs of hearing-impaired persons should result in rates of withdrawal from college that are comparable to the rates for their hearing peers. In this sense, rate of withdrawal can be used as an index of accommodations being made to the special needs of hearing-impaired college students.

The *second* purpose of this report is to describe the findings from an interview study in which students who transferred to the National Technical Institute for the Deaf at Rochester Institute of Technology (NTID at RIT) were asked to explain their reasons for withdrawing from their initial college.[3] The interview format permits exploration of the amount and quality of social and academic integration hearing-impaired students experience in college.

Third, the report will include a discussion of the findings from both data sources in the context of a model of attrition that emphasizes the importance of academic and social integration in retention of students. The report concludes with suggestions for areas in which change could improve the college experience for deaf students and areas for future research.

METHOD

In this section, the methods used to collect data for each section of the report are described. It should be noted that the data were collected separately and are not part of a combined research design.

The data for the attrition part of this study are from a survey of postsecondary programs for hearing-impaired students in North America conducted in the fall of

[3]The interview data included in this paper are drawn from a technical report prepared for NTID by Foster and Elliot (1986).

1985 by Gallaudet University and the National Technical Institute for the Deaf at the Rochester Institute of Technology (Rawlings, et al., 1986). Each college, university, or technical school known to have a specially designated program for hearing-impaired students was contacted and asked to complete a questionnaire. The questionnaire collected information about the program, the date the program was established, the accreditation of the program, special support services offered, size of hearing-impaired enrollments, total enrollment of the institution, number of graduates from the program, admission requirements, and majors of hearing-impaired students. Information was obtained from 145 programs serving hearing-impaired persons at the postsecondary level. The responding institutions represent a total enrollment of 7,031 hearing-impaired students (5,917 full-time and 1,114 part-time) in colleges and universities in the U.S. and Canada. Thirty-four states, the District of Columbia, and Canada are represented by the responding programs.

Data about why students withdraw from a mainstream college were generated through open-ended interviews with twenty students who transferred from a mainstream postsecondary program to NTID at RIT between 1983 and 1985.[4] The interviews were semi-structured in that similar topics were covered with each respondent, but the ordering and phrasing of topics varied. Topics included (1) selection of the mainstream college, (2) experience at the mainstream college, and (3) decision to withdraw.

Each interview lasted between 15 and 45 minutes. Interviews were recorded on audio tape. Interpreters assisted with communication and voiced for participants whose speech could not be recorded clearly. Transcribed interviews were analyzed for recurring patterns and themes following qualitative methods described by Bogdan and Biklen (1982).

[4]We are using the word "mainstream" to describe postsecondary educational programs that serve primarily non-disabled student populations and provide limited basic communication supports for hearing-impaired students. None of these colleges have special programs for hearing-impaired students.

FINDINGS

In this section the findings are presented. Findings from the survey are described first, followed by the findings generated through the interviews.

Attrition Rates of Deaf Students

The data in Table 1 are average enrollment figures for 95[5] of the 145 institutions surveyed in 1985 for the book *College and Career Programs for Deaf Students*

Table 1. Mean enrollment statistics by type of degree most often granted for postsecondary programs for the deaf in the U.S.--1985 data

DEGREE TYPE	NUMBER OF PROGRAMS	AVERAGE NUMBER OF STUDENTS					AVERAGE NUMBER OF UNDERGRAD	AVERAGE NUMBER GRADUATING
		PREP	FRESH	SOPH	JUNIOR	SENIOR		
Diploma	46	14.2	20.5	19.2	2.0	2.9	58.8	8.7
Associate	27	15.9	16.7	11.4	.4	.4	44.8	3.8
Bachelor	22	13.3	40.1	13.3	11.7	10.3	88.7	7.8
Total	95	14.5	24.1	15.6	3.9	4 0	62.1	7.1

(Rawlings, et al., 1986). For this study, programs were categorized by the type of degree most often granted in 1985. Thus, if a program granted both Diploma and Associate degrees in 1985 but granted more Diplomas than Associate degrees, that program is categorized as a Diploma granting institution for purposes of this analysis. The graduates are defined as the reported number of Diploma/Certificates, Associate, and Bachelor degrees granted in 1985. Overall, while the average size of the 95 programs reported in Table 1 is 62.1 students,[6] these same programs graduated an average of only 7.1 students in 1985. This is a rather low rate of graduation given the average size of enrollments.

Attrition is best evaluated by a method called cohort survival (Lyell and Toole, 1974). In this technique, a group of students entering an institution for the first time are

[5]Only programs established in 1980 or earlier were included in the analysis in order to provide stability of enrollment and graduation levels which might be variable in a newly established program.

[6]These figurea included the large federally supported programs of Gallaudet University and the National Technical Institute for the Deaf at the Rochester Institute of Technology.

tracked, and the survival rate to graduation for some given point in time after entering the institution is calculated.

Ideally, knowing the cohort survival rates for the colleges represented in the book *College and Career Programs for Deaf Students* (Rawlings, et al., 1986) would be the best way to measure attrition. Since such information is not reported, a model of cohort survival utilizing the data reported by the schools for the 1985 survey (Table 1) has been developed.

In order to approximate a cohort survival model, it is important to know the numbers of first year (new) students entering the educational system each year. Estimates for the numbers of new students (Table 2) were calculated in the following way: the

Table 2. Enrollment rates by year of attendance for postecondary programs for the deaf in the U.S.--1985 data

PROGRAM TYPE	AVERAGE NUMBER OF UNDERGRADUATES	ESTIMATED NEW STUDENTS	AVERAGE NUMBER OF GRADUATES
Diploma	58.8	26.2	8.7
Associate	44.8	23.1	3.8
Bachelor	88.7	45.4	7.8
Total	62.1	29.9	7.1

assumption was made that institutions admit new students to both the preparatory and freshman classes, but that across all institutions some students in the freshman classes are actually in their second year of attendance and thus not new students. This assumption is based on experience from Gallaudet University and the National Technical Institute for the Deaf that about sixty percent of preparatory students continue to become freshmen. If this is the case then, for example, of the 24 freshmen reported for all programs in Table 1, eight (60% of 14.5) would be second year students and not new. Thus the estimated number of new students in the preparatory and freshmen classes would be given by the equation:

$$\text{NEW STUDENTS} = \text{PREP} + (\text{FRESHMAN} - [\text{PREP} \times .60]).$$

Table 2 contains the estimated number of new students for each of the program types using the equation above.

Using the cohort survival model, attrition rate can be derived by application of the equation below:

ATTRITION = (1 - GRADUATES/[FIRST YEAR])

Applying this equation to programs educating deaf youth, however, will yield a rate of attrition that is inflated. This is because the number of persons graduating in 1985 entered, for the most part, before the increase in enrollments due to the Rubella epidemic. To be accurate the graduates of 1985 must be compared with a cohort size entering five years ago. That is, the graduates of 1985 must be divided in the equation by the number of first year students in 1980. It has been estimated that the number of first year students in 1980 (a pre-rubella year) would be 20 to 40 percent less than in the Rubella years (Stuckless and Walter, 1983). Using this assumption, it is necessary to reduce the number of first year students in the equation to reflect the probable size of the cohort entering in 1980. In effect, such an adjustment would reduce the attrition rate for programs that have not shown an increase in students because of Rubella, and thus make the model more conservative.

Since the effect of Rubella on enrollments in all postsecondary programs is not exactly known, Table 3 contains the resultant attrition estimates using three assumptions: 0% increase due to Rubella, 20% increase due to Rubella, and 40% increase due to Rubella.[7] It can be observed that estimated attrition rates are lowest for the group of programs primarily offering Diplomas and highest for those offering Associate degrees. Under the assumption of an increase of 20% in student numbers due to the Rubella epidemic about 59% of students entering programs offering primarily Diplomas will withdraw while the estimate is 79% for the programs offering primarily Associate degrees. Nationally, depending on the assumption being made about the growth in numbers due to Rubella, the estimated attrition rate is probably about 70 percent of an entering class of hearing-impaired students.

[7] To test the validity of the model, the number of new students entering NTID in 1985 and the number graduating were entered into the equation. With no adjustment for Rubella, attrition rate was estimated to be 55%, with the 20% adjustment it is 46%, and with the 40% adjustment it is 27%. At the time of this writing 43% of the 1980 new students at NTID had actually withdrawn, 55% had graduated, and 3% were still enrolled. Since it is known that Rubella caused an enrollment increase of approximately 20% in new admissions in 1985, this single case supports the validity of the model when the 20% adjustment is used.

Table 3. Estimated attrition rates for 95 postsecondary programs for the hearing-impaired by type of degree granted most often in 1985 using three assumptions about changes in numbers of new students

DEGREE TYPE	ATTRITION RATES (%) CHANGE IN NEW STUDENT NUMBERS		
	0%	20%	40%
Diploma	67	59	45
Associate	84	79	73
Bachelor	83	79	71
Overall	76	70	61

Why Students Withdraw

In order to understand why a student withdraws from a particular college, it is often useful to know their reasons for choosing it in the first place. The respondents in the interview study *selected their initial colleges* for a variety of reasons, most of which could be described as "typical" for any young adult considering a first college. For example, some respondents preferred to live with their parents, and chose local schools. Most considered the availability of financial support when selecting a college.

Several respondents decided to go to their first school to "give college a try," to experience college life, and to see if they could succeed in college. Some chose their first college because they were undecided on a major or because they were particularly interested in a major that was offered at the school; other reasons included improvement of specific skills like English and Math.

Like most high school seniors, respondents recalled the influence of others--including school counselors, parents and friends--when selecting a college. However, there are differences in the roles and perspectives of adults who counsel a hearing-impaired student considering college. For example, respondents were assigned Vocational Rehabilitation (VR) counselors in addition to the school guidance counselor; the VR

counselor would focus on issues of employment and federal funding for postsecondary education.

In a similar vein, parents' perspectives on deafness, in combination with their expectations for their son or daughter, influenced the kind of advice they gave. For example, they frequently encouraged their hearing-impaired child to attend a mainstream college. These parents viewed the national programs for the hearing impaired as "deaf" colleges and feared their son or daughter would lose speech skills through association with hearing-impaired people and acquisition of sign language. In other cases parents encouraged their child to attend a local school because they wanted him or her to live at home.

The respondent's feelings and beliefs about their hearing impairment were also influential in the selection of a first college. For example, some respondents did not consider themselves to be "deaf." As a result they did not even consider a national program for the deaf, choosing instead to select from the wide range of mainstream colleges available to all college-bound students.

Other respondents chose first colleges based on information about availability of "deaf programs" or support services for the hearing impaired. Sometimes they were told that specific services like notetakers, interpreters, or tutors were available. In other instances, they knew only that the college offered "support services."

In discussing their *experiences at the mainstream colleges*, some respondents spoke of understanding teachers who gave them the individual attention they requested, and several had good interpreters. However, most of their comments were about the difficulties and challenges they encountered with teachers, support services, the college environment, and the social life.

Many respondents complained about the teachers at the mainstream college. They said that teachers spoke too quickly and unclearly, or that they would talk with their back to the class. Several said that teachers were not sensitive to the needs of hearing-impaired people and therefore did not understand their requests for repetition. Some respondents felt uncomfortable asking questions in class. Others were frustrated because their teachers treated them as if they could hear. The

following quotations illustrate some of the problems which respondents encountered with teachers in the mainstream college class:

> *"Some of the teachers [at mainstream college], they had no experience with the deaf... they talk real fast. If I had a question I'd have to raise my hand and stop the interpreter, stop the teacher. Then they'd explain, and I'd have to turn over here [look back and forth]... and it was really a pain."*
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> *"...If I had a hard time understanding something, they [teachers] would get very frustrated. They start yelling at me, banging on the desk."*
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> *"...After a while I was getting frustrated in the classes. I'd go up to my lab teacher and tell them that I don't understand what they're saying and that they had to repeat possibly the whole thing to me individually. They don't realize that my hearing is so severe because of my speech [ability]...so they'd get the wrong idea, and so they just didn't believe me...they couldn't understand and some of them weren't really sensitive to how I felt...I don't expect everybody to have an awareness of deafness, but...they didn't take their part...and help you out or nothing. They just sit back and did their job just once and...that was it."*
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> *"Most of the teachers are really fast talking. I had classes where they don't stop and ask questions, they say wait 'til after class. I could take notes but then I'd miss what the interpreter was saying... They offered me notetakers, but still I couldn't tell her to write down questions for me."*

One respondent resolved problems with a teacher by dropping the class:

> *"I took care of myself. I had no trouble with the teachers. Some teachers were bad -- I dropped them... [for example] the teacher talked with a pipe in the mouth and I tried to find a notetaker. I failed, so I decided to drop it out."*

Another worked harder out of class to make up for information missed in the lecture:

> "*When I was going to [name of college] I put a lot of hours into it out of class I'd go home and read and study a lot because a lot of time I can't understand everything in class and I have to depend on the book...sometimes I miss things when the teacher turns around and writes things on the board and talk. Most times I miss what they're saying*"

Respondents were disappointed with other aspects of the mainstream educational environment. For example, some described the lectures as too abstract or theoretical. Others had trouble keeping with up with the reading, or found the vocabulary too difficult. Additionally, an almost universal complaint was that courses were too fast-paced -- this included the teacher speaking too quickly and the quantity of information presented during the class. The result was that the hearing-impaired student often left class confused about the lecture and uncertain of work assignments.

Sometimes even a concerned and sensitive teacher could not compensate for the problems hearing-impaired students confronted in a mainstreamed class, as illustrated by the following quotation.

> "*The teacher was very helpful. He helped me any time, and as much as he can...but towards the end, he went too fast. He was throwing too much homework on us. I couldn't keep up. Some information I missed, I couldn't understand clearly. He couldn't get the idea across to me...that was a hard time.*"

Respondents found classes too large, an issue especially troublesome for oral students because they relied primarily on lipreading at the mainstreamed college and needed to sit at the front of the class. As the following story illustrates, being late for class can have serious consequences for deaf students:

> *"The classes are very, very big [and] there are many students. I have to get there real early to get the front row. Most of the time I have to walk from one class to another and other students get there before I do. So half the time I would end up in the middle or in the back row, and then I would have a hard time understanding the teacher."*

Support services were often inadequate at the mainstream college. Many respondents complained about the lack of skilled interpreters. Sometimes interpreters were only available for particular classes, which limited the deaf students' choices severely, as illustrated in the following quotation:

> *"I had trouble with the interpreters, their limited interpreting. I couldn't pick what I wanted...for example, in math, say I said I want to take algebra in the afternoon. They [support service] said "Nope, you can only have the morning. That's all. Not the afternoon." So I was really stuck."*

Some respondents had qualified interpreters but still had difficulty understanding the lecture, because the instructor covered the material so quickly. Some teachers wrote on the board while speaking--students in these classes had difficulty following the interpreter and watching the board simultaneously. Other students relied on voice and lipreading to understand what was said in class. These students were unaccustomed to interpreters, and did not find even the most skilled interpreters helpful.[8]

Good notetakers and tutors who know sign language were rare, as the following excerpts illustrate:

[8]It should be noted that none of the respondents said they had an oral interpreter in class, which might have been helpful in these kinds of situations.

> *"They did have enough [interpreters and notetakers]...but the notetakers they gave me I had difficulty reading because of their handwriting, and I told them "Please write clearer." But the way they write still I couldn't understand it...so that was difficult for me to read and difficulty to understand and I tried."*
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> ---
>
> *"The interpreter did very well, but they could not help me with the studies. You can get some help from the tutor but the interpreter had to be there...[because] the hearing tutor can't help me without the interpreter. So there would be three of us there... [so] the tutor didn't really help a lot."*

Sometimes the providers of support services demonstrated a severe lack of understanding of the needs of deaf students, as illustrated in the following story:

> *"There was a teacher, he would never speak up. I kept begging him. I said "you'll have to talk up a little louder." We were in a big classroom, not an ordinary small one. He said "all right, all right." I was sitting in the front seat facing him and I still couldn't hear. I went there [support service office] and asked for help...[I told them] "I can't hear the teacher." They told me to take down information on a tape recorder. I told them "I can't understand what's being said on the tape recorder." [They told me] "I'm sorry, we can't help you."*

Another factor in respondents' experiences at the mainstream college is geographic location. A few people were in college away from home and were homesick. Far more common in our sample, however, were students who stayed at home and attended community colleges. They found the commuting expensive. Also, they had difficulty seeing their teachers during limited office hours. Still others were having family problems, or found it hard to study at home.

For a variety of reasons, many respondents had little or no social life at the mainstream college. First, for those living at home, social interaction was limited by the very nature of the commuter school. Second, the people we interviewed spent most of their evenings and weekends studying in order to keep up with their classes,

and had little time to socialize. Third, the mainstream experience itself severely limited students' social lives; respondents often had difficulty communicating with hearing students, and there were few deaf students in the mainstream setting. The following excerpt summarized some of the frustrations which deaf students face in interactions with hearing peers:

> "*Social life... lousy, lousy, lousy... we'd smile at each other. They [hearing students] know that I'm deaf and ... they don't sit down and really get down and talk like [they would ask] "how are you feeling, how is school, how many sisters and brothers do you have" .. tell some jokes and stuff ... [then] some of the hearing people might come up ... and they sit there talking and all of a sudden I'm out of the picture ... then I'll leave and I'll say "I'll see ya later" and I can tell just by their expression, their body language, and their movement that they're more fascinated with hearing than me.*"

Sometimes, this sense of social isolation was amplified through comparisons with more positive past experiences. In the following quotation, a respondent compares his experiences in high school with his most recent college experience:

> "*In high school, generally, everybody treated me like everybody else, I guess because they knew me. I really didn't have to give a full explanation of whatever it is that was on my mind. I didn't have to fully explain myself. They just knew exactly where I was coming from. Where as when I went to school [college], they didn't really quite understand because they didn't know me... I'd be the only one and everybody would treat me as different. I'm sure there would be a number of people who wouldn't have some inferiority about me hanging around with them. The area has a lot of cruel people.*"

The experience of this respondent suggests that consistency of environment over time may be critical to the success of hearing-impaired students in mainstream educational environments. If this is so, then the academic calendar system followed by most colleges, in which students are thrown together for short periods of time (i.e.,

the ten week quarter or fifteen week semester), presents particularly difficult roadblocks to the social integration of hearing-impaired students.

In summary, interview respondents were disappointed with the mainstream college. Teachers were not aware of their needs as hearing-impaired learners, reading materials were difficult to comprehend, and classes were too large and fast-paced. Support services were often inadequate or missing altogether. In addition, these students frequently felt socially isolated and lonely.

Respondents did not make the *decision to withdraw* overnight or on the basis of one element of their college experience. Rather, it was the cumulative and combined effect of these experiences which resulted in the decision to withdraw from the mainstream college. Support services, teacher awareness, class size, pace of instruction, and social life were all involved in their decision.

CONCLUSIONS

The data presented in the findings above lead us to ask whether the rates of withdrawal and the reasons for withdrawing from college are acceptable. These authors suggest that the rates are far too high, and the reasons given for withdrawing suggest that insufficient accommodations are being made to meet the special needs of many hearing impaired college students.

While the overall estimated rate of 70 percent appears to be high, it must be compared to similar figures for hearing students. Data are summarized in Table 4 from a national study of student attrition by Beal and Noel (1980). It can be observed that even for hearing college students there is considerable discrepancy in attrition rates among different types of schools. However, the rates for hearing-impaired college students exceed the national rates for hearing students in every category.

When students were asked why they withdrew from their first college three reasons arose: (1) inability to communicate with teachers; (2) inadequate support services; (3) limited opportunities for social interaction with peers. The reasons articulated by the students are supported by current theory on causes of withdrawal from college.

Table 4. Student attrition rates in various types of U.S. colleges with open or liberal admission standards (Beal and Noel, 1980).

TYPE OF COLLEGE	ATTRITION (AFTER FIVE YEARS)
Private Two Year	39%
Public Two Year	58%
Private Four Year	43%
Public Four Year	48%

The theoretical model presented by Spady (1970), elaborated by Tinto (1975, 1987) and tested in various environments (Pascarella & Terenzini, 1979, 1980; Pascarella & Chapman, 1983; Bean & Metzner, 1985 for hearing students and by Scherer, Stinson and Walter (1987) for hearing-impaired students) provides an explanatory predictive theory of the persistence/withdrawal process that can be applied for use with deaf college students. The theory posited by Tinto (1975, 1987) is longitudinal and considers persistence to be primarily a function of the quality of a student's interactions within the academic and social systems of an institution. That is, students come to a particular institution with a range of background traits (e.g., achievement, communication, sex, social economic status, personality traits). These background traits influence, not only how the student will perform in college, but also how he or she will interact with, and subsequently become integrated into, an institution's social and academic systems. Other things being equal, the greater the student's social and academic integration, the more likely he or she is to continue at the particular institution.

For hearing-impaired students entering a mainstream college, there are a number of variables which may mitigate against their integration into these social and academic systems--most notably their communication and academic achievement skills--especially in the areas of math, science and reading.[9] Difficulties in these areas limit a deaf person's ability to use traditional avenues of information transfer in college.

[9]For example, the Median reading grade equivalent for 17 year old hearing-impaired students is 3.2 on the Stanford Achievement Tests (Allen, 1986).

The concept of providing support services for deaf students in college is built upon the notion that deaf students can be "made equal" to hearing students if they are provided access to regular classroom communication through interpreters, notetakers, and tutors. Once provided these supports, deaf students are expected to compete successfully with their hearing peers. Failure is attributed to the hearing-impaired student's lack of innate ability or effort rather than to the educational environment or method of instruction.

The students we interviewed were not successful in a mainstream college setting. In some cases, their difficulties could be traced to inadequate support services. In other cases, students had interpreters, notetakers, and tutors, and were still unsuccessful. While the quality of support services in colleges certainly needs to be improved, there are and probably will continue to be a significant number of deaf students for whom support services, as they traditionally are defined, are not enough.

By themselves, the services may not necessarily improve the ability of hearing-impaired students to understand the content of a textbook or a lecture. The provision of lecture notes or sign language interpretation for lectures does not necessarily mean that the "achievement barrier" created by low reading and mathematics skills has been breached. The communication difficulties of hearing-impaired students inhibit them from using the avenues most often required for information transfer in college--lecture and reading. We know that access to the classroom is not a problem for these individuals, but integration into the give and take of the mainstreamed classroom is often not achieved. Even for the person with an interpreter, the delay imposed by the task of transferring spoken communication into sign language often keeps the hearing-impaired person a step behind the information flow. As a result, questions asked by the hearing-impaired student often seem out of place, or interrupting to the lecture. In some cases it may be necessary to modify texts and instructional materials, provide a comprehensive battery of compensatory and remedial programs, or to modify the system for delivery of education. Often the needs of each student must be considered individually.

In a similar fashion, the communication problems experienced by most hearing-impaired persons make it extremely difficult for them to take part in the usual social activities of campus life. In fact, it may be that social integration is even more

difficult to achieve than academic integration, since the former is less amenable to formal intervention and support services. Additionally, problems are often even more pronounced in the social arena, since there is almost total reliance on the spoken word to communicate, whether it be through the telephone, or face to face communication. For example, just taking part in a discussion in the cafeteria or hallway is very difficult for the hearing-impaired person, as well as for those hearing students who attempt to interact with a hearing-impaired individual. Since so much socialization in our culture occurs through these informal interactions, it is not surprising that hearing-impaired college students often feel socially isolated. Given these circumstances, a hearing-impaired person may have "physical" access to college but remain excluded from the social mainstream of college life.

It is this isolation, or lack of integration into the educational community, which we contend causes the high level of attrition of deaf persons attending college in the United States. It would appear, then, that considerable effort must be expended to reduce the apparently high attrition rates among deaf students attending college. The work of Tinto (1987) indicates that choice of a college is not a decision that can be made lightly. The better the fit between the individual and the college in terms of academic, personal, social and occupational expectations, the higher the chance of an individual graduating from an institution.

For hearing-impaired students, other variables such as communication and available support services may also be critical to success. For example, Scherer, Stinson and Walter (1987) have demonstrated the importance of adequate support services in students' decisions to withdraw from college. We should, then, apply good clinical skills when counseling hearing-impaired college students. We must fully understand the characteristics of both the individual and the institution and the fit between these characteristics. For those of us who work on behalf of special students within a larger educational environment the problems of integration are enormous. To reduce attrition will require commitments beyond the special services office and the resources of deaf persons themselves. It will require a total institutional commitment. Tinto (1987) concludes his recent book on attrition with the following remarks:

> "*Regarding the character of effective institutional policy, we must remember that people make a difference. Ultimately, the success of our actions on behalf of student learning and retention depends upon the daily actions of all members of the institution, not on the sporadic efforts of a few officially designated members of a retention committee. Properly understood, institutional commitment is the commitment on the part of each and every member of the institution for the welfare, the social and intellectual growth, of all members of the institution. It is a commitment to the notion of education broadly understood which is not limited by either time or place." (189-190)*"

We must, then, look beyond the "official" services provided by the institution on behalf of hearing-impaired students. We must ask whether the academic and social needs of the student are being met within the context of a total institutional environment, and work towards achieving the best possible fit between the hearing-impaired student and the college he or she has decided to attend.

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