Persistence and Academic and Social Integration of Hearing-Impaired Students in Postsecondary Education: A Review of Research

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Persistence and Academic and Social Integration of Hearing-Impaired Students[1] in Postsecondary Education: A Review of Research

By: Berth Danermark

Abstract

The research described here falls into two categories. The first category focuses on outcome, the second category focuses on process. The overview includes 27 studies, 14 in the first category and 13 in the second category. Mainstreamed students seem to be more prepared for postsecondary education. Some studies do not rank communication skills when entering the college as among the most important for college performance and the decision to withdraw, and some do. A few studies indicate no correlation between academic performance and the decision to stay or withdraw. Many of the studies support the idea that this interaction is of great importance for the outcome. Regarding social interaction we can conclude that it is an important mechanism in work. However, it is extremely difficult to state that this or that factor is more important than others and the most important conclusion which could be drawn from the studies is to stress the importance of taking a holistic view of the issue.

Introduction

Over the last 10 to 20 years research on hearing-impaired students and postsecondary education has grown substantially. However, when attempting to organize any body of research, the problem of finding a distinct guiding conceptual or organizational framework always exists. In this paper this is done in terms of foci. The research described here falls into two categories. First, there is research dealing with questions related to persistence or withdrawal from higher education. The second category of research focuses on academic and social integration. This categorization is to some extent arbitrary. The first category is more homogeneous than the second category. The research in this category attempts to answer questions like: Why do students withdraw? Is it possible to predict who is likely to withdraw? What predicts the success of a hearing-impaired student graduating from college? The second category addresses such questions as: Which are the social and academic problems concerned with integration of hearing-impaired students? Does mainstreaming have an effect on hearing-impaired students? What are the attitudes of hearing students towards hearing-impaired students? Studies in this category could be divided into the following sub categories: (a) studies of attitudes, (b) studies of classroom behavior, (c) communication and social interaction outside the classroom, and (d) effects of mainstreaming.

Obviously, the two categories are interrelated. Research in both categories questions how students perform in the collegiate setting. Whereas the first category focuses on the outcome– most often in terms of persistence or withdrawal, but in some of the studies in terms of success (e.g. taking a degree or not)– the second category focuses on the processes: what happens in the academic settings from a social and academic point of view. Many of the studies reported here take a theoretical model presented by Tinto (1975, 1987) as the point of departure. I will argue that most of the research conducted so far could be discussed and evaluated within the framework of this theory. Therefore I will present Tinto's 'Model of Institutional Departure' before I present the studies.

Method

Using the keywords mentioned in the introduction, the following data bases were searched: Exceptional Child Education Resources (ECER), Educational Resources Information Center (ERIC), British Education Index (BEI), SOCIO-FILE, and some Nordic bases. Additionally, all references in the literature found through the search were used for identification of relevant studies. Lists of publications from NTID, Gallaudet, and annotated bibliographies were also used. The inventory resulted in 27 studies, 14 in the first category and 13 in the second category. In Appendix 1 the studies are listed, indicating source, aim, definition of subjects, and method used.

Tinto's Theory of Student Departure

Briefly, the main ideas behind Tinto's theory (1987) are that a student enters a college or university with some specific disposition and attributes. According to Tinto these are Family Background, Skills and Attributes, and Prior Schooling. These pre-entry attributes are accomplished with the student's Intentions, Goals and Institutional Commitments. After entering college these attributes are modified and reformulated over time. The student's new attributes are a result of his or her experiences within the institution. Tinto distinguished between the academic system and the social system. By the former he means a formal academic performance and an informal faculty/staff interaction, and by the latter he means formal extracurricular activities and informal peer-group interactions. An outcome of the formal and informal activities is that the student will be more or less integrated into the system, both academically and socially. It is important to note that "the term *integration* can be understood to refer to the extent to which the individual shares the normative attitudes and values of peers and faculty in the institution..." (Pascarella & Terenzini, 1991, p. 51). Negative interactions and experiences reduce integration, and positive interactions and experiences increase integration. So far the model has only been concerned with intra-institutional influences. However, the student's new intentions and commitments are also influenced by external forces like family and other persons outside the organization. The decision to persist or depart is a result of the new intentions and commitments.

The advantages of the model are that the student is seen as an active participant in the process and that the environment is an active force. However, the model has been criticized for not paying enough attention to external forces like current and potential future employers (i.e., the labor market) and community organizations.

Tinto's concept of integration is of great importance in his model. Therefore, it is crucial to know how this concept is operationalized in the attempt to apply his model in the studies I will present in this paper.

Studies Focusing on Reasons for Withdrawal

As a point of departure for the presentation of studies in this section, I take two studies conducted by Stinson, and his colleagues (the first reported in Stinson, Scherer, and Walter, 1987 and Stinson and Walter, 1992 and the second in Stinson and Walter, 1995). These studies are among the most complete quantitative studies in this overview, because they cover many of the aspects mentioned by Tinto. The authors used Tinto's model of withdrawal or persistence explicitly in their studies, but the model is modified and simplified in order to fit the context of National Institute for the Deaf at Rochester Institute for Technology (NTID/RIT) and to fit the available data. Compared to the original model, three new variables were added reflecting communication skills, mainstreaming, and distance from home. As pre-entry attributes they use four variables: Stanford High School Achievement Test, Percent Mainstreamed in High School, Participation in Sponsored High School Activities, and Distance from Home. Indicators of academic and social activities and integration are College Achievement Tests, College Speechreading, Grades, Participation in Sponsored College Activities, and

Social Satisfaction. The dependent variable is end-of-freshman-year persistence/withdrawal. It is important to underline the characteristics of the population in the two studies. The participants consisted of those who stayed or withdrew after the first academic year. Accordingly, the design of the studies does not allow us to draw any conclusion about those students who withdraw without finishing their first academic year.

In short, the studies suggested that if you know what you want (goal and commitment), have some experience in the mainstream (pre-entry attribute), are academically and socially satisfied and integrated (institutional factors), and are doing well, then the risk for leaving college is small. These main results are in full harmony with Tinto's discussion about why students leave college, and consequently the authors concluded that Tinto's model seems to be applicable also regarding hearing-impaired students. Because these studies are the two most elaborate statistical analyses of the question, I will examine the other studies in the light of these data, i.e., are the conclusions mentioned above supported or questioned by other studies.

Fifteen years earlier MacLeod and Welsh (1982) had investigated the reasons for withdrawal from NTID. They mailed a questionnaire to a withdrawal group of 751 students (those who withdrew 1968 to 1979). Of them 257 (44 percent) answered the questionnaire. A validity check between the respondents and all withdrawals indicated that females were over represented among the respondents and that the respondents more often (than all withdrawals) claimed "transfer" as the reason for leaving NTID. The most common reason for leaving NTID was "unhappy with courses" followed by the

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"transfer reason." "Left to go to work" was another common reason. "Unhappy with dorm life" was not a major reason. In Tinto's terms we can conclude that academic reasons dominated overwhelmingly over social reasons. However, this was not the case in the Stinson, and colleagues studies where the social reasons where emphasized. In the MacLeod & Walter study all withdrawals are included, even those students who withdrew during the first year. It is not possible to determine if the incongruency in the result is due to a different structure of population. There might be structural differences between those leaving NTID after less than one year and those leaving after finishing the first year, e.g., communication problems result in withdrawals earlier than social problems.

Another way of looking at the question is to try to find out what characterizes those hearing-impaired students who are successful in terms of earning a degree. The first study addressing this question is a study by Welsh and Schroedel (1982). This study did not directly deal with the question of withdrawal, but the study is indirectly relevant to the issue raised in this paper. The authors tried to identify the attributes that contribute to persistence in earning a degree. The study was designed to answer the question: what predicts the success of deaf graduates of RIT? Success was measured by level of degree received from NTID, as well as by the status of first job after graduation, and by status of current job. In this overview our concern is only the first indicator of success, i.e., level of degree.

The authors concluded that communication skills in reading and writing English as well as understanding sign language are the most important predictors of earning a higher-level degree from RIT.

Speech intelligibility did not emerge as a significant predictor of level of RIT degree. The suggested importance of communication skills in this study is not stressed by Stinson, and his colleagues.

The importance of communication skills was further supported in a study conducted by Dagel and Dowaliby (1989). Ninety first-quarter profoundly deaf students at the School of Business Careers at RIT participated in a survey aimed at identifying students at risk of being placed on probation/suspension due to academic difficulties. The authors used a 38-item Student Integration Survey, SIS (questionnaire), to measure various personal, social, and academic aspects of subjects' high school and NTID experiences. A five-alternative Likert response scale was employed for all items.

The study indicated that the incoming students who had communication problems were more apt to experience difficulties and develop a negative affect. They were more likely to be placed on academic probation or suspension at the end of their first quarter than those who are not experiencing such problems. Those who reported more negative high school experiences were also more likely to be placed on academic probation or suspension at the end of their first quarter. This was predictable with 60 percent accuracy on the basis of information collected from the third week. The results also suggested the relative lack of importance of reading and math scores in predicting probation or suspension.

Dowaliby, Garrison and Dagel (1993) further developed the method for early prediction of students at risk of attrition in a study aimed at developing a self-reported rating scale. The results suggested that the measure calibrated from the SIS responses was an accurate reflection of the extent to which an entering

student is adapting to, and fitting in with, the academic and social characteristics of the NTID environment. Beside the results related to the development of the scale, the investigators reported that most students achieved social integration after seven weeks at NTID. Most students also anticipated academic difficulties, and many students varied in terms of their perceptions about self-management and study habits.

The importance of communication skills was also indicated in two other studies. Welsh and Schroedel (1982) concluded from their study of 713 graduates who had responded to the 1978, 1979, and/or 1980 Alumni Feedback Questionnaire that reading and writing English, and understanding sign language were the most important predictors of level of college degree. The same conclusion can be drawn from a study by Walter and Welsh (1988) of 1,644 students enrolled at NTID during 1976 to 1980. They investigated, among other things, the persistence in college and related that to pre-entry attributes in terms of prior schooling (mainstream, mixed or separated classes), mathematics and reading grade level, and communication skills. Persistence rate was 45.5 percent. However, the rates were related to placement category. The attrition rate was 50.2 percent for the special class category, whereas it was 31.6 percent and 28.1 percent for the mixed and mainstreamed categories, respectively. Students coming from separate classes demonstrated considerably lower reading ability than students coming from mixed or mainstreamed classes. The mainstreamed students demonstrated highest grade level. The differences for mathematics were substantially lower. Students who received a bachelor's degree had generally

homogeneous skills in reading and mathematics, whereas this was not the case for sub-bachelor's degree or withdrawals. Walter and Welsh also observed that the students with mainstream experience had better speech skills but poorer sign skills when entering NTID. The students in the mixed group were in between.

Experiences of mainstreaming in high school and communication skills have been shown to be positively correlated (see e.g., Stinson, Scherer and Walter, 1987), and this renders further support in this study. These two pre-entry attributes seem to be important for the academic performance and hence for the decision to withdraw or not. However, in a study by Scherer and Walter (1988), problems in communication did not single out as an important factor influencing the departure decision. Scherer and Walter investigated both the reasons for withdrawal from NTID and the satisfaction with support services, social opportunities and academic programming. They interviewed 117 students who decided to withdraw during the 1986-87 academic year.

Regarding satisfaction with NTID/RIT college life, the students were, overall, satisfied with college life and outside of class activities. They were least satisfied with their courses. As indicated earlier, dissatisfaction with academic factors (e.g., courses) and with social life are both important for the outcome. Therefore we could expect that social reasons should not be a major reason for leaving, because the study indicated an overall satisfaction with this. Regarding withdrawal, students decided to withdraw from NTID/RIT primarily for career reasons (unsure of goals e.g., could not decide on a major area of study) and because they are unmotivated and needed a break from college. Social (e.g., closer to family) and communication (couldn't understand

teachers) reasons were not as strong as the other mentioned influences on the decision to withdraw. In Tinto's terms the results suggested that lack of commitment seems to be an important reason for leaving, which is congruent with Stinson, and colleagues' results.

This result seems to be, at least to some extent, contradictory to findings regarding the reasons for coming to NTID. Foster and Elliot (1987) interviewed 26 first year NTID students in order to find out why they decided to attend NTID. They found that technical majors, the comprehensive range of support services and educational environments, the post graduation employment opportunities, and the option of interaction with deaf and hearing peers were clear reasons for coming to NTID. In the decision to attend NTID friends and other deaf peers played an important role. Findings from the latter study suggested that, in Tinto's terms, initial intentions, goals, institutional commitments, and external commitments are important for coming to NTID, and the results of the former study suggested that lack of commitment is the main reason for leaving NTID. However, it is not possible to judge whether the results were incongruent or if there were two different groups of students; if those leaving never were committed, or if something happened during the stay at NTID. This illustrates an important methodological aspect of the problem–focus on the longitudinal process.

So far all studies, except the latter, used quantitative methods and statistical analysis. Common to the two following studies is that they use a qualitative method.

The first of these studies (Walter, Foster & Elliot, 1987, and Foster & Elliot, 1986) addressed the question of why the students

withdraw. Important to note is that the informants are students who transferred from other colleges. They were asked to explain their reasons for transferring to NTID.[2] That means we are not dealing with subjects who withdraw from university studies in general or from NTID specifically, but those who changed academic environments. Among them (in total 56 students) 20 agreed to participate in the study. Reasons for withdrawing from the initial college were (a) inability to communicate with teachers; (b) inadequate support services; and (c) limited opportunities for social interactions with peers. The decision to withdraw was the cumulative and combined effect of these experiences. As we can see once again, the importance of communication with teachers seemed to play a vital role, as did lack of support service.

It is interesting to see that communication was the dominant reason for transferring to NTID, i.e., for leaving other (mainstreamed) colleges. The two other reasons were also related to environmental problems which do not exist at NTID, at least not to the same amplitude as at other colleges. This indicated that among the factors discussed in the "Tinto-model" modified for this group of students, the communication problem once again stood out as very important. The results illustrated that communication is a pre-entry attribute, skills developing during the studies, and an institutional factor in the sense that the college does not cope with the communication issue well enough.

In the second qualitative study Barnhart (1991) interviewed 13 students during their first year at Gallaudet University. These were all students who had limited sign language abilities and had grown up in a primarily oral communication environment. In many other

educational settings, including NTID, the characteristics of these students (poor sign skills but [presumably] with good oral communication skills) would not have put them in a vulnerable position—which was the case at Gallaudet because it is an educational setting based on signing.

The students were interviewed three times. Of these students two withdrew, four considered withdrawing, and seven were convinced to persist. The interviews were analyzed through a typology based on Tinto's model. However, Barnhart modified the initial model in three major ways: as background influences he included "hearing related" information; as an institutional experience he included "support system"; and lastly, he added a general integration category besides the social and academic integration sub-categories. The most important finding of the study was, according to Barnhart, the background influence. It influences both social and the academic integration. Coming from primarily oral backgrounds it was important to know how the students interacted socially. Five of the seven stayers were considered to be making a positive social integration at the end of the semester in contrast to none of the withdrawers or possible withdrawers. Regarding academic integration, all of the participants experienced problems. Barnhart concluded that difficulties with academic integration did not predict withdrawal as did problems with social integration; i.e., the results stressed the relationship between communication skill as a pre-entry attribute and its impact on social integration, which in turn seemed to play a vital role for the decision to withdraw or not (or be at risk to withdraw).

Thus far I have only reported studies using students at NTID or Gallaudet University as their subjects. In the following study, conducted by Franklin (1988), 246 deaf students attending seven colleges in the US were studied. We have to consider that we are now dealing with a totally different context than that of NTID and Gallaudet. Franklin found that communication oral skills were of great importance for the decision to withdraw or not. Those with better oral skills seem less at risk to withdraw. Among other pre-entry attributes he also found that attending high schools offering minimal support was positively correlated to persistence (prior schooling attribute). Among the academic institutional experiences, the study indicated that those deaf students who participated in pre-college preparatory programs and decided on a major during the first year were more likely to persist.

In a national study consisting of five separate projects Schroedel and Watson (1991) made an evaluation of the nation's specialized postsecondary programs training deaf students. Among the 5 projects one described the pattern in student attrition and retention. Findings suggested that the number of dropouts was about one of five (19.5%). The reasons differed, regarding type of program. At the rehabilitation-technical programs the major reasons for withdrawal were "adjustment difficulties" or "immaturity"; among community colleges financial reasons and academic difficulties dominated; and among four-year colleges personal problems and problems with the academic requirements were the most given reasons. However, this information was provided by the programs and not through data collection directly from the students. Therefore, the interpretation of the data must be done with some caution. It is worth noting that financial problems were mentioned as a common reason. This was the first study mentioning this factor. This reason for withdrawal was discussed by Tinto who expressed the view that among hearing students, economic problems only played a minor role in the decision to withdraw. Personal and academic reasons were two other dominating reasons, similar to findings in other studies. On the basis of information provided in the report, it is not possible to discuss the reasons in detail. The results indicated the importance of the two institutional factors discussed here: academic and social integration.

The last study in this section is a study by Saur, Coggiola, Long and Simonson (1986). The researchers did not explicitly deal with persistence or withdrawal. Instead, they addressed the question of the long-term effects of educational mainstreaming on hearing-impaired students. The authors used the annual NTID Alumni Feedback Questionnaire. The number of graduates included in the study was 225. Based on the data three conclusions were presented: (a) degree of hearing loss need not be a limiting factor in academic achievement, mainstreaming experience, or employment success, (b) mainstreaming experience can be included in a model for student success, and (c) the model lent credibility to the observation that academic and work-related achievement are separate outcomes. The results could be interpreted in Tinto's terms; among the pre-entry attributes the experience of mainstreaming is important, but the degree of hearing loss seems not to be so important.

Summary

It is not an easy task to summarize these findings. The studies had different populations (definition of "withdrawer" is unclear

or differs between the studies), used different methods, applied different concepts regarding reasons for leaving college, and were conducted in different educational settings. A more elaborate summary will be presented at the end of this paper, but so far we have to note that eleven of the thirteen studies are from NTID. Therefore, it is hazardous to say to which extent these findings are relevant outside the NTID context. The results of these studies indicated that experiences from mainstream high school and communication skills are factors which are, in relation to other factors, important. However, some of the studies did not emphasize communication skills. Instead, more personal factors, such as lack of commitment and an unclear goal, were described as crucial. Both academic and social integration were also important factors. The results of one study indicated financial problems as an important reason. This could also be the reason behind "Left to go to work" mentioned in one study.

Studies Focusing on Academic and Social Integration

In the following sections studies addressing a variety of questions related to the educational process are presented. The main difference between these studies and the former are that none of these studies explicitly address the question of withdrawing. The studies focusing on withdrawal mostly had an explanatory design, i.e., causal approach, and in general used quantitative methods, most of the following studies seem aimed at understanding the pre-condition for, and the process of, integration. Accordingly, in most of the studies a qualitative method is applied.

Because attitudes towards hearing-impaired students are an important pre-condition and dimension of integration the overview starts with some studies focusing on this aspect.

Attitudes Toward Hearing-Impaired Students

In the following three studies the question of hearing students' attitudes towards hearing-impaired students will be examined. I also include a study focusing on attitudes between hearing-impaired students.

Emerton and Rothman (1978) found in their study that entering hearing students tended to be favorable in their general attitude toward deaf people. The respondents were 100 randomly sampled freshmen and transfer students who answered a self-administrated mail questionnaire. After six months, face-to-face interviews were conducted with 30 of the initial respondents. At this point, there seemed to be a downward trend. It is suggested that such change could be due to the social reality of confronting "ideal" norms with the "real" norms of the culture. Surprisingly, the authors did not find any significant correlation between proximity and attitudes toward deaf people. As in many other studies it is reported that normal-hearing students dislike certain behaviors displayed by some deaf students.

In their study of attitudes toward deaf students, Brown and Foster (1991) discussed their findings from two perspectives; first, from an academic point of view and then from a social point of view. In both cases the findings are discussed in terms of peers and integration. Their results are based on interviews with 30 hearings students at RIT. Most hearing students accepted the presence of deaf students in mainstreamed classrooms, and a majority thought support services

were fair and appropriate. That communication through interpreters limited the participation of deaf students in many ways and that it also had disadvantages for hearing students was a common view. Informants felt that deaf students were well integrated in the classroom; however, they did not feel that the classroom supported interaction. Labs were said to provide these opportunities, but despite that, very few deaf interacted with hearing students during the labs.

Regarding integration in social situations, the authors found that the description of the deaf students fell into two sub-categories: a negative and a positive category. The authors did not quantify the two categories but gave us many examples of both categories. Negative behaviors were often tolerated if they were not compounded by a negative attitude. If so, it become intolerable. The authors also observed that close proximity, i.e., living on mainstream floors, sometimes resulted in friction which became worse over time, which seems contradictory to the findings in Emerson and Rothman mentioned above. The overall result of this study was that hearing and deaf students did not interact much socially.

The problems of getting the interaction to happen is further illustrated in a study by Coryell, Holcomb and Scherer (1992). They investigated which factors have positive and negative influences on hearing students' attitudes toward deafness. In this study they used students who have frequent contact with deaf students. Fifty-six resident advisors were the informants. The data were collected during a series of focus group interviews during weekly staff meetings. The three most common factors the informants felt contributed to positive attitudes were: (a) personal contact with deaf

students and positive deaf role models, (b) education and deaf awareness for hearing students, and (c) sign language competence and sign classes for hearing students. Among the negative factors the following were the most often mentioned: (a) stereotyping and patronizing attitudes of hearing students, (b) insufficient availability of educational opportunities to learn about deafness, and (c) communication barriers and gaps. The authors concluded: deaf and hearing students have little meaningful interaction; communication barriers were identified as a major source of friction; specific behaviors of deaf students were identified as contributing to hearing students' attitudes. Several behaviors of deaf students could not be categorized as either cultural misinterpretation or stereotyping. Instead, they could only be described as insensitive, disrespectful, and even obnoxious.

Hardaway (1988) investigated the attitudes among 40 deaf students and 40 deaf students with an additional handicap. She used a modified version of "Peer Attitudes Toward the Handicapped Scale". All students attended Gallaudet. She found that none of the groups expressed any desire to integrate with other students in the classroom. They wished to work in small groups among the deaf, and deaf with additional disability, respectively. An important conclusion was that identification with a sub-group (sub-culture) seems to be superior to the willingness to interact with individuals outside that group.

Summary

The studies addressing the question of attitudes report mixed attitudes towards deaf students. A generally positive attitude in combination with clear negative attitudes are related to specific behaviors among the deaf population. However, it seems that the generally positive attitude is not reflected in interaction. Hearing-impaired and hearing students do not interact much. On the other hand, in no study does increasing interaction between deaf and hearing students result in more positive attitudes. However, it must be stressed that our knowledge about attitudes between the two groups of students is very poor. We have, for instance, no information about the attitudes in mainstream settings.

Academic and Social Integration

Though the previous four studies explicitly addressed the question of attitudes, the following studies in this section did not, but to some extent they are related to the discussion about attitudes. The first two focused on the classroom interaction, while the following studies have a wider scope.

Through participant observation in the classroom, Saur, et al. (1986), studied the experiences of eight mainstreamed hearing-impaired students among twenty-eight normally hearing students. The classes were upper division social work classes. The study focuses on three dimensions of mainstreaming: participation, relationships, and feelings. The participation of deaf students is hindered by their being isolated spatially, temporally, and culturally from the class. Some problems are associated with hearing loss and other problems to the classroom environment. The hard-of-hearing students have to deal with the time lag when they request interpretation, and the students who speechread have to concentrate a large amount of effort on getting the message. An instructor's rate of speech and/or style of teaching is of importance. It is suggested that the participation is affected by (a) the fast pace of discussion and the number of persons who take part in the discussion, (b) language and cultural barriers, and (c) traditional use of space.

The relationships depended on the mutual interactive competence of normally hearing and hearing-impaired persons. It is suggested that the relationship between normal hearing and hearing-impaired persons in the classroom is dependent on their becoming comfortable in each other's presence. This is gained through shared experiences in the classroom context. It can also be gained when persons who use different modes of communication learn to use an interpreter to the best advantage.

The feelings depended on their acceptance of their hearing loss as well as their acceptance by others in the classroom. Mainstreaming is successful when hearing-impaired students feel fully able to function as students in the classroom and where their needs for support are met without setting them apart from other students. This success is most likely dependent on the attitude, maturity, and self-acceptance of the students themselves, along with the sensitivity and concern of the instructors and other class members.

In a second study Saur, Popp-Stone and Hurley-Lawrence (1987) continued to study mainstreamed hearing-impaired students using systematic observation as the method. Thirty-seven students from NTID enrolled in programs at RIT; College of Liberal Arts or the College of Science were the target for the study. The study indicated that normal-hearing students interacted more frequent with the teacher than their hearing-impaired classmates. Worth noting is that hearing-impaired students took part as often as normal hearing students in some

classes, but not as often in other classes. When the instructor used simultaneous communication there were no differences between interaction, i.e., hearing-impaired interacted as often as hearing students. This was not the case when the instructor used only voice and an interpreter. The study dispelled two stereotypes: (a) those students who are successful are the ones who have the least amount of hearing loss, and (b) hearing-impaired students were passive or unresponsive in the regular classroom. A lower degree of participation is more related to barriers described in the previous study.

These findings are further supported in a third study focusing on communication in the classroom. Long, Stinson, Saur and Liu (1993) investigated fifty deaf and hard-of-hearing cross-registered students at RIT regarding their perception of classroom communication. The difficulties in communication were of many kinds, and the communication preferences and needs varied considerable.

Through in-depth interviews with 20 hearing-impaired students at NTID, Foster and Brown (1988, 1989) tried to catch the academic and social aspects of mainstreaming. They found that although the students were generally positive about their mainstream academic experience, their descriptions included a strong sense of separateness. In the article this is discussed in terms of three kinds of constraints: physical, functional, and psychological.

Hearing impairment was not an "invisible" condition. On the contrary, the student had a very distinct presence in the classes. Often the hearing impaired students all sat together and formed a physical entity. The physical separation was also followed by a functional

separation associated with the use of support services. The perceptions of themselves and interpretations of how they and other hearing-impaired individuals are viewed by others created psychological constraints. The social interactions were described in terms of negative interactions (not unusual), neutral (most common), causal but positive interaction, and close, positive relationships (rare). The findings support the position that mainstreaming did not insure social interaction. Most of the informants did not experience any significant interaction.

Foster and Elliot (1986) reported from a study of 25 graduates from NTID about their experiences at NTID. The experiences fell into two categories: academic and personal/social. Regarding the academic experiences, the general attitude was positive. Many were impressed with specific aspects of NTID programs and were heavily influenced in their academic careers by their teachers and counselors. However, the informants reported some negative aspects like difficulties selecting a program major and frustration with English skill level requirements. Those who registered for courses at other colleges at RIT had difficulties following class lectures and reading materials. Regarding the social experiences, they emphasized that the presence of deaf and hearing students on the same campus does not always lead to positive and meaningful interaction. They also stressed the importance of the presence of other deaf college students. These students played an important role in their personal and social development.

Leaving the classroom and the academic environment, Foster and DeCaro (1989, 1991) concentrated their attention to the social interaction between hearing-impaired

and hearing students in a residence hall. Using participant observation and in-depth interviews they described the impetus and barriers for social interaction between the two groups of students. The authors concluded that there are individual characteristics as well as environmental ones influencing the interaction between deaf and hearing students. Among the individual characteristics the authors emphasize four: (a) perceived advantages of living on a mainstream floor; (b) communication skill; (c) knowledge of one another; and (d) attitudes and feelings about hearing or deaf people. Among the environmental characteristics were (a) the physical setting of the residence hall; (b) student housing policies; (c) stability of the residential environment; (d) campus organization and administration; and (e) student culture - stereotypes of deaf students and NTID. These factors were interactive and cumulative, and the authors used an ecological model to illustrate this. The model illustrates the contextual settings of the interaction. The complexity of both academic and social integration is clearly illustrated in the studies reported here. Institutional factors seemed only to be able to provide the opportunities or create barriers for interaction. The question of integration raises fundamental questions concerning cultural belongingness

So far all studies have investigated the situation at NTID. Three studies addressing the integration dimension using subjects outside NTID have been identified.

The most comprehensive study of these is reported by Menchel (1995). He interviewed 33 deaf sophomores, juniors, and seniors enrolled in 18 postsecondary four-year colleges throughout New England.[3] These are students who "survived" the first year and are in

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that sense successful. Their hearing loss was 70 dB or greater as measured in the better ear. The study showed that this group of students were oral oriented. All except one used speech and speechreading as the primary mode of communication. Before entering college only four knew or used any sign language. Much of this has to do with the fact that twenty-eight of them had been mainstreamed in public or private schools for their earlier education. The study also showed that these students came from families which in general had academic experiences and well above average income. Their GPA's in high school were also well above average. If we relate these data to findings by Allen (1994) regarding reading comprehension among students leaving high school, the character of an elite among Menchel's population is further underlined. Allen estimated that only 40 percent of the students with severe and profound hearing loss demonstrate reading levels at the fourth grade equivalent or above (p. 11).⁴ With reference to Tinto's model, one can summarize some of Menchel's findings by saying that among the participants in the study pre-entry school attributes of oral based communication, mainstreaming and belonging to an 'elite' were among the more distinguished attributes. They were also goal oriented, highly motivated, committed, academically and socially well integrated.

The picture drawn by Menchel showed a rather successful group of students. However, due to sampling procedure and sample size, it is not possible to generalize from this study. But his data were unequivocal: this group of students were, in his own terms, "gifted" and were doing very well. Surely, his study will contribute to the discussion about oral and sign based

communication and their role for postsecondary mainstreamed education. It further underlined the importance of learning more about deaf and hard-of-hearing students enrolled in mainstreamed colleges.

In another recent study of 60 deaf and hard-of-hearing students all over the U.S., English (1993) investigated the effect of support service on academic and social integration. She found that support services had a positive effect on academic integration and academic success. However, she also found that the service did not seem to facilitate social integration. Besides these findings, her study also indicated that students reporting greater interaction with faculty were more likely to have better grades and that those with better grades had a stronger intention to stay. Although this study did not address the question of staying or withdrawing, some of the results were in accordance with the findings reported by Stinson, and his colleagues. Academic integration (facilitated by support service) had a positive impact on the academic performance which results in a higher likelihood of staying put.

The sense of loneliness is an important aspect of integration. A study by Murphy and Newlon (1987) addressed the question of loneliness and mainstreamed hearing-impaired students. They pointed out that no study had so far published any results concerning this. One hundred seventy hearing-impaired students answered a questionnaire (a revised UCLA Loneliness Scale measurement). These students were a group of volunteers among a total sample of 446 students (38 percent) attending eight mainstream colleges/universities. The authors found that hearing-impaired students were more lonely than their hearing peers, that hard-of-hearing were not more lonely than deaf students, and

freshmen were not more lonely than upper class students. The same goes for male and female. A second category of relationships (how different aspects of mainstreaming were related to loneliness) were found. They suggested that the following five factors related inversely to loneliness: (a) satisfaction with parental relationships, (b) peer relationships, (c) adjustment to disability, (d) comfort with speech and (e) sign language.

Summary

It was shown in these studies that proximity does not automatically lead to integration, neither in a classroom nor on a campus. In the classroom the hearing-impaired students were identified as a separate group of students, both spatially and socially. Their ability to participate depended on whether the instructor used simultaneous communication or not. If so, the deaf students took part in the discussions as much as their hearing peers. This fact stresses both the important role of the instructor and that communication is the focal point. The latter is also what a majority of the studies in the previous section indicated.

The question of social interaction was shown to be a very complex issue. Individual characteristics interact with environmental characteristics, which make it hard to predict the outcome. However, one important conclusion is that institutional factors seems only to provide opportunities or create barriers for interaction.

Studies outside NTID indicated that mainstreamed second-year students at regular colleges are "gifted", oral oriented, and are doing well. Not much is known about the situation for freshman hearing-impaired students outside NTID.

General Conclusion and Comments

As Barnhart (1991), among others, pointed out, before the universities and colleges can improve their rates of persistence, they have to understand why the students stay or leave. As has been shown in this overview, some research has been done in this field. Many studies also included recommendations, to administrators and faculty. In this concluding section I will focus on the question: Which general conclusions can be drawn from the research described in this overview?

Taking Tinto's model as a point of departure, we can ask what the studies say about the reasons for the students' satisfaction or dissatisfaction with their experiences at the college they attend, and why they either leave or stay. Regarding the pre-entry attributes, it seems that, for this group of students, performance at high school and experiences from mainstreaming are of importance in the outcome of their postsecondary studies. Mainstreamed students seem to be more prepared for postsecondary education. It should be observed that Tinto suggested that among hearing students the association between high school performance and academic failure is not great (Tinto, 1985). However, in the studies reported here I have not been able to distinguish between different types of departure

When it comes to communication skills, the results were not consistent. As may be seen from the overview, some studies did not rank communication skills when entering the college as among the most important for college performance and the decision to withdraw, and some do. Studies not stressing the importance of communication skills as a pre-entry attribute did not suggest that these skills do not

matter, but the studies indicate that other factors are more important. If we look at studies which do not have students attending NTID as respondents, they all indicate the great importance of communication skills.

The second set of factors which Tinto included in his model are goals and commitments. Some of the studies touched upon this question, but not many. It seemed that many of the students attending NTID have a clear reason for doing so. Foster and Elliot (1987) showed that among these reasons were the educational environment and the possibility to interact with deaf and hearing peers. It is plausible to assume that these kinds of reasons play a positive role in the process. One study indicated that unclear goals was the most important reason for withdrawal (Scherer & Walter, 1988), and the authors summarized their results in saying that one of the characteristics of a withdrawing student is that he or she "feels he or she just doesn't belong in college right now - or in this particular college" (p. 11).

When we come to the factors related to the academic system, some disagreements between the studies appeared. These disagreements concerned first and foremost the academic performance.[5] Some studies indicated no correlation between academic performance and the decision to stay or withdraw. The inconsistency could be a result of the inability to distinguish between different types of withdrawal. Tinto (1985) suggested that academic difficulty is of great importance for one type of withdrawal: the forced decision. When saying this, one should be aware that among hearing students this type of withdrawal only constitutes a minor part of all withdrawals. We do not know if this also is the case among hearing-impaired students who withdraw.

Stinson and Walter (1992) discussed the lack of correlation between grade and withdrawal found in an earlier study (Stinson, Scherer & Walter, 1987). Their explanation is related to the NTID environment, more specifically the unique set of support services provided at this college and other colleges at RIT. Thus, this result does not indicate that the relationship does not exist in other settings, e.g. mainstreamed colleges. This is an illustration of a shortcoming in the research due to the NTID bias.

The informal side of the academic system, according to Tinto, is the faculty/staff interaction. Many of the studies in this overview supported the idea that this interaction is of great importance for the outcome. For instance Walter, Foster and Elliot (1987) concluded that the inability to communicate with teachers was one of the reasons the students withdrew. This view is also supported by the findings in the studies of classroom behavior.

Stinson and Walter (1992) claimed that there is overwhelming support for the thesis that both the formal and informal side of the social system play a crucial role in the process. However, many of these findings were based on qualitative studies with small samples. In these studies one could say that the authors were demonstrating that the social interaction is an important mechanism in work. At the same time many studies also indicated that there are many other mechanisms in motion. Some of them exaggerated the importance of social integration; some of them counteracted it. One could say that social integration is—as many other factors involved in the model—contextual dependent.

The results from the studies presented in this overview support the view that Tinto's model seems to be a good point of departure for research in this field. The process is

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a complex one, and it is extremely difficult to state that this or that factor is more important than others. The limitations of much of the research do not allow us to be specific about the importance of separate factors. However, this does not imply that it is impossible to say anything general about the findings. With reference to Tinto's model, I will summarize the result of this overview in the following way: The most important conclusion which could be drawn from the studies is to stress the importance of taking a holistic view of the issue. Factors influencing the decision to leave are communication problems, academic difficulties, disappointment with the academic and social environment, loose institutional commitment, uncertainty in goal, difficulties in choosing major, lack of academic and social integration, and low GPA, to mention the factors which seem most important. However, this conclusion seems to be defensive regarding the possibility of developing our knowledge further in this field. We do not have to throw the baby out with the bath as many postmodernists do or abdicate as predictors[6] as the hermeneutics do.

References

Allen, E.A. (1994). *Who are the deaf and hard-of-hearing students leaving school and entering postsecondary education?* Paper submitted to Pelavin Research Institute as part of the project "A Comprehensive Evaluation of the Postsecondary Education Opportunities for Students who are Deaf and Hard-of-hearing. Gallaudet University.

Barnhart, J.S. (1991). *The transition process of hearing-impaired new sign language freshmen: An interview study of first semester experiences at Gallaudet University.* Gallaudet University. Ann Arbor, MI: U.M.I.

Brown, P.M. & Foster, S.B. (1991). "Integrating hearing and deaf students on a college campus: Successes and barriers as perceived by hearing students." *American Annals of the Deaf,* 136, 21-27.

Coryell, J., Holcomb, T.K. & Scherer, M. (1992). "Attitudes toward deafness: A collegiate perspective." *American Annals of the Deaf,* 137, 299-302.

Dowaliby, D. & Dowaliby, F. (1989). "Third-week prediction of incoming postsecondary deaf student probation/suspension". *Journal of the American Deafness and Rehabilitation Association,* 22, 53-56.

Dowaliby, F., Garrison, W. & Dagel, D. (1993). "The students integration survey: Development of an early alert assessment and reporting system." *Research in Higher Education,* 34, 513-531.

Emerton, R.G. & Rochester, G. (1978). "Attitudes towards Deafness: Hearing students at a hearing and deaf college." *American Annals of the Deaf,* 23, 588-593.

English, K.M. (1993). *The role of support service in the integration and retention of college student who are hearing impaired.* Doctoral Dissertation, San Diego State University, Claremont Graduate School, University Microfilms No. 933034.

Foster, S.B. (1984). *Perspectives of selected NTID graduates on their college experience.* Rochester, NY: Rochester Institute of Technology, National Technical Institute for the Deaf.

Foster, S.B. & Brown, P. (1988). *Academic and social mainstreaming: Perspectives of hearing-impaired college students.* Rochester, NY: Rochester Institute of Technology, National Technical Institute for the Deaf.

Foster, S.B. & Brown, P. (1989). "Factors influencing the academic and social integration of hearing impaired college students." *Journal of Postsecondary Education and Disability,* 7, 78-94.

Foster, S.B. & DeCaro, P.M. (1989). *Life in a mainstream residence hall: A case study of successes, problems and potential.* Rochester, NY: Rochester Institute of Technology, National Technical Institute for the Deaf.

Foster, S.B. & DeCaro, P.M. (1991). "An ecological model of social interaction between deaf and hearing students within a postsecondary educational setting." *Disability, Handicap & Society,* 6, 181-201.

Foster, S.B. & Elliot, L. (1987). *Why students decide to Attend NTID at RIT: An interview study with first year college student.* Rochester, NY: Rochester Institute of Technology, National Technical Institute for the Deaf.

Foster, S.B. & Elliot, L. (1986). *Alternation in mainstreaming: A "range of options" model for the postsecondary hearing-impaired students.* Rochester, NY: Rochester Institute of Technology, National Technical Institute for the Deaf.

Franklin, E.L. (1988). *Attrition among community college hearing impaired students in mainstreamed programs.* Mimeo. University of Arkansas.

Hardaway, B.D. (1988). *Silent avoidance: The relationship between attitudes and physical impairments among deaf students.* Howard University. Ann Arbor, MI: U.M.I.

Long, G., Stinson, M., Saur, R., & Liu, Y. (1993). *Mainstreamed students' perspective of classroom communication.* Paper presented at the Convention of American Instructors of the Deaf, June 1993.

MacLeod-Gallinger, J. (1988). *Transfer students to NTID/RIT.* Rochester, NY: Rochester Institute of Technology, National Technical Institute for the Deaf.

MacLeod, J. & Welsh, W. (1982). *1980 withdrawal follow-up study - A comparative analysis of NTID students who withdrew and NTID students who graduated.* Rochester, NY: Rochester Institute of Technology, National Technical Institute for the Deaf.

Menchel, R. (1995). *Deaf students attending regular four-year college and universities.* Unpublished dissertation. Harvard University Graduate School of Education. Cambridge, MA: University Microfilms.

Murphy, J.S. & Newton, B.J. (1987). "Loneliness and the mainstreamed hearing-impaired college student." *American Annals of the Deaf,* 132, 21-25.

Pascarella, E.R. & Terenzini, P. (1991). *How college affects students.* San Francisco: Jossey-Bass.

Saur, R., Coggiola, D., Long, G., & Simonson, J. (1986). "Educational mainstreaming and the career development of hearing-impaired students: A longitudinal analysis." *The Volta Review, Feb/Mar,* 79-88.

Saur, R.E., Layne, C.A., Hurley, E.A. & Opton, K. (1986). "Dimensions of mainstreaming." *American Annals of the Deaf,* 131, 325-330.

Saur, R.E., Popp-Stone, M.J., & Hurley-Lawrence, E. (1987). "The classroom participation of mainstreamed hearing-impaired college students." *The Volta Review, Oct/Nov,* 277-286.

Scherer, M.J. & Walter, G.G. (1988). *Student-reported satisfaction with college and reasons for college withdrawal.* Rochester, NY: Rochester Institute of Technology, National Technical Institute for the Deaf.

Schroedel, J.G. & Watson, D. (1991). *Enhancing opportunities in postsecondary education for deaf students.* University of Arkansas. Rehabilitation Research and Training Center in Deafness and Hearing Impairment.

Stinson, M.S., Scherer, M.J. & Walter, G.G. (1987). "Factors affecting persistence of deaf college students." *Research in Higher Education,* 27, 244-258.

Stinson, M.S. & Walter, G.G. (1992). "Persistence in college." In S.B. Foster and G.G. Walter, (Eds.). *Deaf students in postsecondary education,* pp. 43-64. New York: Routledge.

Stinson, M. & Walter, G. (1995). "Improving retention for deaf and hard of hearing college students: What the research tells us." Rochester, NY: Rochester Institute of Technology, National Technical Institute for the Deaf.

Tinto, V. (1975). "Dropout from higher education: A theoretical synthesis of research." *Review of Educational Research,* 45, 89-125.

Tinto, V. (1987). *Leaving college.* Chicago, IL: University of Chicago Press.

Walter, G.G., Foster, S.B., & Elliot, L. (1987). *Attrition and accommodation of hearing-impaired college students in the U.S.* Paper presented at the Tenth National Conference of the Association on Handicapped Student Service Programs in Postsecondary Education, Washington, DC.

Walter, G.G. & Welsh, W.A. (1988). "Characteristics and success of deaf college students in three types of educational environments." *American Rehabilitation, April-May/June,* 8-11, 28-29.

Welsh, W.A. & Schroedel, J.G. (1982). *Predictors of success for deaf graduates of the Rochester Institute of Technology.* Rochester, NY: Rochester Institute of Technology, National Technical Institute for the Deaf.

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APPENDIX 1

STUDIES FOCUSING ON PERSISTENCE, ATTRITION, WITHDRAWAL, AND MAINSTREAMING

Author(s)	Subjects	Method	Aim
PERSISTENCE/WITHDRAWAL			
1. MacLeod & Welsh (1982)	257 withdrawals from NTID	Questionnaire	Measuring the benefit of an NTID/RIT degree
2. Welsh & Schroedel (1982)	713 deaf graduates from RIT	Alumni Feedback Questionnaire, NTID registers	What predicts the success of deaf graduates of RIT
3. Stinson, Scherer, & Walter (1987), Stinson & Walter (1987)	233 students at NTID	Tests and questionnaires, path-analysis	To learn about factors affecting persistence of deaf college students
4. Foster & Elliot (1987)	26 first-year NTID students	Open-ended semi-structured interviews	To learn why high school students decide to attend NTID
5. Stinson, Scherer & Walter (1987), Stinson & Walter (1987)	233 students at NTID	Tests and questionnaires, path-analysis	To learn about factors affecting persistence of deaf college students
6a. Walter, Foster & Elliot (1987)	145 programs (7,031 stud)	Questionnaire to the colleges, etc.	Attrition and accommodation of hearing impaired in the U.S.
6b. Foster & Elliott (undated)	20 students withdrawing from NTID 1983-85	Open-ended interviews	Discussing models of educating the hearing-impaired at the post-secondary level
7. Franklin (1988)	246 freshmen in 7 colleges	Questionnaire	To study attrition at mainstreamed colleges
8. Scherer & Walter (1988)	117 withdrawing students during 1986-87	83-item exit interview	To learn why students withdraw from NTID
9. Walter & Welsh (1988)	1,644 students entered NTID 1976-1980	Register study	Characteristics and success of deaf college students
10. Dagel & Dowaliby (1989)	90 students 1st quarter School of Business Careers Profoundly deaf	38-item Student Integration Survey, Discriminant analysis	To identify students at risk of being placed on probation/suspension due to academic difficulties
11. Barnhart (1991)	13 freshmen at Gallaudet	Interviews	To study the transition from high school to Gallaudet
12. Schroedel & Watson (1991)	A selection of 46 programs	Questionnaire	To gain information about student characteristics

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13. Dowaliby, Garrison & Dugel (1993)	1990: 193 freshmen 1991: 143 freshmen	33-item and 40-item Student Integration Survey (SIS)	To develop SIS (see study number 10 above)
14. Stinson & Walter (1995)	233 students at NTID	Tests and questionnaires, path-analysis	To learn about factors affecting persistence of deaf college students
15. Emerton & Rothman (1978)	100 students (random sample) 30 of the initial respondents	Self-administered questionnaire (25 items), face-to-face interviews	To see what happens to the attitudes of hearing students when they are confronted with deaf peers on a daily basis
16. Saur, Lagne, Hurley & Opton (1986)	Classes at Social Work Department, RIT (8 hearing impaired, 28 hearing students)	Participant observation, interviewing	To identify important dimensions of the classroom experience for mainstreamed students
17. Murphy & Newlon (1987)	170 mainstreamed hearing-impaired students at 8 colleges	UCLA loneliness scale	To provide a starting point in the investigation of loneliness
18. Saur, Popp-Stone, & Hurley-Lawrence (1987)	37 students from NTID	Student records, participant observation	Classroom participation
19. Brown & Foster (1988)	30 hearing students at RIT	In-depth interviews	To study integration of hearing and deaf students
20. Foster & Brown (1988), Foster (1989)	20 hearing-impaired students (11 males and 9 females) at RIT	In-depth interviews	To study the academic and social integration of hearing-impaired students
21. Hardaway (1988)	80 students at Gallaudet (40 deaf students, 40 deaf students with additional handicap)	Peer Attitudes Toward the Handicapped Scale (PATHS)	To investigate the attitudes between two groups of deaf students
22. Foster (1989)	25 graduates from NTID (15 males and 10 females)	In-depth interviews	To learn about the college experiences of graduates from NTID
23. Foster & DeCaro (1989, 1991)	20 students living on the Ellington Hall (10 deaf males, 1 deaf female, 5 hearing males and 4 hearing females)	In-depth interviews, 12 participant observations	To learn about life on a mainstream floor
24. Coryell, Holcomb & Scherer (1992)	56 hearing students at NTID	A series of focus group interviews	Explore integration and attitudes
25. English (1993)	60 students throughout the U.S., hard of hearing and deaf	Questionnaire	Study the effects of support service on integration and intent to stay
26. Long, Stinson, Saur & Liu (1993)	50 deaf and hard-of-hearing students at NTID who are cross-registered	Questionnaire	Learn about hearing-impaired students' communication ease in mainstream educational setting
27. Menchel (1995)	33 students in mainstream institutions in New England	Interview	Academic progress characteristics, academic and social integration

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End Notes

[1] The terms 'hearing-impaired' and 'deaf' are used to refer to students with significant losses; they do not imply a specific degree of hearing loss.

[2] For a statistical description of this category of students, see MacLeod-Gallinger (1986).

[3] He also interviewed the service providers at these colleges.

[4] Father's and mother's level of education and father's occupation are also reported by Schroedel and Watson (1991). They find that deaf students attending four-year high schools in general come from middle or upper class homes with parents with good education. But they also stress that in total, 53 percent of all students came from homes without college-education parents.

[5] Mostly operationalized in grades, e.g., in terms of Grade Point Average (GPA).

[6] Although the concept "predictions" should not be interpreted in the narrow sense that many positivists use it. What I here refer to is the possibility to pass from explanatory statements to practical imperatives.