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Text telephone reference services in California public libraries

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Text telephone reference services in California public libraries

Call, Nancy A., M.L.S.

San Jose State University, 1993

TEXT TELEPHONE REFERENCE SERVICES

IN CALIFORNIA PUBLIC LIBRARIES

A Thesis

Presented to

The Faculty of the School of Library and Information Science

San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Library Science

by

Nancy A. Call

May, 1993

APPROVED FOR THE SCHOOL OF LIBRARY INFORMATION SCIENCE

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ABSTRACT

TEXT TELEPHONE REFERENCE SERVICES

IN CALIFORNIA PUBLIC LIBRARIES

By Nancy A. Call

Text telephone reference services or Telecommunication Device for the
Deaf Reference (TDD) services in the public library setting has gained
more attention due to an increased awareness of the information needs of
patrons with hearing impairments. Theories in the literature about the
state of services to individuals with hearing disabilities suggesting
problems and solutions are examined. Unobtrusive text telephone research
was conducted, followed by telephone interviews of all California public
libraries identified as having text telephone reference services.

Research on text telephone reference services examines the effect of
staff training and equipment location. It describes the ability or
inability of the libraries to deliver text telephone services based on
training, equipment location and other factors suggested by library
literature and the research itself. The purpose of the research is to
identify what procedures California public libraries currently use that
produce success or failure in delivering text telephone reference
services.

Acknowledgement

First, I wish to thank my Father in Heaven for those who have helped me and for the knowledge I have gained from this thesis project. I express my thanks to Dr. Crowley for chairing the thesis committee. It was in his Reference class that the idea for this project began. Thank you for creating that environment and for the guidance since then. I appreciate the guidance from Dr. Tessier. Thank you for the encouragement and for taking over when Dr. Crowley had to leave. From Donna Pontau I appreciate the insight shared with me about services to people who are disabled. Thank you for helping me recognize all the pertinent aspects of services to people who are disabled.

I dedicate this effort to my husband, eric [sic], and my three daughters, Cynthia, Sherrie, and Mimi for their love and kindness and support. Thank you eric for sacrificing your time to help me.

I hope this project will be a blessing to librarians and their text telephone reference services.

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CHAPTER I

INTRODUCTION

People whose hearing is impaired experience problems because they are
cut off from the mainstream of communication. What people who are hearing
impaired "want is information. All their efforts, and all their demands
on the hearing world reflect their desire for direct access to
information" (Neisser, 1983, p.157). The chairman of the board of
trustees for Gallaudet University, Philip Bravin, stated that in order to
gain "communication access, education access, and community access,"
several issues need to be addressed:

1. recognition of American Sign Language as an official language
   separate from English;
2. more... sign language interpreters,
3. all television programs should be close captioned, and
4. public places need telecommunication devices for the deaf
   (Eickman, March 14, 1990, p. 1).

Bravin encouraged people with hearing impairments to continue "to work to
achieve equality" (Eickman, p. 1). "For the past twenty-five years the
deaf community has consistently requested, lobbied, and worked for"
(Neisser, 1983, p. 157) the four access issues. In communication,
education, and community access the public library can be a strong
advocate for people with hearing impairments. Though each of the access
issues are pertinent to the subject of equal access for people with
hearing impairments, only one of the issues will be discussed here: the
need for text telephones or telecommunication devices for the deaf (TDD)
in public places; namely, public libraries' text telephone reference

services.

Traditionally, Telecommunication Device for the Deaf (TDD) has
been the accepted terminology, but during the debates on terminology to be
used in the law, the Department of Transportation led an argument against
the use of telecommunication device for the deaf (TDD) as the legal
terminology. They argued that telecommunication device for the deaf is
not only a cumbersome phrase, but it does not reflect all the users of
the machinery. It is true that people who are hearing impaired use text
telephones, but people who are able to hear but who are unable to speak
also use the text telephone. Text telephone is a more apt description
of the use and purpose of the telephone. For that reason, and in view of
the new consciousness of thinking of people first, the term text telephone
was chosen for use (Gunde, 1992, p. 1).

Project Statement

Offering reference service to individuals with hearing impairments by
means of a text telephone is an option that some public libraries have
chosen. As a result of that choice, questions have been raised as to how
to deliver text telephone reference service most effectively. For this
thesis text telephone service was investigated studying all California
libraries within the advertised service areas by means of unobtrusive text
telephone calls and subsequent interviews. This study includes a pilot
study which was conducted on public libraries in the Bay Area followed by
a full statewide study and interviews with staff in public libraries.
The pilot study was designed as a test of the procedures to be used in the
full study. Therefore, the pilot study tested only a small group of

libraries. In the full study an attempt to include all California public libraries was made. Interviews followed the unobtrusive study wherein key questions were asked of librarians about different factors that may influence effective text telephone reference services. The chapters entitled Pilot Study and Full Study detail how libraries were selected and what procedures were used. The interview questions and the results of the interviews are contained in the chapter entitled Full Study as are the results of the unobtrusive part of the study. The implications of these findings are discussed in the final chapter.

To better understand the nature of the problem of delivering services to individuals with hearing impairments, the introduction presents background information about demographics, state and national library services, and federal legislation. Then to identify the magnitude of the problems involved in providing library services to people with hearing disabilities, the literature review section contains a discussion of the perceptions, opinions, and experiences of library and education professionals.

<div align="center">Nature of the Problem: Background Information</div>

<div align="center">Population of Individuals with Hearing Impairments</div>

An essential beginning for the study of text telephone reference services is to define the categories of individuals with hearing impairments and then to determine the number of people who fit the definitions. It is also be necessary to discuss the validity of the available statistics. The State Office of Deaf Access (SODA) (1989) published statistics on residents of California who are hearing-impaired.

These statistics are based upon the Schein and Delk (1974) study and "adjusted for increases in the California general population" (SODA, 1989, p. 2).

SODA's (1989) statistics show two categories of hearing impairments: "one-ear only" impairments and "both-ear" impairments. SODA separates "one-ear only" and "both-ear" impairments and it also supplies a "total all hearing impairments" figure which combines both "one-ear only" and "both-ear" impairments. Usually, when population comparisons are made between the number of individuals with hearing impairments and other statistics, such as the population of the country or the state, the figure chosen to describe the number of individuals with hearing impairments is the "total all hearing impairments," which includes individuals with "one-ear" impairment. In this study; however, the "total all hearing impairments" figure will not be used. Researchers may find "one-ear" statistics combined with "both-ear" statistics valid for their needs, but this "total all hearing impairment" figure is not appropriate for use in text telephone reference research. If the patron hears normally in one ear and has the ability to use his or her voice, he or she is not among those who would likely own a text telephone, and therefore, it would be even more unlikely he or she would use text telephone reference services. Therefore, this study employs the "both-ears" hearing impairment figure.

The document published by SODA (1989) provides a break down by county of the number of individuals with hearing impairments in "both ears," from a "mild to moderate" to a "severe to profound" degree. SODA published statistics which reveal that about 1.2 million individuals with "both-ear" hearing impairments (about 4.5% of the total population) live

in California.

In seeking the most current statistics, the Center for Assessment and Demographic Studies (CAD), located at Gallaudet University, was contacted and one of their demographers, Tim Anderson (February, 14, 1992), was interviewed. Anderson indicates that although the states and national government have accepted figures from the 1974 study by Schein and Delk, he does not believe they are valid because of the way they are produced. Corroborating this view is an earlier statement by Hotchkiss (1989), who calls their method a last resort.

> Local planners could produce synthetic estimates by applying national age-specific prevalence rates to local populations. This procedure should be avoided because it is based on the assumption that all states and localities have the same prevalence of hearing impairment as the nation. This assumption has never been tested (p. 5).

Anderson states that, without data from the national census, it is impossible to answer the question of how many people with hearing impairments live in California.

Another primary source of demographic information used by the CAD is the Health Interview Survey. The National Center for Health Statistics (NCHS) conducts this survey annually. This survey includes one health-related question about family members with hearing impairments. From this information NCHS estimates the number of individuals with hearing impairments. Hotchkiss (1989) stated,

> Although the Health Interview Survey does include a question on overall hearing difficulty, only the 1971 and 1977 surveys included self-evaluations of level of hearing impairment (p. 2).

To remain useful, the 1977 figure would require the assumption that "the prevalence of deafness has remained constant" (Hotchkiss, p. 2). He indicates a heavy demand to provide:

sub-national estimates of the hearing impaired population. This is
understandable, as services for hearing impaired people are usually
administered at the state and local level rather than at the national
level. Planners want population estimates in order to allocate
resources for programs designed to meet the needs of hearing impaired
persons. However, such sub-national estimates are not available.
When providing national estimates of the hearing impaired population,
the Center for Assessment and Demographic Studies (CAD) relies on
national surveys such as the Health Interview Survey and the Survey
of Income and Program Participation. Designed to produce national
regional estimates, these surveys cannot be used for state and local
estimates because the sample sizes are too small and because the
sample households are not selected to be representative of states and
localities (p. 5).

These considerations put into perspective the statistics which are

used in this study, and which are used by the California state government

in describing Californians who are hearing-impaired. Though Anderson and

Hotchkiss raise valid concerns about the states' statistics no other

figures or estimates of individuals with hearing impairments exist.

Therefore, the "both-ear" hearing-impaired statistics published by SODA,

are those used in this study.

State Services for Individuals with Hearing Impairments

To investigate the support services that the California state

government renders to public libraries which serve patrons with hearing

impairments, SODA and the State Library were examined. Substantial help

comes from SODA, whereas the State Library provides no service support for

public libraries who serve their patrons with hearing impairments. To

support public agencies in serving the population of individuals with

hearing impairments, SODA contracts with eight regional public or private

agencies who provide services to the public. These agencies are called

Deaf Access Assistance Agencies. SODA assists public agencies with

hearing impairment issues by providing consulting services and mediating

contracts through the eight regional agencies to provide direct services. The services are free; however, libraries do pay for qualified interpreters for programs and for equipment purchase and repair. For example, San Francisco Bay Area Public Libraries work cooperatively with the Deaf Counseling and Referral Agency (DCARA) in San Leandro for consulting services and mediating contracts. The eight agencies are the most powerful state advisory sources for libraries in their service areas because there is no department within the California State Library that deals specifically with issues arising from hearing impairments.

The State Library deals only with issues that affect individuals who are blind and physically disabled. This department delivers services at a "basic level" (Strong, 1992, viii) due to major budget shortfalls.

> Prior to the major budget cuts, we provided a newsletter twice a year, advisory forums twice a year, in depth reference service, staff recording program, and immediate book service... Now we have retained the basic book service, because it is the most critical to patrons (Hedrick, State Library coordinator of the Braille and Talking Book Library, personal communication, March 1993).

The California State Library is a Regional Library of the National Library Service for the Blind and Physically Disabled (NLS). The NLS is a federal entity that provides tape recorders, catalogs, braille catalogs, and a bimonthly magazine that lists available materials. The California State Library distributes the materials which are provided free from the NLS. If a person is both blind and hearing impaired, the State Library coordinates services through the Braille and Talking Book Library in Sacramento and the Braille Institute of America in Los Angeles. The State Library does not foresee the development of a State Library Department to serve the population of individuals with hearing impairments. Hedrick

says,

> I have never heard any intonation of the hearing impaired being
> included in any of our services. Mostly it is a matter of format.
> We provide alternate formats that do not meet their needs. ... I see
> libraries becoming more aware of special groups. They will
> incorporate their needs within the local service. I do not believe
> it will be soon. In time the State Library services, the Braille and
> Talking Book Library may be phased out" (Hedrick, personal
> communication, March 1993).

The State Library collection is available to all state and public

library employees and can be accessed by employees who are deaf through

their text telephone but there is no special closed-caption video

collection or subject collection that deals specifically with

hearing-impaired issues.

SODA offers various support services to public libraries, whereas the

State Library offers none and foresees none. It is therefore necessary

now and in the foreseeable future for public libraries to look toward the

national level if the support of professional librarians is wanted. This

gap in library services to individuals with hearing impairments on the

state level is filled on the national level by Library Services to the

Deaf Section (LSDS) of the Association of Specialized and Cooperative

Library Agencies (ASCLA).

National Library Services for Individuals with Hearing Impairments

In exploring the national support for public library services to

patrons with hearing impairments, the services provided by the LSDS and

the National Library Service for the Blind and Physically Disabled (NLS)

are examined. The evolution of national standards for service to patrons

with physical disabilities are also examined, with an explanation of the

reasons patrons with hearing impairments are excluded. Substantial help

comes from LSDS, whereas the NLS provides no support for public libraries who serve patrons with hearing impairments.

The LSDS is the first national library organization disseminating information about library service to individuals with hearing disabilities. LSDS is a section of the ASCLA, a division of the American Library Association (ALA). Though LSDS is a professional group and not a national organization authorized to act by Congress, LSDS is the "first national, permanent vehicle for the development of library service to the deaf and hearing impaired in all types of libraries" (Dalton, 1985, p. 5). The purpose of this section is as follows:

> To promote library service to the deaf by fostering awareness, studying legislation and funding sources, encouraging career opportunities for the deaf in libraries, stimulating the production and distribution of materials, and developing an information clearinghouse. These functions shall be carried out through specialized and cooperative library agencies and in cooperation with other ALA units and national organizations, as appropriate (Library Service to the Deaf Section, Spring/Summer, 1979, p. 18).

LSDS publishes its information about individuals with hearing disabilities in Interface, an ASCLA publication. Standards for service have been prepared by the ASCLA Standards for Library Service to the Deaf Subcommittee (Parks, et al., 1981, pp. 2-3). The standards are divided into four sections: communication, resources, publicity and programs, and participation and staffing. In the section of the standards describing text telephones, three uses are suggested: reference, information and referral services, and public access.

Standards for national, state, and local agencies giving services to the blind were expanded to include services to individuals with physical disabilities (American Library Association, 1967; Association of

Specialized and Cooperative Library Agencies, 1979). These services were
not extended to individuals with hearing impairments, because of the
definition of users:

> blind and physically handicapped persons who are unable to read
> normal printed material as a result of physical limitations and are
> thus eligible to use the services of network libraries (1979, p. 7).

People with hearing impairments could be categorized with those who have
physical disabilities, but they do not qualify because of the physical
limitation clause. The most current ASCLA (1984) standards have not
changed to incorporate patrons with hearing impairments in their mandate.
The "technologically advanced equipment" (p. 20) does not specifically
identify text telephones with braille access for the patron who is both
hearing impaired and blind. Individuals who are not able to see
written materials and are hearing impaired are also eligible for help from
the NLS. The revised standards, now in process (ASCLA, Publications in
Progress, 1992, p. 8), will still not include patrons with hearing
disabilities. According to a NLS reference librarian, the inclusion of
patrons with hearing impairments will never happen.

> We recognize the deaf need special library services, but they can see
> the printed page. They have no need for our books in alternate
> formats. ... There are no pressures to include services for the deaf.
> Regulations guide us. Until Congress changes the law, even if we
> [NLS] wanted to [provide services to the hearing-impaired
> population], we cannot" (Redmond, personal communication, March
> 1993).

LSDS offers various support services to public libraries, whereas the
NLS like the California State Library offers none and foresees none. It
is, therefore, necessary for public librarians to look to the LSDS for
professional support. Hedrick (interview, March 1993) envisions the

shrinking of State assistance. If Hedrick's forecast is true, public libraries may see their current state support from SODA dwindle. This situation would make LSDS's services more critical than ever. What impact state and national fiscal difficulties may have upon support services is to be seen. Another federal force in this issue of service to patrons who are hearing impaired is federal legislation, this will be examined next.

Legislation Affecting Service to Individuals with Hearing Impairments

Three federal laws have mandated equal services for individuals with disabilities: The Rehabilitation Act of 1973 (Public Law 93-112), the Education of All Handicapped Children Act of 1975 (Public Law 94-142) and the Americans with Disabilities Act of 1990 (Public Law 101-336) (ADA). The Rehabilitation Act and the Education of All Handicapped Children Act have had a major influence on library services to people with hearing impairments because they brought federal money to the public libraries. The Rehabilitation Act emphasizes program accessibility, and the Education of All Handicapped Children Act emphasizes mainstreaming. The third law, the ADA has not had the same length of time to impact public libraries. The ADA's purpose and Title II have raised questions as to what the law requires and how the law is to be implemented. For libraries the central question related to the study of telecommunication reference to the deaf is whether libraries should depend on the California Relay Service (CRS) or whether they should obtain a text telephone.

The Rehabilitation Act of 1973

The major points of the Rehabilitation Act are its "emphasis on expanding services to the most severely handicapped individuals," and

placing "responsibility for the ultimate rehabilitation of the disabled squarely on the shoulders of the society as a whole" (Velleman, 1979, p. 180). Section 504 states:

> No otherwise qualified handicapped individual in the United States, as defined in Section 7(6), shall, solely by reason of his handicap, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving Federal financial assistance.

Section 504 affects libraries directly, requiring equal access of services and materials to individuals with disabilities. Implementing this act "was a catalyst in the development of library programs for people who are handicapped by a loss of hearing" (Dalton, 1985, p. 7). Karrenbrock (1992) and Needham (1983) point to the Act's emphasis of "program accessibility." This concept allows librarians to innovate methods of compliance, "thus allowing recipients flexibility in selecting the means of compliance" (Needham & Jahoda, 1983, p. 105).

The Education of All Handicapped Children Act of 1975

According to Velleman (1979) the Education of All Handicapped Children's Act "must be seen in conjunction with Section 504 of the Rehabilitation Act of 1973" (p. 261). The provisions of the Rehabilitation Act refer to all Americans with disabilities, so it applies to all handicapped children.

The Education of All Handicapped Children Act of 1975 has been called "civil rights with escape clauses" (Biklen, 1992, p.85). Though the act requires that all children receive a "free appropriate public education," Biklen (1992) points out "they can be sent away if the regular class, with support, is deemed ineffective for them to achieve satisfactorily" (p. 85).

The goal of the law is a "free, universal education for all
children" (Barbacovi & Clelland, p. v) resulting in large numbers of
children with disabilities being integrated into local public schools
(Bidler, p. 88). The children leave the residential schools to live at
home and attend their local school. These children no longer use their
institution library; therefore, they need a strong public library. The
public library is one of the "segments of our society" that must "change
to accommodate the handicapped" (Barbacovi & Clelland, p. 73).

Legislation encourages large numbers of patrons with disabilities to
come to the public library and later in their educational career to come
to the academic library (Ferstl, 1982; Ferstl & Gibson, 1983; Gibson,
1977; Karrenbrock, 1992). This process of mainstreaming is called a
"stage of forced assimilation where the minority has been increasingly
dispersed by placing deaf children in scattered local schools for hearing
children" (Lane, 1992). The mainstreamed population requires equal access
to the myriad of services the public library provides its patrons.

The Americans with Disabilities Act of 1990

The library profession is studying the most current legislation, the
Americans with Disabilities Act (ADA). The ADA requires careful scrutiny
as it has been described as the "most important, and perhaps most complex,
piece of civil rights legislation passed in this country in the past 25
years" (American Civil Liberties Union, 1991, unpaged). The purpose of
the ADA, a sketch of the five titles, and a deeper study of Title II will
help clarify the difficulties librarians have in deciding whether to use a
relay service or to obtain a text telephone to deliver reference services
to people who are hearing impaired.

President George Bush signed the ADA on July 26, 1990. This legislation was enacted to eliminate discrimination against individuals with disabilities. The purposes of the Act are:

> (1) to provide a clear and comprehensive national mandate for the elimination of discrimination against individuals with disabilities;
> (2) to provide clear, strong, consistent enforceable standards addressing discrimination against individuals with disabilities:
> (3) to ensure that the Federal Government plays a central role in enforcing the standards established in this Act on behalf of the individuals with disabilities; and
> (4) to invoke the sweep of congressional authority, including the power to enforce the fourteenth amendment and to regulate commerce, in order to address the major areas of discrimination faced day-to-day by people with disabilities.

The ADA requires that all barriers to libraries be removed. It provides the legal mandate to persuade boards to find the resources to remove all barriers to give library service to an estimated 43 million Americans with disabilities. "As related to libraries, these rights include equal access to employment, public services and accommodations, and telecommunications relay" (Pack & Foos, 1992, p. 255). If the library can prove providing equal access to these three areas will cause an undue hardship, "an action requiring significant difficulty or expense" (ADA, Sec. 101.10A) in view of specified factors such as "nature and cost, ... financial resources, ... number of employees" and so on (ADA, Sec. 101.10B).

This legal incentive is composed of five titles: Title I—Employment, Title II—Public Services and Accommodations, Title III—Public Accommodations and Services Operated by Private Entities, Title IV—Telecommunications, and Title V—Miscellaneous Provisions. For libraries, aspects of Title II is the most relevant part.

Title II of the ADA covers "any state or local government, any

department agency, special purpose district, or other instrumentality of a State or States or local government" (ADA, sec. 201.1.A-B). This description clearly includes public libraries as well as other public entities, not to be confused with Title III's "(H) a museum, library, gallery, or other place of public display or collection" (ADA, sec. 301.1.H). This list refers to private museums, libraries, and galleries.

Title II prohibits libraries from denying equal access to services, programs, or activities to "any qualified individual with a disability" (ADA, sec. 201(2)). Equal service is not necessarily the same service, but "equal to that [services] afforded others" is acceptable if the services "are as effective as those provided to others" (Federal Register, vol. 56, p. 35718) and "only when necessary to ensure... services are as effective as those provided to others" (Federal Register, vol. 56, p. 35703).

Communication barriers: Text Telephone and CRS

Title II of the Act requires libraries to remove communication barriers, and to provide auxiliary aids and services (Subtitle A, Section 201.2). Auxiliary aids and services are defined as "effective methods of making aurally delivered materials available to individuals with hearing impairments" (Section 3.1.A) and "acquisition or modification of equipment or devices" (Section 3.1.C). More specifically "auxiliary aids" include various devices such as television captioning and decoders and text telephones (Americans with Disabilities Act Handbook, 1991, p. 5). In order to understand what is required of libraries, the Department of Justice's interpretation in the Federal Register must be consulted.

Public libraries are one of the public entities the Department of

Justice refers to in its requirements for providing text telephones
(Federal Register. Vol. 56, Section 35.161, p. 35712). A text telephone
or "equally effective telecommunication system" is required "to
communicate with individuals with impaired speech or hearing" (p. 35712).
Some libraries in California have chosen to rely upon the California Relay
Service (CRS) as an "equally effective" system. This type of system is
described here as relay services which "involve a relay operator using
both a standard telephone and a text telephone to type the voice messages
to the text telephone user and read the text telephone messages to the
standard telephone user" (p. 35712). The decision to use text telephones
on site or use CRS requires careful consideration of three issues.
1. Is CRS an "equally effective" system? 2. Are libraries maintaining
patron confidentiality? 3. Is the patron receiving access to all
telephone services?

Does CRS fulfill the Department of Justice requirement of an "equally
effective" system? Though the CRS strives for the highest quality,
people with hearing impairments complain steadily that the service does
not reach reasonable standards:

> Excuses have been made by the relay provider for the sad state of
> affairs in California... What must we do to convince the world that
> much needs to be done? Many people in our state are so repelled by
> relay operator crudities and ineptitude that they will not use the
> system. Many deaf relay users religiously save, by the truckload,
> TDD printer tapes showing instances of inappropriate or
> unprofessional operator procedure (White, 1990, p. 6).

In White's opinion it is not possible to provide "equal access" through
CRS. Librarians are deciding whether the quality of a relay service is
equitable with the quality of service of a direct line to the library.

A patron who uses a text telephone and a relay service may experience

difficulties with access to the automated telephone systems some libraries use. The relay service cannot operate fast enough to allow the patron to select and push a button on a touch tone phone or leave a recorded message. Relay systems are also too slow to convey messages on answering machines (Federal Register, vol. 56, p. 35712). Librarians are deciding whether the quality of a relay service is equitable with text telephone equipment that can directly interface with patrons who are hearing impaired. Because of these issues the proliferation of this new text telephone technology is making relay service less useful in communicating with institutions.

The issue of "professional commitment to patron confidentiality" is raised by Gunde (1991, p. 808). Do librarians wish a third party to be listening to their patrons' request for reference assistance? The Department of Justice indicated that "communication through relay systems may not be appropriate in cases of crimelines pertaining to rape, domestic violence, child abuse, and drugs" (Federal Register, vol. 56, p. 35712). The library has no crimeline, but librarians have a strong commitment to patron confidentiality. They are deciding by what system will be able to maintain their professional commitments.

The ADA and the Federal Register do not provide a checklist of services a library needs to provide. ADA regulations are "parameters to serve as guidelines" (Federal Register, vol. 56, p. 35726). The Department of Justice:

> encourages those entities that have extensive telephone contact with the public such as city halls, public libraries, and public aid offices, to have TDD's to insure more immediate access. Where the provision of telephone service is a major function of the entity, TDD's should be available (Federal Register, vol. 56, p. 35712).

The Department of Justice does not require the use of text telephones. The language of the legislation is "should." Librarians are deciding whether to follow the suggestion. Gunde stated:

> very few libraries are likely to be in compliance with the requirements of the ADA when it becomes effective. At least some libraries face nearly certain litigation and the resulting public relations nightmare that inevitably ensues (1991, p. 809).

It has been discussed that there are two ways to provide library services to patrons who are hearing impaired, text telephone or CRS. If the library chooses a relay service to provide text telephone reference services, the library has many hard issues to settle. Three federal laws discussed here have placed the mandate to provide services to patrons who are hearing impaired at the doorstep of the library. But without specifically requiring what method must be used, the federal government has made it necessary for librarians to choose which to use. It may seem obvious that choosing to obtain a text telephone is the correct course to pursue, but other problems with that choice, should it be made, will be discussed in the next chapter where the opinions, perceptions, and experiences of library and education professionals are explored.

Population figures of people who are hearing impaired have been discussed. With the assistance of CAD demographers, the weaknesses inherent in the available statistics, have been described. State and National support services to public libraries who provide services to patrons with hearing impairments were briefly sketched. It is noted that the State Library supplies no services to patrons with hearing impairments, but SODA does coordinate some valuable services. The history and development of standards for individuals who are blind and physically

disabled have been traced, showing the trend toward not supplying services
to people with hearing impairments. The importance of LSDS was stressed
in view of the overall lack of professional librarian support services.
Three federal laws that impact public library services to patrons who are
hearing impaired have been discussed: the Rehabilitation Act, the
Education of All Handicapped Children Act, and the Americans with
Disabilities Act. The issues discussed relative to the ADA are suggestive
of a clear-cut decision to obtain a text telephone rather than use CRS.
CRS has a negative reputation among patrons and leadership who are hearing
impaired. It is impossible to provide equal services through CRS, because
of its inability to provide access to telephone answering machines and
automated phone services.

All of these issues describe an overall problem. Demographers cannot
obtain accurate population figures for people with hearing impairments,
so librarians cannot easily summarize figures for patrons with hearing
impairments in community analyses. Professional librarians in the state
and national government as a whole ignore services to individuals with
hearing impairments. Only LSDS provides a forum to discuss and
standardize service to patrons with hearing impairments. This leaves
librarians for the most part without local professional library support to
help determine what they should do with a complicated problem. The
federal laws provide some guidelines to providing services to patrons with
hearing impairments that are equal to services for patrons with normal
hearing, but it is the library's decision how to provide equal services to
patrons who are hearing impaired. These decisions are complicated. In
the next chapter library literature will be examined, which describes the

problem in specific terms. This information will help ensure the development of adequate services.

CHAPTER 2

LITERATURE REVIEW

Text telephone reference service is just one service in a context of

many services for individuals with hearing impairments and as such has

been discussed by library and education professionals who have examined

how libraries are access to all library services for individuals with

hearing impairments. These professionals have done the preliminary work

of identifying the various characteristics that describe the patrons who

need special services. Then they suggest how to locate these patrons.

They describe several text telephone service problems. Librarians have

identified these problem areas: communication, attitude, participation,

and training. These problems are examined along with the findings library

researchers report. This section also contains a summary of some library

applications of text telephone reference services as well as a brief

sketch of the development of telecommunication devices for patrons with

hearing impairments.

Classification

The average person who hears normally "distinguishes only two classes

of hearing impaired: those with a hearing aid due to aging or accident...

and those who communicate in sign language" (Houlahan, 1988 p. 43).

Addressing the confusion in society about these two groups, Hagemeyer

(1979) notes that the more easily recognized individual "in whom the sense

of hearing, although defective, [can function] with or without a hearing

aid" fits right in to the majority culture, though that easily recognized

individual functions with tools that help overcome the lack of hearing.

People in the other group "in whom the sense of hearing is nonfunctional

for the ordinary purpose of life" do not try to fit into the majority

culture. This group "functions like a subculture." Those in the

subculture "speak their own language and most have similar characteristics

and mannerisms" (p. 145). Jacob (1986), a deaf educator, describes the

difficulty of ident'fying the hearing-impaired patron; he employs nine

designations, each identifying some form of hearing impairment that would

influence communication style. They include:

1. Adventitiously deaf adults.
2. Prelingually deaf adults from deaf families.
3. Prelingually deaf adults from hearing families
4. Low-verbal deaf adults.
5. Products of oral programs.
6. Products of public schools.
7. Uneducated deaf adults.
8. Deafened adults.
9. Hard of hearing adults. (p. 47)

Hagemeyer (1991) also identifies nine designations, but adds to and

combines some of Jacob's designations. Her list includes individuals who

are bilingual, elderly who are hearing impaired, "hearing members in deaf

person's family," and "service providers" (p. 4).

Hagemeyer emphasizes individuals who are hearing impaired are all

different. "Each group has its own unique library and information needs

for mainstreaming in the society" (p. 4). Both Hagemeyer (1991) and

Jacobs (1986), note that it is difficult to classify individuals with

hearing impairments according to categories. They imply that personal

experience with the different groups will help develop the skills

needed for effective communication when working among them.

Location of the Population of Hearing-Impaired

The "friendly open-door policy" is used at the public library
as a passive method to reach to patrons with hearing impairments. Brewer
and McClaskey (1976) indicate that 75% of the libraries in their
survey criticize the use of only the traditional "friendly open-door
policy" and recommend that libraries cooperate with agencies and
organizations in developing services to individuals with hearing
disabilities. There is strong support in the literature to do more than
keep the library open, and to encourage librarians to locate the
population of individuals with hearing impairments. Once the population
of individuals with hearing impairments has been located, libraries can
communicate with the identified groups to cooperatively develop programs
and services.

Locating patrons who are hearing impaired is discussed in the
literature (Anstine, 1981; Amdursky, 1982; Jahoda, 1980; Metcalf, 1981).
Anstine noted one of the parts of doing a needs assessment is to "identify
the disabled population" (1981). She listed ten sources:

1. personal knowledge and contacts; relatives/friends of disabled.
2. service organizations; charities, chapters of organizations for disabled, community groups of disabled persons.
3. churches
4. community centers
5. vocational centers
6. vocational educational/training personnel
7. schools
8. professionals working with the disabled
9. state agencies serving the disabled
10. census information or other survey information for numbers and types of disabilities in your area (p. 538)

Amdursky (1982) identifies the same sources as Anstine with the
addition of two sources: local school board and hearing-aid dealers. He

added one periodical source, the directory issue of <u>American Annals of the</u> <u>Deaf</u> which lists organizations serving individuals with hearing disabilities in each state. Amdursky is concerned about the effort being made to identify individuals with hearing impairments. He questions whether "any effort has been made to identify and communicate with the deaf community" (p. 70). He states that frequently no effort has been made, because librarians feel the number of individuals with hearing disabilities is too small and the cost of providing services to individuals with hearing impairments is too great. He stated though there is "little solid statistical data" (p. 70), it is possible to identify the population of individuals with hearing impairments.

Metcalf (1981) also suggests many of the same location sources as the rest, but adds the following suggestions:

> the local special education districts who will have a list of hearing-impaired children who attend the local schools and ... the residential schools and contact the National Fraternal Society of the Deaf or the state association of the deaf for a list of members who live in the areas which each library serves (p. 628).

Jahoda (1980) described difficulties in locating the population of individuals with hearing impairments. He contacted national and state organizations to obtain a list of local chapter presidents of organizations of handicapped persons. He received no response. Then he contacted a church in Florida known to have a small number of members who are hearing impaired. Only on this local level did he experience any success. Jahoda concluded that research might be more successful if "attempts are made to establish personal rapport" with the population of individuals with hearing impairments (1980, p. 31).

Amdursky, Anstine, and Metcalf list sources where a librarian can go

to identify the populations of individuals with hearing impairments.
The total failure Jahoda experienced in obtaining responses from national
and state organizations for his national research, signals the paramount
importance of personal contact and developing networks.

<div align="center">Communication</div>

Among Hagemeyer's and Jacob's combined list of individuals with
different communication methods, American Sign Language (ASL) may be the
most challenging. ASL is a language and not a signed approximation of the
English language (Stokoe, 1978). ASL has no written component and differs
syntactically from English.

> Because of the differences in these two languages, librarians may
> experience some difficulty in deciphering the patron's information
> request. Native ASL users are just as intelligent as people fluent
> in English. The only difference is the way they communicate.
> (Cohen, Summer 1990, p. 11).

The difficulty in understanding ASL syntax may be noticeable when an
individual who is a native ASL signer and not proficient in writing
English tries to communicate via the text telephone. For example, on a
simple level to say "Is the book right?" in ASL would be translated, "It
book right it?" To say "Does the librarian understand sign language?" in
ASL would be translated, "Library person he/she understand sign he/she?"
To say "She didn't read the book?" in ASL would be translated "She read
book not?" To say, "You will show me the new text telephone." in ASL would
be translated "TDD new you-show-me will you." (Humphries, Padden, &
O'Rourke, 1988, p. 246-249). When ASL is communicated via text telephone,
some librarians express difficulties understanding the message. Not all
reference librarians or patrons with hearing impairments know the
difference in syntax between English and ASL. Neisser explains ASL is the

"only kind of language... that assumes the client is competent in both
languages" (Neisser, 1983, p. 165). Wright and Davie (1983) feel
librarians should take upon themselves the responsibility to communicate
effectively with individuals who are hearing impaired, because

> for too long the communications burden has been left on the hearing
> impaired.... they have been left to use pencil and paper, guess at
> what people are saying, and do the best that they could in a hearing
> world (p. 59).

To change this imbalance, some librarians may become competent in
ASL. Learning ASL will not eliminate all problems, because interpreting
written language raises other problems. Some of these problems in
communication are not related to translation from one language to another,
but are related to communicating via the text telephone. Librarians
cannot hear the expression in the voice of the patron with a hearing
impairment and they cannot speed up the transmission of the conversation.
One librarian's comments summarized several librarians concerns about the
difficulty of text telephone communication, "A lot is missing if you can't
hear the person's voice or see their face, because you must read words at
face value."

There are abbreviations librarians can use to speed transmission
(Gadle & Gadle, 1991), but some librarians feel the time saved by
using those techniques does not adequately address the problem. According
to one professional librarian, it is "impossible to execute a complex
reference question on a text telephone. It is impossible to manage
complex answers in a non-user friendly medium that requires short
sentences and truncated thoughts" (See Head note on p. 77).
The problems associated with the translation of ASL, understanding of

written text telephone communication, and speed of text telephone
transmission are outside the scope of this study. These problems
however, could influence attitude.

<div align="center">Attitude</div>

Unknowingly, the community of people who are hearing communicates
attitudes and feelings which alienate the'community of people who are
hearing-impaired. Velleman (1979) emphasizes the importance of attitude,
introducing the concept of "image-loaded words" such as "deaf and dumb,"
"deaf mute," or "afflicted with a disability" (pp. 10-11). These labels
alienate patrons and hinder service. The Library of Congress Subject
Headings no longer use these "image-loaded words" with regard to people
with hearing impairments. Velleman warns that individuals with hearing
disabilities need a positive environment:

> Deaf people experience feelings of isolation, and they are suspicious
> that people who wish to do something for them do so out of a sense of
> pity rather than wanting to develop activities that would be
> appropriate and worthwhile. It is important, therefore, that
> attitudes of the hearing population toward people with any degree or
> type of deafness be radically changed, that real attempts be made
> among the hearing population, who'll be coming in contact with deaf
> people to a greater extent than ever before, to learn the language of
> the deaf or at least be ready to attempt communication in whatever
> way possible--body language, pantomime and gestures of all kinds,
> written communication, and lip reading (1979, pp. 10-11).

This positive environment according to Hagemeyer (1979) needs to include
an understanding of "the culture and the communication of deaf people,
their information needs, and their suspicion of professionals who want to
do something for them--rather than with them" (p. 141). This is the
attitude librarians can take to show the community of people with
hearing impairments they are "welcome in your library and not a nuisance
or an embarrassment" (Hagemeyer, 1979, p. 141).

Hagemeyer and Velleman mention a "suspicion" of professionals. An explanation for the distrust of institutions associated with the hearing culture can be read in the most eloquent and distinctive historical background in the literature, Harlan Lane's (1984) When the Mind Hears. Lane recreates through original transcripts the scene where Bell used his charismatic oratory to decide the future of the education of the prelingually deaf in America. Bell's outcry for a strictly oral education excited an overwhelming response from his supporters who ignored Gallaudet's plea to have no final vote until the prelingually deaf contingent was present. The group made up of individuals who were prelingually deaf, fluent in ASL, were absent, because the expense of the voyage to Milan prevented them from coming. Lane definitively describes historical reasons for hesitancy or refusal to participate in programs initiated and supervised by the hearing.

Brewer and McClaskey (1976) surveyed librarian attitudes toward individuals with hearing impairments and noted more than 50% "did not feel that the deaf were severely handicapped" whereas 36% felt the deaf were severely handicapped and 12% stated that they did not know (p. 3). One librarian stated:

> I have always labored under the assumption that deaf library patrons were not especially handicapped in using their public library. A deaf person, after all, can walk into and out of a library, read and use the card catalog, reach the bookshelves, browse through the aisles with no hindrances, checkout any book in any size and read it the same as a non-handicapped library patron. That was before I talked to some of the people in the state that work with the deaf (Brewer & McClaskey, 1976, p. 3).

Participation of People with Hearing Impairments in Library Services

Some librarians express concern that services for the population of individuals with hearing impairments may exist in the library, yet be

underutilized by the group they are there to assist. Librarians who

"establish a liaison with these groups and use their expertise when

planning programs and activities" (Amdursky, 1970) will encourage higher

usage in the population of individuals with hearing impairments.

Librarians who do not establish these networks cannot "guarantee an influx

from the deaf community".... No amount of "interest in the deaf

community, sign language skills, TDD machines, and information packets"

will be effective without their participation (Wright & Davie, 1983,

p. 65). Most potential patrons who are hearing impaired do not anticipate

the availability of useful library sources (Dalton, 1985). Hagemeyer

(1979) agrees and states,

> A few stabs at better collections or services to the deaf won't help
> much if you really want to provide better services to an isolated
> community of citizens. Few deaf users will respond to a meager
> library campaign, since deaf people largely are unfamiliar with the
> host of services that a good public library provides (p. 141).

From the literature it is apparent that the lack of preplanning with

communities of individuals with hearing impairments may explain instances

where few patrons with hearing impairments use library services.

Hagemeyer (1981) specifically included text telephone reference services

in describing the problem. She stressed that the request for a text

telephone must come from the community of individuals with hearing,

impairments.

> one very important lesson we must remember— do not try to guess the
> needs of the deaf and hard-of-hearing. Do not buy a TDD for your
> library. Let deaf and hard-of-hearing citizens learn to make a
> request themselves. We already have too many TDDs all over the
> libraries that are not well used, just because librarians thought
> deaf communities have waited all their lives for that miracle
> (p. 533).

In the literature it is agreed that when people with hearing impairments

are not involved, they do not use text telephone reference services.

Therefore, Dalton (1985) recommends that libraries look at services to the

population of individuals with hearing impairments from their viewpoint.

They are the only accurate source of their expectations and needs. Dalton

further states:

> A benefit received from this type of planning is the individualized
> programs which result. They are not simply those that imitate other
> library programs that have been successful. Programs based on the
> needs of the individual community have unique characteristics.
> Patience is needed in the development, as well as in the utilization,
> of the services. It takes time to develop a worthwhile library
> program and more time to achieve maximum use of it (p. 105).

Dalton feels the information gained about the unique community and

effective communication channels will assist in continued effective

service plans.

Training of Librarians to Serve Patrons with Hearing Impairments

Stone (1980) wrote a landmark exposition about the importance of

library schools changing their curriculum to include classes on service to

patrons with disabilities. These changes continue to be recommended

(Karp, 1987). Stone drew attention to questionnaire survey research by

Gibson (1977) who reported 90% of the library schools were willing to

organize workshop training and about 25% of the library school curriculums

contained classes about service to individuals with disabilities.

> There appears to be either no consideration of this aspect of library
> services or the subject is taught briefly in one or more general
> courses which appear to lack continuity and depth (1977, p. 123).

Gibson indicated it was not possible to "discover comprehensive coverage

of the subject" in any of the courses reported on in the survey (p. 124).

Library literature also did not reveal to what extent library science

courses include services to individuals with disabilities. Gibson

recommends:

> Library school students must be made aware of some possibilities and problems of library services to handicapped library users. Issues which should be considered and presented to these students include: available library services and programs, equipment, appropriate reference materials to include in a collection, standards of accessibility for library buildings and facilities, employment of disabled persons on the staff, and the maintenance of referral services to sources of appropriate information and aid within the community (p. 123).

Kraus and Biscoe (1981) recommend federal government financial assistance to defray the costs of initiating service instruction. All agree that a logical beginning for training is in the library schools.

Telecommunication Services for Patrons with Hearing Impairments

Researchers recognize the evolution of telecommunication services to individuals with hearing impairments and the individual efforts of libraries in giving high quality service to their patrons with hearing impairments. Notwithstanding that recognition, Jahoda and Needham (1980) in their national questionnaire study draw several conclusions about the state of public library service to physically disabled persons. By comparing services available to individuals with visual, hearing, or mobility impairments, they conclude that the area needing the most attention was services to individuals with hearing impairments. Results of the questionnaire survey showed 5% of the public libraries in the nation offer telephone reference to the deaf (p. 36). Jahoda and Needham conclude "more extensive back-up service for persons with hearing impairments through collections of captioned films and reference via teletypewriters is... suggested" (p. 43). These researchers point to the need for further study, concluding that "studying existing model

libraries... to determine how public library service to physically handicapped persons might best be provided" (p. 45) would be beneficial.

Other researchers have discovered a lack of text telephone reference services (Deveaux, 1983 & Mularski, 1987) and found users without the means to access text telephone services (Texas Association of the Deaf, 1983). Deveaux explored services to disabled persons, surveying every tenth institution in Comparative Guide to American Colleges. She surveyed 110 academic libraries and asked, "Are telephones accessible to handicapped patrons?" Fifty-four libraries had telephones accessible to handicapped patrons and 30 did not (p. 52). This question about accessibility was not referring only to the needs of individuals with hearing impairments, but also to the needs of those with physical and visual disabilities. Her conclusions indicated that improvements were needed in the following areas: posted signs, staff signer, and emergency flashing lights (p. 55), but no improvements in text telephone services.

Mularski (1987) administered a survey to 152 Ohio institutions about enrollment of students with disabilities and library service to those students. She discovered how each institution served individuals with hearing impairments. Mularski focused on administration and library services. None of the 152 respondents had text telephones available for text telephone reference or any other purpose.

The Texas Association of the Deaf (1983) conducted a survey of text telephone usage of persons with hearing impairments in eight major cities in Texas. Eleven thousand surveys were distributed in an unspecified manner to determine: 1. who owns text telephones, 2. frequency and kind of use, and 3. the cost incurred in text telephone usage. The results of the

survey showed 30% of individuals with hearing impairments own text telephones and 63% do not. Many respondents indicated that they borrow text telephones. Twenty-five percent own the old teletype variety, and 2% rent them. The Texas Association of the Deaf concluded that text telephone owners use their text telephones mostly for emergencies and secondarily to communicate. Non-owners say that text telephones are too costly and that they cannot afford to purchase them.

Library Application of Text Telephone Service to Patrons with Hearing

Impairments

Three California libraries pioneered the text telephone project. One envisioned the library as a hub of telecommunication, and thus developed an in-house relay service. The second library identified patrons with hearing impairments in the service area to be an advisory board for services to the population of individuals with hearing impairments, and thus obtained a text telephone at the recommendation of the advisory board. The third studied the Rehabilitation Act of 1973, and thus obtained a text telephone at the recommendation of that Public Law. To maintain anonymity, these three libraries are not identified.

Burns and Reese (1982) described popular text telephone services. Patrons with hearing impairments could call one of the three library text telephone news phones to access news. The available news subjects were general and brief news coverage, specific and detailed news coverage, and local subjects news coverage. In the local subjects news coverage, text telephone callers could also access news about individuals with hearing impairments. This program design was based on suggestions received from the community of individuals with hearing impairments.

Kemp (1982) described a program that hired work-study students who were hearing impaired, and one full-time employee, who was also hearing impaired, to give inservices to the employees who could hear. Those employees, who were hearing-impaired, were able to train the employees who were hearing on all services and equipment for patrons with hearing impairments.

Development of Telecommunication Devices for Patrons with Hearing

Impairments

Telecommunication devices for individuals with hearing impairments are a recent technological development. When Bell invented the telephone in 1876, he was trying to develop a hearing aid for individuals who were hearing impaired (Gannon, p. 325). A description of two innovations made in service to individuals with hearing impairments follows the history of text telephone development.

Two telecommunication devices were developed in the early 1940s. They were Visible Speech, developed by the Bell Telephone Laboratories and the Tactile Receiver for coded signals, designed by Bell Laboratories for the Deaf Blind. The inventions were considered major breakthroughs for individuals with hearing and speaking disabilities, but they were difficult to use. Visible Speech communication

> is produced by an intricate piece of machinery that transforms the flow of speech uttered by the message-sender into moving sound-wave patterns which the person on the receiving end sees on a small screen attached to the telephone (Levine, 1981, p. 167).

The Tactile Receiver is used by sending a message "tapped out on the mouthpiece of a telephone in an agreed upon code ... The recipient gets the message by placing a finger on a vibrating button on the telephone's

dial-face" (Levine, 1981, p. 167). These two inventions preceded the

invention of the text telephone (also historically known as teletypewriter

(TTY)).

The invention of the acoustic coupler in 1964 by Robert Weitbrecht

combined with the teletypewriter, resulted in the development of the first

phone that could be used by individuals with hearing impairments (Gannon,

1981, p. 323).

> Surprisingly, it took awhile for the teletypewriter to catch on. By
> 1978, Teletypewriters for the Deaf, Inc. (TDI) listed only about
> 7,000 dues-paying members. (It was believed by TDI officers that the
> number of TTY users was twice that figure) (Gannon, 1981, p. 325).

According to interviews of librarians who participated in the full

study, in the late 1970's text telephones were refined, and the first

California public libraries began using them.

Conclusions of Literature Review

Identification factors have been reviewed. It was noted that there

are many classifications of individuals with hearing impairments who seek

services in the library. Effective communication with these diverse

patrons, is in part the result of awareness and experience. The library

literature also suggested different places the librarian could go to find

individuals with hearing impairments. It was noted that the librarian's

personal efforts in interfacing with different clubs and organizations,

where individuals with hearing impairments are found, are far more likely

to succeed than traditional advertising campaigns. These steps to

identify and locate people who are hearing impaired were noted as

preparatory to the actual deliverance of library services. Several

problems in providing services to people who are hearing impaired were

discussed: communication, attitude, participation, and training. ASL in its written form was noted as a challenge to librarians due to its syntactical differences with English. It was further stressed that ASL has no official written language, so by default English is the written language of native signers. Positive and negative attitudes toward patrons with hearing impairments were discussed. Words with negative imagery were noted. The importance of promoting participation of people who are hearing impaired in the planning of library services was stressed. It was particularly noted that without the participation in the planning process of people with hearing impairments, there will be no use of the text telephone reference service. Training of librarians was discussed. The lack of courses about services in library schools to people with disabilities was noted. In research a lack of text telephone reference services was reported. A few libraries, using innovative text telephone programs were reported on. Finally, the history of telecommunication devices to people who are hearing impaired was presented. It showed, though experimentation has been underway to improve telecommunication for individuals unable to use a conventional phone, that the text telephone has been usable for only the past fourteen years. This short history of telecommunication for people who are hearing impaired may be provocative of other problems librarians experience in text telephone reference services.

Library literature points to several conclusions that the full study explores. By means of a telephone questionnaire, it was possible to amass the opinions of librarians across California who provide text

telephone reference. The content of the interviews was closely linked to the content of library literature. For example, it was possible to inquire with librarians about their experience with English written in ASL syntax, as they see it in operating text telephone services. It was also possible to ask about the participation of people who are hearing impaired in planning library services.

The opinions of librarians in the literature are so valuable that delivering an effective text telephone reference service seems straight forward: study the literature and then install a text telephone. Between the installation of the text telephone and the actual service, there are further difficulties that were identified by the unobtrusive research in this study. The unobtrusive research and the interview questions solve some of the mysteries of what needs to be done to deliver effective text telephone reference service. The pilot study begins to reveal these problems. The full study and the interview questions conclude the findings.

CHAPTER 3

PILOT STUDY

<u>Purpose</u>

Before conducting an experimental unobtrusive text telephone
study of public libraries in the State of California, a pilot study of 14
libraries was designed. To identify problems with the pilot methodology,
a pretest of four libraries was undertaken. If the methods and procedures
were found faulty, then adjustments could be made before the study was
performed on the 37 libraries that offer text telephone services in
California.

The pilot study was designed to be unobtrusive. For the past
25 years, the accuracy of reference services has been tested by
unobtrusive methods. Crowley (1971) found unobtrusive studies to be a
"highly useful and realistic way of obtaining samples of actual
information service" (p. 57). While this study is not testing the
accuracy of responses, the unobtrusive method is used to test the ability
to respond. Unobtrusive methodology is an accepted technique in use here
to give a greater validity to the conclusions. The pilot study combines
the value of an unobtrusive study with phone interviews to obtain results.
The information in the pilot study (March, 1992) is paired with data from
the full statewide project (October, 1992) and supplemented by interviews
(November, 1992) which followed the unobtrusive testing. This sequence
insured that the unobtrusiveness of the calls would not be compromised.

There are five sections in the Pilot Study: Subjects, Apparatus
and Procedure, Pretest Summary and Results, Pilot Study Results, and Pilot

Study Discussion. Subjects is an explanation of how the libraries were chosen for the pilot study, how the phone numbers were checked for accuracy, and how dates and times were chosen to perform the pilot study. Apparatus and Procedure describes the type of text telephone used in the testing, the philosophy used to develop the questions, and the questions used in the study. The procedures to handle answers are also described. At this juncture the preliminary work is complete and it is appropriate to report on the pretest. In Pretest Summary, how the libraries were chosen is explained as well as how the phone numbers were confirmed. In Pretest Results, the responses to the unobtrusive pretest are described and questions generated by the data and the test are considered. After Pretest Results, the pilot study was conducted and its findings are described under Pilot Study Results. Finally, under discussion, the results are summarized.

Subjects

Bay Area libraries (11) from the California section of "Libraries Serving the Deaf and Hearing Impaired' in Bowker's American Library Directory 1991-1992 (ALD) were chosen. This section listing libraries with services to individuals with hearing impairments is an "index to those libraries which have available a TTY or TDD reference service" (p. 2,267). There are 28 California public libraries that advertise text telephone reference services in the ALD, were checked to confirm they still offered those services.

Once the 11 libraries were chosen, each phone number was checked against the listed in the current phone book. The reference service of each of these libraries was called to verify the days and hours the

library is open and to verify the current phone number used for text telephone reference service.

Four of the libraries no longer offered text telephone reference services. Three of these libraries made referrals to seven other libraries with text telephone reference service. All seven of these libraries were listed in the ALD, but none was listed as giving text telephone reference services. These changes resulted in an increased number of libraries to be studied. The final number of libraries in the pilot study was 14 testable public libraries.

The dates and times for the pilot study were carefully selected. By establishing the operating hours of the library, it was ensured that the calls would be made during those times. The calls were made between March 23rd and April 1st.

Apparatus and Procedure

The VuPhone Model 3224, made by Plantronics, Inc., of Santa Cruz, California, was used to perform the research. The questions used in the research were developed to satisfy several criteria. Unlike most unobtrusive reference studies, the questions were not to test the speed and accuracy of the librarian to respond to a difficult reference question or to manipulate reference sources. The purpose of the questions was to test the ability of the librarian to answer the text telephone call. The first and third questions were simple enough that a yes or no answer could be given, possibly not requiring the librarian to do research. The second and fourth followed up the preceding questions and required a policy statement in answer. The questions also served to gather information about services available in public libraries. Due to the

focus given to closed captioned videos and decoders (Brewer & McClaskey, 1976; Dalton, 1985; Hagemeyer, 1979; Jahoda & Needham, 1980; Velleman, 1990), four questions about them were chosen:

1. Do you have closed captioned movies to check out?
2. How long can I check them out?
3. Do you have a decoder to check out?
4. How long can I check it out?

Preparation of stock answers were necessary should the individual answering the phone not know about closed captioned videos or a decoders. A definition was prepared for both questions. "What are closed-captioned movies?" would be answered by the statement, "Deaf people can't hear the movie, so the movie has subtitles for them to read." "What is a decoder?" would be answered by the statement, "a decoder is a box that attaches to the TV. It enables the TV screen to show the subtitles." If the librarian asked, "How did you decide to call this library?" The answer was, "I heard you give services to the deaf."

To maintain continuity, an outline of outcomes was developed.

TABLE 1	OUTLINE OF OUTCOMES	
Action	Response	Reaction
Dial number	Answering machine	Record the message
	Text telephone answer	Proceed with test
	Busy signal	See call back limits
	No answer	Redial
	Vocally answer	Signal with space bar
	Undecipherable	Check for disconnection
	Too busy	Planned response
	Unexpected	Prepare response

In the Outline of Outcomes, Reaction was planned to give the libraries the fullest opportunity to show how they normally respond to a text telephone call. If the call resulted in a constant busy signal, the library could be busy or it could have a phone that is out of order. To test for this, the library was called again after the library was closed. If the line was still busy at 11 PM, then the phone was judged to be off the hook or out of order. Call back and redial limits were imposed of no more than 30 attempts. If the call resulted in an answer consisting of letters and numbers in no discernible order (undecipherable), one of three things was happening: The phone may have been hung up, the researcher and the librarian may be sending simultaneously, or the librarian may have his/her fingers on the wrong keys. The first possibility required a call back. The second possibility required the use of text telephone

etiquette, and was handled in the same way as the third possibility. The third possibility required a lull in the conversation. During that lull, a message would be sent: "Would you repeat, I can't read that message." If the librarian was too busy and asked to return the call, the too busy response would require this stock reaction: "That is not convenient. Can you give me a time to call you back?" In the case that an unexpected response should arise, a note of the new situation was made and a standard reply was composed. The main purpose of the pilot study was to correct any procedures that appeared to be inadequate. In this way changes could be made in the pilot study before the full study was underway. This short pretest was, therefore, devised to signal any difficulties.

<p style="text-align: center;">Pretesting Summary and Results</p>

Pretesting Summary

Before conducting the pilot study, four public libraries were pretested on March 19, 1992. These four libraries were not Bay Area public libraries. The same process was applied to these libraries as the ones to be used for the study. A comparison of the text telephone number in the ALD was cross checked against the phone number given in the current phone directory.

Pretest Results

The variety of library staff responses encountered in the pretest were a boon to the pilot study and the full study. An entire spectrum of responses were observed. The results of the four libraries' text telephone performance were almost a microcosm of the entire study. The following are responses librarians made to the pretest unobtrusive calls:

1. Text telephone answer (Immediate answer and transmission)
2. Text telephone answer (Two disconnections and two-minute response time.)
3. Unexpected (Uninterpretable response from an answering machine)
4. Vocal answer (four disconnections)

The experience also raised issues not anticipated, which were addressed before conducting the pilot study.

1. How long should the text telephone signal be sent
2. How many attempts should be made at calling and how long a wait should be allowed for the library to set up their text telephone equipment
3. What could be done to record the library staff transmission more efficiently

It was originally decided that three text telephone signals should be used to help the library identify the caller as a text telephone caller. In this test the three signals were insufficient. The library staff hung up almost immediately every time. After confirming the mode of the library answer, text telephone or voice, an immediate transmission of, "Is this the library?" was sent. This message sends 20 text telephone signals and seemed to be more effective in eliciting a text telephone response from the library staff than the three text telephone signals.

The length of time allotted for the library to activate their equipment was five minutes. To give the library ample opportunity, they were called back four times, if needed, giving the library a total of 20 minutes. The five minute and four-time call back was determined based upon cost factors.

Results

The pilot study found that two (14%) of the fourteen public libraries were unable to provide that service when tested anonymously. Twelve (86%) were able to provide text telephone service. Three (22%) of

those 12 initiated service within three seconds or less without first using voice transmission and completed the service without erroneous disconnections. Of the three, two used text telephone answering machines, and the one had a dedicated line for text telephone service. The remaining nine (64%) initiated service with initial voice transmission, one or more erroneous disconnections, and initiated text telephone transmission within three minutes or less. If the library were operating a dedicated line, libraries were able to respond immediately to an incoming text telephone call. If the text telephone was not hooked up and at the ready position, libraries required an average of two minutes to respond. Those operating the dedicated lines had no distance to travel to set up the text telephone, but those who used the same number for voice and text telephone averaged five feet distance needed to travel to connect the text telephone to the incoming call. Those who had a dedicated line suffered no erroneous disconnections, but those with the same number for voice and text telephone experienced an average of one disconnection.

Table 2

Text Telephone Response Time as Related to Distance, Disconnections, and Location

Response Time	n	Location	Distance	Disconnections
Immediate	2	Department	0*	0
	1	Reference desk	0	0
1 minute	3	Reference desk	5	1
	1	Office	10	1
2 minutes	2	Office	0	1
3 minutes	2	Reference desk	3	2
	1	Reference desk	5	1
	1	Reference desk	10	1
None	1	Reference desk	5	4
	1	Department	0	x**

Note. Distance refers to linear feet the library staff must travel from the active phone line to obtain the text telephone. The distance is not doubled even though the librarian or other personnel must travel back to connect the equipment. Location refers to the place where the text telephone is stored. Department for example means any department in a library such as Cataloging, Children's Services, or Humanities.

* "0" means the text telephone is ready to connect or has a dedicated

line.

** "x" means no one answered the phone.

The following patterns appeared:
1. libraries that do not have a separate phone number for their text telephone reference services are more likely to disconnect.
2. libraries without a dedicated line for the text telephone calls required two calls with substantial text telephone signaling to make the connection.
3. libraries without a dedicated line for the text telephone calls required between one to three minutes response time.
4. libraries that do not have their equipment set up at the ready, and do store their text telephone three to ten feet away from the incoming phone line tend to disconnect between one and two times.
5. libraries that do not have their equipment set up at the ready, and do store their text telephone three to ten feet away from the incoming phone line require from one to three minutes response time.

Table 3

Text Telephone Service Ability as Related to Service Population

Service Population Groups	n	Able	Unable
1. Over 200,000	3	2	1
2. 100,000 - 199,999	1	1	0
3. 75,000 - 99,999	2	1	1
4. 50,000 - 74,999	0	0	0
5. 30,000 - 49,999	3	2	1
6. 15,000 - 29,999	3	3	0
7. Under 14,999	2	2	0

Note. "Able" and "Unable" refers to the full study's test. Those

libraries which were able to deliver text telephone reference services
are numbered under the "Able" column. Those libraries which were unable
to deliver text telephone reference services are numbered under the
"Unable" column.

Table 3 was based on statistics taken from the CLD and the California
Library Statistics (CLS), and from libraries' annual fiscal year reports
in cases where CLS did not break down the populations. No patterns are
apparent in Table 3; therefore, it might be generalized on the basis of
those who give text telephone services that there is no relationship
between the size of the population and the ability to handle a text
telephone transaction.

Table 4

Type of Training Compared with Ability to Operate

Training Type	n	Able	Unable
Annual	3	3	0
Manual	7	6	1
New Employee	2	2	0
Posted	1	1	0
None	1	0	1

Note. "Able" and "Unable" refers to the full study's test. Those
libraries which were able to deliver text telephone reference services
are numbered under the "Able" column. Those libraries which were unable

to deliver text telephone reference services are numbered under the
"Unable" column.

Table 4 does not reveal any trends. There is at least one library
representing each category. Library literature recommends regular
training, but there is no swing toward the annual training. The one
library that uses a dedicated line does text telephone training of its
library employees annually. It is one of the three that was able to
answer the text telephone immediately. No other libraries in the pilot
study duplicated this library's pattern.

Table 5

How the Library Obtained the Text Telephone

Source of Motivation	n	Able	Unable
Gift	7	7	0
Administration	2	1	1
Patron with hearing impairments	3	3	0
Not know	2	1	1

Note. "Able" and "Unable" refers to the full study's test. Those
libraries which were able to deliver text telephone reference services
are numbered under the "Able" column. Those libraries which were
unable to deliver text telephone reference services are numbered under
the "Unable" column.

According to Table 5, receiving a gift of the text telephone, rather

than obtaining it after a request from library patrons with hearing impairments, is the most common stimulus for having one installed. It appears from this table that there is no relationship between the source of motivation to obtain and install the text telephone and the library staff's ability to use it.

Discussion

The results of the four libraries in the prestudy helped prepare for the pilot study. Both the prestudy and the pilot study provoked useful questions. Of the 14 libraries investigated, 12 (86%) were able to deliver text telephone reference service. From this number three (22%) were able to respond immediately and without disconnecting. Only one of the three answered in person, and the other two used answering machines. Though the data points to strengths and weaknesses in public libraries' services to patrons with hearing impairments, the data shows no obvious relationship between any two factors except distance and the dedicated line. At face value, one might say that the whole text telephone reference service problem is due to the lack of a dedicated line. No suggestion in the literature was found that obtaining a dedicated line is the solution to text telephone reference service problems. It could also be contended that text telephone reference service problems are due to the distance the text telephone is stored from the in-coming phone line. This is also an issue not found in the literature review. It was not possible to find a relationship between ability to deliver service and any other factor such as training types, service population figures, location data, or purchase motivation, because the number of libraries in all the categories was too low and spread too evenly to be conclusive. It was

desirable, upon the completion of the pilot study, to move onto the full study to determine if the larger number of libraries (37) showed any other generalizable results.

To establish the status of library services to people who are hearing impaired, background information was examined and a literature review was presented. A pretest and a pilot test were conducted and findings detailed. With the preparation concluded, the results of the full study are reported in the next chapter.

CHAPTER FOUR

THE FULL STUDY

An unobtrusive study and phone interview of all California public
libraries identified as providing text telephone services was conducted.
How this study was conducted and what results were found are herein
organized: Subjects, Apparatus and Procedure, Results, and Final
Discussion. In subjects is discussed the shortcomings of using the ALD
as a source of libraries that give text telephone services, as that
was the original plan when the pilot study was initiated. The method used
to collect a more complete list of libraries that offer these services is
explained. Other details such as the selection of dates and times under
which the full study was conducted are included. In Apparatus and
Procedure, the equipment and the questions used in the study are detailed.
In Results, findings from the unobtrusive tests and the telephone
questionnaire are tabulated and discussed. In addition, a comparison of
results between the full study and the pilot study is made.

Subjects

The question was raised as to how representative is the ALD as a
source of information about libraries giving text telephone reference
services? The ALD listed 28 public libraries as giving text telephone
reference, but identified correctly only 15 (54%). An accuracy rate of
54% is not satisfactory. Of the libraries erroneously listed, six denied
ever having a text telephone in their libraries and seven disposed of
their text telephone. Because the ALD did not offer a high

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percentage of accuracy, it was desirable to use another directory in conjunction with the ALD. The <u>California Library Directory 1992</u> (CLD) also identified public libraries with text telephone services. The CLD identified correctly all 23 public libraries described as providers of text telephone reference services. Of the libraries listed in their directories, the ALD and the CLD agreed on 12, the ALD identified two unique libraries, and the CLD identified 11 unique libraries. It was also possible to add 10 other libraries to the study group as a result of library referral.

The question was then raised as to whether the combined data of the ALD, the CLD, and the referrals were representative of the actual population of public libraries giving text telephone reference services. To determine this, system headquarters and individual counties were called and asked if the individual library or any libraries in their system offered text telephone reference services. System headquarters that had advertised libraries providing text telephone service were not contacted. Two additional counties identified libraries within their system that provided this service. As a result 37 libraries were identified. Three other libraries indicated they planned to add text telephone reference services within the 1993 fiscal year. Almost 30% (17) California counties offer text telephone reference service in one or more of their public libraries. Of the 168 public libraries in California (California Library Directory, 1992), 78% do not provide that service.

The dates and times for the full study were selected using the same system as the pilot study; the operating hours of the library were established to ensure that the calls would be made during those times.

The calls were made between October 19th through November 5th, 1992, during the week but excluding the Friday before Halloween. As with the pilot study the length of time allowed for the library to set up equipment was five minutes, and the number of opportunities to correctly answer a telephone call was four.

After the completion of the unobtrusive text telephone calls, each library that participated in the full study was interviewed. Where possible, as noted in the CLD, the director of the library system was contacted, asked who could best answer questions about the text telephone reference service, and that individual was interviewed. These interviews were conducted from November 6th through the 20th.

Apparatus and Procedure

The same text telephone used in the pilot study was used in the full study. In order to more precisely measure how long libraries take to respond to the text telephone call, a Cronus 602CL stopwatch was used. The same questions used in the pilot study were used in the full study, except for one change. The word movies was changed to videos in question number one. The word movies raised some requests for clarification, whereas the word videos did not. Therefore, the change was in line with the purpose of the questions. The series of questions worked smoothly in the full study because they did not require a call back from the library staff.

Though it did not occur in the full study, in two cases in the pilot study questions did not work as well as expected, so there was some consideration of revising the question. In the two cases library staff

left the text telephone to search their collection before it was possible to stop them. This problem occurred because the process of communicating with a text telephone takes more time than using voice. Also, in these cases the conversation had exceeded the memory limit of the Vuphone. The Vuphone has a 700 digit memory that was used to record the conversations. When the memory limit ran out, it was necessary for the conversation to be transcribed by hand to document the remainder of the call. Most of the library staff (six) answered the questions with a yes or no. Staff from two libraries asked if a specific title was wanted and there were two answering machines in working operation that were not tested. The answering machines were not tested, because they would require call backs that would compromise the unobtrusive nature of the study.

In comparison in the full study, even when the Vuphone's memory was full and the conversation was being transcribed, none of the library staff left the phone to search the collection. All of the library staff (eight) who inquired whether a specific title was desired, waited for a response from the text telephone before they went to search for an answer. Most (13) answered the questions with a yes or no. There were four answering machines in working operation, but the questions were not applied to the answering machines for the sake of preserving the unobtrusive nature of this study. Upon consideration, the problem that occurred in the pilot study did not seem serious enough to eliminate or change the question for the full study.

The interview questions were developed to test issues raised in the literature search and questions raised by the pilot study. The questions used in the full study's interviews follow.

These questions are based on library literature and library research. To describe your TDD services, there are eight general questions and a few follow-up questions.

1. How long have you had TDD reference services?
2. Please describe what you must do to set up your TDD machine.
   a. Where is the TDD located?
   b. Do you store your TDD? If so how many feet is it from the ready position?
   c. If the TDD is always in position for a call, do you have a dedicated line?
3. Please describe staff training on the TDD.
   a. How frequently do you have training?
   b. What kind of training do you use?
4. What motivated the acquisition of the TDD, and did the hearing-impaired community have any input in acquiring the TDD?
5. Library literature indicates ASL syntax is difficult to understand. How do you feel about that?
6. How many TDD calls does the library receive annually?
7. Has the ADA impacted library services to your hearing-impaired patrons? Do you foresee any impact?
8. Have you made any changes in your TDD services or are you planning to make any changes?

The first through third questions test whether experience, training, or distance affect delivery of service. The pilot study results suggested that having a dedicated line may affect service quality. The fourth and fifth questions relate to two issues in library literature: the importance of community input and the difficulty of ASL syntax. The sixth question is about number of calls and serves as a factor to compare with the ability to perform text telephone reference services. The last two questions were asked to determine the direction libraries are going with their services to individuals with disabilities. These two questions might also have uncovered some issues not yet discussed in library literature.

Stock answers were prepared should the librarians ask questions about

the research. If asked, "Why are you doing this interview?" the answer was "It is for a school presentation. Library literature raises all the issues compiled in the questionnaires. It might be interesting to share the results of what libraries are actually doing in the field." If the librarian should ask, "Why are you asking that particular question?" then the answer would be a variation on the answer to the validity of the questionnaire: "That question addresses an issue raised in library literature. Your experience in this area may validate the literature or it may raise interesting questions."

It was noted as a possibility that a text telephone could malfunction. In order to insure that the Vuphone used in the full study was not the source of any break down in communication during the study, it was decided that in any suspected case of malfunction, DCARA would be contacted. DCARA would then be asked to test the Vuphone. This test was performed twice, and in both cases the Vuphone was working.

Results

Unobtrusive Text Telephone Phone Study

The full study tested all California public libraries (37) that were identified and confirmed as having text telephone services. Libraries in the prestudy and pilot study as well were recalled as all others identified through the CLD, the system and county library survey, and the referrals.

In this section the abilities of the studied libraries to deliver text telephone reference service based on response time, location, distance, and disconnections are reported. Next a report on the ability

or inability of these libraries compared to their service population groups is discussed. After these results are tabulated and discussed, factors closely related to the issues discussed in library literature which were the subject of telephone interviews are discussed.

Table 6

Text Telephone Response Time as Related to Distance, Disconnections, and Location

Response Time	n	Location	Distance	Disconnections
Immediate	2	Department	0*	0
	2	Office	0	0
	2	Outside facility	0	0
	6	Reference desk	0	0
	1	Reference desk	0	1
30 seconds	2	Reference desk	0	1
	1	Reference desk	0	2
2 minutes	2	Department	5	1
	1	Office	0	3
	1	Reference desk	3	1
	2	Reference desk	10	3
3 minutes	1	Reference desk	3	0
	2	Reference desk	10	2
None	4	Department	0	x**
	1	Reference desk	0	x
	7	Reference desk	10	x

<u>Note</u>. Distance refers to linear feet the library staff must travel from the active phone line to obtain the text telephone. The distance is not doubled even though the librarian or other personnel must travel back to connect the equipment.

* "0" means text telephone is ready to connect or has a dedicated line.

** "x" means no one answered the phone.

This table finds that 12 (32%) of the tested public libraries were unable to provide text telephone service when tested anonymously. Twenty-five (68%) were able to provide text telephone service. Sixteen (44%) of those 25 initiated service within three seconds or less without first using voice transmission and completed the service without erroneous disconnections. Of the sixteen, five used text telephone answering machines, and four had a dedicated line for text telephone service. The remaining nine (24%) initiated service with initial voice transmission, one or more erroneous disconnections, and then initiated text telephone transmission within three minutes or less. Libraries disconnected an average of one time and needed an average of 1.7 minutes to begin sending a response.

Of those who were not able to respond, three text telephone answering machines were not able to process the calls. One was constantly busy, received 30 redials, one of which was at 11:00 PM indicating a malfunction rather than a very busy line. The second rang and was never answered, it also received 30 redials. The third answered in a continuous high-pitched tone. In one text telephone reference call the library's machine was sending a muffled text telephone signal. A concern was that the text telephone used in the research was malfunctioning. DCARA stated, "Their

[the tested library] sending mechanism sounds like it's malfunctioning."

Two more libraries did not have their text telephone connected to receive

calls. Of the 12 that were unable to respond 42% were due to some

difficulty with their machine.

Based on this table,

1. libraries that have their text telephone set up to operate tend to handle the calls immediately.
2. distance of the text telephone from the connection site increases the amount of time required to handle the call.
3. distance of the text telephone from the connection site increases the number of disconnections.

To determine if there was any connection between the ability of the

library to provide text telephone service and the size of the service

population, Table 2 presents the service population statistics taken from

the CLD and the California Library Statistics (CLS), and from the service

development plans and compares them alongside their ability or inability

to perform text telephone reference. The service population groups used

in Table 2 are approximately the same as used in the CLS.

Table 7

Text Telephone Service Ability as Related to Service Population

Service Population Groups	n	Able	Unable
1. Over 200,000	15	10	5
2. 100,000 - 199,999	9	5	4
3. 75,000 - 99,999	3	1	2
4. 50,000 - 74,999	0	0	0
5. 30,000 - 49,999	3	2	1
6. 15,000 - 39,999	2	2	0
7. Under 14,999	5	5	0

Note. "Able" and "Unable" refers to the full study's test. Those libraries which were able to deliver text telephone reference services are numbered under the "Able" column. Those libraries which were unable to deliver text telephone reference services are numbered under the "Unable" column.

From looking at Table 2, no patterns appear; therefore, it might be generalized on the basis of those who presently give text telephone service that there is no relationship between the size of the service population and the ability to handle a text telephone transaction.

In the next section on the results of the interviews, findings from the unobtrusive study and the interviews are compared.

Library Interviews

The library interviews were broken down into seven categories:

1. Experience with text telephone services, 2. Training with text

telephone equipment, 3. Networking with patrons, 4. Language difficulties,

5. Quantity of text telephone callers, 6. Impact of the ADA, and 7. Future

of text telephone services.

Experience with Text Telephone Services

Table 8

Library Text Telephone Experience Compared to Ability to Operate

Years Experience	n	Able	Unable
New – 2	6	6	0
3 – 4	2	1	1
5	0	0	5
6 – 8	7	7	0
9 –14	9	7	2
Unknown	5	2	3

Note. "Able" and "Unable" refers to the full study's test. Those

libraries which were able to deliver text telephone reference services

are numbered under the "Able" column. Those libraries which were

unable to deliver text telephone reference services are numbered under

the "Unable" column.

There appears to be a relationship between number of years that the

library has operated text telephone services and the number of libraries that are able to deliver text telephone services. Of libraries with six or more years experience, only 25% of the libraries are unable to deliver services.

To clarify why a library with several years experience with the text telephone reference service would be unable to successfully deliver the service, comments of the librarians who were interviewed were examined. One library with three years experience described the same service situation as three other libraries with five years experience, "We've not answered a call in the past year. By the time we turn it [text telephone] on, and hook it up, the line is dead. They think it will be answered immediately." One library with five year's experience stated they did not know why they receive no calls. Both of those libraries used voice in answering the line and hung up immediately. Four other libraries' equipment might have been out of order. Another library used an automated telephone system. Years of experience is a positive factor when compared to ability to deliver services, but does not guarantee success.

Training with Text Telephone Equipment

Table 9 summarizes the type of training that public libraries use to teach personnel how to use the text telephone. Individuals interviewed approximated most of their answers, but in regard to training on the text telephone, they were quite specific in their answers.

Table 9

Type of Training Compared with Ability to Operate

Training Type	n	Able	Unable
Annual	12	12	0
Manual	2	0	2
New Employee	6	2	4
Posted	7	6	1
None	10	5	5

Note. "Able" and "Unable" refers to the full study's test. Those libraries which were able to deliver text telephone reference services are numbered under the "Able" column. Those libraries which were unable to deliver text telephone reference services are numbered under the "Unable" column.

The largest category, annual training, indicates that if librarians are able to do annual hands on training, the ability to operate and maintain the text telephone reference service is unquestioned. Library literature has recommended regular training. New employee training is clearly less successful. The six successes versus one failure under the posted category could be indicative that posting instructions is another effective training method.

Networking with Patrons

There are several ways that libraries obtain text telephones: gifts, administrative requirements, and community participation (requests from patrons with hearing impairments). Library literature advises that the text telephone not be purchased unless the community of individuals with hearing impairments requests it. Table 10 shows the interview results.

Table 10

How the Library Obtained the Text Telephone

Source of Motivation	n	Able	Unable
Gift	12	9	3
Administration	8	5	3
Patron with hearing impairments	4	4	0
Unknown	13	7	6

Note. "Able" and "Unable" refers to the full study's test. Those libraries which were able to deliver text telephone reference services are numbered under the "Able" column. Those libraries which were unable to deliver text telephone reference services are numbered under the "Unable" column.

There was a high level of uncertainty as to why and how the library obtained their text telephone. Only four libraries obtained their text telephones after being motivated by the community of individuals with hearing impairments, but all of those libraries were able to provide text

telephone reference service. That number is suggestive but does not seem
to be conclusive evidence, because higher numbers of libraries are able to
deliver service and those libraries received their text telephones as the
result of gifts or administrative requirements.

Quantity of Text Telephone Callers

When the librarian was asked how many calls a year the library
received on the text telephone, those who never received calls were
certain there were none, but those who had received calls approximated
their figures. Only a few libraries kept accurate tallies.

Table 11

Number of Annual Text Telephone Reference Calls Compared to Ability

n Calls	n	Able	Unable
None	11	0	11
1-10	8	8	0
11-30	4	3	1
31-99	1	1	0
100+	11	11	0
Declined to state	2	2	0

Note. "Able" and "Unable" refers to the full study's test. Those
libraries which were able to deliver text telephone reference services
are numbered under the "Able" column. Those libraries which were
unable to deliver text telephone reference services are numbered under

the "Unable" column.

Librarians were reluctant to state the number of calls received. Several librarians felt the figures were "embarrassingly" low. Some of the annual figures in the "1-10" column were guesses. When the librarian admitted to not knowing the number, he/she was asked, "Could the number be under ten?" In two cases a librarian said she had the number, but did not want to give it. One librarian explained she did not want to give the number, because she felt the number of text telephone reference calls received in her department would not be indicative of the overall service given to their service population of individuals with hearing impairments. Consequently, there are two library statistics missing from Table 6.

The library in the number calls "11-30" was one that apparently had an equipment failure, possibly a malfunction of their sending mechanism. Otherwise there is a strong indication of a connection between ability to deliver text telephone service and the number of annual calls received. Of extreme interest is that all the rest of the libraries that were unable to provide text telephone services claimed to never receive any calls, even though each library was called four to 30 times.

Language Difficulties

Regarding the difficulty of understanding ASL, there were three categories reported by librarians: hard, easy, and unknown. Twenty librarians said that interpreting ASL in English format was not hard. One reference librarian stated that if one "uses good reference interview techniques," a reference question in ASL is no harder than a reference question in English. Six libraries claimed ASL structure was extremely difficult, and the remainder said they did not know.

Impact of the ADA and the Future of Text Telephone services

Though the questions were asked separately, the librarians answered

these two questions together. Thirty-two librarians stated they did not

know about the ADA, and did not have an opinion about the future of text

telephone services. Five librarians summarized their hopes that the ADA

might be the impetus for increased funding from governing bodies. They

hoped for new personnel, equipment, and materials, such as interpreters,

public text telephone access, and more closed-captioned videos.

Librarians each stated, in their own way, that the ADA would strengthen

their request to further develop services for patrons who are disabled to

bridge the barrier, for it is "not their [the patron's] job to overcome

it."

Full Study and Pilot Project Comparison

Because the pilot study was conducted in March of 1992 and the

full study in November of 1992, nearly all the findings relative to the

libraries that participated in the pilot study remained the same. It is

possible to compare all aspects of the research, but since most of the

findings per library remained the same, it would not be valuable to

summarize the similarities, but it would be valuable to discuss the

differences. Because all the libraries in the pilot study were tested

twice and these libraries' second test results appear in the full

study, the most significant discussion centers on the changes a few

libraries experienced from the time of the pilot study to the full

study. Six of the libraries changed two of their procedures during that

time.

In March when these six libraries were tested they fell into the norm

of the pilot study's findings, at least one disconnection and the average

connection time of between one to two minutes. In November, these six

libraries answered the text telephone call immediately and without

disconnection. Because of the dramatic change, when librarians

representing these libraries were interviewed, the interview questions

encouraged further background on their current and past text telephone

reference service policies. All six libraries moved the text telephone

from storage locations on a shelf or in a cupboard. They installed

their text telephone in a position where it was at the ready. They also

changed their training from manual to the annual hands-on training. All

six of them moved up to the immediate response range without

disconnections.

Table 12

Text Telephone Response Time Pilot and Full Study Compared

Pilot Study		Full Study	
Response Time	n	Response Time	n
Immediate	3	Immediate	16
1 minute	4	1 minute	0
2 minutes	1	2 minutes	6
3 minutes	4	3 minutes	3
None	2	None	12

The number of disconnections if averaged among the 14 studied

libraries was approximately one in the pilot project. The number of disconnection if averaged among the 37 studied libraries was approximately the same number.

Neither the full study nor the pilot study showed any connection between service ability and size of service population. There are no significant statements to make about similarities and differences in the area of how the library obtained the text telephone or the number of years experience with the text telephone.

Table 13

Type of Training Comparing Pilot and Full Study

Training Type	Pilot Study n	Full Study n
Annual	3	12
Manual	7	2
New Employee	2	6
Posted	1	7
None	1	10

Because the libraries in the pilot study are also contained in the full study, there is no basis of further comparison. The cases of the six libraries which have been mentioned and the comparison of the significant changes they made from the time the of pilot study to the full study are suitable for discussion and fully cover the significant issues.

Discussion

An improved system of identifying libraries was used in the full
study in comparison to the pilot study. As a result 37 libraries were
unobtrusively tested. It was determined in the unobtrusive tests that 25
(68%) were able to deliver text telephone reference service at various
levels. Sixteen (44%) were able to respond immediately and without
disconnection. There were five text telephone answering machines and four
dedicated lines in the 16 that gave the highest level of service. The
data shows that the distance between where the text telephone is stored to
where it must be brought to put it into service adversely affects the
standard of service in nine cases. Distance increased the average amount
of time to begin sending a response by an average of about two minutes.
Distance also increased the average number of disconnections to about one.
It was shown in the section devoted to comparing the pilot and full
study that six libraries were able to improve their standard of service
from the average library performance to the highest level.

The length of text telephone service experience was generally a
positive factor, but some libraries used practices that disabled their
program. Six libraries successfully implementing their new service versus
five libraries unsuccessfully giving service for the past one to three
years of their five-year old program raised a question as to what factors
could be influencing the more experienced libraries to lose their ability
to provide services. The most identifiable condition linking the disparity
in some of those cases was storing the text telephone rather than having
it in the ready position. Another question determined the type of
training libraries were using. Twelve libraries successfully used annual

hands-on training and six libraries successfully used the posted method, but the manual and new employee training saw negative results. No training was the least effective way to teach text telephone use in a way that would be retained. The value of participation of patrons who are hearing impaired was difficult to interpret. The four libraries which consulted with their patrons who were hearing impaired and used their input as the impetus to obtain the text telephone delivered successful text telephone reference services. Nine who obtained the text telephone as a gift and five who obtained it at the request of the administration were also successful. The difficulty of ASL syntax was not overwhelmingly recognized: 20 librarians did not recognize any difficulty, six did recognize the difficulty, and 11 stated they did not know. Finally, the ADA was perceived as a positive tool to use in the budget process by those few who had studied it. Those who were interviewed hoped the ADA would enable them to make progress in their programs to assist people who are hearing impaired. The conclusions and implications of these findings are the subject of Chapter 5.

CHAPTER 5

CONCLUSIONS

Recommendations for Improving Text Telephone Reference Services

Text telephone reference services are a link to information for patrons who are hearing impaired, and, as such, an operable program to access this information is desirable. In the full study libraries which are successful in delivering text telephone reference services are described. The description of some aspects of their text telephone services demonstrates the procedures to follow to set up and maintain a text telephone service. These current practices and the guidance from LSDS and library literature are illuminating.

There may be a difference between the ability to deliver text telephone service and the use of the service. What was required for the library to deliver text telephone service in a research situation may not encompass everything that is needed to deliver the service to a patron who is hearing impaired. It is clear that no distance must exist between the text telephone and the site where the call takes place. Type of training is also an important key to maintaining the service. Planning, however, may not be an ability issue. Library literature points to the importance of working together with patrons who are hearing impaired. A large number of librarians did not know if the text telephone was obtained at the request of their patrons who are hearing impaired. The theory, according to library literature, was that the library would have few or no participants if the patrons with hearing impairments were not involved in

the acquisition of the text telephone. The number of patrons who used text telephones was difficult to test, because a large number of librarians did not maintain records of the number of text telephone reference calls they received. The number of calls supplied in many cases were broad guesses. Hence it was not possible to compare the number of calls received versus how the library received the text telephone.

There is no question that the distance between the text telephone and the site where it is used affects service. Libraries with ready access were more successful. Many libraries which did not maintain their text telephone at the ready were still able to deliver services. Those libraries, however, were not able to deliver the service on a timely uninterrupted basis. The quality of service was impacted. Patrons who are hearing impaired might wait one to five or more minutes for the library to hook up their text telephone, but it is quite possible that these patrons would not wait. A patron may be discouraged from using a service if the service is performed slowly.

Annual hands-on training was also a key factor to maintaining service ability and quality. Training can could be handled in-house without the assistance of outside groups. SODA at one of their eight regional offices might be a good place to start and LSDS are also good sources of guidance.

In view of this research and the literature review, it is recommended that libraries work together with their patrons with hearing impairments to determine whether a text telephone is wanted. It is good if the library is delivering a text telephone reference service that the community of individuals with hearing impairments thinks is valuable and uses. It is not the purpose of this study to tell libraries they ought to

obtain text telephones. Even the ADA does not specifically require text

telephone reference service. The ADA points out text telephone service is

desirable because of the direct access it provides. It also eliminates

the concerns about confidentiality that CRS raises. The ADA recommends

its use for public libraries. All these are positive reasons, but they

will mean nothing if the library receives no calls from patrons.

Therefore, it was the purpose of the study to explore what factors might

affect text telephone reference services. If librarians decide to use the

relay service or if they decide to use a text telephone, they should

carefully consider all the factors involved and supply a written service

plan for patrons with disabilities. This plan would explain step by step

the library's ADA compliance procedures for the present and the future.

The plan may protect the library from litigation. This service plan would

also help guide the library through the inevitable challenges that arise.

There are three libraries that indicated they are adding text telephone

services in fiscal year 1993. Others may be considering adding this

service. The recommendations in this full study are meant to assist them.

Suggestions for Further Research

This study could be extended in several ways. The unobtrusive test

could be replicated in ASL syntax to test the results. The unobtrusive

test could use CRS to channel the questions to the library. The whole

test could be repeated on a broader base, using the nation rather than

just California libraries. Each of these suggestions would yield valuable

results. Library literature suggests that ASL syntax is a stumbling block

for librarians in rendering text telephone services and requires strict

adherence to reference techniques. Testing libraries in ASL syntax might

suggest some interesting insights and conclusions. Testing CRS would also be helpful. The ADA permits the use of a relay service to process reference questions. It may help libraries decide whether confidentiality issues and access issues are valid concerns. The last suggestion of repeating the study on a broader base may be valuable. Libraries outside of California may be able to answer some of the questions about the number of calls and the level of cooperation with patrons with hearing impairments. These suggestions may bring further insight in how to deliver text telephone reference more effectively to individuals with hearing impairments.

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