Title
The legibility of print and the indexing of printed reference materials intended for use by older persons

Author
Bader, Jeanne Ellen

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THE LEGIBILITY OF PRINT AND THE INDEXING OF PRINTED REFERENCE MATERIALS INTENDED FOR USE BY OLDER PERSONS

by

Jeanne Ellen Bader
B.A., University of Delaware 1965
M.A., University of Vermont 1967

DISSERTATION

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ABSTRACT

Most aging-related agencies and organizations communicate information to older persons in print. The print medium has the advantage of being permanent -- available for repeated use. In order to be adequate, printed reference materials intended for use by older persons must be available, acceptable, appropriate, accessible, and accurate. This research focused on questions of access. Three experiments, each using a counterbalanced design, were conducted.

Two of these experiments focused on legibility of print for "normally sighted" older readers (n = 36). (Earlier studies of legibility have focused primarily on children and on partially sighted readers.) The variables selected for study in the legibility experiments were chosen because they are particularly likely to be affected by certain changes in visual functioning that frequently characterize older persons. Experiment I compared speeds of reading three commonly available typefaces (Bookman, Century Schoolbook and Helvetica) and typesizes (10-, 12- and 14-point). A significant main effect of typesize ($p < .05$) was obtained. Larger typesizes were more legible. A significant interaction ($p < .001$) between typesize and typeface also was obtained. The obtained interaction probably is better ascribed to a position effect than to any strong interaction of face and size *per se*. Experiment II examined reading speed with three ink-to-paper color combinations and two line widths (4" and 6"). White on black (W/B) was significantly ($p < .05$) less legible than B/W or B/Yellow, possibly because W/B was novel and possible because B/W and B/Y provide greater contrast than W/B.

Experiment III examined speed and accuracy of agency identification using a single directory of services and three different index formats (n = 12 entries [i.e., headings]; n = 33 entries; and n = 66 entries). The test items were employed with each format (total n = 30). Test items consisted of questions and requests for information and help that had been received by information and referral specialists. They also were the printed material used to test legibility in Experiments I and II. In general, more detailed (i.e., longer) tables of contents produced faster and more accurate directory search. Post hoc analysis revealed that specificity of labeling on tables of contents, no matter how detailed, elicited superior performance. Even with explicit labeling, occasional errors were made. Conversely, in the absence of explicit labeling, many subjects identified appropriate agencies.

The results of the experiments were used to develop guidelines for designing printed reference materials for older readers. Consideration also was given to potentially significant variables other than those studied in the three experiments reported here. For instance, boldness and spacing might also be varied to enhance legibility. Similarly, the organization and wording of the contents of reference materials are undoubtedly crucial for accessibility.

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TABLE OF CONTENTS

VII. DISCUSSION AND IMPLICATIONS

APPENDICES

L I S T O F T A B L E S

15. DIRECTLY AND INDIRECTLY CORRECT AGENCY SELECTIONS ACROSS TABLES OF CONTENTS FORMATS BY DEGREE OF EXPLICIT CATEGORY LABELLING, IN PERCENT.

16. "CORRECT AND DIRECT" AGENCY SOLUTIONS (CDL) WITHIN FIRST CATEGORY SELECTION ONLY, BY LEVEL OF EXPLICIT LABELLING AND FORMAT OF TABLE OF CONTENTS, IN PERCENT.

17. DIRECTLY AND INDIRECTLY CORRECT AGENCY SELECTIONS WITHIN FIRST CATEGORY SELECTION ONLY, BY LEVEL OF EXPLICIT LABELLING AND FORMAT OF TABLE OF CONTENTS, IN PERCENT.

18. DISTRIBUTION OF MEANS FOR TIME SPENT SELECTING A SERVICE AGENCY, IN SECONDS.

19. ANALYSIS OF VARIANCE OF TIME TO SELECT AN AGENCY USING THREE FORMATS OF TABLES OF CONTENTS.

20. CRITERIA OF SERVICES DIRECTORY DESIGN ADEQUACY.

LIST OF FIGURES

Chapter I

The Problem: Legibility and Indexing of Printed Reference Materials Intended for Use by Older Readers

C H A P T E R I

Most efforts to relay information to older Americans rely on the printed word. At the same time, very little research has been done on the most effective way to present printed information to older readers. The experiments reported below are an attempt to remedy, in part, this research gap. The results of the three experiments to be described below suggest useful guidelines for designing print messages for older audiences and further suggest possible avenues for additional research.

Need for Information and Help

Information barriers are particularly detrimental to older persons because older persons are likely (at least, more so than younger people) to need certain types of information -- especially about benefits, entitlements, and social services. Older persons frequently have physical, mental and social problems which earlier experience does not adequately prepare them to deal with by themselves. They need help -- but all to often do not know if that help is available, where it can be obtained, at what cost, etc.

Need for help and information is greatest among those 85 years of age and older -- the "old old" (Neugarten, 1970). They are far less healthy then the "young old" (Neugarten, 1975; Federal Council on the Aging, 1976). In addition, their health problems are frequently compounded by other

problems such as poverty; housing and transportation inadequacies (U.S. Senate Special Committee on Aging, 1979); losses of family members and friends through death and relocation (Silverstone, 1978; Brody, 1978); and the unavailability of supportive services short of institutionalization (Doherty, Segal and Hicks, 1978). Such problems may remind old people of their advancing age and cause them considerable mental stress as they experience or anticipate depletion of their psychological and social reserves. Furthermore, now that more women are working, the elderly are less likely to have family members (usually daughters and daughters-in-law) who will help them deal with the services bureaucracy (Seelbach, 1978; Ward, 1978). As a result, older persons, especially the old old, may need help in obtaining and acting appropriately on information about benefits, entitlements, and services (Shanas and Hauser, 1974; Brody, 1978). Perhaps this is one reason why the proportion of regular readers does not decrease with age (Harris, 1975) and may even increase (Beyer and Woods, 1963). Older persons' heightened need for information may also help to explain why old persons select more serious radio, television, and printed content than do younger people (Lazarsfeld and Kendall, 1948; Schramm and White, 1949; Steiner, 1963; Parker and Paisley, 1966). Also, older persons' focus tends to be increasingly on local level news (Kubey, 1977; Comstock, 1978), perhaps, in part, because of their need for services-related information.

Responses to Older Persons' Needs for Information

A multitude of agencies, groups, and individuals try to convey needed information to older people. Almost all of these agencies, groups, and individuals attempt to communicate through print media -- newspapers, newsletters, magazines, brochures, and posters. Despite a surge of interest during the last few years in the possibility of informative television programming directed at older audiences (Kubey, 1977; Comstock, 1978), such programs (e.g., "Getting On," "Prime Time," and "Over Easy") are rare. Radio programs with special content for older listeners are almost nonexistent.

The selection of the vehicle for communicating its messages to older persons is particularly crucial to the Social Security Administration since almost every older American receives some combination of Social Security, Medicare, and/or Medicaid benefits (Pechman, Aaron, and Taussig, 1968; Harris, 1975). The Social Security Administration relies almost exclusively on printed materials to explain its programs to the public. Many other service agencies, both in the private and public sectors, follow its example.

> The overwhelming majority of respondents indicated that they would like to receive notice of benefit changes directly by mail from the responsible agency. Even those who could not read preferred to be notified by letter.
>
> Many respondents stated that benefit changes were a very personal thing and should always be conveyed by letter directly to them. As one

> respondent said, "I can sit down and read it, figure it out for myself." Because of hearing and sight problems, the recipients feel that they cannot "always believe" what they hear on television and radio, but a letter is a permanent record that can be referred to again and again. Also the problem of individuality comes into play. A broadcast announcement is a mass communications device, but a letter, addressed to the recipient by name makes him feel that he hasn't been forgotten as a person. (Social Security Administration, 1972, p. 94)

Voluntary associations of older persons also tend to communicate with their membership through the print medium. It is reported by membership department personnel that such groups (primarily the National Retired Tearchers Association/ American Association of Retired Persons and the National Council of Senior Citizens) regularly communicate with more than half of the population 55 and older in this country.

Reliance on printed communications makes sense when one considers that most older Americans (over 90%) are literate (Riley and Foner and Associates, 1968) and that over 70% read newspapers (Harris, 1975) "regularly". They may, however, have more difficulty than younger people in apprehending printed information because of aging-related changes in visual, cognitive and memory capacity. Only visual constraints will be addressed here, although reference will be made later to other limitations due to changes in cognitive and memory skills.

Visual Changes with Age

With aging, many (but not all) individuals experience some deficit in visual functioning. Among prominent visual changes which take place with age are:

1. The lens becomes yellow-brown (Chylack, 1977).
2. The lens thickens as "old" cells (inert tissue) move to the center (Marin-Armat, 1956; Lopping and Weale, 1965; Chylack, 1977).
3. The lenticular and corneal surfaces may become distorted (Kapoor, 1965).
4. The pupil dilates more slowly than in earlier years (Birren, Casperson, and Botwinick, 1950; Kumnick, 1956; Feinberg and Podolac, 1965).
5. The eye muscles become less elastic (Weale, 1963).
6. Blood vessels serving the eye disappear, thereby reducing the production of fluids internal to the eye (Kuwabara, 1977).
7. Neurons atrophy. Both rods and cones are affected, especially in the periphery of the retina. Rods disappear first (Kuwabara, 1977).

Such changes often result in the following difficulties:

1. Less light enters the eye and even less reaches the retina than in younger years (Weale, 1960; Weston, 1962; Eriksen, 1970). More illumination is required to see as well as younger people see (Weston, 1949; Guth, Eastman, and McNelis, 1956).

2. Light is altered in coloration by the lens. Blues, greens and purples are especially affected, but all wave lengths are somewhat attenuated (Gilbert, 1957); Dalderup and Fredericks, 1969).
3. The image formed on the retina is more distorted and less clear, and presbyopia (farsightedness) is an almost universal accompaniment of old age.
4. Metabolism of the eye is slower (Becker, 1958).
5. Accomodation is more difficult in old age (Duane, 1931; Bruckner, 1967).
6. Light adaptation is slower (Domey, McFarland, and Chadwick, 1960a, b).

Most aging-related visual changes begin when a person is in her/his thirties or forties (Fozard, Wolf, Bell, McFarland, and Podolsky, 1977). Prosthetic devices such as eyeglasses and magnifying glasses are frequently recommended for the first time at these ages. By the time adults reach their sixties and seventies, almost all of them wear contact lenses or eye glasses (Colenbrander, 1979.) That does not necessarily mean, however, that their eyesight is adequately corrected. Through neglect or poverty, many older persons rely on prescriptions that are long-since outdated.

Appendix A describes a 40-states survey of 3,000 older persons' visual functioning. One of the conclusions of the study was that:

> Their inability to see well prevents them from performing different activities such as household chores, recreation, business, etc. About 40%

> reported problems going up and down stairs; nearly 30% have difficulty reading the newspaper; one in five have difficulty watching television; and among those surveyed who drive, 8% have some trouble driving during daylight hours while 45% have some trouble or can't drive at night. One out of every four citizens surveyed indicated they had an eye problem which required regular care and only about 15% of those surveyed categorized their vision as excellent. 9% of those surveyed have had cataract surgery and 11% indicated they are presently being treated for an eye disease. (Eger, 1976, p. 712)

Most of the changes in functional vision listed above have implications for the design of printed reference materials for older readers. Nonetheless, these implications have not, for the most part, been discussed in the literature. For instance, older persons' heightened sensitivity to glare (Wolf, 1960; Wolf and Gardiner, 1965) has been considered in recommendations for improving architectural designs of congregate housing (Green, Fedewa, Johnston, Jackson, and Deardorff, 1975). However, the effect of glare on legibility of print has been ignored.

Other factors influencing use of printed materials may be cited. For instance, negative attitudes toward old age identification (Bultena and Powers, 1978) and toward accepting help from public agencies (Brody, Finkle, and Hirsch, 1972) may prevent older persons from making maximum use of printed messages. Insufficient income (Schulz, 1976; National Journal, 1978), mobility impairments and transportation inadequacies may prevent them from obtaining their messages in the first place (Administration on Aging, 1978; National Science Foundation, 1977). Furthermore, some potentially useful messages may only appear in the form of

technical reports intended for use by the scientific community (Kaplan, 1973) rather than by older consumers.

Promoting Legibility and Usability of Printed Materials

One approach to improving older people's access to important information might be to shift from reliance on printed media to reliance on broadcast media or some other communication device.[1] However, since the great majority of older Americans are literate, since print is a relatively inexpensive information conduit, and since many aging-related agencies and organizations probably will continue to communicate through print, it is of practical significance to focus on the prosthetic design of printed messages. Perhaps most important is the fact that printed materials have an element of permanence. They can be studied and repeatedly used. Other media do not share this characteristic.

Little data exists on how older people are affected by variations in the physical design, organization or language of printed messages.[2]

> One might suspect, then, that there exists a fairly sizable and usable body of research pertaining to the effects of aging on visual/perceptual capability of individuals, and the interplay of this variable on the legibility of the printed word. A fairly exhaustive search of the literature, and interviews with experts in the fields of aging, typography, and publishing have established that not only is there no "body" of such research, there has never been even on scientific investigation of this subject. (Social Security Administration, 1978, Preface, p. 1)

Two of the studies to be reported below focused on the effects on legibility of typographic variations in printed materials designed for older readers. The third study varied ways of formatting indices to a directory of services. Legibility and optimal organization are particularly important for services directories. Such materials take diverse forms. At a minimum, they differ in legibility (due to typography, paper selection, quality of printing, and format, among other things) and in the quality of information they convey. High quality publications are well organized, precisely worded, instructive, and sufficiently detailed to be helpful without being cumbersome or boring.

Older persons confront printed information in at least four modes. Examples of each are given in Table 1.

In the first mode, low information/low legibility, little information and poor typography combine to make reception and comprehension difficult. Photographs taken through lenses which scientifically simulate the appearance of exemplary items in this mode when they are seen by the average person of 78 years of age (Pastalan, Mantz and Merrill, 1973) are presented as Figures 1-3. When pressured by time or circumstance, people faced with decisions between consumer goods in this mode probably rely on familiarity with brand names or label design and with advertised characteristics of the product -- characteristics which may or may not be useful bases for effective decisions.

Table 1. Examples of Printed Reference Materials which differ in Legibility and in Quality of Information.

Relative Legibility	Quality of Information	
	Poor	Rich
Low	Commodity contents and ingredients Labels on food packages Labels on prescription & non-prescription medications	Instructions for use of various commodities Newspapers Publications of U.S. Government Printing Office Publications of major nursing home chains
High	Billboards Brand names on commodities Traffic Signs	Social Security Administration publications Magazines for older readers

Figure 1. Example in the First Mode (Labels on Food Packages) as seen by the Average Person in her Late Seventies (top) and by Younger Persons with Corrected Vision (bottom).

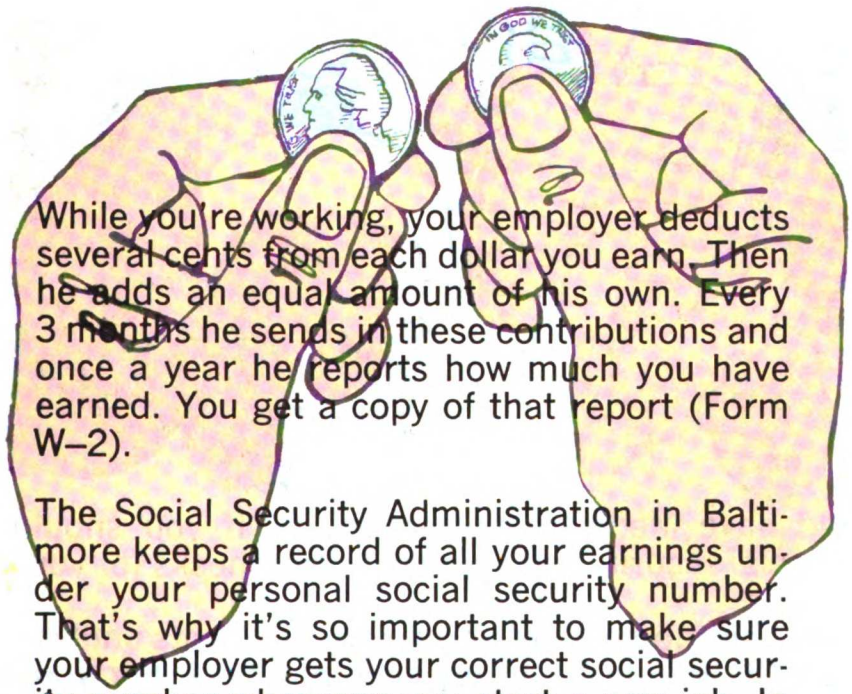
Figure 2. Example in the First Mode (Shopping Center Directory) as seen by the Average Person in her Late Seventies.

Figure 3. Examples in the First Mode excerpted from Help. I'm a Number. Washington, D.C.: Social Security Administration (USDHEW Publication Number [SSA]78-10049), 1978: a) too much variability; b) overlay of graphic image limits legibility; and c) ink smudges. In all cases, note bleed-through.

a

b

HOW DOES SOCIAL SECURITY WORK?



While you're working, your employer deducts several cents from each dollar you earn. Then he adds an equal amount of his own. Every 3 months he sends in these contributions and once a year he reports how much you have earned. You get a copy of that report (Form W–2).

The Social Security Administration in Baltimore keeps a record of all your earnings under your personal social security number. That's why it's so important to make sure your employer gets your correct social security number whenever you start a new job. In that way, you get credit for your earnings . . . **credit you need before benefits can be paid.**

C

WHY IS SOCIAL SECURITY COMPULSORY ?

If it were voluntary, the people who need it most might be the least likely to sign up for it. Then, when their income stopped because of disability, death, or retirement, they wouldn't have social security to fall back on.

9

Figure 4. Example in the Second Mode (Transit Schedule) as seen by the Average Person in her Late Seventies (right) and by Younger Persons with Corrected Vision (left).

Figure 5. Example in the Second Mode ("Oversize" Unit Pricing) as seen by the Average Person in her Late Seventies (right) and by Younger Persons with Corrected Vision (left).

Figure 6. Example in the Second Mode (Brand Names on Commodities) as seen by the Average Person in her Late Seventies (right) and by Younger Persons with Corrected Vision (left).

Figure 7. Example in the Third Mode (Washing Machine Instructions for Use) as seen by the Average Person in her Late Seventies (left) and by Younger Persons with Corrected Vision (right).

Figure 8. Example in the Third Mode (Washing Machine Controls) as seen by the Average Person in her Late Seventies (top) and by Younger Persons with Corrected Vision (bottom).

Figure 9. Example in the Third Mode (Newspapers) as seen by the Average Person in her Late Seventies (left) and by Younger Persons with Corrected Vision (right).

Figure 10. Example in the Fourth Mode (Newsletter of a State Unit on Aging).

Offers
vide
LINE

tion but no where
answer? If you
of an information
program operating
consider calling the
oard on Aging's
INFO-LINE.
ctober, the service
nd to have all the
Minnesota seniors,
bly can give you
ation than you've
will help start you
t direction toward
p.
G INFO-LINE is
s between 10 and
is easy. Dial
7 and ask for
FO-LINE." Your
e directly transfer-
nnesota Board on
aul.

Minnesota

SENIOR SPOTLIGHT

Vol. 9, No. 2
November-December, 1979

newsletter of the minnesota board on aging

From 141 County Winners

State's Outstanding Seniors Picked

Eleanore Adelmeyer, Stearns county, and Richard Froland, Brown county, are Minnesota's Outstanding Senior Citizens of 1979. They were chosen at this year's State Fair from 141 county winners representing 71 counties. Runners-up are Edith Lor-

Figure 11. Examples in the Fourth Mode (Publications of the Social Security Administration).

How to apply

You can apply for SSI checks at any social security office. You can phone if you want to find out more about SSI before applying.

If you visit a social security office to apply, it will help if you have certain information with you. This includes:

- Proof of age, unless you are already getting social security checks.
- Your latest tax bill or assessment notice if you own real estate other than your home.
- Your latest rent receipt if you pay rent.

6

Thinking about retiring?

If you have started thinking about retiring, chances are some of your questions have to do with social security.

This leaflet answers many of the questions we have received about retirement and social security. We hope it helps make your retirement planning a little easier.

Before you can get retirement checks, you must have credit for a certain amount of work covered by social security. The exact amount depends on your age. You earn credit in ¼ year units called quarters of coverage. The quarters need not be consecutive. The following table shows in years how much credit is needed for retirement benefits.

Work credit for retirement benefits

If you reach 62 in	Years you need
1975	6
1976	6¼
1977	6½
1978	6¾
1979	7
1981	7½
1983	8
1987	9
1991 or later	10

Figure 12. Example in the Fourth Mode (Nursing Home Residents' Bill of Rights).

patient's bill of rights

FOR SKILLED NURSING FACILITIES
(As published in the Federal Register)

1. Each patient must be fully informed of these rights and all rules and regulations on patient conduct and responsibilities prior to or at the time of admission and during the stay. This must be acknowledged in writing.
2. Each patient must be fully informed on the services available in the facility and related charges, including any service charges not covered under Medicare, Medicaid or the facility's basic per day rate. This must be done prior to or at the time of admission and during the stay.
3. Each patient must be fully informed by a physician on his/her medical condition unless medically contraindicted by an attending physician on the medical record. Each patient has the opportunity to participate in the planning of his/her medical treatment and can refuse to participate in experimental research.
4. A patient can only be transferred or discharged because of medical reasons, his/her welfare or that of other patients or nonpayment for care (except as prohibited by Medicare and Medicaid.) The patient must have reasonable advance notice to ensure orderly transfer or discharge, and such actions must be documented in the medical record.
5. Each patient is encouraged and assisted during his/her stay to exercise his/her rights as a patient and citizen. Patients may voice grievances and recommend changes in policies and services to facility staff and/or outside representatives free from restraint, interference, coercion, discrimination or reprisal.
6. Each patient may manage his/her financial affairs, but if the facility is given written responsibility for this for any given period of time in conformance with state law, the facility must give the patient a written accounting of all transactions made on behalf of the patient.
7. Each patient must be free from mental and physical abuse and free from chemical and physical restraints (except in emergencies) unless authorized in writing by a physician for a specified and limited time period, or when necessary to protect the patient from injuring him/herself or others.
8. Each patient is assured confidential treatment of his/her personal and medical records and may refuse or approve release of them to any individual outside the facility except in the case of transfer to another health care facility, requirements by law and third party payment contracts.
9. Each patient must be treated with consideration, respect and full recognition of his or her dignity and individuality, including privacy in treatment and care of his/her personal needs.

Examples in the second mode, low information/high legibility, are typically printed in relatively large typesizes, are terse and frequently have as their objective the familiarization of the consumer with a unique brand name or the designation of directions. Figure 4-6 show such examples, again as the older viewer would see them.

The third mode features high information/low legibility. An example in this mode is newpapers. Not only are many newpapers' typesizes small (most typically 8-point), but also their excessive use of hyphenation (a consequence of narrow column widths) and the quality of their materials and printing may inhibit legibility. Examples in this mode are given in Figures 7-9.

In the fourth mode, high information/high legibility, appear discursive publications specifically designed for use by older readers. The Social Security Administration has repeatedly revised its brochures[3] in response to the results of ongoing testing of its numerous publications targeted for older readers. (More will be said below about this research.) Magazines published by national membership organizations of older persons have consciously made certain design decisions based on their assumptions about the visual functioning of older readers (sample of eight editors, personal communication,1976; Successful Marketing to Senior Citizens, 1978). Figures 10-12 provide examples in this mode.

The specific type of publication used in the studies to be reported below is purposively intermediate in the extent

to which it is informative; Directories of services for older persons. Such directories are typically intended to facilitate consumer selection of an appropriate service agency or organization to meet a perceived need. In order to be usable, service directories must be legible to their users and informative without being so detailed that agency selection becomes fatiguing, frustrating and possibly overwhelming.

Two of the studies reported below focused on legibility and the third on the indexing of a services directory intended for older adults. The first experiment asked, "Other things being equal, does familiarity with typeface and typesize improve the legibility of print?" The second experiment asked, "Other things being equal, does familiarity with certain ink-to-paper color combinations and line widths improve legibility of print?" The third experiment compared performances using different kinds of indexes: "Other things being equal, are some forms of indices to a directory of services more efficient than others at facilitating the identification of agencies appropriate to answer questions commonly asked of referral agencies by older persons?"

Chapter II will elaborate on various aging-related theoretical perspectives appropriate to discussion of typographical and informational considerations. Chapter III will draw the broad outline of the methodological approaches which characterized the three experiments. Chapter IV will describe the procedures and results of Experiment I dealing

with typeface and typesize. Chapter V will describe the procedures and results of Experiment II which focuses on color and line width. Chapter VI will describe the procedures and results of Experiment III: Indexing a directory of services. Chapter VII will integrate the results of the three experiments and discuss them in the broader context of typographical and informational considerations for preparing directories of services and other reference materials specifically intended for use by older readers.

Chapter II

Approach to the Problem:

Theory and Practice

C H A P T E R I I

This chapter first will introduce the concepts of legibility, accessibility, and usability of printed materials. Next, attention will be given to the selection of directories of services as the test document for the experiments described below. Discussion will focus on variables which must be considered in designing directories of services and other printed materials. Related research will be noted. Consideration will be given to a range of typographic variables, particularly to those studied in this research. Also included will be discussion of one useful theoretical approach to interpretating the results of the typographic research to be reported below. Finally, the importance of indexing a directory of services will be underscored.

Legibility, Accessibility and Usability

There is little agreement in the research literature on the definition of legibility, or its traditional synonym "readability". Furthermore, other terms are also associated on occasion with "legibility". Among these terms are "recognizability", "visibility", and "perceptibility". (See Tinker, 1963; Foster, 1968.) Research on these topics generally has to do with the detection, recognition, or readability of free standing (unitary) symbols (e.g., shapes [especially those used in instrumentation], highway signs, digits, numerals, words). Studies of these phenomena demand

the use of distinctive methodologies common to perceptual research. Such research has on occasion led to invalid conclusions (Tinker, 1965).

The legibility of continuous text has been studied infrequently. Comprehension has almost never been assessed (Tinker, 1963; 1965). Some researchers have, however, recorded subject preferences (aesthetics and/or presumed ease of reading), typically in conjunction with the collection of other less subjective, legibility-related data (e.g. Tinker and Paterson, 1942).

For the purposes of the research to be reported in Chapters IV and V, legibility of print refers to the ease, speed, and accuracy with which printed materials are read. This functional definition of legibility is similar to that employed by Tinker in Legibility of Print, where he states:

> Legibility is concerned with perceiving letters and words, and with the reading of continuous textual material. The shapes of letters must be discriminated, the characteristic text read accurately, rapidly, easily, and with understanding. In the final analysis, one wants to know what typographical factors foster ease and speed of reading. Optimal legibility of print, therefore, is achieved by a typographical arrangement in which shapes of letters and other symbols, characteristic word forms, and all other typographical factors such as type size, line width, leading, etc., are coordinated to produce comfortable vision and easy and rapid reading with comprehension. In other words, legibility deals with the coordination of those typographical factors inherent in letters and other symbols, words and connected textual material which affect ease and speed of reading. (1963, pp. 7-8)

Not only stimulus characteristics, but also the

characteristics of the environment in which one reads and reader characteristics may be expected to affect legibility.

For the purposes of this research, accessibility refers to ease, speed, and accuracy with which the organization and component parts of printed reference materials are understood. Legibility is required for accessibility. Indexing presumably enhances accessibility. Usability refers to the ease,speed, and accuracy with which printed materials can be used as intended. Accessibility is a precursor of efficient usability.

The printed materials and design for this research were selected because they tap legibility, accessibility, and usability most efficiently (i.e., with relatively low costs for subjects and researchers).

The Choice of Services Directories

An opportunity to test the strengths of the relationships noted in Chapter I between familiarity and legibility and between index format and accessibility unexpectedly presented itself when the San Francisco Commission on the Aging and the Junior League of San Francisco, Inc., requested help in designing a directory of services for older residents of San Francisco. At the time, the researchers were engaged in the study of diverse aspects of "information systems for the elderly". The research strategy for this multi-faceted project had from its inception called for research on the design of printed reference materials for older readers.

The researchers agreed to participate in the project primarily because it met their previously established objectives. At the same time, they welcomed the opportunity to work on a practical and potentially important task in concert with a public agency (the Commission) and a private one (the Junior League). The Commission assembled the contents of the directory and managed distribution. The Junior League participated in the design of the directory and paid printing costs. University personnel were asked to participate in each production step by reviewing relevant available information, and when necessary, conducting empirical research. The savings accruing to each of the three organizations because of the participation of the other two were enormous.

The selection of directories of services as the test document was thought to be appropriate for Experiments I and II for two additional, somewhat contrasting reasons. First, older persons are unlikely to be very familiar with directories of services. Even people who have used such directories are likely to have used them only rarely. Familiarity with the physical or organizational design of a particular directory should not unduly bias subject performance in an experimental situation requiring the use of another such directory. Furthermore, services directories are different enough from other kinds of reference materials that familiarity with the latter should not bias the results of research on the former. Second, most

people have heard about, seen, or even used a directory of services[4] at one time or another. Consequently, older research subjects might be expected to be less threatened in a test situation focusing on the design of a directory of services than in a more classical experimental situation. In addition to being potentially less threatening than more traditional research, research which asks older subjects to perform concrete, meaningful tasks should (according to the research literature) elicit better performance than more abstract, less familiar tasks (Demming and Pressey, 1957; Hulicka, 1968; Arenberg, 1968; Howell, 1971, 1972a,b). Since the test directory could be designed to refer to existing local services, stimulus meaningfulness could be maximized.[5]

Another reason for focusing on directories is that efficient use of services directories is sufficiently complicated to permit adequate testing of differences in indexing formats. Efficient use of directories of services requires literacy; adequate sensory, perceptual, and cognitive functioning; fair attention span; manual dexerity; and ability to think about multiple stimuli simultaneously. A well-functioning memory helps, too. Because these are the same attributes required for accessing information from other printed messages, it was thought that services directories would prove adequate for research purposes.

In summary efficient use of directories of services taps multiple skills, is generally not well-practiced, and is instrumental, relatively nonthreatening, and potentially

intrinsically interesting. In addition optimal directory use is somewhat akin to use of other kinds of printed reference materials.[6]

Production Decisions

Certain production decisions must be made regardless of what sort of reference materials one wishes to print. These decisions are affected by document objectives, intended audiences, and available financial resources. In addition, they are limited by the quality of printing materials and techniques at one's disposal.

Quality of paper, ink, and press are likely to affect legibility of print -- especially for persons with limited visual resources. For example, the weight, density, surface quality, opaqueness, absorption capacity and color of paper can affect legibility of print.

Design considerations (features) which singly and in combination are bound to affect the legibility of printed materials are the following:

A. Typography
    1. Type family (See Table 2)
    2. Type face
        a. Relative weight of type bodies and their weight relative to any ascenders (i.e., b, d, f, h, k, l, t) and descenders (i.e., g, j, p, q, y)
        b. Consistency and thickness of stroke

Table 2. Classification of typefaces into type families, with example of each.

Note. From Pocket Pal: A Graphic Arts Production Handbook. New York, N.Y.: International Paper Company, 1974. Copyright 1974 by the International Paper Company. Reprinted by permission.

c. Familiarity

d. Availability

3. Type size: what point-size of type (traditional measure) or x-size (more popular measure currently)

4. Boldness (light, regular, demi-bold, bold)

5. Leading (i.e., inter-line spacing)

6. (Intra- and inter-word) spacing

7. Line or column width

8. Margin width

B. Layout

1. Number of distinct parts to the package (e.g., cover, cover letter, table of contents, body, index, back cover).

2. Unity of these parts. Is the order of the parts intuitively obvious? Are there equal but separate parts, e.g., successive versions of same document -- but in different languages?

3. Given the typographical choices made, how can the effect achieved on an entire page and on facing pages "feel right" to the reader?

4. How to achieve emphasis, e.g., spacing, boxing, underlining, using only capital letters, italicizing.

5. Should the right margin be justified?

C. Packaging

1. Materials selected

a. Ink

b. Paper

2. Size, shape, weight

3. Color combinations of ink (s) relative to paper

4. Binding

5. Mounting aides

6. Durability

D. Production

1. Costs

2. Method of reproduction

Definitions of many of the terms appearing in the above outline are given in Appendix B. Table 3 graphically presents certain select variations within classes of typographic features.

Previous Legibility Research

The majority of studies of typographic factors have varied one or two factors (e.g., typeface and typesize) at a time. In addition, the majority of studies of typographic features have used partially sighted children and college students as research subjects (e.g., Irwin, 1920; Royal National Institute for the Blind, 1938; Fortner, 1943; Eakin, Pratt, and McFarland, 1961; Nolan, 1961; Birch, 1966).

Extensive abstracts of hundreds of legibility-related studies are provided by Cornog and Rose (1967) and by Tinker (1963; 1965). Most of the studies apparently used college students or younger children as subjects. Age

Table 3. Graphic Descriptions of Selected Typographical Terms.

Boldness

Light abcd Medium **abcd** Demi-Bold **abcd** Bold **abcd**

Consistency of Stroke

abcdefghijk abcdefghijk

Leading (Line Spacing), in points

Hairline
½ Point
1 Point
1½ Point
2 Point
3 Point
4 Point
6 Point
8 Point
10 Point

NO LINE SPACING
The amount of space between lines is known as leading. There is no set rule to follow. Too much leading can sometimes be as bad as not enough. Type faces with

1 POINT LINE SPACING
The amount of space between lines is known as leading. There is no set rule to follow. Too much leading can sometimes be as bad as not enough. Type faces with

2 POINT LINE SPACING
The amount of space between lines is known as leading. There is no set rule to follow. Too much leading can sometimes be as bad as not enough. Type faces with

3 POINT LINE SPACING
The amount of space between lines is known as leading. There is no set rule to follow. Too much leading can sometimes be as bad as not enough. Type faces with

Letterspacing (inter-word, in ems) (intra-word, in pts.)

NO LETTERSPACING
LETTERSPACING IS THE AMOUNT

2 POINT LETTERSPACING
LETTERSPACING IS THE AM

4 POINT LETTERSPACING
LETTERSPACING IS THE

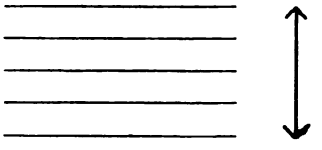
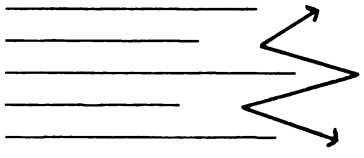
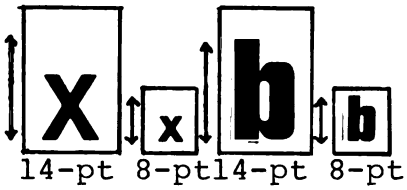
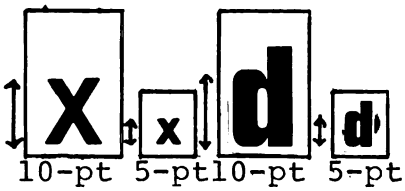
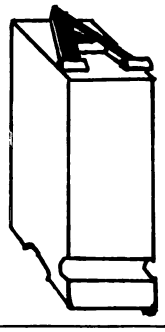
Line Width, in pica
1 pica = 12 points
1 inch = 6 picas

12

18

24

Table 3.(continued)

T E R M	CLASSES; EXAMPLES	
Right Margin	Justified 	Not Justified 
Type Family	Serif **abcdefgh**	Sans Serif **abcdefgh**
Type Size (always expressed in points; 1 point = 1/72")	In Points  14-pt 8-pt 14-pt 8-pt	In x-height  10-pt 5-pt 10-pt 5-pt
Hot Type (Used in Composition)		

Note. Figures for leading and letterspacing appear in Pocket Pal: A Graphic Arts Production Handbook. New York, N.Y.: International Paper Company, 1974. Copyright 1974 by the International Paper Company. Reprinted by permission.

Note. See Appendix B for additional, more extensive definitions of typographic terms.

was thought to be of so little relevance for the outcomes (and generalizability?) of such studies that Cornog and Rose and Tinker rarely mention it (i.e., fewer than a dozen times). Because older eyes are different and function differently from younger ones, the results of these studies may not be directly comparable to those obtained in Experiments I and II. Nonetheless, most subjects tested in Experiments I and II wore eyeglasses, thereby presumably rendering their visual functioning somewhat comparable to that of younger readers.

Cohort differences between older and more traditional (i.e., younger) research subjects may also be significant -- particularly differences originating in quantity and quality of formal education.

Some studies have concluded that when printed materials are legible for children they will also be legible for adults. Other studies have obtained different results.

> (T)he criterion of legibility should be based upon the reading of children. Type which is suitable for them will hold no difficulties for the adult, though certain modifications, such as reduction in size, may be found desirable. (Vernon, 1931, p. 165)

> There is a basic difference between adults and children (with) respect (to typesize). The adult often does need larger than average print, but the child, because he still retains powers of accomodation, can achieve adequate enlargement by bringing the print close to his eye. (Shaw, 1969, p. 64)

> (C)hildren read enough like adults so typographical arrangements having optimal legibility for adults should also be optimal for children who are about 10 years of age or older. (Tinker, 1963, p. 4)

Only a few legibility-related studies have focused on adults (Burt, 1960; Bablola, 1961; Prince, 1966; Shaw, 1969; Social Security Administration, 1972) and only three have included older readers in their samples. Two of the latter three studies (Prince, 1966; Shaw, 1969) focused on legibility for visually impaired or partially sighted adults (i.e., readers whose visual functioning has been clinically established to be quite limited). The Social Security Administration (1972) investigated subjects' typeface and typesize preferences when given a limited number of faces and sizes to compare. More will be said about these studies below.

The typography studies about to be reported differ from those by Prince, Shaw and the Social Security Administration in four ways:

1) The new studies focused exclusively on older readers.
2) Subjects were not visually impaired. About 70 percent of the population 65 and older are not visually impaired (Cohen, 1966). This is a crucial difference because, as Prince (1967) points out, "Type that is produced to criteria that theoretically should aid the efficiency of readers with subnormal vision, will frequently reduce quite drastically the performance of normal readers" (no pagination).
3) The new studies were conducted under standard

conditions and subjects were individually tested.

4) They were more naturalistic than their predecessors, This distinction is potentially important since old persons perform better when test materials are concrete (Hulicka, 1967; Arenberg, 1968); familiar (Arenberg, 1968; Howell, 1971, 1972 a,b) and meaningful (Demming and Pressey, 1957; Howell, 1971; 1972 a,b). Old persons' performance may also be enhanced because naturalistic conditions, unlike more traditional test situations, are not reminiscent of nor dependent upon earlier educational experiences. Naturalistic settings may also produce less anxiety than more traditional test conditions.

The Experts' Views

In order to learn what assumptions design professionals and old people hold about older readers and directories of services, the researchers consulted with a group of older persons and with a group of book designers, publishers, and printers. Both groups were specifically constituted for the purposes of this research. Relevant beliefs about older people's sensory, perceptual and cognitive abilities; about the availability and quality of personal and social supports available to older people; and about the relative efficiency of directories of services in performing the functions for which directories are intended were explored.[7]

The experts delimited the extremes of legibility in each stimulus class. They believed, for instance, that a minimum of 11-point typesize would be required for legibility by older readers. In addition, they described the variations within each typographic class according to presumed impact on legibility for older readers. They placed greatest emphasis on the quality of printing work and on the importance of typeface and typesize selection.

In addition, individual meetings were held with experts on impaired vision and blindness and several literature reviews were undertaken. The topics reviewed were older people's visual systems and functioning; research conducted with partially sighted adults; research on large-type publications, and other visual prostheses; and legibility, readability, perceptibility, etc.

Appearing below (see Appendix C) is a document that discusses and summarizes the conclusions of the consultations and literature reviews. The discussion document was prepared for and submitted to the Junior League by the university before empirical research was undertaken. The document was intended to guide decision making by the Junior League and Commission on the Aging in designing their directory of services for older San Franciscans. A copy of the directory which was produced taking into account many of the considerations raised in the research document is also appended (Appendix D).

Typographical Variables Selected for Study

Of all the typographic variables considered to be particularly important for legibility by design professionals and the research literature, typeface and typesize stand out as most essential (Tinker, 1963; 1965). The impact on legibility of color combinations and line widths,boldness, and spacing is also widely recognized. In the studies to be reported below, attention focused on the first four of these variables. Spacing was set aside because there are well-established conventions governing word, inter-line, and intra-word spacing differences. As with boldness, these conventions are generally stated in terms of ratios of letters per line, lines per inch, etc. Spacing, therefore, follows directly from the selection of other typographic features. Examples of these conventions will be cited below.

The fundamental importance for legibility of each of the four test variables will be described below. So also will the particular typographic variations selected for research. Suffice it to say that stimulus variations selected for Experiments I and II were chosen precisely because they are commonly available and characteristic of their respective classes. Using these criteria for stimulus selection made it possible to concentrate on the relationship of familiarity on stimulus characteristics to legibility.

Theoretical Perspective

The most obvious aid to predicting the results of the two typographic experiments to be detailed in Chapters IV and V was the theoretical perspective offered by familiarity/novelty. Only two studies[8] were identified which focused on the effects of familiarity on performance when new learning was not required. Both provide modest evidence of beneficial effects on performance of familiarity.

One of these studies (Demming and Pressey, 1957) sought to develop an intelligence test that, unlike the "I.Q." tests then in common use, would not penalize adults for their generally lower levels of formal schooling. The result was a series of multiple choice questions about subjects' "practical information, judgment, and social perception... out of the stuff of everyday living." Adults almost invariably performed better on these test items than 20 to 24 year olds -- although the latter had had much more formal educational experience. Adults' greater experience (familiarity) with the substance of the test materials presumably enhanced their test performance.

Another study that indicates that familiarity may enhance performance by older persons even when new learning is not required was conducted by Howell (1971; 1972 a,b). Older subjects performed significantly less accurately than younger ones in recognizing relatively meaningless and unfamiliar patterns and colors. While old and young subjects performed about equally well in recognizing photographs

from the 1908 Sears Roebuck Catalogue, old subjects were less accurate than younger subjects in recognizing complex (redundant)pictures of common, present day objects. Howell concluded that recognition accuracy for older people was related to meaingfulness and familiarity of the stimulus materials and that contextual complexity (redundancy) of visual stimuli affects the accuracy with which they can recognize pictures of even very familiar objects.

In addition to the results of the studies just described, the conclusions of print design research using younger adult subjects also lead one to expect that familiarity of stimulus characteristics (e.g., typeface, typesize, color, and line width) might well enhance reading performance by older readers. Of the typographic variables, only typeface has been studied with reference to familiarity. In what is "probably the first comprehensive state-of-the-art report in the field of legibility (readability) of printing types" (as judged by Cornog and Rose, 1976), Pyke (1926) concluded that the most readable of the eight typefaces he studied was probably also the most familiar: "[R]esults indicate that to some extent it was its ordinariness which helped to make Old Style the best...".

On the basis of comments elicited from his research subjects, Burt (1959) commented "that almost everyone reads most easily matter set up in the style and size to which he has become habituated" (p. 18). A year later, Burt expanded on this conclusion:

> With adult readers, ... the most powerful factor of all is habit or custom. Almost everyone prefers that kind of type-face to which he is most accustomed; and almost everyone reads with the greatest speed and the least amount of fatigue the material set in the type-face which he happens to prefer (p. 278).

Prince (1967) argues that people learn to read words as wholes at an early age. They later read most comfortably in the mode in which they were earlier taught (i.e., as far as today's elder generation is concerned, in serif). If one were taught from one's youth to read sans serif, he argued, one would perform better with sans serif typefaces in later life. Prince was so sure of his conclusion that he ended his 1967 report with the following words:

> Spartan type IS and would be better for all people if they could start and continue through life with this best form of type, but unless it is used universally, its advantages are hardly worth considering.

Support for this position was supplied by his finding that sans serif letters and syllables were more legible than serif letters. But when letters and syllables were combined into words, serif typefaces were more easily readable. Prince concludes that:

> (E)ach word forms a picture which, in older people at least, has been imprinted on the mind in conventional types over a long period of time, and the advantages of special criteria are then greatly reduced (p. 37).

While familiarity was not named in earlier research as a possible determinant of legibility for typographic variables other than typeface, the researchers conducting the studies reported below predicted that more familiar typesizes, colors and line widths -- as well as typefaces -- would be more

legible than less familiar ones. While none of the test variations was outside the realm of ordinary experience, some were presumed to be more familiar than others. Chapters IV and V will describe these assumptions in greater detail.

At the risk of emphasizing the obvious, it should be noted that the objects of the legibility research to be described below, typographic features, were only incidentally familiar to the research subjects. Attention was not drawn to typographic distinctions during the course of the research and there was no indication that any subject had paid particular (e.g., job-related) attention to typographic distinctions at earlier points in her/his lifetime.

Indexing Directory Contents

A directory of services may be organized alphabetically, by presumed degree of salience of different categories of services, by geographical areas, etc. Among ways to highlight the particular arrangement selected are to color code different sections, to tab, to layer different sections, to categorize entries in a table of contents and/or to index exhaustively. The latter two options are by far the least expensive and most commonly used methods of facilitating accurate agency selection.

The more detailed a table of contents format, the higher may be the costs to directory sponsors and consumers. Increasing the detail of directory indices may force directory sponsors to abbreviate or omit other content; to

use smaller typesizes, closer spacing, or narrower margins; or to sacrifice none of these, thereby increasing production cost. For some consumers, more detailed indices could increase the possibility of longer search times or decrease accuracy of agency selection.

The question initially posed in Experiment III was "How extensive does a table of contents need to be to foster optimal use of a directory of services by older persons?" A corollary question which emerged after data collection was completed may be stated as follows: "How explicit (i.e., specific versus generic) should a table of contents label be to facilitate optimal use of a directory of services by older persons?"

No gerontological literature exists on these subjects.[9]

Chapter III

Research Methodology,

In Brief

C H A P T E R I I I

The three experiments conducted for this study concerned the design of printed reference materials for older readers. The advantages and limitations of decisions made in designing and carrying out these experiments will be described in this chapter. Succeeding chapters will describe the procedures and results of individual experiments more fully.

Subjects were presented with a series of 30 questions (test items) posed by older people or their caretakers of information and referral systems. Some of the test items (#6-20) were printed in different combinations of typeface and typesize (Experiment I) or color and line width (Experiment II). Subjects read each of the test items twice aloud. Reading time was recorded. The content of all 30 test items was used as the basis of Experiment III, in which subjects were required to use three distinctly different indices in order to access a directory of services to find the help or information called for by each test item.

Each experiment used a counterbalanced design (Campbell and Stanley, 1963). Thirty-six residents of San Francisco, all of whom were 65 or older, participated in each of the three experiments.

The Focus of Study

Chapter II explained why a particular directory of services was the focus of research. There is reason to

think that some subjects may have been somewhat familiar with the contents of the test directory. First, most older participants in the study had lived in San Francisco many years and may have been familiar with the general community context and the likely range of services available in the city. They were probably at least somewhat familiar with the kinds of services and even the specific agencies involved in testing. Thus they may have had prior knowledge that helped fill in gaps which would exist among newer residents seeking services in San Francisco. Second, subjects tapped for Experiments I, II, and III were not as network-naive as had been hoped before subject recruiting began. Because recruiting proved to be more difficult than anticipated, subjects were eventually recruited from aging-related organizations. Their aging-related knowledge and experience may have helped their performance in all three experiments -- in the first and second by facilitating word recognition and in the third by increasing speed and accuracy of directory search.

At the risk of overstating the obvious, the selection of directories of services as the object of study in the research to be reported below may correctly be interpreted as implying that subject characteristics were not the object of the study -- the materials themselves were. Because the research focus was on the design of printed materials rather than on subject characteristics and because each of the three experiments used a counterbalanced design,

subject characteristics (e.g., visual acuity, reading habits) could legitimately be diverse and were not recorded.

Participant Selection

Participants in all three experiments were 36 literate 65+ residents of San Francisco County. The age distribution of participants in this research matched the age distribution of all 65+ Americans in 1970: one-third were 65-69 (n = 12); one-fourth were 70-74 (n = 9); 17% were 75-79 and 80-84 (n = 6 each); and 8% were 85+ (n = 3).

The only major difficulty encountered in conducting the research was subject recruitment. Although not necessary to the research design, initial plans called for recruiting typical community residents who were relatively unfamiliar with aging-related agencies. It turned out to be extremely difficult to recruit older persons who were not affiliated with aging-related organizations. A decision, therefore, was made half way through the testing period to accept as subjects San Franciscans 65 and older who were members of aging-related organizations. Consequently, about half of the subjects were members of a Retired Senior Volunteer Program or a senior center.[10]

The earliest recruits for this research were referred to the experimenters by acquaintances of the experimenter. Organization-affiliated participants were recruited by the experimenters from a list of possible volunteers provided by organization directors. All research participants were

contacted by telephone; none was recruited by organization personnel.

Subjects were asked by phone and by letter to bring and to use any optical devices they normally used for reading at home. No subjects used any such devices other than eye glasses.

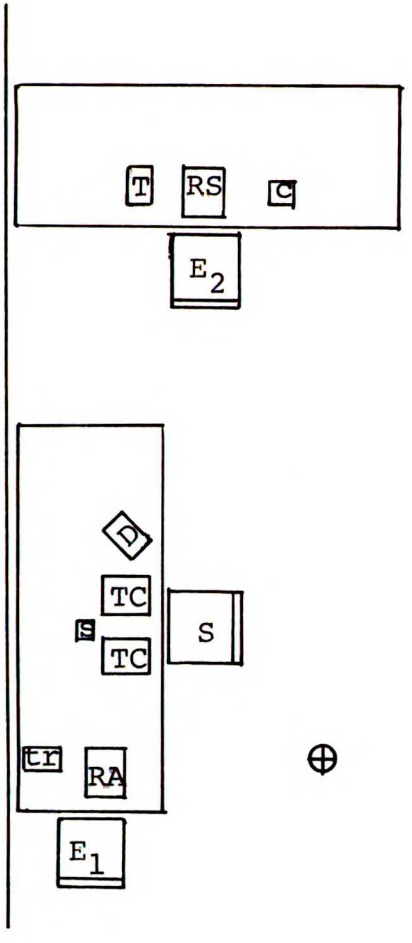
Testing Conditions

Location. All testing took place in an isolated quiet room on the top floor of the downtown YMCA in San Francisco. The "Y" was familiar to and convenient for participants.

Room Arrangement. Semi-fixed features involved in testing were arranged as shown in Figure 13. No other furniture was present. Windows were totally covered by dark (light absorbing) India Prints.

Illumination. Level of illumination affects legibility of print (Tinker, 1963). For older readers, the importance of adequate illumination may be even greater than for younger readers (Prince, 1967). For the purposes of the research described here, illumination had to be adequate and constant. Therefore, illumination, as it impinged on the surface of the test materials, was standardized at the approximate levels which characterize most residences: 25-30 foot candles (Bablola, 1961; Tinker, 1963; Illuminating Engineering Society, 1966). A GE DW69 spot light meter was used to monitor output from two 150 watt bulbs mounted with rheostats on a pole lamp behind and above the shoulder of

Figure 13. Room Arrangement for Experiments I, II, and III.



LEGEND:

People

S = Subject

E_1 = First Experimenter E_2 = Second Experimenter

Objects

TC = Table of Contents (2 pages) c = Clock

D = Directory s = Test Item

T = Timer TR = Tape Recorder

RS = Record of Speed RA = Record of Accuracy

⊕ = Source of Illumination

each subject.

The Choice of Counterbalanced Designs

Counterbalanced designs are especially useful because they effectively control for such threats to internal validity as initial group differences, practice effects, and testing "history" (Campbell and Stanley, 1963). The external validity of studies based on counterbalanced designs may suffer from the negative effects of repeated measurements on the same subjects. The broader the subject selection criteria and the more naturalistic the study, however, the less likely is this occurrence.

Experiment I used a Latin Square design. In its classic form, a large enough number of subjects is recruited to permit presentation of variations on treatments to each subject in an order which is fully counterbalanced by the orders of presentation of treatments to other subjects. One virtue of the Latin Square design not noted above is that fewer subjects are required in order to discriminate test condition differences because each research participant appears in every treatment condition (if not every possible combination of treatment variations); each subject is her/his own control.

In Experiment I, each of the three age balanced groups of 12 subjects each within groups was assigned randomly to one of three sequences of typeface - typesize presentations. Each subject, therefore, was exposed to each of the three

test typefaces and the three test typesizes -- but in different orders and combinations.

In Experiment II, subjects were randomly assigned to one of 36 counterbalanced, mutually exclusive sequences of experimental variations of colors (three) and line widths (two). All subjects read each of six identically worded test items in the same order, but each test item had been printed in six possible color - line width combinations so that orders of presentation of color and line width pairings could be counterbalanced.

A counterbalanced design was also used in Experiment III. Three forms of indexing systems (major headings only [n = 12 entries]; major and minor subheadings [n = 33]; and subheadings only [n = 66]) were used by each participant for each of ten test trials. The indexes were presented in one of six possible orders: short (S), medium (M), long (L); S,L,M; M,S,L; M,L,S; L,S,M; L,M,S.

More complete explanations of the research designs of Experiments I, II, and III will be presented in the following three chapters where the results of each experiment will also be presented.

Selection of Test Items

Test items selected for use in this research were paraphrased from requests made of information and referral systems for information and help by older persons or their caretakers. They were chosen for diversity of content

so that many parts of the test directory would have to be accessed for the purposes of Experiment III. The thirty test items selected for use appear in Appendix E.

Dependent Variables

The dependent variables considered most appropriate for all three experiments were speed and accuracy. Speed of reading is by far the most valid (Tinker, 1944) and most widely used (Tinker, 1963) criterion variable in typography experiments.

> Speed-of-reading performance in continuous text or in special reading situations has been adopted by most researchers as a criterion of legibility. In general, we want to know the typographic factors influencing speed and ease of reading. Other things being equal, a typography that is read faster than another should be easier to read.
>
> Certain pitfalls must be avoided when the reading performance method is employed to measure legibility. a. The reading material must be uncomplicated by comprehension difficulties. b. Sets of reading materials employed in comparisons must be of equal difficulty. c. Enough reading material and sufficient number of readers must be used to establish beyond question the accuracy of the findings. d. There must be an adequate check on comprehension. "Reading" without understanding is not reading. e. Actual printing practice must be duplicated. Photographic enlargements or reductions .. are not satisfactory in studying variations in size of type, line width, etc. f. Approved statistical methods of analyzing results are essential. (Tinker, 1963, p. 22)

Reading speed is also important in assessing the relative efficiency of various indexes to directories of services -- particularly because services directories are used primarily in times of crisis. When stress is high and time spent in the process of seeking help may be considered "wasted" time,

directory search time may be highly valued.

Reading accuracy is also important, particularly when the materials being read are intended to inform, refer, or direct the reader. Reading errors may be of two kinds: errors of omission or errors of commission. For reasons which are described at greater length in Appendix F, accuracy was dropped as a criterion variable for Experiments I and II.

To test the efficiency and effectiveness of three kinds of indices to the test directory of services (Experiment III), both speed of search and accuracy of agency identification were measured.

Scheduling of the Three Experiments

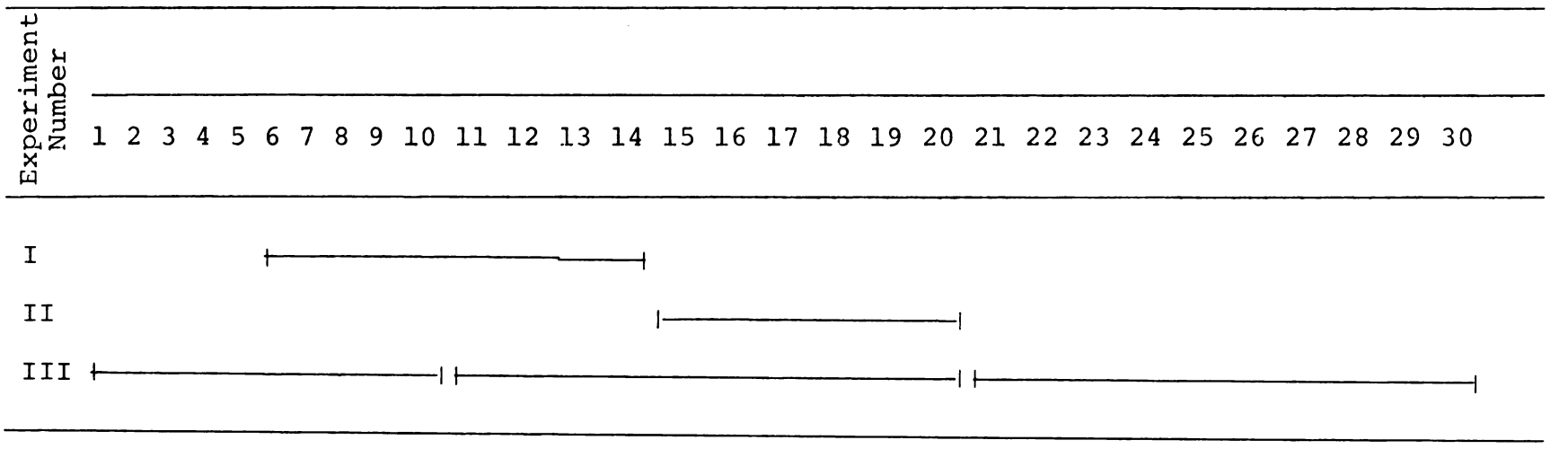
As shown in Table 4, Experiment III began with the presentation of the first test item and ended with the selection of an agency suitable for providing the help or information required in response to the last (i.e., thirtieth) test item.

Experiment I began with the reading of test item six and continued through the reading of test item 14.

Experiment II began with the reading of test item 15 and continued through the reading of test item 20.

No attention was drawn to the beginnings nor the endings of Experiments I or II. In fact, it is not at all apparent that subjects recognized differences between the typographic features of test items 6 - 20. Undoubtedly, this

Table 4. Schedule followed in research on legibility of print and indexing of printed reference materials intended for use by older readers. Schedule shown was replicated for each individual participant in the research.



unobtrusiveness of the experimental design was facilitated by their having to focus on the content of each test item in order to be able to meet the performance requirements of Experiment III.

It is possible that the sequencing of the three experiments introduced some bias. Speed of reading in Experiment II in particular may have been affected to some extent by previous participation in Experiment I. For some subjects, increasing ease with practice in the experimental situation may have accelerated reading speed or fatigue may have delayed it. In any case, since the research focus is on the comparison between conditions and since Experiment II followed Experiment I in all cases, this is of no particular concern here.

Testing Procedures

Subjects were individually tested in the presence of two experimenters -- the same two experimenters for all subjects.

Subjects were introduced to both experimenters. Then, while the subject read and signed the Committee on Human Subjects' release form, experimenter$_2$ prepared to time performance and experimenter$_1$ disassembled a previously compiled packet of testing materials appropriate for subjects' randomly assigned treatment group.

Experimenter$_1$ then read instructions to each subject, out loud. Summarized, the instructions explained that:

1. The study was about reference materials intended for use by older people -- not about the subjects themselves.
2. Subjects should wear their eyeglasses if they normally wore corrective lenses for reading at home.
3. Subjects should read each paragraph twice aloud; pick a category on the table of contents before them; and look in the test directory under that heading for an agency which could help with or provide information to answer each question previously read.
4. They should ask any questions before beginning or after testing -- not during testing.
5. They should recognize how helpful the results of their participation in this research might prove to be.

The complete text of the instructions appears in Appendix G.

Testing continued without interruption until an agency was selected in conjunction with test item #30. Total testing times ranged from about 70 minutes to almost 100 minutes, averaging about 80 minutes.

The Recording of Data

One of the two experimenters (experimenter$_1$) had a form on which to enter each agency selection made and any

additional comments the subject might volunteer. The second experimenter recorded the time elapsed in reading each test item and in searching the test directory for agencies to provide the help or information called for by each test item.

Tape recordings were made of each session so that any flaws or ambiguities in manual data recording could be retraced and evaluated.

The Three Experiments, Summarized

The independent variables of Experiment I were typeface and typesize. The dependent variable was reading speed. Chapter IV will elaborate on the procedures and results of Experiment I.

The independent variables of Experiment II were ink-to-paper color and line width. The dependent variable was the same as in Experiment I. Further discussion of Experiment II will be presented in Chapter V.

The independent variables of Experiment III were the number of entries on indices to a directory of services and the appropriateness of the particular category labels which appeared on each test index. The dependent variables were speed and accuracy of agency identification. Attention will be focused on Experiment III in Chapter VI.

Chapter IV

Experiment I:

Typeface and Typesize

C H A P T E R I V

Experiment I was designed to assess the relative legibility of three commonly used typefaces and three commonly used typesizes. Other stimulus characteristics were controlled. In the Latin Square design used, three groups of twelve subjects each read presumably meaningful paragraphs printed in each of three mutually exclusive combinations of typeface and typesize.

The Independent Variables

Typeface. Typeface refers to the purposive design features of whole sets of alphabetic and numeric characters. Among features that distinguish typefaces from one another are serif, complexity, thickness of stroke, modernity, form, and x-height. (See Table 2 and Appendix B.) The serif is believed to have developed as a product of the techniques required by brush writing -- not in order to enhance legibility. Serif are as old as Roman inscriptions (i.e., about 100 AD) (Catich, 1968). Serif type was introduced about 1830 (Robinson, Abbamonte and Evans, 1971). Tinker noted in 1963 that editors, advertisers, and publishers seemed to believe that typeface was much more important than other typographical features. Perhaps that explains why Tinker also found that as of 1963 studies of typeface outnumbered all other kinds of typography studies combined (Tinker, 1963). A review of the more current

literature suggests that this continues to be true.

Some legibility-related studies focused on the design of individual letters and numerals. Others focused on continuous text. The first group relied on measures of perceptibility, visibility and recognizability. The second group monitored reading speed, eye movements and blink rate. On occasion, subjects were asked to estimate relative legibility, from a subjective perspective. On other occasions, subjects were asked to number test paragraphs in order of relative "pleasingness," again subjectively defined. Only one researcher (Tinker) and his colleagues have repeatedly controlled for comprehension of print in their researches.

The major conclusions of such studies -- without reference to age -- may be summarized as follows:

1. Different research techniques yield different judgments of relative legibility (Tinker, 1944).
2. Many typefaces in common use do not differ significantly in legibility (Pyke, 1926; Paterson and Tinker, 1932).

   It seems safe to assume that currently used typefaces, all printed in the same point size, leading, line width, and paper stock, would be read with approximately the same speed (be equally legible) but that readers would rate some to be more legible than others (Tinker, 1965, p. 134).
3. Several typeface design features other than presence or absence of serif affect legibility of

print: boldness, case (upper vs. lower), inclination (Roman vs. italic), etc.

As described in Chapter II, Shaw's (1969) partially sighted adult subjects read continuous text in a serif (Plantin) and a sans serif (Gill Sans) typeface. Results indicated that differences in legibility between the two typefaces had less effect on legibility than did typesize and weight (boldness). On those occasions when typeface did affect legibility, legibility was greater with the sans serif typeface.

Prince (1967), on the other hand, found that a sans serif typeface (Spartan) was more legible than a serif typeface (Baskerville) for partially sighted adult readers asked to identify single letters. When letters were combined into words, however, serif face enhanced legibility.

For the reasons noted in Chapter II (e.g., they focused on legibility for partially sighted adults), these studies are not directly comparable to the ones presented below. Nonetheless, because few studies exist on legibility of print for normally sighted or partially sighted adults, it was decided to summarize all such studies.

Another recent investigation merits attention in connection with the study to be reported in this chapter. In 1972, the Social Security Administration queried 529 aged and disabled (younger) welfare recipients residing in ten cities about the adequacy of a Title XX-related leaflet and check stuffer. The research focused primarily on the

content and wording of these publications. In addition, the subjects were asked to complete a brief questionnaire regarding typeface preference. Subjects found Times Roman to be somewhat more easily readable than News Gothic.

Experiment I. The three variations in typeface selected for study in Experiment I were recommended by the design experts who were consultants for this study. Their recommendations were not empirically based. Century Schoolbook (a "transition" face) and Bookman (a square serif) were selected by the experts as commonly available, commonly used, and representative of other serif faces. For similar reasons, Helvetica was thought to be the best example of sans serif typefaces. Examples of each of the test typefaces are presented in Figure 14.

The design experts predicted that serif faces would prove to be more legible than sans serif faces. This prediction was made on the assumptions that older people learned to read with serif and that most continuous text is printed with serif. Sans serif tends to be used only for emphasis. The designers spontaneously noted that familiarity with serif should benefit legibility of print.

Century Schoolbook was the first of the three test typefaces to be invented (c. 1894) and was thought by the design experts to be the most commonly used of the test typefaces. Helvetica was the last (a 20th century invention) and is probably least frequently used in continuous copy. Unfortunately, no information on actual incidence of

Figure 14. Typefaces Used for Testing in Experiment I: a) Bookman; b) Century Schoolbook; and c) Helvetica, all shown in 10-point typesize, tops removed.

a

I've got to have this prescription filled, but the druggist says they won't accept out-of-state prescriptions. What am I to do?

b

I've got to have this prescription filled, but the druggist says they won't accept out-of-state prescriptions. What am I to do?

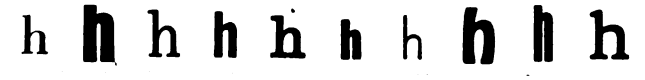
c

I've got to have this prescription filled, but the druggist says they won't accept out-of-state prescriptions. What am I to do?

use of various typefaces is available.

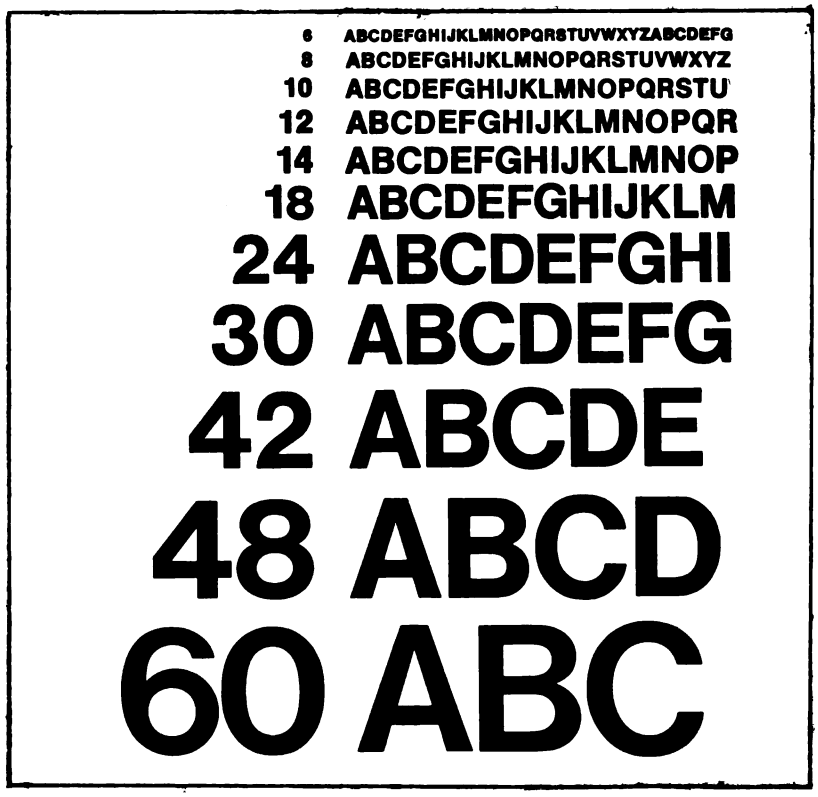
Should the sans serif test face prove to be superior to the serif face, one could argue that either the novelty of the sans serif face facilitated performance or that its less cluttered appearance facilitated performance. Should the legibility of serif faces exceed that of sans serif faces, one could argue that familiarity facilitated performance and/or that the serif actually added additional legibility-related cues for the reader.

Typesize. Typesize is defined as the height of the body on which each letter or numeral in a font of type is cast. Typesize is measured in "points" (1 point = approximately 1/72 of an inch) or in "x-height" -- the height, in points, of the lower case "x" in any typeface. An example of range of typesizes from 6 to 60 points in a given typeface appears as Figure 15. A single letter printed in two typefaces but one typesize may look dramatically different in size and form when the two are compared. For example, the following are all 24-point, lower case "h's:"



It will be recalled from Table 3 that typesize refers to the height of the metal body on which the raised letter or numeral appears -- not to the height of the letter or numeral itself. Leading (space above and below the letter or numeral which when set solid in continuous text provides inter-line spacing) and face height combined constitute point size.

Figure 15. Eleven Typesizes of Helvetica Medium, in points.



The effects of typesize on legibility have been studied repeatedly. One early research concluded that typesize might be the most important factor in legibility (Huey, 1908). Other researchers insist that the effect of relative type-size on legibility is best examined in conjunction with variations in leading and line width (Chapanis, 1949; Tinker, 1963; 1965) -- not in isolation.

The techniques used in studies of typesize are the same as those used in investigations of typeface.

The broad generalizations which emerge from existing age non-specific researches are:

1. Subjects read 9-, 10-, 11-, and 12-point typesizes faster than smaller and larger typesizes; 11-point is judged to be more legible than larger and smaller typesizes by the readers themselves (Tinker, 1963);
2. A particular typesize will be more legible when appropriate spacing is used. There are spacing-related conventions to follow. (See Appendix H.)

Two studies tested partially sighted adult readers to determine optimal typesize. Shaw (1969) tested each subject with threshold point-size and that typesize two points lower than threshold. ("Threshold" was determined in ways not fully described in Shaw's report. Visual acuity was also determined, using standard techniques.) Prince (1967) compared 14- and 18- point typesizes. Both experimenters concluded that larger-than-normal typesizes were optimal for

their subjects, but that enlargement beyond an identifiable point-size (unique to each reader) did not enhance legibility of print.

A few words about the use and success of large print publications are in order. Large print books were being published as early as the 1880's (Cohn, 1886), the publisher's market for such editions having been traditionally promoted by school teachers. Adults were neither considered as potential consumers of large print publications nor as prime targets for low vision research.

Publishers were further discouraged from marketing large print books for adults because medical opinion for years favored sparing the residual sight of the partially blind. It also was considered prohibitively costly to publish large print books for such a relatively small market (Shaw, 1969). It was not until 1965 that the first commercially available volume in large print was published in this country, an 18-point reprint edition of Profiles in Courage (Hagle, 1967).

A few pertinent surveys of the use of large print by older readers have been conducted. A Xerox Corporation research study (Gartner, 1968), for instance, concluded:

> ...(I)t is likely that the number of Americans over 65 who should have large type reading matter is 1.1 million. However, considering all of those who might find large type more convenient, if not absolutely necessary, the number of elderly who would enjoy reading large type materials may range up to 10 million. This larger group includes persons with so called 'tired eyes.' A large number of people under 65 also fit this

category. (p. 233)

A survey of the readership of the New York Times Large Type Weekly revealed that individual copies of the Weekly were read an average of 2.5 times and that the primary readership was composed of older people. The Reader's Digest Large Type Edition (Gartner, 1967) claims that more than 90% of its readers are 65 or older. The Social Security Administration (1972) found that panels of aged and disabled (younger) welfare recipients "preferred" larger typesizes when the range was 10- to 12-points, and when the test typesizes were leaded one point greater than the test typesize.

Experiment I. The panel of design professionals consulted for Experiments I and II believed 11-point type to be the "minimally easily readable" typesize for older readers. Ten-, 12-, and 14-point typesizes were selected for testing in Experiment I because the experts believed them to range from "minimally acceptable" to "probably easily readable." Examples of each appear as Figure 16.

While no attempt was made to determine which criteria the design experts were using to predict which typesizes would be easier for older persons to read, familiarity was spontaneously mentioned by them as one criterion. Other relevant considerations mentioned by the experts stemmed from their assumptions about normal eye function and aging-related changes in vision. Larger typesizes, they said, would project larger images on the retina and, therefore,

Figure 16. Typesizes used for Testing in Experiment I: a) 10-point; b) 12-point; and c) 14-point, all shown in Bookman typeface, tops removed.

a

I've got to have this prescription filled, but the druggist says they won't accept out-of-state prescriptions. What am I to do?

b

I've got to have this prescription filled, but the druggist says they won't accept out-of-state prescriptions. What am I to do?

c

I've got to have this prescription filled, but the druggist says they won't accept out-of-state prescriptions. What am I to do?

would provide more information to the brain -- thereby presumably promoting legibility. Research bears out this assumption: Not only does less of the visual stimulus reach the retina in later life but also, as shown in Chapter I, it is frequently distorted in form, hue, intensity and saturation.

On the other hand it can be argued that although it would be projecting a smaller image to the retina, the samllest of the test typesizes should be the most familiar to readers of all ages since most newspapers and many magazines and books are printed in 10-point or smaller typesizes. As shown in Table 5, most older people manage to read newspapers, magazines, and books, at least once in awhile. This suggests that most old people can read materials printed in 8- to 10-point typesizes.

If familiarity is chosen as the predictor, Experiment I results should indicate better performance with the smaller of the test typesizes and with serif. If, however, visual functioning is chosen as the predictor, results should indicate better performance with larger typesizes. It is not clear whether serif would enhance or attenuate visual functioning.

Table 5. Frequency of Response of Population 65 and Older to the Questions: "Do you ever spend time reading newspapers? magazines? books?", in percent.

Demographic Category		Type of Reading Matter		
		Newspapers	Magazines	Books
Age	65 - 69	91	70	62
	70 - 79	86	67	57
	80+	79	58	47
Income Level	Less than $3000	76	49	46
	$3000-7000	89	68	56
	$7000-15000	95	81	67
	$15000+	97	80	80
Formal Educational Level Attained	High School	82	55	46
	High School + Some College	95	85	72
	College Graduate	97	92	92

Note. From Louis Harris and Associates, Inc. The Myth and Reality of Aging in America. Washington, D.C.: The National Council on the Aging, 1975. Copyright 1975 by The National Council on the Aging. Reprinted by permission.

Method

Subjects and testing conditions for Experiment I were described in Chapter III.

Test Materials. Test Items ranged in length from eight to 53 words (total n = 256; $\bar{X}$ = 28.4 per test item). Each was typeset on matte surface cards (Eagle A Antique Bright White Satin Sub 80). All items were "normally spaced" and no words were hyphenated. All were leaded two points greater than the point size of the test typesize. Line width was approximately 24 pica (i.e., 4 inches), variations being due to the fact that the right margin was not justified (in order to avoid hyphenation). Each test item was entered on a 36 pica-wide (i.e., 6 inches-wide) card. Upper and lower margins exceeded the dimensions of the copy by one inch.

Test Items were printed in each of three typefaces (Bookman, Century Schoolbook, and Helvetica) and three typesizes (10-, 12-, and 14-point). All were printed in black on white.

Packets of test materials were prepared in advance of testing for use by subjects in each of three test groups (designated A, B and C). Assignment to the groups predetermined which combination of typefaces and typesizes a given subject would read. Subjects initially were assigned to groups by a combination of the random number scheme (Table 6) and an age quota system. Each group was allowed four 65-69 year olds, three 70-74 year olds, two 75-79 year olds, two 80-84 year olds, and 1 85+ year old. For instance, an 85+

Table 6. Subject Assignment to Groups for Experiment I: Typeface x Typesize.

Order of Testing	Group Assignment	Order of Testing	Group Assignment
1	C	19	C
2	A	20	C
3	A	21	C
4	B	22	A
5	A	23	A
6	B	24	C
7	B	25	C
8	C	26	C
9	B	27	B
10	C	28	B
11	B	29	A
12	C	20	A
13	B	31	B
14	C	32	A
15	A	33	A
16	B	34	B
17	A	35	A
18	C	36	B

year old might have been assigned to Group A by the random number scheme, but if another 85+ year old was already in A, the new 85+ year old would be assigned to the next test group in Table 6 not yet having its quota of 85+ year olds met.

Research Design. A counterbalanced design, shown in Table 7 was used thus tending to minimize error variance. Twelve subjects read three test items (TIs) in each of three combinations of typefaces and typesizes. Group A read TI 6-8 in 10-point Bookman; TI 9-11 in Century Schoolbook, 12-point; and TI 12-14 in 14-point Helvetica. Group B read TI 6-8 in Helvetica-12; TI 9-11 in Bookman-14; and TI 12-14 in Century Schoolbook-10. Group C read TI 6-8 in Century Schoolbook-14; TI 9-11 in Helvetica-10; and TI 12-14 in Bookman-12.

Experiment I was preceded by the reading of instructions which emphasized Experiment III tasks and minimized legibility-related considerations (Appendix G). Five practice test items followed the reading of instructions. The first four were presented in 12-point Century Schoolbook (black on white). The fifth was presented in one of the other test combinations of typeface by typesize (black on white), randomly assigned.

Performance Measure. Each subject read each test item aloud twice. Speed of reading and reading accuracy were recorded. For reasons which are described in Appendix F, error performance was later dropped as a dependent variable

Table 7. The Research Design: Experiment I: Typeface x Typesize. Subscripts Indicate Order of Presentation, by Groups.

Point Sizes of Type	TYPEFACES		
	Bookman	Century Schoolbook	Helvetica
10	A_1	B_3	C_2
12	C_3	A_2	B_1
14	B_2	C_1	A_3

in Experiment I. Time scores were calculated as:

$$\log \frac{(\text{time}_1 + \text{time}_2)}{n}$$

where time_1 = time taken to read aloud a given test item on the first reading

time_2 = time taken to read aloud a given test item on the second reading

n = number of words per that particular test item.

Several factors require justification:

1. TIs were read twice each for three reasons. The primary reason why two readings of each TI were required had more to do with Experiment III than with Experiment I -- namely, that directory search time should not be increased by time taken to achieve understanding of each TI. Second, it was thought that requiring two readings would increase the stability of the time measure. Third, it was thought that subjects might correct errors made during the first reading on the second occasion, thereby contributing to the stabilization of the accuracy criterion of legibility.
2. Reading aloud permitted the researchers to simultaneously obtain written and taperecorded records of reading performance. In other words, a degree of artificiality was achieved for the sake of

accuracy of recording performance.

3. By dividing reading time by the number of words in the particular test item read, the researchers standardized the performance measure for test item length.
4. Since repeated experience has indicated that performance times in a variety of tasks are not consistently normally distributed, it was thought advisable to transform the raw time measures for the purposes of standardizing the distribution. The commonly used logarithmic transformation was considered adequate for these purposes.

In order to provide a more reliable data base, each subject read three test items in the same combination of typesize and typeface. Since the researchers were not interested in the replications themselves, time scores per subject per experimental condition were averaged and used as the unit of analysis.

Procedure. The instructions which researchers read to subjects drew no particular attention to the kinds of typographic differences which subjects would encounter in Experiment I. Furthermore, test item #5 (which immediately preceded Experiment I) differed in typeface and typesize from test items #1-4. Because subjects gave no indication that the typographic changes introduced with Item #5 unsettled them in the least, it can probably be safely assumed that their reading performance did genuinely reflect

legibility differences.

Results

As shown in Table 8, a significant main effect of the variable typesize ($p < .05$) was obtained by analysis of variance. Larger typesizes were more legible than smaller ones, as shown in Table 9. A complex interaction relationship between the variables typeface and typesize ($p < .001$) was also obtained. These findings will be discussed in Chapter VII.

Table 8. Analysis of Variance of Reading Speed for Experiment I: Typeface x Typesize

Source of Variance	Sum of Squares	df	Mean Square	F
Total	0.76742	107		
Between	0.58573	35		
Groups	0.04186	2	0.020929	1.26986
$Error_b$	0.54389	33	0.01648	
Within	0.18167	72		
Face	0.00379	2	0.00190	0.97806
Size	0.01378	2	0.00689	3.55613 *
Face x Size	0.12788	2	0.00194	9.34761 **
$Error_w$		66		

*p <.05

**p <.001

Table 9. Mean Reading Times across Conditions of Experiment I: Typeface by Typesize, in seconds.

Size	Typeface			$\bar{X}_{size}$
	Bookman	Century Schoolbook	Helvetica	
10-point	86.75	74.34	78.25	79.78
12-point	70.16	83.02	80.23	77.80
14 point	79.75	70.42	73.61	74.59
$\bar{X}_{typeface}$	78.89	75.93	77.36	77.39

Chapter V

Experiment II:

Color and Line Width

C H A P T E R V

Experiment II investigated the effects of three color combinations and two line widths on legibility. Six test items, each of which exceeded thirty words in length, were read aloud twice. Reading time was averaged over both readings and for number of words per test item. Of the aging-related changes in visual functioning which were listed in Chapter I, change in color perception is quite common. One question posed in Experiment II had to do with the effects of stimulus color variations on legibility of print.

The Independent Variables

Color. The effects of color on legibility of print may be investigated by measuring how reading performance varies with differences in ink or paper colors. Possible comparisons include white vs. tinted paper under normal light; white versus tinted paper under colored light; black ink versus inks of other colors.

Little research has been devoted to the effects of color on legibility of continous reading materials. Most research has compared legibility of conventional black on white (B/W) to the nonconventional white on black (W/B). Paterson and Tinker (1931) and Starch (1923) used speed of reading to determine which of these two combinations was more legible.

Taylor (1934) used eye movements for the same purpose. All concluded that B/W was more legible than W/B.

In addition to studies of the effects of B/W and W/B on legibility of continuous reading materials, Tinker (1963; 1965) reviews some studies focused on the perceptibility of single letters in B/W and W/B. With the exception of the earliest of the studies cited (Kirschmann, 1908), B/W was shown to be more perceptible than W/B (Taylor, 1934; Holmes, 1931).

Dark inks on light color papers are generally legible when typesize is sufficiently large (i.e., larger than 10-point) (Tinker, 1965). Black on white and black on yellow (B/Y) seem to provide optimal legibility (Tinker and Paterson, 1931; Hackman and Tinker, 1957).

One study not cited by Tinker may be more relevant for the purposes of Experiment II, reported below, than those just cited. Bablola (1961) simulated glare and corneal opacity among 50 normally sighted, presumably young, subjects (the lecturers, students and laboratory technicians in his laboratory). After correcting for visual acuity, he added simulating devices to each subject's corrective lenses. Bablola then asked subjects to monitor Landolt rings which he gradually enlarged until the locations of the gaps in the rings were identified. Not only did subjects recognize W/B faster than B/W, but they also indicated a preference for W/B. While the conclusions of Bablola's study may not be valid (because the research design is multiply flawed),

his is the only study which has assessed the effects of color differences in a legibility-like test situation for subjects with visual disabilities characteristic of old age.

Brightness contrast (vs. color contrast) is the single most important contributor to differences in legibility arising from color differences between print and background (Griffing and Franz, 1896; Tinker and Paterson, 1931; Chapanis, Garner, and Morgan, 1949).

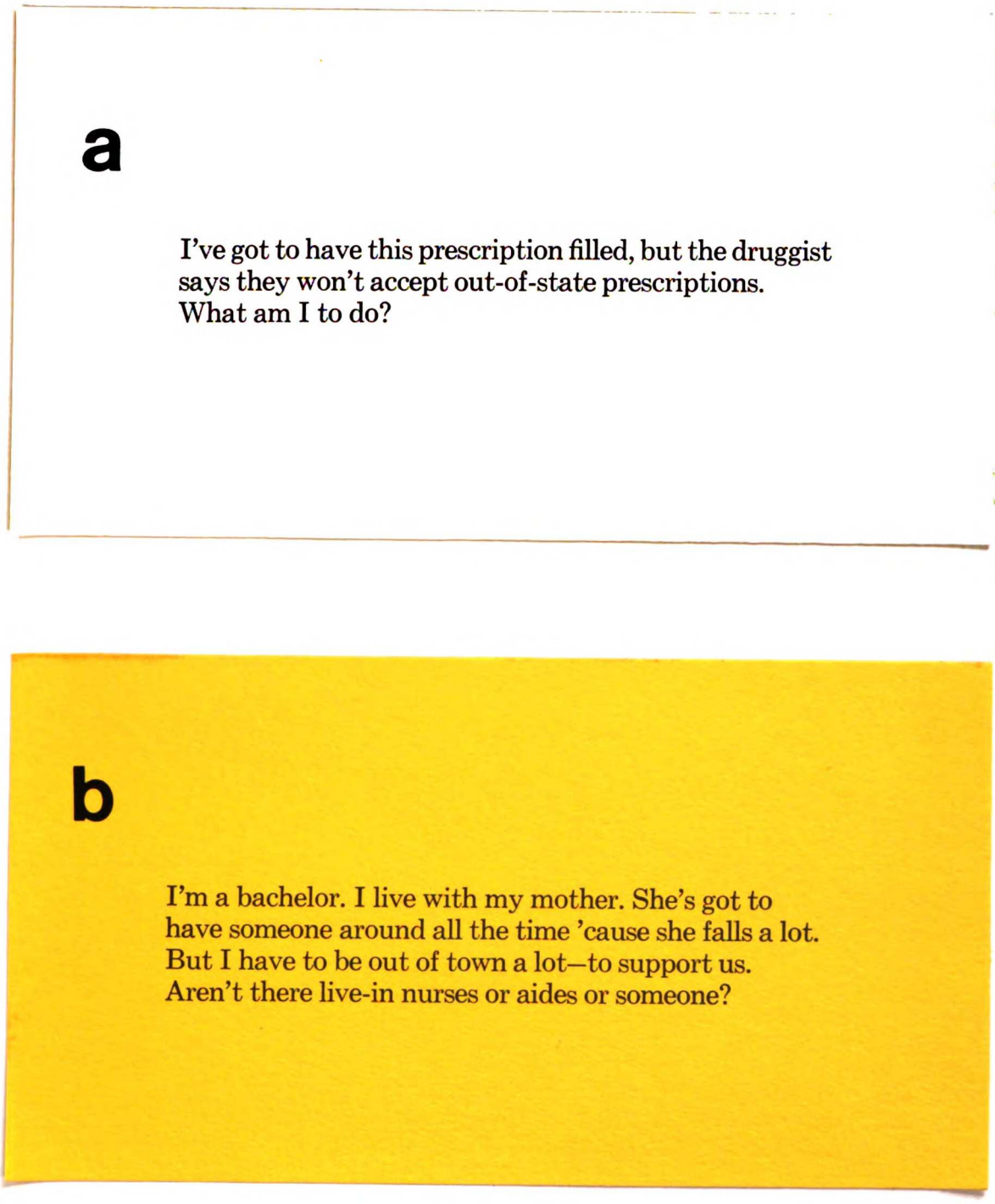
None of the research cited above involved older subjects. It is possible that the results of these studies would not prove to be valid for older readers since older people are visually functionally different from younger ones and since old people may be less familiar with color diversity in the print medium than younger ones.

Color perception by older people has received little research attention. As noted in Chapter II, the need for adequate time to adapt to light and for adequate illumination is greater under all circumstances for older persons -- not just for reading. Moreover, no matter how great the compensation, retinal illumination never reaches the same levels for older persons as for younger ones (Fankhauser and Schmidt, 1957). All colors tend to fade with age (Gilbert, 1957; Dalderup and Fredericks, 1969; Pastalan, 1975). Shorter wave lengths become particularly imperceptible with age (Chapanis, 1950; Gilbert, 1957).

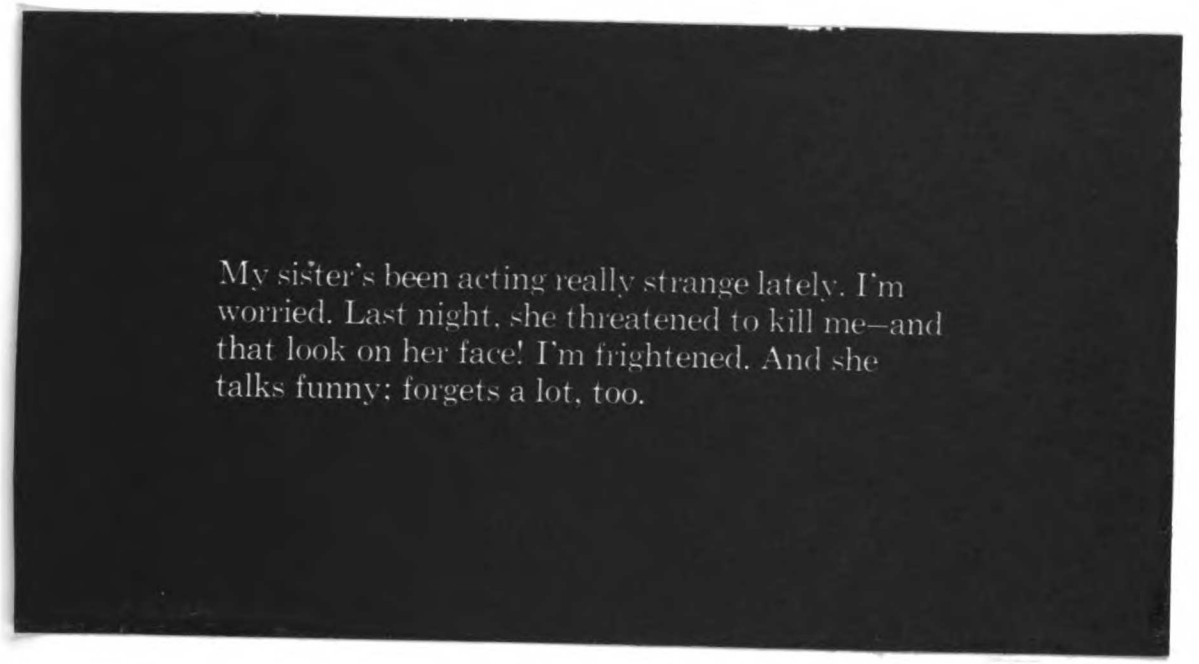
Experiment II. Examples of each of the test color combinations appear as Figure 17. B/W was selected for study in Experiment II because it is the most common -- and, therefore, presumably the most familiar -- ink-to-paper color combination. B/Y was included in Experiment II because existing information on the coloration of lens and fluids in the older eye would lead one to expect that B/Y might be even more legible than B/W were only physiological predictors considered. W/B was included for study in Experiment II because it was thought that this color combination would be least familiar of all possible color combinations to an older audience. W/B was selected for study for a second reason as well -- because low vision experts with whom the researchers consulted reported greater legibility with W/B than B/W among partially sighted persons of all ages. They could not, however, identify published research to support this observation.

Line Width. Line width is of potential significance for the legibility of print for older readers for at least two reasons. First, columns of continuous print which are too narrow or too wide may cause eye muscle fatigue. Second, narrow columns of continuous copy may require excessive hyphenation while wide columns may cause difficulties in retrieving one's place line after line. Neither is desirable, particularly for older readers since such features of printed publications may cause frustration or exacerbate existing memory problems.

Figure 17. Ink-to-Paper Color Combinations used for Testing in Experiment II: a) Black on White; b) Black on Yellow; and c) White on Black, all shown in 24 pica line width, 12-point, Century Schoolbook.



C


My sister's been acting really strange lately. I'm worried. Last night, she threatened to kill me—and that look on her face! I'm frightened. And she talks funny; forgets a lot, too.

As noted in Chapter I, line width may be expected to interact to some extent with typesize and leading. Tinker (1963) presents a table of line widths which he has demonstrated to be optimal when used in conjunction with specific typesizes and ranges of leading. (See Appendix H.) Because of the intimate relationship of typesize and line width, a review of the literature using 12-point typesize -- the size used in Experiment II -- will be presented separately from other references.

Line width has been studied using the same techniques as those used to study typeface and typesize. (See Chapter IV.)

Paterson and Tinker (1940) had 12-point type set solid (i.e., without leading) in line widths ranging from 17 to 30 picas. Speed of reading was equally rapid across the test widths. In the same research report, Paterson and Tinker described a second experiment in which subjects read six paragraphs of about 150 words each, set in 17 to 45 picas. 41 and 45 pica line widths were read significantly less rapidly than line widths of 17-37 picas.

Line widths in combination with typesizes smaller and larger than 12-point have been investigated. Conclusions may be summarized as follows:

1. Given sufficient leading, smaller typesizes (12-point and smaller) are equally legible over a broad range of line widths (Tinker and Paterson, 1940). With smaller typesizes and

very wide line widths reading difficulty appears to lie in relocating the beginnings of successive lines (Paterson and Tinker, 1942).

2. Studies of eye movements reveal that narrow and very long line widths are inefficient (Paterson Tinker, 1940).

Neither Shaw (1969) nor Prince (1967), both of whom studied legibility of print for partially sighted adults, paid any attention to the possible effects of color on legibility. Only Prince reported any conclusions on line width -- although the origins of his conclusions were not specified. Prince asserts that a 30 pica line width (i.e., 5 inches wide) is generally legible and that a 36 pica line width may be "even more efficient and economical in many sizes of print."

Lack of research attention to the effects of line width on legibility of print for older persons is somewhat surprising since short lines too often require hyphenation and since long lines can lead to eye muscle fatigue and can produce difficulty in locating one's place at the left margin.

Experiment II. The line widths recommended for this research by the professional designers and selected for study in Experiment II were 24- and 36- picas wide (i.e., 4 and 6 inches wide). Both have been demonstrated to be equally legible by younger subjects when used in conjunction with 12-point type. The 36-pica width, it will be recalled,

represents the outer limit of optimal legiblity. Both line widths selected for study in Experiment II are commonly used and both were used in directories of services located by the researchers. Examples of the test line widths appear in Figure 18.

Familiarity theory would predict that B/W should be more legible that B/Y and that B/Y should prove more legible than W/B. Familiarity theory would also predict that narrower line widths, as in newspapers and books and magazines should enhance legibility.

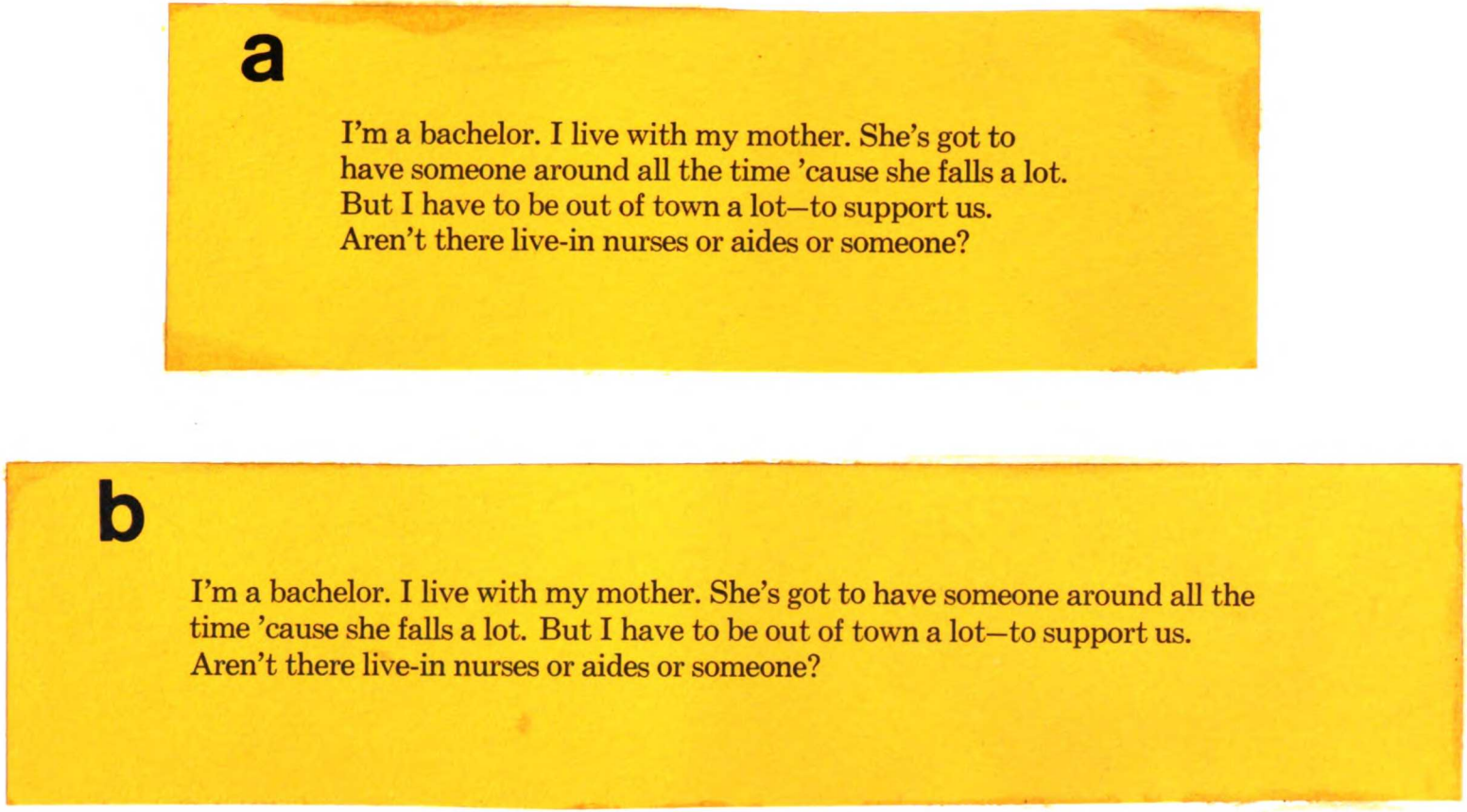
Method

The same 36 subjects who participated in Experiment I (Chapter IV) also participated in Experiment II.

Test Materials. Test items 15 to 20 were printed in one typeface (Century Schoolbook) and one typesize (12-point) but in three color combinations and two line widths. The test color combinations were black on white (B/W), black on yellow (B/Y), and white on black (W/B). The test line widths were narrow (24 pica/4 inch) and wide (36 pica/6 inch). The right margin was not justified. Test cards were cut one inch in excess of the copy in all four dimensions. (See Figure 5,14,16,17 and 18.)

Test items ranged in length from 31 to 44 words (total n = 207; $\bar{X}$ = 34.5 per test item). Each was typeset on matte surface cards (Eagle A Antique Bright White Satin Sub 80). All were "normally spaced" and no words were hyphenated. Fourteen-point leading was used (i.e., slightly more than

Figure 18. Line Widths used for Testing in Experiment II: a) 24 pica (4") and b) 36 pica (6"), all shown in Black on Yellow, 12-point, Century Schoolbook.



1/6 inch spacing between lines of copy).

Research Design. Packets of test materials were prepared in advance of testing. Subjects were randomly assigned to one of 36 mutually exclusive sequences. Each sequence included all possible combinations of colors and line widths. In other words, while the wording of the test items was sequential in all 36 cases, only six of the 36 subjects read any single test item in B/W, narrow; B/Y, narrow; W/B, narrow; B/W, wide; B/Y, wide; or W/B, wide.

Performance Measure. As in Experiment I, speed of reading (see Appendix F) was the dependent variable:

$$\log \frac{(t_1 + t_2)}{n}$$

Procedure. The procedure was essentially that of Experiment I. As shown in Appendix G, the instructions read aloud to subjects in advance of testing drew no particular attention to typographic differences which might appear in reading the test items. Since Experiment II began with the reading of test item #15, since the task was identical to that required by test item 1-14, and since no notice was given subjects that a new experiment was beginning with test item #15, it may be assumed that subjects regarded the requirement to read aloud test items 15-20 as little different from requirement to read aloud test items 1-14.

Results

Table 10 presents the results of the analysis of variance for Experiment II. Only a significant main effect on the variable color was obtained. Analysis using Duncan's Multiple Range Test showed that test items printed in W/B were significantly ($p < .05$) less legible than items printed in the other two test color combinations, but that B/W was as legible as B/Y. The mean reading speeds obtained under each experimental condition are displayed in Table 11. This finding will be discussed in Chapter VII.

Table 10. **Analysis of Variance of Reading Speed for Experiment II: Color x Line Width**

Source of Variance	Sum of Squares	df	Mean Square	F
Total	1.81318	215		
Subjects	1.01910	35		
Color	0.02870	2	0.01435	3.7664*
Width	0.00454	1	0.00454	1.17010
Color x Width	0.00022	2	0.00011	0.02506
$Error_{color}$	0.26652	70	0.00381	
$Error_{width}$	0.135910	35	0.00388	
$Error_{color\ x\ width}$	0.30725	70	0.00439	

*$p < .05$

Table 11. Mean Reading Times across Conditions of Experiment II: Color x Line Width, in seconds.

Width	Color			$\bar{X}_{width}$
	B/W	B/Y	W/B	
Narrow	76.8	75.0	81.0	77.6
Wide	75.0	73.8	79.2	76.0
$\bar{X}_{color}$	75.9	74.4	80.1	76.8

Chapter VI

Indexing a Directory of Services

C H A P T E R V I

People who want to identify sources of help or information logically may turn to directories of services. The ways in which such directories are organized affect their usefulness. In particular, use of services directories presumably will be facilitated by tables of contents and indices.

Experiment III focused on the design of indexing systems for directories of services intended for use by older persons. A review of the research literature revealed no relevant studies.[11]

All subjects were required to use a single directory, but with three different formats for its table of contents: a) major headings only; b) major and sub-headings; and c) exhaustive index. These particular formats were selected because they are believed to be the most frequently used sorts of such indices. Data were collected on accuracy (i.e., subjects' vs. experts' agency selections), speed of agency selection, and number of index categories accessed.

Method

Subjects. The same 36 subjects as participated in Experiments I and II also participated in Experiment III.

Test Materials. Test Items were paraphrased versions of 30 aging-related questions and requests for help which had actually been posed by older persons or their representatives of various information and referral (I & R)

systems. Each had been recorded according to standard practice by an I & R specialist. Items were selected for frequency and diversity. A wide range of items was sampled. Some items were easily answerable using a directory of services while a few others were purposively included for which one would not expect to find "solutions" in directories of services. Test items ranged in length from six to 53 words and are listed in Appendix E.

The three test formats were quite different one from the others. (See Appendix I.) The Short Format showed only 12 categorical headings. The Medium Format contained all the major headings from the Short Format, but also indicated a total of 33 subheadings. The Long Format showed 66 rather specific categorical labels.

The same edition of a directory of services (without a table of contents) was used by all subjects for all test items. (See Appendix I.) Each subject was given a fresh copy of the directory in order to eliminate possible cues to do with previous subjects' agency selections. The directory was a typed draft of a directory being prepared by the Junior League of San Francisco and the San Francisco Commission on the Aging for printing and distribution to older residents of San Francisco County. The design of the test directory presumably reflected some of the features discussed in the document given the Junior League and Commission by the researchers. The information contained in the test directory was believed to be as current and

complete at the time of testing as possible. A copy of the test directory appears in Appendix J, exactly as used.

Research Design. In order to promote understanding of each test item, all subjects read each test item twice aloud. Then each subject turned to the particular table of contents which lay on the table before her/him. From that table of contents, the subject selected a categorical label that s/he believed to be applicable to the test item. Subjects then turned to the indicated section of the services directory and selected an appropriate agency, announcing which agency s/he had selected by reading aloud its telephone number. Because agency names were diverse in length and familiarity and because some agencies bore Spanish-origin names, it was decided to have subjects announce agencies' seven-digit phone numbers. This practice overcame the potential research bias by which these factors could have affected the dependent variable. If the subject thought that none of the agencies listed in the chosen section of the directory was appropriate, s/he had to select another label from the table of contents before re-accessing the directory. A maximum of four minutes was permitted for repetitions of this sequence for any particular test item.

For example, the following question was one of the test items read for Experiment III:

> "I'm a bachelor. I live with my mother. She's got to have someone around all the time 'cause she falls a lot. But I have to be out of town a lot -- to support us. Aren't there live-in nurses or aides or someone?"

Examples of appropriate "answers" to this question are "in-home care," "day care," and "visiting nurse services." These "categorical labels" do not appear on the short format table of contents. They do appear in broader terms (e.g., Home Health/Homemaker Services; Nursing Care) on the medium format. They also appear, explicitly labelled, on the long format table of contents. How would the subject come to identify these services, particularly if s/he had never heard of such services? Using the short format table of contents, the most likely entry (label) would be "Health" since it was noted in the test item that the son primarily feared the mother's falling. In thumbing through the eight pages listed in the directory as health-related, subjects would presumably come across day care, in-home, and visiting nurse services. Given the medium format, subjects would probably spot the major category label "Health" and then look for a subheading (e.g., Nursing Care) which might prove helpful or informative. One page would be searched. Given the long format, all three "correct answers" are explicitly labelled. Turning to the single page listed on the table of contents next to each correct label would likely yield a "correct" agency selection.

As noted in Chapter III, all subjects used all three tables of contents for each of ten test items.[12] The order of presentation of the three test tables of contents was counterbalanced: Subjects were randomly assigned to one of six sequences of tables of contents: Short (S), Medium (M),

Long (L); SLM; MSL; MLS; LSM; LMS.

Performance Measures.

Accuracy. Agency selection was evaluated for accuracy by comparing subjects' agency selections to those of four information and referral (I & R) specialists to whom the test items had been read by telephone. Each expert was asked to respond to each test item as s/he would have had the caller been a "real" client.[13] These experts did not see the test directory.

Relative accuracy was evaluated in one of several judgmental categories. Subject selection of agencies that were judged to provide the help or information sought were judged to be "Correct and Direct Label" (CDL) agency selections. Agencies which could have referred the subject to a better source of information or help were judged to be "Correct but Indirect Label"(CIL) selections. If a subject selected a correct category in the test table of contents but nevertheless failed to identify an appropriate agency upon turning to the directory, the selection was "Correct Label but Incorrect Agency" (CLIA)."Incorrect Categorization" (IC) (inappropriate category selections or search in excess of four minutes for a particular test item) was the fourth possibility.

Agency Selection Time. Response speed was measured from the conclusion of the second reading of each test item to verbalization of an agency telephone number the subject had selected as appropriate to obtain the help or information

requested by the test item. As noted previously, a maximum of four minutes per test item was permitted.

Number of Categories Accessed was also counted in order to estimate difficulty of directory search. It was assumed that the greater the number of categories (labels) searched, the greater the possibility of subjects' discontinuing directory search under non-experimental conditions.

Results

Accuracy. Of all responses to the short format table of contents, 46.8 percent were CDL. The medium format table of contents yielded CDL responses more than 55 percent of the time (55.1 and 62.0 percent, respectively). That the test directory of services was directly usable and useful for multiple purposes (i.e., different test items) half the time or better under different access conditions (i.e., different length table of contents) suggests that services directories may indeed be an appropriate medium for communicating services-related information to older persons.

In many real life situations, it is unreasonable to expect a directory of services to reveal which agency will be best able to help. But directories can help narrow the choice. Agencies selected which could not themselves provide the necessary help or information but which could probably have referred them to the most appropriate agency to meet their needs were selected at a rate of 23.1 percent with the short format table of contents; 22.1 percent with

the medium length format; and 17.2 percent when using the long format table of contents.

Combining CDL and CIL responses, one finds that subjects identified direct and indirect sources of help and information at the rates of 69.9 percent when using the short format; 77.2 percent with the medium format; and 79.2 percent with the long format.

Ambiguous (CLIA) agency selections occurred in 10.5 percent of the short format selections; 11.5 percent of the medium format selections; and 4.6 percent of the long format selections. The incidence of CLIA agency selections is significant because it implies that no matter how accurate and complete an indexing system, a certain proportion of errors in accessing the body of a directory of services will be made. Such errors presumably reflect the effects of misleading agency names or agency descriptions or subjects' failure to notice adequate descriptors.

Incorrect (IC) table of contents categorizations and failures to identify an appropriate agency within four minutes occurred at a rate of 19.7 percent with the short format table of contents; 11.1 percent with the medium format; and 16.2 percent with the long format. Table 12 summarizes accuracy by table of contents format. A chi square test comparing the four "levels" of accuracy was significant across formats ($\chi^2 = 25.9$, df = 6, $p < .001$).

The short format table of contents appeared to be the least adequate of the three formats tested. Short format

Table 12. Accuracy of Agency Selections by Length of Table of Contents Formats, in percent. (n = 28 test items)

Table of Contents Format	Accuracy			
	C D L	C I L	C L I A	I C
Short	46.8	23.1	10.5	19.7
Medium	55.1	22.1	11.5	11.1
Long	62.0	17.2	4.6	16.2
$\bar{X}$	54.4	20.9	8.9	15.8

use led to the fewest CDL selections and the highest rate of inaccuracies. The medium and long format tables of contents fostered correct agency selection and discouraged incorrect responding.

Somers' d_{yx} [14] was computed to test for overall degree of association. A ten percent chance of association ($d = -.110$, $p < .05$) was obtained. This association reflects the greater probability of selecting a correct service agency the more detailed (i.e., explicitly labelled) is the table of contents. The likelihood of incorrect agency choice was greatest with the short format table of contents. The likelihood of CLIA agency choices was greatest with the medium format. The likelihood of correct, direct agency choices was greatest with the long format. While it is true that greater detail also requires searching through more categorical labels, it will be shown below that the time required for agency identification is no greater -- in fact, it is less -- with more detailed indexing formats.

Immediately rewarding agency selections (i.e., CDL selections on the first trial) would probably increase the likelihood of further use of directories of services. Conversely, directory users might put a services directory aside if they found agency selection difficult or ineffective or too time consuming. They also might set aside their directory if the service agency they select on the first trial only provided further referral. Directory inadequacies alone might not account for failures to identify helpful

agencies. Appropriate agencies might not exist for some problems. Other problems do not lend themselves to "solution" using services directories. Subject characteristics such as fatigue, failing memory, and emotional state might also negatively influence directory search.

Paying attention exclusively to subjects' initial category selections, only 40.5 percent and 16.9 percent of responses given to test items when the short format table of contents was in use were CDL or CIL respectively. Using the medium length table of contents 46.3 percent of agency selections were CDL correct and 16.4 percent were CIL. Fifty-two and eight tenths percent of responses using the long format table of contents were CDL and 15.2 percent were CIL. Again, the more detailed the test format, the more accurate was agency selection.

Agency Selection Time. On the average, agency selection took approximately one and one half minutes. With the short format table of contents, mean time was 96.4 seconds. With the medium format, it was 89.65 seconds. Use of the long format yielded an average of 88.7 seconds response time. "t" - tests revealed no significant difference between these search times.

Number of Categories Searched. The number of categories accessed by subjects when using the three test tables of contents is shown in Table 13. Without reference to objective evaluation of accuracy of agency selection, it should be

Table 13. Agency Choices Completed in One, Two and Three-or-More Category Selections, in percent, by length of table of contents formats. (n = 28 TIs)

Number of Categories Searched	Format			
	Short (n = 331 categories selected)	Medium (n = 332 categories selected)	Long (n = 309 categories selected)	$\bar{X}_{\#}$
One	75.2	80.4	81.6	79.1
Two	17.5	14.9	11.6	14.7
Three	7.2	4.7	6.8	6.2

Note. Not cumulative and not reflective of selection accuracy.

noted that subjects were sufficiently satisfied with three out of four agency selections made on the first trial that they discontinued directory search, regardless of which table of contents was in use. There is no reason to believe that this high rate of satisfaction with first selections reflected anything other than perceived accuracy of the selection. (Subjects appeared to maintain interest in the task throughout the experiment and not to suffer from inordinate fatigue or anxiety.)

Information-Specific Categorization. Although the test items were not preselected according to how they might "fit" any of the test tables of contents, it was evident upon post hoc examination that test items did vary in terms of the degree of explicitness with which they could be addressed in the various indices. For some items, it was apparent that they were directly and explicitly labelled in terms of the major categories included in the Short format and hence also in the Medium and Long formats. For others, appropriate referral categories appeared in only the Medium and Long formats and for still others, only in the Long one. Not least, it will be recalled that some test items had been purposively included for which no direct "answer" was apparent in any of the three test formats.

Accordingly, it made sense to conduct a separate analysis of accuracy and time of the agency selection data across the three formats, but separately across the various subcategories of items in terms of such information-specific

categorization.

Accuracy. Performance predictions -- based only on degree of congruity of information in the item descriptions and in the format categories -- were straight forward: For those items which were readily congruent with the categorical labels in all three formats, performance should be high and no difference across formats should be apparent. When only the Medium or Long versions bore an appropriate level, agency selection should be equally accurate for those versions, but less accurate for the Short format. When only the Long format bore an appropriate label, accuracy should be greatest with it and significantly depressed with the other two table of contents formats. Finally, when no table of contents bore an appropriate label, accuracy should be equal across tables of contents and lower than in any of the above conditions.

Tables 14-17 show the results of this analysis. In all cases, the dashed lines define borders between collections of items according to the above reasoning. Thus, items falling within a bordered area all represent the same degree of explicit information and hence should not differ in accuracy from one to another to any substantial degree. By the same token, there should be significant differences between areas defined by the dashed borders since areas are defined by differing degrees of explicit information in the test tables of contents.

The findings presented in Table 14 clearly support

Table 14. "Correct and Direct" Agency Selections (CDL) across Table of Contents Formats by Degree of Explicit Labelling, in percent. (n = 28 test items)

Labelling	Format			$\bar{X}_{labelling}$
	Short	Medium	Long	
All Table of Contents Formats bear Appropriate Category Label (n = 6 TIs)	76.8	74.2	80.1	77.0
Two (M,L) Table of Contents Formats bear Appropriate Category Label (n = 7 TIs)	41.4	74.7	70.0	62.0
Only One (L) Table of Contents Format bears Appropriate Category Label (n = 6 TIs)	51.6	51.0	70.8	57.8
No Table of Contents Format bears Appropriate Category Label (n = 9 TIs)	27.1	25.8	36.2	29.7
$\bar{X}_{format}$	49.2	56.4	64.3	56.6

Table 15. Directly and Indirectly Correct Agency Selections across Tables of Contents Formats by Degree of Explicit Category Labelling, in percent. (n = 28 test items)

Labelling	Format			$\bar{X}_{labelling}$
	Short	Medium	Long	
All Table of Contents Formats bear Appropriate Category Label (n = 6 TIs)	88.4	87.1	90.7	88.7
Two (M,L) Table of Contents Formats bear Appropriate Category Label (n = 7 TIs)	72.4	87.9	89.0	83.1
Only One (L) Table of Contents Format bears Appropriate Category Label (n = 6 TIs)	51.7	71.1	76.3	66.4
No Table of Contents Format bears Appropriate Category Label (n = 9 TIs)	54.6	62.3	64.2	60.4
$\bar{X}_{format}$	66.8	77.1	80.0	74.6

Table 16. "Correct and Direct" Agency Selections (CDL) within First Category Selection Only, by Level of Explicit Labelling and Format of Table of Contents, in percent. (n = 28 test items)

Labelling	Format			$\bar{X}_{labelling}$
	Short	Medium	Long	
All Table of Contents Formats bear Appropriate Category Label (n = 6 TIs)	83.9	72.9	80.6	79.1
Two (M,L) Table of Contents Formats bear Appropriate Category Label (n = 7 TIs)	45.9	77.5	65.0	62.8
Only One (L) Table of Contents Format bears Appropriate Category Label (n = 6 TIs)	53.2	30.2	72.3	51.9
No Table of Contents Format bears Appropriate Category Label (n = 9 TIs)	34.8	27.3	33.3	31.8
$\bar{X}_{format}$	54.4	52.0	62.8	56.4

Table 17. Directly and Indirectly Correct Agency Selections within First Category Selection Only, by Level of Explicit Labelling and Format of Table of Contents, in percent. (n = 28 test items)

Labelling	Format			$\bar{X}_{labelling}$
	Short	Medium	Long	
All Table of Contents Formats bear Appropriate Category Label (n = 6 TIs)	91.9	86.4	91.9	90.1
Two (M,L) Table of Contents Formats bear Appropriate Category Label (n = 7 TIs)	74.3	90.0	93.9	86.0
Only One (L) Table of Contents Format bears Appropriate Category Label (n = 6 TIs)	70.2	74.4	76.6	73.7
No Table of Contents Format bears Appropriate Category Label (n = 9 TIs)	68.2	61.0	66.7	65.3
$\bar{X}_{format}$	76.2	77.9	82.2	78.8

predictions for the CDL selections. The marginals evidence different degrees of accuracy among the four labelling categories and in descending order. Overall differences across the three formats are not as pronounced and are of less interest anyway. It is the interior data that are of more direct interest here and these fit the predictions almost perfectly. Thus, for the six items which are adequately labelled in all three formats, the data reveal high and almost equal accuracy. In the second area (i.e., where the table is explicit only in the Medium and Long formats),a relatively high level of performance persists. But, as anticipated, performance drops substantially with the Short format (i.e., where the labelling is not explicit). In the third labelling category, high level performance was obtained only with the Long version (i.e.,where labelling was still explicit enough) and was significantly lower in the other areas, again as predicted. Finally, in the fourth area, were none of the tables of contents should apply uniformly (i.e., no differences between formats), performance was less accurate than in any of the above categories.

It is readily apparent that items within a bordered area are not significantly different from one another, but that there are significant differences between areas.

This pattern is reflected in almost exact detail in Tables 15-17 in which analysis focuses on indirectly as well as directly accurate agency selections both in terms of all

categorical labels searched and only the first category searched.

Again, no differences were obtained in any of these tables where none had been predicted and there were significant differences in all cases where they had been predicted according to the information-specific categorization hypothesis.

Agency Selection Time. These findings are even more pronounced when speed of performance is examined. Here, ease of performance is reflected by shorter latency. Therefore, results should show reverse "direction" to those reflecting accuracy of agency search, but they should follow the same pattern as was observed in Tables 14-17.

Table 18 shows mean latencies under the different test conditions. In accord with earlier predictions, the highest latencies were obtained when none of the test tables of contents bore an appropriate categorical label. The fourth row in Table 18 also shows that speed of agency selection was about the same when labelling was not explicit, no matter which format was in use. The data presented in rows three and four clearly indicate that explicit labelling hastens speed of agency selection. When all three test formats are labelled explicitly selection latency is similar across formats.

ANOVA for a two-factor (format, labelling) mixed design with repeated measures on one factor (labelling) and unequal "n's" was conducted using as scores the logarithm of

Table 18. Distribution of Means for Time Spent Selecting a Service Agency, in seconds. (n = 28 test items)

Labelling	Format			$\bar{X}_{labelling}$
	Short	Medium	Long	
All Tables of Contents Formats bear Appropriate Category Label (n = 6 TIs)	66.2	76.8	75.2	72.8
Two (M,L) Table of Contents Formats bear Appropriate Category Label (n = 7 TIs)	94.9	56.8	74.8	75.5
Only One (L) Table of Contents Format bears Appropriate Category Label (n = 6 TIs)	78.9	87.9	47.2	71.3
No Table of Contents Format bears Appropriate Category Label (n = 9 TIs)	118.8	118.6	127.9	121.8
$\bar{X}_{format}$	89.7	85.0	81.3	85.3

search times (in seconds). The results of that analysis are presented in Table 19. Both labelling and interaction effects were significant ($p < .001$).

"t" - tests were conducted to compare mean time of agency selection under different levels of explicit labelling. They revealed no differences across test formats when all tables of contents or none of them bore an appropriate categorical label. (Response time was considerably greater when no appropriate label was provided than under the other three conditions.)

As predicted, significant differences did obtain between search times when subjects were using the Short and Medium formats ($p < .01$) and the Short and Long formats ($p < .01$) when only the latter (the Medium and Long formats) were explicitly labelled. Significant differences were also obtained when comparing performance using the Short and Long formats ($p < .05$) and the Medium and Long formats ($p < .01$) when only the Long format bore an appropriate label. (See Table 18.)

Table 19. Analysis of Variance of Time to Select an Agency using Three Formats of Tables of Contents. (n = 28 test items)

Source of Variance	Sum of Squares	df	Mean Square	F
Between	1.37	27		
Labelling	0.81	3	0.27	13.50***
$Error_b$	0.56	24	0.02	
Within	0.83	56		
Format	0.02	2	0.01	1.11
Format x Labelling	0.38	6	0.06	6.67***
$Error_w$	0.43	48	0.009	
Total	2.20	83		

***p < .001

Chapter VII

Discussion and Implications

Chapter VII

This chapter will begin with a brief summary of the assumptions behind Experiments I, II, and III. Outcomes and implications of the experiments will then be discussed. Explanations for the obtained results will be offered, related variables will be considered, and relevant questions will be posed.

Summary of Assumptions

Printed messages vital to the well-being of older persons should be usable. As shown in Table 20, this means such messages must be available, appropriate, acceptable, accessible, and accurate. Legibility and accessibility are not sufficient for usability. Nonetheless, they are essential. The three experiments reported in Chapters IV, V, and VI focused on some of the more obvious aides to message usability. These three experiments are the only ones to date to focus exclusively on older readers. They also stand alone in focusing on design for visually normal, rather than partially sighted, older readers.

While it is true that most older persons do not have seriously impaired vision, it is also true that most older persons experience failure of accommodation, changes in color perception, increased susceptability to glare, and other changes noted in Chapter I. When designing

Table 20. Criteria of Services Directory Design Adequacy.

Availability

- The service itself
- Information about the service
- Distribution of directory
- Ease in locating the directory once in the home

Acceptability

- Sponsorship
- Targeted (e.g., for older readers) vs. generic (i.e., for all readers)

Appropriateness

- "Right" language?
- "Best" way to convey particular message?

Accessibility

- Legibility
- Organization and layout
- Indices
- Instructions for use
- Labels and descriptors
- Packaging

Accuracy

- Up-to-date
- Amendable (e.g., space for writing consumer comments and/or envelope for storing clippings)

print materials for the elder generation, these physiological changes should be taken into account. Optimal design for younger readers may not be adequate for older ones.

It also may be advisable to vary message design depending upon what segment of the elderly population one hopes to reach. For instance, were Experiments I, II and III to be replicated, it might be especially informative to use large enough samples of "middle old" (75 - 84 year old) and "old old" (85+ year old) subjects to be able to draw some conclusions and comparisons between these age groups' print-related habits, abilities, and needs. The old old population probably has the strongest habits, the greatest needs, and the fewest resources to meet those needs. (It is instructive to note that the median age of nursing home residents exceeds 80 years.) The middle old population may include more potential users of information and referral systems than either the "young old" or old old groups. While needs of the middle age for services may be somewhat less numerous and severe than those of the old old, those needs may be nonetheless considerable. However, many middle old may be too depressed (Granick and Patterson, 1970), too poor (Schulz, 1976; National Journal Issues Book: The Economics of Aging, 1978), or too isolated (Lowenthal, 1964) to seek

the help or information they need. For such persons, information and referral systems may prove beneficial. Such systems also may prove cost-effective in the long run if they lead young- and middle-old persons to take sufficient advantage of available services that their needs are reduced or that institutionalization is prevented or delayed. Adequate data on these matters is not yet available.

Compensation for Visual Decrements

As noted above, some visual changes normally accompany aging. Others are the result of trauma or disease. All such changes take place independently and at different rates in each eye. The diversity of causes and symptoms of age-related changes in visual functioning render compensation difficult.

Compensation for decrements in visual functioning may be regarded as the responsibility of the older person (e.g., by improving illumination); the purview of the professional (e.g., by prescribing corrective lenses); and/or the job of the agency or organization that desires to communicate its message to the older persons (e.g., by improving the design of the message itself). When print is the communications medium of choice, an enormous variety of message designs is available. Since the communicating agency desires to convey its message in a usable, acceptable manner to the target audience, it logically would

manipulate the design of the printed message itself, instead of trying to change reader characteristics.

Both theoretical and practical issues arise when one considers print design. Theoretical perspectives are particularly obvious in considering legibility. Practical considerations, particularly cost-related ones, must be taken into account at every step in the print design process. The costs involved in implementing certain design decisions are, in fact, so great, that once such decisions are made they largely predetermine the balance of the design decisions.

The Legibility Experiments

Experiment I.

Theoretical Implications. One theoretical perspective which potentiallv applies to every design feature intended to enhance document usability for older persons is familiarity. Other theoretical perspectives (e.g., brightness contrast) apply to only one or two design features.

As noted in Chapter II, one might expect familiarity to enhance usability of printed materials. Thus, older persons may be expected to benefit from serif typefaces and smaller typesizes because of their lifelong experience with these typographic features. Conversely, older persons might be expected to read more slowly materials printed in less familiar typefaces (i.e., sans serif) and sizes (i.e.,

larger ones).

The results of Experiment I indicate that familiarity may be less important for legibility than other factors. In fact, the obtained results on typesize were exactly contrary to the results one would have expected had familiarity enhanced legibility. It would be difficult, however, to argue that novelty enhanced legibility. It is possible that more familiar features induced boredom or such a degree of comfort in the test situation that the readers lost motivation to perform as accurately and rapidly as possible (as requested). Another possible explanation is that some other factor besides familiarity accounted for the obtained results.

Re-inspection of Figure 16 reveals that variations in x-height are considerable among the three test typefaces. It may be that the choice of the three particular faces to be tested was unsuitable for the typesize comparison, although adequate for the typeface comparison. The fact that a strong interaction (to be discussed below) was obtained enhances this possibility.

All three test typefaces were legible. However, no significant differences in legibility among them was obtained. In particular, had relative familiarity been varied even more, one might expect legibility differences to have emerged. Besides varying relative familiarity, future researchers in this area might wish to systematically vary relative boldness, relative thickness of stroke, and

relative contrast in figure-to-ground ratios (i.e., amount of print in relation to amount of background). For instance, it would be useful to compare relative legibility of two typefaces differing only in being serif or sans serif.

The interaction effect obtained in Experiment I also can not be explained by familiarity theory. In fact, it is impossible to know, given the research design, whether the obtained interaction is more a function of a genuine typeface by typesize interaction or whether the interaction reflects primarily a position effect. Figure 19 presents the performance means obtained in Experiment I as a function of size and face. Figure 19 seems to suggest that Bookman or 12-point typesize affect legibility differently than the other two typefaces and sizes -- a most unlikely occurrence. A more likely explanation of the obtained results is that they reflect a position effect, as shown in Figure 20. Only 14-point Century Schoolbook behaves differently than one would expect were a position effect to be affecting the obtained results. The fact that the first four test items were presented in 12-point Century Schoolbook may account for the unexpectedly large increase in the legibility of 14-point Century Schoolbook. That 14-point Century Schoolbook was presented in the first position bolsters this possibility. If a position effect did affect legibility in Experiment I, then further explanation of the obtained results in terms of stimulus

Figure 19. Mean Reading Speeds in Experiment I, by Typeface and Typesize, in seconds.

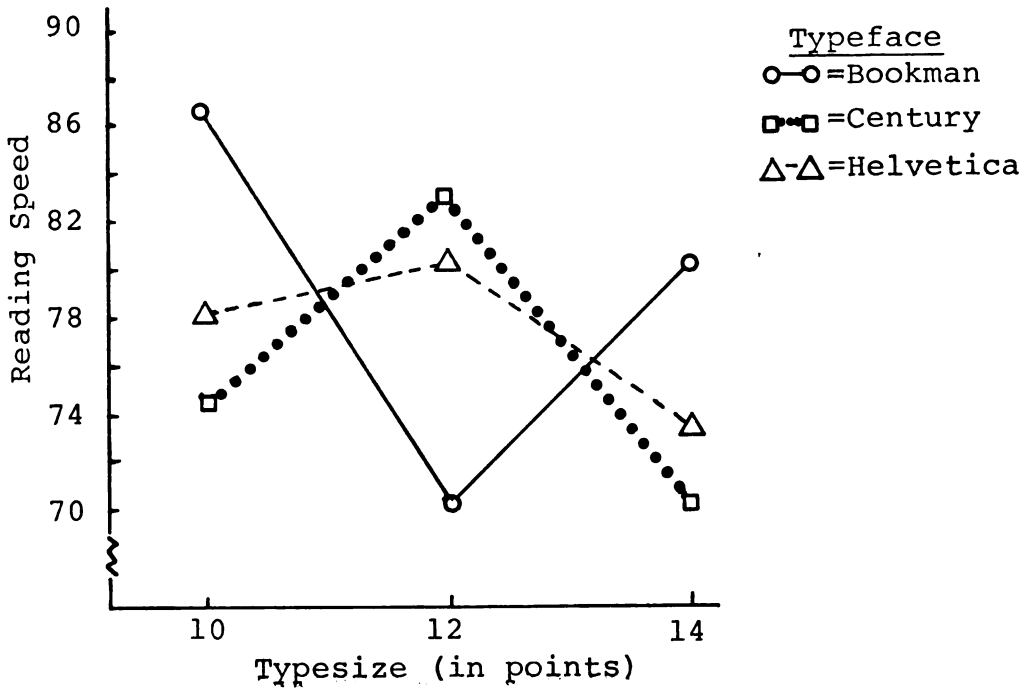
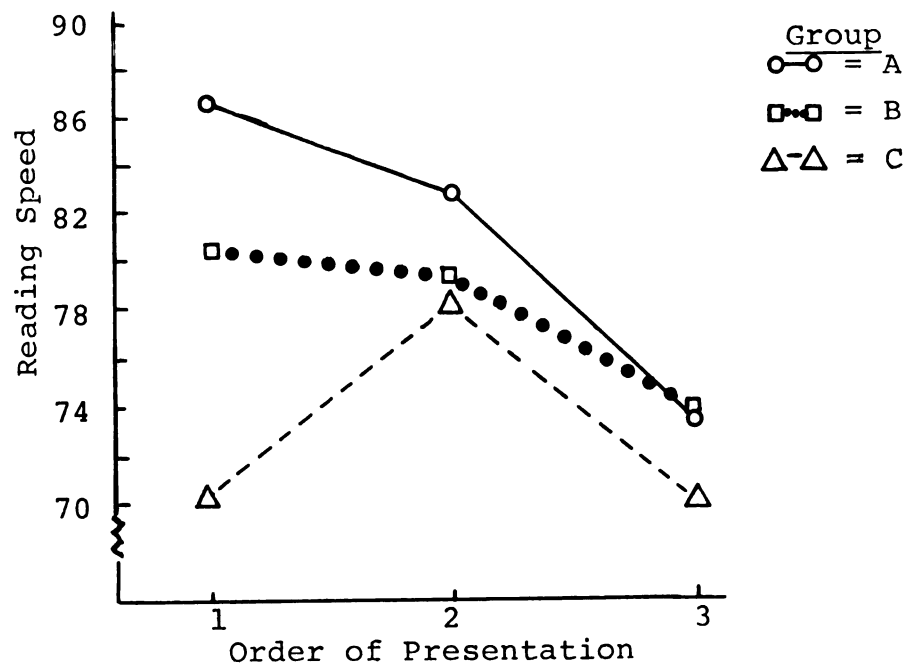


Figure 20. **Mean Reading Speeds in Experiment I, by Group and Order of Presentation, in seconds.**



set or expectations and/or in terms of stimulus interference would be appropriate.

Practical Implications. Generally, designers and sponsors of publications for older persons recommend larger typesize as the sole means of increasing legibility of materials for older audiences. The significant main effect of typesize obtained in Experiment I reflected consistently shorter reading times with larger typesizes than with smaller ones. This difference, while it was consistent, was not large: Reading time was, on the average 3.21 seconds longer with 12-point type than with 14-point type and was 1.98 seconds longer with 10-point type than with 12-point type. Professional opinion, therefore, is supported up to a point. The test typesizes were in the average range. Larger sizes would have forced subjects to read words in parts rather than as a whole and might, therefore, have slowed or reduced comprehension. Typesize alone is important, as shown by visibility and perceptibility experiments. But it is in combination with other typographic features that typesize has its greatest effect on legibility. Therefore, in designing reference documents for older persons, a sponsor might do well to invest more in document organization and layout -- even if a smaller typesize had to be used to recoup increased personnel cost. While reading speed is slower with smaller sizes, there is not much content in reference materials and, thus, speed may not be as important as it is for continuous

reading matter.

Besides causing considerable increase in financial cost, use of larger typesizes may lead to other difficulties. Among these are:

1) As typesize increases, the document will increasingly resemble children's literature and may, thereby, become less acceptable to older readers;

2) The document will look unlike materials printed for consumption by younger adults, thereby potentially emphasizing generational differences that older readers may not wish to recognize or encourage;

3) Some older persons may feel stigmatized by the special treatment that larger-size type implies may be necessary or at least desirable.

Because of variations in point-size or x-height across typefaces, sponsors wishing to print a document in a minimum type-size must provide the designer and/or printer with an acceptable sample or with the name and point-size of a face they find adequate. Decisions about leading, margin justification, and other spacing requirements complement decision-making about typesizes and faces -- and must be taken into account simultaneously.

Experiment II.

Theoretical Implications. The results of Experiment II suggest that familiarity may indeed play a role in enhancing legibility. The significant main effect

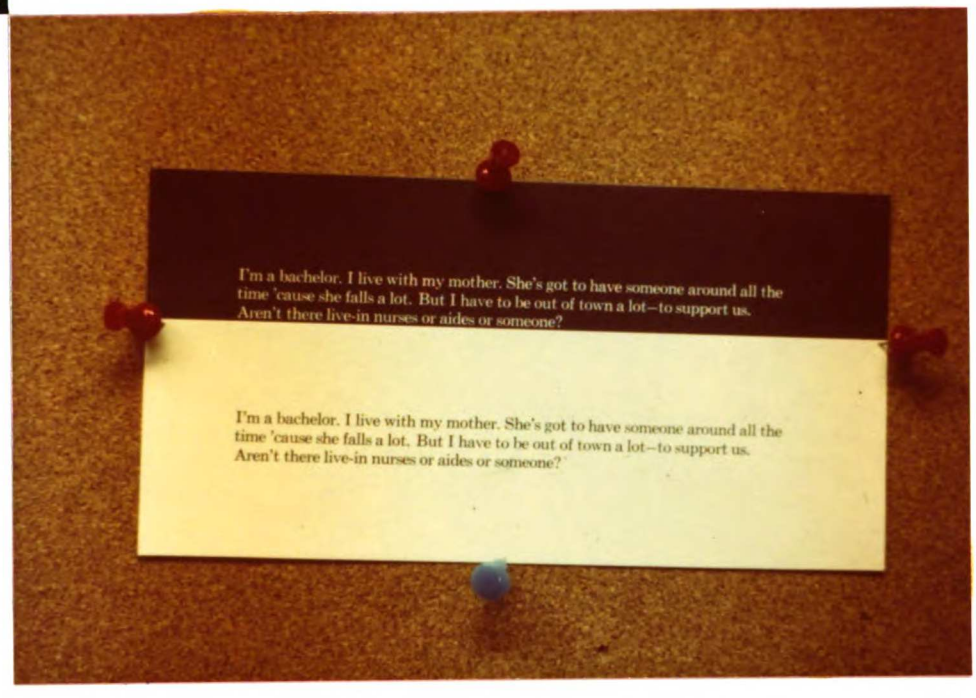
of color obtained in Experiment II reflected a consistent, although not large, difference in reading speed in favor of B/W and B/Y over W/B. Despite producing the greatest amount of glare of the test color combinations, the familiar B/W was superior to the presumably novel W/B. W B was the only test color combination to elicit any spontaneous comments from subjects. One subject said:

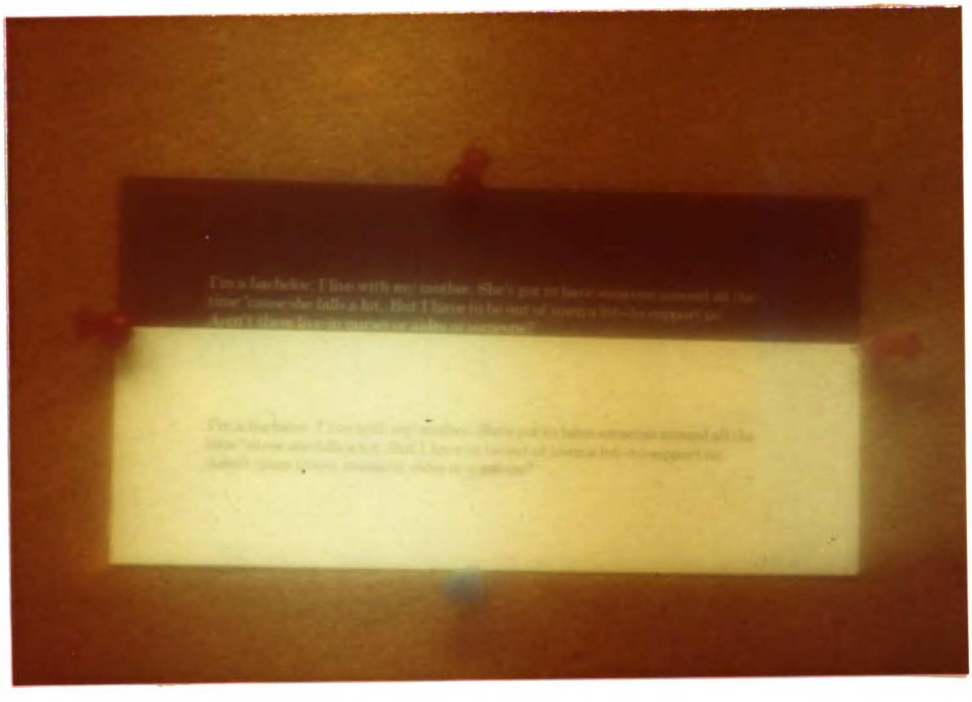
> I thought I was going to like white on black (I had always heard it was best!). But I am suprised. I found black on white is better than the other two -- probably because of the familiarity.

B/Y was as legible as B/W. One possible explanation of this finding is that B/Y produces less glare (reflected light) than B/W. (See Figure 21.) Were B/Y as familiar as B/W, one would expect the former to be even more legible than the latter. Although B/Y is not as familiar as B/W, it is also probable that its similarity to B/W in saturation alone (i.e., very dark print on bright light background) renders B/Y more legible than other lower contrast combinations. The latter suggestion is quite researchable. By varying saturation systematically while controlling for all the other typographic variables (including hue), it should be possible to compare saturation differences. Similarly, by varying hue systematically while controlling for other typographic variables (including saturation), it should be possible to compare hue (i.e., "color) differences.

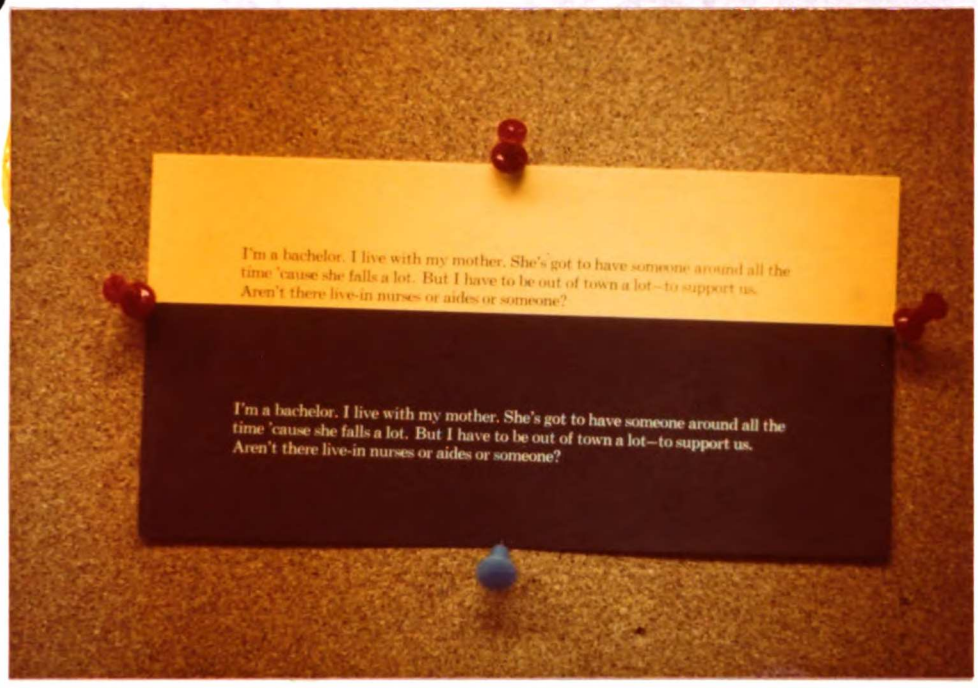
Figure 21. Test Items used in Experiment II, printed in a) B/W and W/B; b) W/B and B/Y; and c) B/W and B/Y as seen by the Average Person in her Late Seventies and by Younger Persons with Corrected Vision.

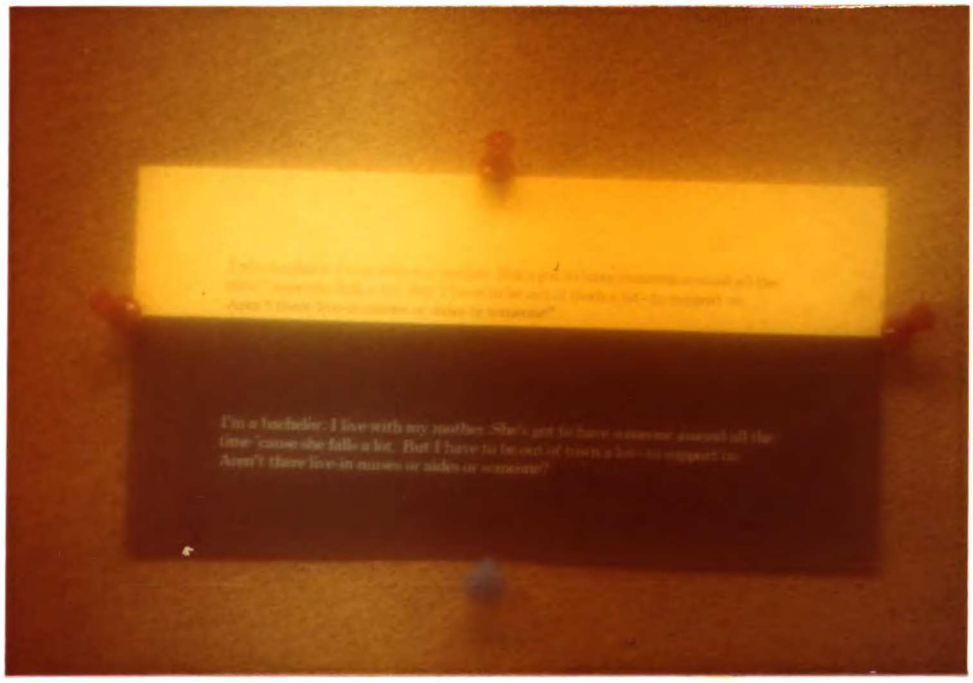
a



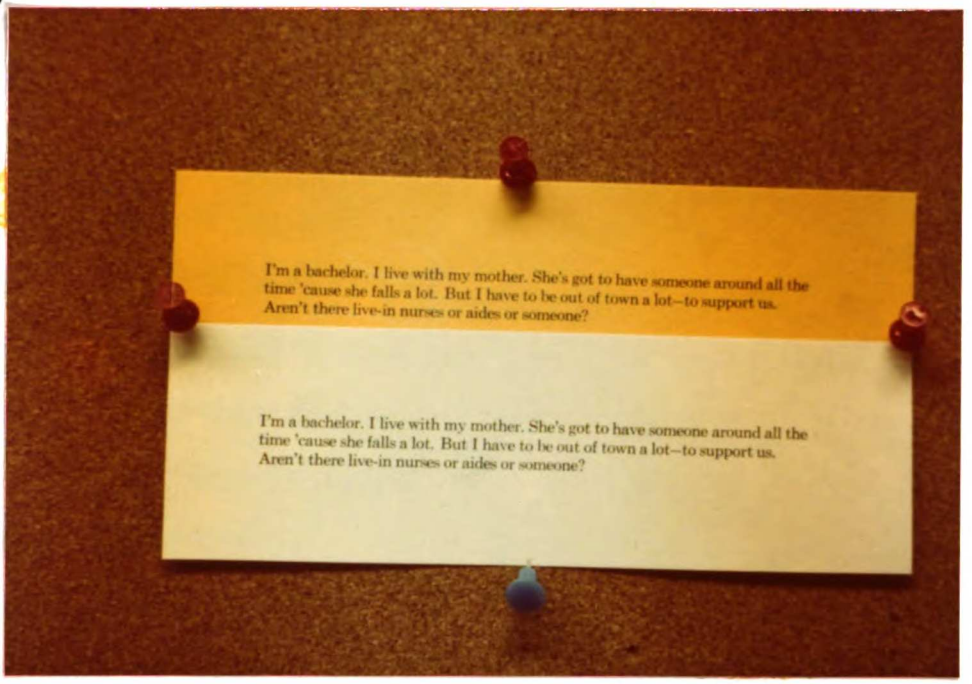


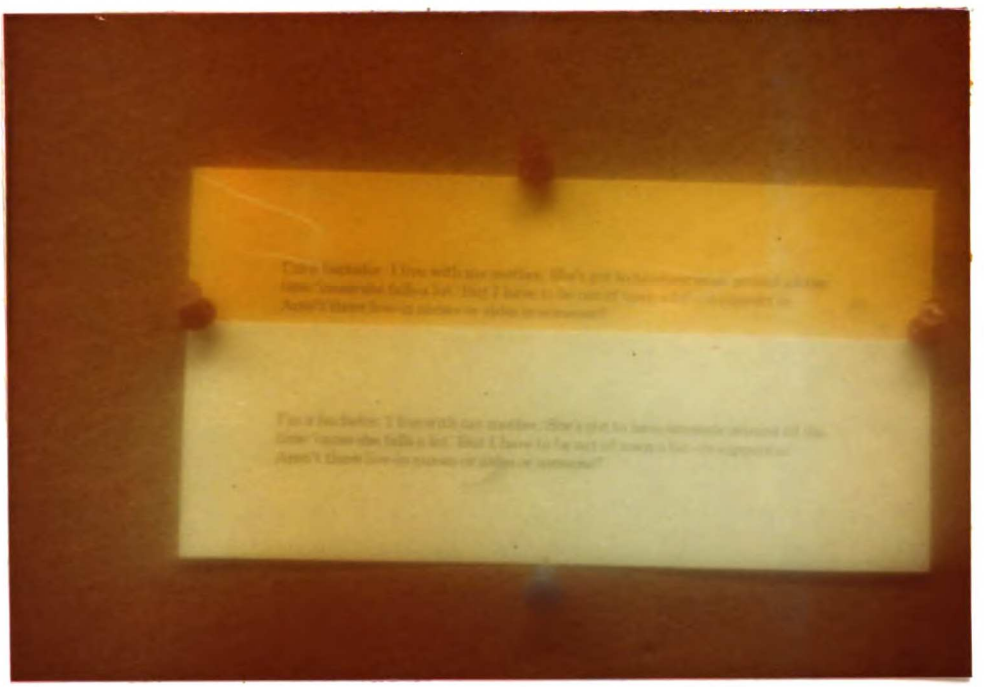
b


I'm a bachelor. I live with my mother. She's got to have someone around all the time 'cause she falls a lot. But I have to be out of town a lot—to support us. Aren't there live-in nurses or aides or someone?
I'm a bachelor. I live with my mother. She's got to have someone around all the time 'cause she falls a lot. But I have to be out of town a lot—to support us. Aren't there live-in nurses or aides or someone?



C


I'm a bachelor. I live with my mother. She's got to have someone around all the time 'cause she falls a lot. But I have to be out of town a lot—to support us. Aren't there live-in nurses or aides or someone?
I'm a bachelor. I live with my mother. She's got to have someone around all the time 'cause she falls a lot. But I have to be out of town a lot—to support us. Aren't there live-in nurses or aides or someone?



Given what is known about changes which take place in the lens and vitreous fluid of the eye (see Chapter I), certain predictions can be made about the effects of color on legibility. Printing with blue, green, or purple should prove to be less legible than printing with yellow, orange, and red. But black on off-white or yellow should be optimal. Illumination color is also important. Blue-white lighting should be avoided. Furthermore, regardless of color, surface glare should be minimized and brightness contrast maximized.

Practical Implications. Although no significant main effect of line width was obtained in Experiment II, narrower line widths might be more costly to sponsors because less material could be printed per page. Narrower line widths might also slow readers because of memory requirements, possible fatigue, increased need for hyphenation, and greater likelihood of expansion or condensation when columns of print are justified. On the other hand, longer line widths may cause readers to lose their places as they proceed from line to line.

Because B/W copy is considerably less expensive to produce than either B/Y or W/B (although, it will be recalled, for different reasons), B/W may be regarded as optimal for cost and efficiency among the color combinations tested. In spite of the added financial cost, however, B/Y might be considered for use in printing reference

materials in particular because of its possible aesthetic appeal and because -- in directories of services, at least -- it may bear some psychological resemblance to the yellow pages in telephone book. Should the latter prove true, it may be that a consumer would refer to a service directory or remember its location more readily if the directory were printed B/Y, since the directory and the yellow pages of a telephone book are functionally akin. As shown in Appendix D, the Junior League chose to maximize the benefits of this effect while at the same time minimizing costs: The League printed the directory cover in B/Y and the body in B/W.

Production Costs

The unit costs involved in producing the diverse stimuli used for Experiments I and II were quite comparable within categories (i.e., typeface, typesize, color, and line width) and well within the normal range. Production costs are likely to rise, however, when multiple features that enhance legibility are combined. While commonly used typefaces should be roughly comparable in cost, larger typesizes and narrower line or column widths will increase costs. This is because background space is "wasted" with larger letters and numerals and with more marginal space.

Printing in colors other than B/W greatly inflates production cost. Black ink and white paper are least expensive. The production cost of printing W/B is more

than printing B/W even though both combinations are printed with black ink on white paper. Because it is extremely difficult to obtain clear copy with W/B, many pages printed in W/B may have to be discarded in order to maintain quality image. In other words, the production costs of W/B may be low per se, but the volume of usable sheets may be so small that costs will be inflated by the need for production overruns. This was found to be true in printing the test items for Experiment II. Even though only the clearest of the printed cards were used for testing, it is apparent by inspection of Figure 17 that the W/B cards were simply less well printed than were the B/W and B/Y test items. Perhaps Experiment II should be viewed as having tested quality of printing as much as it tested color and line width comparisons. Because W/B produces the least glare of any color combination and because the low-vision experts consulted for design of Experiment II were convinced that W/B was the most legible color combination for partially sighted readers, a more definitive test of the legibility of W/B for older readers is needed.

Professional book designers considered printing quality even more important than design decisions. The professionals emphasized quality in materials selection and in the printing process itself -- even, if necessary, at the expense of other production features. The professionals maintained that, for optimal production of

reference materials, typesetting was invariably superior to other printing techniques and that highly saturated ink cleanly printed on contrasting opaque paper was invariably superior to less contrasting ink-to-paper combinations.

Other Variables of Potential Importance. The legibility experiments reported above focused on relative legibility as it is affected by ordinary variations in typeface, typesize, color, and line width. Other potentially significant typographic variables await further study.

Experiments I and II did not contribute to greater understanding of how variations in boldness or spacing affect legibility. However, these typographic features are undoubtedly of equal or greater importance to legibility for older readers than are the four variables studied here.

If Shaw (1969) is correct in her assertion that boldness may be particularly important for glaucoma victims, then boldness is likely to be exceptionally important for older persons, more than five percent of whom have glaucoma symptoms (Kornzweig, 1977). As noted above, comparison of Figures 14a and 14b raises the possibility that differences in boldness may account for the differential legibility of the two serif test typefaces. Perhaps contrast accounts for the greater legibility of larger typesizes and for the greater legibility of B/Y and B/W over W/B. Unfortunately, this hypothesis can not be tested, given current technology and given the total size of the test items as printed.[15]

Spacing is also likely to be a particularly good predictor of legibility for older persons. The recommendations of the Social Security Administration in this regard will be repeated here because they make intuitive sense. But is must be noted that the recommendations are based on the existing research literature (i.e., drawn from studies of children and partially sighted persons of all ages), not on empirical data using older subjects. The Social Security Administration (1978) recommends using greater spacing with heavier typefaces and larger ones. Further, less leading may be required the stronger is the "horizontal flow" of any particular typeface. For instance, Helvetica (or, indeed, any sans serif face) has a strong vertical thrust. Increasing leading would benefit legibility with Helvetica more than with either of the serif faces tested in Experiment I.

Experiments I and II focused on legibility of reference materials, not on the design of continuous materials, forms, signage, television captions and displays, commodity labels, road signs, or posters. Nonetheless, these investigations have gone a long way toward asking -- and answering -- some questions of interest and importance to many agencies and organizations -- and to older readers.

What general conclusions can be drawn from Experiments I and II about legibility of print for older readers? First, these experiments show that directory sponsors need

not go to extremes to promote legibility for older consumers. Commonly available, relatively familiar typographic features are sufficient. Second, these experiments show that while design familiarity may promote success in using reference materials, other predictors may be even more important -- predictors having more to do with consumers' visual functioning than with psychological considerations. Third, these experiments demonstrate the adaptability of older people to new situations (i.e., experimental setting) and to novel variations on familiar stimuli (e.g., typographic features) and activities (i.e., reading).[16]

No matter how legible a printed message, its usability will be limited by its comprehensibility. Comprehension was assessed indirectly by the research presented above (i.e., by Experiment III).

Accessibility

Information and referral systems of all kinds assume that the consumer will identify her or his own need for help or information before turning to any particular information and referral system. Some information and referral systems rely heavily on consumer's abilities independently to locate, use, and follow up on referrals from printed documents (e.g., directories of services). The design of these documents is important. Package design can aid retrievability. Adequate instructions, organization, and indexing, etc., can aid

usability.

Investment in the various design features which enhance usability of such documents appear to be cost-effective for consumers of all ages. For older consumers, these features may be not only desirable, but in fact necessary. If a reference document is not easily used, these consumers may be stymied. The way they use these documents initially may determine how effectively they use them later (Botwinick, 1961). Therefore, the accuracy of their initial perception of the meaning, significance, and usability of the materials may prove to be important. Related to the first point is a second -- that some older people may have trouble recognizing or discriminating among ambiguous stimuli (Botwinick, 1961).

In order to minimize consumer frustration and fatigue -- and in order to promote accuracy of agency identification -- directories of services for older people should be particularly well organized and indexed. This further suggests that familiar words and formats might enhance usability of reference materials intended for older consumers. (These findings further argue in favor of repeating essential baseline information as often as necessary in order to achieve understanding -- at least once in each major division of the directory. See Appendix C.)

Experiment III. Since there is no research literature to guide the interpretation of the results of Experiment III, they may be viewed as opening a new line of inquiry.

The results of Experiment III were consistent one with another. More detailed indices were generally better than shorter ones at fostering speed and accuracy of agency identification. But the shorter the index that bore an explicit label appropriate to the test item, the better was directory search performance.

Because Experiment III was not designed to assess learning or reading abilities per se, this study did not reveal which strategies subjects used to identify index labels. Did they tnink of probable index labels in advance of index search? Did they simply scan the test indices until a label appeared relevant to the test item? If they scanned, did they settle for the first possibly appropriate label or did they choose among two or more such labels? Did they pursue the same strategies across all items or use different strategies for different test items? across formats? Hardware to answer such questions is now available.

Regardless of which strategies subjects used, a wide variety of kinds of questions were "answerable" using a directory of services. In fact, no test item -- including items for which no explicit label appeared on any of the test tables of contents -- was unanswerable at the CDL level and within the allotted time period by at least some of the subjects using each of the test index formats. This suggests that directories of services are accessible by older persons when they are legible and adequately organized and indexed. Unfortunately, Experiment III did

not include a no-table-of-contents condition. If it had, the resulting data could have contributed to greater understanding of the importance of indexing per se.

While it is true that directories were usable by some subjects even when no explicit labeling appeared on any of the test tables of contents, it is also true that directories never achieved complete usability -- even when explicit labels appeared on all the test tables of contents. Whether human factors (e.g., boredom or fatigue) or directory inadequacies (e.g., misleading agency names or poor descriptors) account for the latter is not known, but empirical investigation might supply the answer.

As noted above, indexing is only one of several low-cost means of enhancing directory organization. Optimizing overall layout, use of section headings, italics, colors, boldface type, etc., for this purpose might not only affect accuracy and speed of directory use, but also frequency of directory use. Were a section to be added to the document telling consumers how best to use the directory, that, too, might enhance accessibility. A general caveat that tempers the above is that such means should probably only be used to the extent necessary to achieve emphasis and make directory organization obvious. Too many such features could slow directory search or prevent some consumers from ever using the directory because of its superfluous appearance.

Subjects' success in performing the requirements of Experiment III suggest that many older persons (all of those tested) can perform adequately under test conditions. The relative meaningfulness and naturalness of the task requirements probably helped. Perhaps, too, some test items proved actually to be easy to "solve" and set up the expectation -- and realization -- of success with harder test items.

How well subjects would have performed the same tasks at home (e.g., under different levels of illumination) or under different levels of stress is unknown. The latter consideration is particularly relevant to the study of success in using directories of services since one is probably most likely to turn to such directories under mild or moderate stress -- not to pass the time of day or to relieve severe stress.

Directories of Services

Some broader questions about directory desirability and organization might also be raised here. Each is researchable: Which directory organization is most efficient? Can only the most commonly asked information and referral questions be addressed efficiently using directories of services? How rich in services does a community have to be to warrant publication and distribution of a directory of services for older persons? Similarly, is there some level of services density beyond which eligibility and

service selection criteria become so complex that information and referral specialists are likely to be better than directories at matching callers with services?

Perhaps all that can safely be said about services directories as an information and referral system is that while such directories can not ensure accurate service identification, they do appear to be usable for the purposes for which they are intended and for diverse kinds of questions. Directories of services may be less adequate in some instances and for some consumers than other information and referral systems. But for many of the questions posed in the research reported above and for most subjects most of the time, directory search was not only possible but efficient.

It must be remembered that obtaining accurate information and appropriate referral is only the first step toward receiving needed services. Psychological, financial, transportation, social, and other barriers may prevent one from following up on leads obtained from information and referral systems or from receiving needed help or information when one does follow up on such leads.

Beyond the conclusions, recommendations, and suppositions offered above, it would be premature to present guidelines on the design of printed reference materials intended for use by use by older persons. Nonetheless, it is probable that building on this and other applied research of import to currently older persons will "pay off" in the long run for all Americans -- current and future older citizens alike.

F O O T N O T E S

Footnotes

[1]In 1963 (Beyer and Woods, 1963) as now (Harris, 1975), older Americans spent two or more times as many hours watching television as they do reading. (Approximately one hour per day is spent reading (Beyer and Woods, 1963; Harris, 1975.) Nonetheless, adults 60 and older report that newspapers are "more important" to them than television (Steiner, 1963).

[2]As will be described in Chapter II, some book designers and publishers are willing to suggest how such materials might best be physically designed, but their assumptions have not been tested.

[3]Several conversations with Dr. Bruce Dull of the Social Security Administration (SSA) have taken place. Also inter-office memoranda regarding these findings have been reviewed.

[4]Directories of services have several virtues over other kinds of referral systems. They are compact, available for study and repeated use in the home, portable between home and service agency. They also permit the client a degree of privacy which is lost when she/he must voice his/her need for information or help to a professional information and referral staff member. Directories may even encourage a sense of security among users: Self-confidence will be enhanced by successfully using services

directories to obtain the help or information one needs. Furthermore in this regard, directories of services are available at all hours, seven days a week -- not only during working hours of service agencies.

Agencies also benefit from publishing directories of services. Not only is agency visibility increased, but also directories are relatively inexpensive to develop and distribute; they can be targeted to specific consumer audiences both in design and distribution -- or they can be widely distributed at little extra cost (since the costs of printing and mailing are relatively insignificant compared to the costs of preparation and typesetting). The ease of disseminating directories gives them an advantage over other kinds of referral services which depend on client initiative and ability.

Well designed services directories can be updated or annotated easily and inexpensively. Finally, well designed directories of services can be personalized by their users. Notes, underlining, tabbing, and other means can be invented to make directories more usable.

[5]Several comments made spontaneously by subjects during testing indicated that they saw the research task as relevant and important and even interesting. It may be indicative of subjects' interest that all but one subject requested that a copy of the San Francisco directory of services for seniors be sent to her/him.

[6]It also is possible that effective use of such directories is somewhat self-reinforcing. Several subjects spontaneously expressed pleasure when they felt they had identified a "correct" service agency to provide the help or information requested by a particular test item read as a part of the research.

[7]The design of printed reference materials, particularly directories of services, for use by older people will be influenced by their designers' (and to some extent their sponsors') attitudes and beliefs about older people. The design of directories of services may be affected by whether designers and sponsors think it is desirable (let alone possible) for older people to try to diagnose their own problems; whether designers and sponsors think it is desirable for (or characteristic of) older people to be as active as possible or to "disengage" (Hochschild, 1975); and whether designers and sponsors think old people's problems should be treated independently of younger people's.

The professional designers who consulted on this project had somewhat negative images of older people's sensory, perceptual and memory abilities. They also questioned older persons' abilities to search through directories of services, follow up on and evaluate the success of their interactions with agencies to which services directories referred them. The designers spontaneously requested information about how familiar older people are with such directories, with service agencies, and with the

concept of referral.

[8]Familiarity as a factor in older people's ability to learn and remember has also been investigated (Arenberg, 1968; Comalli, Wapner, and Werner, 1962; Canestrari, 1968; Hulicka, 1967; Korchin and Bosowitz, 1957; McNanamy, 1968; Peak, 1968; Poon and Fozard, 1978; Ruch, 1934; Thomas, Waugh, and Fozard, 1978).

[9]Confirmed by some of the leading research psychologists who also have surveyed and conducted research in this area (specifically: Botwinick, Fozard, Perlmutter, Siegler).

[10]As it turned out, there was no indication that subjects who were affiliated with aging-related organizations performed any better or worse in any of the experiments than subjects who were not affiliated with aging-oriented organizations.

[11]Confirmed by some of the leading research psychologists who also have surveyed the literature and conducted research in this area, specifically Botwinick, Fozard, Perlmutter, Siegler.

[12]Two items were dropped from testing and analysis. One test item was dropped because it duplicated content in another test item. The second test item was dropped because it called for a value judgment inappropriate for resolution by use of a directory of services.

[13]Because the test tables of contents followed the organization of the directory as prepared by its sponsors (i.e., not by the researchers), it was possible to assess

the adequacy of the tables of contents only be analyzing response speed, accuracy of agency selections for that particular location, and number of categories accessed. It had been decided, in other words, to use a "real" directory and test items rather than a directory and test items which could be designed to test the refinements of highly structured (controlled) -- and probably somewhat artificial -- variations in test item/directory relations.

[14]Somers' d_{yx} is an assymmetric measure of association for ordinal variables. The measure uses the difference between concordant and discordant pairs in the numerator. The denominator is the sum of concordant and discordant pairs tied on the dependent variable. It is normed from -1 to +1 and the test of significance is the test for the numerator as is the case with other ordinal measures (e.g., tau, gamma). Somers' d_{yx} can be interpreted as the proportion reduction in error in predicting rank of pairs of randomly chosen cases on the dependent variable when prior information is avilable concerning rank of the cases on the independent variable. It is commonly used in the social sciences and is included in the frequently used SPSS computer analysis package.

[15]Conversations with Paul Guy of Shawk Graphics, Chicago, revealed that technology appropriate to determining relative reflectance is available only at the micro- and macro-levels -- not for stimuli the sizes of the test items used in Experiments I and II. In the former instance, the micro-dot of the densitometer is too small to test adequately for reflectance. In the latter instance, too small a visual angle is subtended by the printed surface to permit analysis of all that the eye sees.

[16]Shawn Walmsley of the State University of New York at Albany is currently studying the relationship between older persons' reading habits and their perceived reading abilities.

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A P P E N D I C E S

EDITORIAL

Vision Care and Our Senior Citizens

BY: MILTON J. EGER, O.D., EDITOR

APPENDIX A

In 1975 the Auxiliary to the AOA conducted a survey of over 3,000 senior citizens in 40 states throughout the United States. The purpose of the survey was to determine and document the vision care needs of senior citizens throughout the nation.

In February, 1976 a project team headed by the late Dr. Frank Maier of the Southern College of Optometry, prepared a final report to the Board of Trustees and it is to his memory that this editorial is dedicated.

The highlights of this survey and their significance are discussed here.

"Nearly ⅔ of the senior citizens surveyed used optometrists as their primary eye practitioner. However, of those living in towns of less than 25,000 population, 72% utilized optometrists as their primary eye care specialist."

This is another confirmation of the fact that optometry serves as a primary health care profession.

"7 out of 10 senior citizens surveyed reported they have a personal or family eye specialist (optometrist or ophthalmologist), and the majority of those who do, have had this eye specialist for at least 5 years. Of those senior citizens reporting they have had their personal or family eye specialist more than 10 years, nearly 74% are patients of doctors of optometry. 51% utilize their present eye specialist primarily because they get good care and an additional 27% because they trust the doctor."

Perhaps this indicates that patients do develop vision care habits and a loyalty based on good care and trust.

Questions on availability of vision care services received this response.

"Lack of knowledge of where eye care services were available was not a factor for nearly 93% of the senior citizens in seeking vision care.

Only 3.2% of those surveyed felt the eye doctor's office hours were inconvenient. However, of those finding current office hours inconvenient, 31.9% would prefer earlier morning hours, 23.6% suggest changes in Saturday hours and 13.7% request evening hours."

This seems to indicate that the office hours of the eye care practitioners are generally convenient but if one were to develop a geriatric practice, earlier morning hours for the early rising aged might be considered.

When questioned on how eye care practitioners were chosen, the following was reported.

"Nearly ⅔ of the senior citizens selected their eye care specialist through a friend, neighbor or relative. Of the nearly 16% who selected their eye care specialist through the advice of their family physician, only 35% were cared for by optometrists."

This seems to confirm two long suspected notions that word of mouth is the most effective type of "advertising" and that physicians generally refer to physi-

cians. One might logically conclude that if optometrists were not a primary entry point to the health care delivery system and were dependent on the general practioner for referral for eye care services, the present ratio of eye care by the two providers might undergo a drastic shift.

What about advertising?

"Fewer than 5% used advertisements or the telephone directory in selecting their eye care specialist. Of those few senior citizens who did use advertisements as a means to select their eye care specialist, nearly 92% used it in selecting their optometrist and only 8% in selecting their ophthalmologist and when the telephone directory was used for selecting, nearly 74% used it to select an optometrist and 26% used it to select an ophthalmologist."

It is gratifying to note that our senior citizens are sophisticated enough to realize that advertising is not the appropriate method of securing health care. Of those who did resort to advertising, their overwhelming choice of optometrists over ophthalmologists is not significant in my opinion, for ophthalmologists rarely advertise in the general media and in some phone books are listed as physicians without specialization listings.

In determining the type of vision care problems experienced by the senior citizens:

"Nearly ⅓ of those surveyed feel their inability to see well prevents them from performing different activities such as household chores, recreation, business, etc. About 40% reported problems going up and down stairs; nearly 30% have difficulty reading the newspaper; one in five have difficulty watching television; and among those surveyed who drive, 8% have some trouble driving during daylight hours, while 45% have some trouble or can't drive at night. One out of every four citizens surveyed indicated they had an eye problem which required regular care and only about 15% of those surveyed categorized their vision as excellent. 9% of those surveyed have had cataract surgery and 11% indicated they are presently being treated for an eye disease."

This seems to indicate that even with the geriatric patient, regular optometric care far exceeds the need for medical eye care. But in spite of the apparent universal need for regular vision care for senior citizens:

"2 out of 5 (40%) of the senior citizens surveyed did not visit an eye care specialist at all during the past year (12 months) and over 15% have not done so in the past three years.

Although over half of the elderly are concerned about the cost of eye care, less than one in five say they neglect these services for lack of money.

However, among those senior citizens who did not go to an eye specialist the last time they felt the need for eye care, 48% did not go because of lack of money. 45% of the senior citizens surveyed with limited finances would visit their eye specialist more often if money were no problem.

Over 80% of those responding do not have company or personal insurance (other than Medicare) that pays for all or part of their eye care.

5 out of 6 senior citizens would urge federally subsidized programs to pay for eye care services including glasses."

The results of this survey have far reaching implications for the eyecare professions in the realization of the visual needs of our senior citizens. We, who work with the vision problems of all the people every day, realize only too well the debilitating effect that poor vision has on their efficiency and performance. We recognize that the aging process takes its toll on the mobility and activeness of the elderly. In many instances their only enjoyments are reading, television and other sedentary tasks. These pleasures are lost when vision is lost. It is bad enough when untreatable disease is the sight stealing culprit but in an affluent society, it is appalling when correctable vision goes untreated because a nation committed to take care of the health care needs of the aged through Medicare, does not consider vision care important enough to be offered as a benefit under Title XVIII.

Perhaps it is time for our senior citizens to mobilize their forces and use their political clout to correct this political shortsightedness. **AOA**

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APPENDIX B

GLOSSARY

Ascender: the upward stroke in the lower case letters b, d, f, h, k, l, t.

Body: main portion of a piece of type:

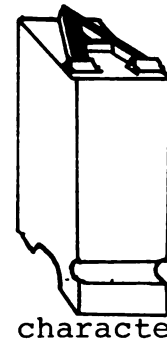


Figure from Pocket Pal: A Graphic Arts Production Handbook. New York, N.Y.: International Paper Company, 1970. Copyright 1970 by the International Paper Company. Reprinted by permission.

Boldness: the thickness of strokes which characterize a given typeface, e.g., light, medium, demi-bold, bold.

Condensation: closer than normal spacing of adjacent letters.

Descender: the downward stroke in the lower case letters g, j, p, q, y.

Expansion: greater than normal distancing of adjacent letters.

Face: the raised letter as it appears on a piece of type.

Justification: technique of applying condensation, expansion, and hyphenation, etc., to achieve straight vertical right column boundary.

Kerning: reduction of inter-letter spacing to achieve more aesthetic results or to promote more type in a limited space than would be effected by normal spacing.

Leading: the amount of space (in points) between lines.

Legibility (classic definition): ease/speed/accuracy with which individual numbers or letters can be read. (As used here: synonymous with readability.)

Letter spacing: the amount of space (in points) between individual letters and words.

Normal spacing: inter-letter and inter-word spacing achieved by using the type exactly as it is produced without condensation or expansion.

Perceptibility: recognition of presence of classes of characters, e.g., alphabetic, numeric, symbolic.

Pica: linear measure of type. There are 12-points to one pica (6 pica/inc).

Point: 0.0138" or approximately 1/72".

Point size: measure used to specify size of type. Variations run from 4 to 144 points. Most common point sizes are 7-72.

Readability (classic definition): ease/speed/accuracy with which two or more numerals, letters or words can be read. (Used here synonymously with legibility.)

Recognizability: statistical evidence of identification of individual or grouped characters.

Sans serif: typefaces lacking serif (sometimes written sanserif)

Serif: finishing strokes at the ends of main strokes of letters, e.g.,

n = sans serif n = serif

Typeface: the design characteristics of entire sets of alphabetic and numeric characters which distinguish one such set from another. Among the letters permitting one to distinguish most accurately between typefaces are g, p, a, e, and t.

Type family: the design characteristics (supplemented in some cases by historical traditions) which permit one to aggregate typefaces into design groups. Type families include Old Style, Modern, Traditional, Square Serif, Sans Serif, Script, text letters and decorative types.(See Table 2)

Typography: the art of writing by means of movable types.

Visibility: that quality of one or more numerals, letters, and words which makes it separately visible from its surroundings, i.e., present vs. absent.

x-height: the height (in points) of a lower case "x".

Weight: synonymous with boldness.

APPENDIX C

April 29, 1976

TO: Susan Chamberlain

FROM: Percy Tannenbaum

RE: Services Directory for Older San Franciscans

Because of both anticipated and unanticipated delays, we will not be in a position to complete our empirical research for some time. However, since you may have to make arrangements for printing the Directory before our research is completed, it is probably a good idea for us to share with you our impressions and best guesses regarding some of the decisions you may have to make in the preparation of the Directory. These are also the result of "research," but more in the form of reviews of the literature, consultations with vision experts, geriatric specialists, graphic designers, and printers -- not to mention feedback from our panel of elderly citizens. These sources are not always in agreement, but there appear to be enough majority and even consensual views to suggest certain steps in the absence of more empirical research.

The following comments may not be exhaustive in the sense of covering all the decisions you are apt to face, but they should address the main ones. In each case, of course, considerations of relative cost enter the picture and may well be the significant factor in decision making. While we have some rough cost estimates, our investigations

revealed considerable variations in this respect among different printers. Accordingly, we recommend that you take up these factors individually with the one or more printers you are apt to be dealing with. (Incidentally, printers find the task of estimating costs by single items and without the entire copy to go by frustrating. Therefore, it would be well to rethink many issues with the printer when the mock-up Directory becomes available.)

One last introductory caveat: these are merely what we have found out and believe and are not to be construed as firm recommendations. You are, of course, free to do with them as you wish, not necessarily as we wish.

I. Characteristics of the target population.

Given the commitment to produce 50,000 copies for general distribution in San Francisco, one should not aim for any particular segment of the elderly population in the City. The aged population in San Francisco, as in most other locales, is best characterized by a wide diversity of attributes, abilities, needs and wants, and it would be folly to assume some unitary set of attributes to focus on. This variety and diversity, along with the substantial number of copies to be distributed in a more or less non-selective manner, suggests an optimization strategy with respect to both the content and design of the Directory. At the same time, it suggests the use of certain redundancy characteristics in the preparation of the Directory since its

is best to assume that different individuals within the target population have already developed different habits or procedures for referring to and using such information systems.

There are two limiting characteristics which one must assume for present purposes: a) Only literate people (in English or at least one other of the selected languages) can use such directories, and b) they must function at a level of vision adequate to this task with the use of adequate lighting and prosthetic devices such as reading glasses or magnifying glasses. For our general purposes here, we have assumed a vision level that would accomodate approximately 75% of the elderly population, as documented in the research literature.

II. Desirable characteristics of services directory.

1. Reader availability is critical. This implies that it needs to get into the right hands -- those people most able to use it and most in need of it. (Unfortunately, the two don't always jibe.) Therefore, distribution strategy is critical. It also means that the Directory should be handy -- that it should be available to the potential user at the time it is needed (e.g., near a phone, mounted on a wall and/or hung on a string, etc.)

2. The Directory needs to be easily and quickly readable. Neither brevity of time to read nor comprehensibility should be sacrificed, if at all possible.

3. The Directory needs to be printed in an accessible format. It is not enough to merely list all the agencies. They should be classified in some meaningful manner, and some way of addressing the classification should be provided. Thus, there should be a table of contents, possibly a general index as well, and even an alphabetical agency listing. (A good deal of our current research is on the organization and wording of the first two of these.) Furthermore, the body of the Directory should be formatted and labeled (and even relabeled, where necessary) in such a way as to make obvious the organization of information therein. It would not be amiss to be somewhat redundant in labelling, table of contents, or the index.

4. The Directory should contain the information needed and that information should be up to date and accurate. Since service systems are rarely stable over a long enough period of time, re-issuing will be necessary. But if the first edition is faulty it will probably decrease the tendency to use subsequent ones. Therefore, the initial document must be as accurate as possible. It would also be desirable to design a strategy so that the user can do his/her own updating (e.g., by leaving space to write in additions and corrections, and by including a pocket for the collection of relevant clippings). Obviously, the Commission on Aging should make sure its Senior Information Line is updated and accurate on a continuing basis. Among other things, this will abet the preparation of later

editions of the Directory.

5. Users can benefit from a back-up service for problem clarification and/or addressing problems not covered in the Directory itself. This is suggested because many problems cannot be directly addressed by a service directory, others are so complex that simple self-referrals are insufficient, and still others are not matchable with existing service agencies. Therefore, an I & R telephone service to supplement the Directory is required and information regarding it should appear conspicuously and with some regularity in the Directory.

6. The Directory might well feature a way for consumers (inquirers) to provide feedback with regard to possible improvements in or updating of the Directory, a report on contacts with agencies to which the Directory refers inquirers, etc. At the very least, users should be invited to provide commentary on their own initiative.

7. As with other such ambitious ventures, there are a number of tradeoffs involved, and those should be considered carefully in advance. The prior decision to have a set number of copies in a given number of languages and a fixed budget imposes substantial constraints which will inevitably have to be pitted against certain quality decisions. Most apparent, a tendency to maximize cost effectiveness may invoke severe efficiency limitations. To neglect the latter in favor of cost considerations can be counter-productive since it will inevitably affect how many people can use the

Directory with a maximum of ease. If necessary, our general preference is for sacrificing breadth of coverage (how many users) in favor of selectivity (those who need it most and can use it) and for maximizing usability once it is in the right hands.

III. Presentation characteristics.

1. Typography. Because of the cost and production factors involved in making choices about typography, those decisions you do make in this regard may well determine others. The primary choice in the printing of any such document is whether to use IBM Selectric typing or to typeset. The combined wisdom of our various sources of input and some empirical data suggest that appropriate typesetting is not only preferrable but also strongly desirable even at the expense of some other desirable characteristics. In spite of the additional cost involved, typesetting has been strongly recommended by those with whom we have spoken. If, however, one had to use the Selectric, the larger and bolder typefaces should be selected.

2. Typeface. If one decided to typeset, any of the following three typefaces would probably meet the criteria of ease of readability; ready availability; and familiarity: Bookman, Century Schoolbook, or Helvetica. The first two are serif typefaces; the third, sans-serif. Bookman is preferable to some because of the more consistent and somewhat bolder thickness of the lines. However, Century Schoolbook is used more frequently and hence may be more

familiar to most readers. Helvetica is one of the most commonly available sans-serif faces and is also probably legible enough for most older readers. (One of the issues we are not addressing empirically has to do with the relative merits of these typefaces. Past research with low vision and partially sighted readers mildly favors san-serif typefaces but familiarity also plays a role in legibility so that some trade-off may be involved.)

3. Boldness. Many typefaces come in light, regular, demi- and boldface. The middle two of these seem most acceptable for general copy, but the use of the bold typeface for emphasis, major headings, and such, is also recommended.

4. Type Size. Consensus favors 12- and 14-point type with a minimum of 11-point for maximum readability by an older population (recognizing that different typefaces assume different actual sizes). Larger type clearly yields better legibility up to a certain limit, but each increase in type size also results in a loss of space and in a more grade-school primer appearance. At the upper limit, if the copy is so voluminous that printing in large type expands the required number of pages beyond financially tolerable limits (e.g., as inviting 16 extra pages), the smaller type size in the selected typeface or a different typeface altogether may be required. This is partially explained by the fact that different typefaces in the same point size may well differ in width or in boldness as well as style -- and readability is the composite product of all of these as

well as other factors yet to be discussed.

5. Emphasis. It will obviously be necessary to highlight certain words or phrases for added emphasis. Techniques include coloring, underlining, italicizing, using caps only, boxing, setting off spatially (e.g., indented), etc. Most of these changes involve some added activity on the part of the viewer (e.g., visually refocusing or cognitively rethinking), which makes for somewhat more effort and/or time expenditure, possibly some loss of information. For example, some experts suggest that the shapes of words (maximized by using lower case letters) help some readers read more accurately and faster. Thus, given the choice between bold-face lower case vs. all capitals as means of emphasis, the former might be preferred for older readers.

6. Between word spacing. Spacing in general can significantly influence legibility and readability for people with relatively poor vision. Most obviously, between word spacing is such that words tend to "run together" and the distinction between them gets blurred; readability is, thereby, adversely affected. Thus, some degree of separation is necessary although this, too, can be overdone, of course. Other things being equal, "normal spacing" (i.e., taking the type as it comes prespaced) would appear to be the simplest solution here.

A special case of word separation when block copy is involved relates to whether the right hand column should be

"justified" or somewhat irregular. The former is usually preferred for aesthetic reasons, but it would be folly to insist upon it if achieving it necessitated unduly condensing some lines, expanding others, etc. For most of the copy for a directory, this may not be a problem -- which makes insisting upon justification for mainly aesthetic reasons a rather dubious design tactic. By the same token, breaking a word (hyphenating) at the end of a line seems unnecessary for the nature of the material anticipated.

7. Between line spacing. Also known as "leading," this relates to the distance between successive lines of normal running copy. Given the normal standard, leading for our purposes should never be less than the point size of the typeface chosen and should probably be a bit higher as an aid to word and sentence readability. Again, there is some tradeoff between "leading out" and saving space, but this will probably not be a major cost consideration in the end. (For our testing purposes, we are using a constant two points greater than the point size of the typeface for leading.)

8. Column width. This is one of our testing variables about which we know little at this time. Recommendations from experts and some independent research would imply that column width would be best set at 30 to 36 picas (5-6") no matter which typeface and point size one were to choose for reading by older people. The effect of column width is clearly greatest in the printing of lengthy text, not phrases

such as agency names. Nonetheless, even these should probably be spread over two lines if they would otherwise exceed 6" in length.

IV. Materials

1. Paper stock. Durability, within reason, is an obviously important criterion for paper selection, and so are such characteristics as opaqueness, surface quality and color. The paper should be opaque enough so that the copy on one side of the page is not visible on the other. The interaction of surface quality with "color" is potentially important. The glossier the surface of the paper, the more light will be reflected to the eye of the reader -- often producing undesirable glare. Glare can be greatly reduced by color reversal -- that is, by black-inking the ground and leaving the figure (copy) white. Glare is somewhat reduced, however, by simply printing in black ink on off-white (yellow-white) rather than bright white (blue-white) paper. A strong yellow paper is also very effective when the print is in highly saturated black ink -- significantly more effective for some readers than black ink on white ground. (Again, one feature of our testing program involves such comparisons of print and paper color, with results still pending.)

2. Ink. The one cardinal rule here is that the ink chosen should provide maximum contrast with the paper selected (as measured by densitometer).

V. Packaging

1. Format. The basic choice here is between some variant of a layered format (such as the San Mateo Directory) or booklet style. The former is judged to be much more expensive -- as much as one-third of eacy copy's cost. Whether such an expenditure is worth the extra cost is doubtful, given the already present cost constraints. A book-like format is less costly than almost any other packaging option, although perhaps not as attractive.

2. Binding. There are a number of options here but we do not have figures to give you on relative costs. The advantages of a spiral binding -- preferably metal rather than plastic -- are that the Directory will open flat and can be easily hung for ready access. One disadvantage is that some printers do not spiral bind in their own shops. Another is that it is more costly. The conventional binding of books is evidently superior to staple binding for durability and safety, but durability is not one of the key objectives of a services directory considering its infrequent use and obsolescence rate.

3. Accessibility. Ready access is clearly desirable because such directories are especially intended for use in times of need. Therefore, the possibility of punching a hole for hanging by a string might well be investigated.

4. Size. There appear to be few concrete guidelines here -- other than the obvious fact that it should not be too small for finding readily when needed or for legibility,

and not too big for handling. Therefore, size is probably a good variable to manipulate (i.e., to increase in order to achieve economies of cost while not sacrificing efficiency). Factors to consider in such an accommodation include:

a) The book format usually involved units of 16 pages, so that often a great deal of extra cost can be incurred by variations that add only a few pages.

b) Wherever possible, whole units of information (such as a single category of service agencies, etc.) should be included on one page; including multiple categories on one page can add significantly to confusion if not to cost.

c) As indicated above, to the degree feasible, blank space should be allowed between and within major categories for writing in pertinent and helpful information.

5. Insert Space. A desideratum for such a directory that was strongly emphasized to us by our Elderly Resource Panel involved inclusion of some appropriate container (or envelope) for depositing clippings relating to each of the major categories. On reflection, we were very impressed with this suggestion, especially if a separate compartment could be provided for each of the major service categories. However, our investigation of these options suggested so excessive an added cost that it was obviously impossible for our present purposes, given the constraints already imposed. Given the priority of other considerations -- e.g., such as fewer copies directed at the audience best equipped to use the information -- this might be a more principal design

consideration and accordingly should be kept in mind for future editions.

VI. Organization

1. Content. Because all of us have established habits which determine how we will get answers to our questions and because these habits are different between people, it is probably advisable to provide several ways for inquirers to access the Directory in their personalized ways. Quite apart from a table of contents or an index, it is important to design the body of the Directory in such a way as to make its contents more obvious. Thus, category and sub-category labels should be employed, and should probably appear on every page.

By the same token, extraneous information should be excluded. The underlying assumption is that the Directory is intended to be used in times of need, which may also be times of distress, and hence distractions should be avoided. And for some, certain extra information may prove extremely valuable -- like how to get a MUNI map or BART discount ticket. Public transportation does, after all, promote the usefulness for many of a self-referral mechanism such as a services directory -- by making self-referral possible in the first place.

On the other hand, certain extra information would be highly desirable. Included here are:

a. Listing of emergency phone numbers, to be featured prominently at the beginning of the Directory. One might

also explore in this regard the feasibility of a cut out section on the cover featuring emergency numbers that could fit into the center of a telephone dial -- this same information being repeated on the first page so as to show through the aperture.

b. Information on how to get transportation aides, such as a MUNI map or BART discount ticket (assuming strikes don't stop either or both services). Public transportation is a part of gaining access to service agencies and hence is part and parcel of what an I & R is to provide.

c. As mentioned above, an indication of a basic I & R number, e.g., the Senior Information Line, which is presumably available on a 24 hour basis. This number should probably repeat with some regularity throught the Directory.

2. Indexing System. One major incomplete aspect of our empirical research has to do with the labeling and organization of a Table of Contents for a seniors' services directory. It is likely that the optimal display is of a few (e.g., perhaps a dozen) major headings and additional subheadings, each of which clearly indicates the pages of the Directory which are relevant.

The distinction between major and minor headings should be obvious by their appearance in the Table of Contents. An example of the format of a Table of Contents we are currently testing follows:

T A B L E O F C O N T E N T S (example)

E M E R G E N C Y I N F O R M A T I O N--See Back Cover

FOOD SERVICES AND NUTRITION INFORMATION -- (Continued)

- Meals on Wheels
- Title VII Nutrition Sites (Low cost meals for seniors)

HEALTH

- Ambulance
- Day Care Centers
- Dental Care
- Health Care Facilities
  - Clinics
  - Convalescent Hospitals
  - Hospitals
- Health Insurance
- Health Services
  - Hearing
  - Podiatric (Feet)
  - Visual (Eyes)
- Home Health Care
- Homemaker Service
- Medical Supplies and Equipment
- Mental Health Services
- Nursing Care

Housing

- Housing Facilities
  - Homes for the Aged
  - Nursing Homes
  - Senior Housing

3. Order of categories. Assuming you will end up using some categorization scheme, such as the above, there is still the matter of the sequence of the main categories, both for a Table of Contents and for the listing within the Directory itself. One school of thought suggests that the more subjectively significant (salient) categories be listed first -- tapering off the less subjectively significant. Another suggestion is to order categories by expected frequency of usage, from the most to the least; this might correspond to some statistically established prevalence or need assessment. A third approach is to order the main categories in alphabetical sequence and leave it at that.

We have no guidelines to help choose among these alternatives, or for that matter, a fourth that some individuals might suggest: "feels right." Perhaps here aesthetic considerations or the like could dominate. Alternatively, we might suggest you contact a librarian or anyone else with experience in this area and check out his or her thoughts.

VII. Languages.

We take it that there has been commitment to print the Directory primarily in English with some copies in Chinese, Spanish and Japanese. What still remains to be settled is just how the non-English language edition will be prepared and distributed. There are several choices here and, if for no other reasons than pure cost considerations, the decisions

as to which to pursue are not trivial ones.

1. Total reprinting in different languages. This is the option which was discussed before, probably because it is the most obvious. We would have thought this would be the most expensive in production, but initial, tentative estimates indicate that this is not necessarily the case. Distribution costs are likely to be high, however, and getting the "right" Directory in the "right" hands, a problem.

The more we thought about it, however, the more we realized that there would be a great deal of unnecessary duplication which would probably not involve language duplication as such. The bulk of the Directory is, after all, a set of proper names of agencies, addressed with numbers and street designations, and telephone numbers. None of these is directly translatable from English and even if they were, they may introduce more difficulty in accessing the right agency than be facilitative. Listing the telephone number in either of the Oriental designations would make dialing all the more difficult; listing an English agency name in Spanish would probably have the same effect.

What a non-English speaking individual needs in this case is a Directory which lists the headings in a form comprehensible to him or her, along with any descriptive materials for a given agency. The rest of the copy should probably remain in English in order to facilitate direct communication. This situation suggests the following possibilities. Most simply, however, what such a person has

to know is which agencies can respond to their requests in their native languages. Not all agencies have people on tap who can speak one of the three languages above and it would be counterproductive to direct an individual to an agency which could not help because of an acute language problem.

2. All languages repeated sequentially in all copies. While this option would permit maximum ease of distribution, the publication costs of deciding on it are quite high. (The discussion in the preceding two paragraphs holds for this alternative as well.)

3. Four editions of the Directory: English; English + Chinese; English + Japanese; English + Spanish -- either in mixed or sequential order. This is the alternative PHT prefers without regard to cost factors, for the following reasons:

a. The Directory is to be used by persons who speak one language and yet must access agency names, addresses, and telephone numbers in English to use the Directory most efficiently. It is in translating a need into a question of the Directory and then acting on that information in a primarily English-speaking environment which poses this dilemma. The combination of the possibility of locating information appearing in English after identifying the need-to-service match in one's native tongue seems highly desirable.

b. This alternative permits the operation of older

persons' making supplementary use of their previously existing networks of communication; children, social workers, etc. The Directory PLUS such resource persons who may not necessarily speak the older person's native language is likely to be a better resource than either the Directory or the resource person alone.

No matter which alternative you select, the main goal of the multiple language approach is to make the Directory maximally usable by indicating which agencies can service foreign language speaking older persons in their own tongues. Therefore, we strongly recommend that ANY English edition of the Directory you publish -- even in combination with other-language sections -- include notation next to each agency which is committed to providing a translator or worker in each of the target languages (in view of the flux in agency staffing), -- in other words, that you include either a symbol or the words "Chinese (spoken) (here)" in CHINESE, etc.

VIII. The Directory should be dated with the month and year of publication.

IX. There should be instructions somewhere in or attached to the Directory as to how to obtain copies of the Directory for others.

X. No directory we have seen has provided for write-in space in their services directory. While the provision of such blank space is clearly an extravagance of a sort, the

gain in use of a directory by older people may be sufficient to merit such "wasted space." Such space might be used for writing down the name of the agency person contacted, notes for future use, referral telephone numbers. (This suggestion and that of a pocket at the back of the Directory for clippings relevant to services for seniors were two suggestions from our Senior Panel.)

APPENDIX E

Test items used were:

1. What do I do to get MUNI and BART discounts?
2. Who is eligible for food stamps? I just can't pay those prices anymore.
3. What theaters in the City give discounts to seniors?
4. My mother-in-law lost her medicare card in December. How do I get one for her?
5. How much can you earn and still get SSI?

---

6. My dentures fell and got chipped and now they don't fit right. I got them in New York years ago. Where can I go for help? I can't afford a regular dentist.
7. What are Gray Panthers? I think I'd like to join. But are they radical?
8. I've got to have this prescription filled, but the druggist says they won't accept out-of-state prescriptions. What am I to do?
9. What is the best senior center in town?
10. My friend -- in her late seventies -- is coming home from the hospital and needs help with housework, shopping and cooking for the next couple weeks.
11. They took my purse and knocked me down. The man at the bank won't give me my SSI check without an identification card -- and they're all gone. What can I do? I've got to have some money!

12. I've never filled out a tax form in my life. My husband always did it. But not that he's passed away, I don't know how to begin.
13. I'm afraid to complain about the treatment my mother gets at that nursing home. They'll take it out on her and she's very fragile now. What can I do? She won't eat their food, doesn't get more than one bath a week, and just sits all day dozing and banging on that table.
14. My landlord sold the building and he's going to raise the rent again. I can't afford to stay here, but the Housing Authority says there's no use going on the waiting list; it's two years long already.
15. I'm a bachelor. I live with my mother. She's got to have someone around all the time 'cause she falls a lot. But I have to be out of town a lot -- to support us. Aren't there live-in nurses or aides or someone?
16. I saw a magazine for senior citizens in my doctor's waiting room but I didn't write down the name of it. How do I find out about publications for older readers?
17. My house hasn't been painted or plastered for years and it's in terrible condition. I can pay for the paint and stuff, but I can't afford a professional repair and paint job.
18. When my husband died they gave me $100 to tide me

over. But the estate's still not settled -- and it's been three years. How am I supposed to live? It's my money, too!

19. I have to work full time and my father can't be left alone long. Now my daughter is going away to college and I don't know what to do about someone to be with Dad.
20. My sister's been acting really strange lately. I'm worried. Last night, she threatened to kill me -- and that look on her face! I'm frightened. And she talks funny; forgets a lot, too.
21. Is there a bus or other transportation service for seniors? I can't carry those heavy bags of groceries on MUNI.
22. I can't afford to retire, but they're making me retire next week anyway. I have to find work -- even part time will help.
23. Can a senior ride the MUNI with just a Medicare card?
24. My Social Security card's been stolen. I went to the Social Security office, but nothing's happened.
25. I can't see these Medicare forms well enough to fill then out. Can't someone help me?
26. I'm afraid to go outside alone.
27. They just ignore you when you get old. No one will talk to me anymore. I can't stand this lonely

room one more day!

28. I want to vote, but can't get to the polls on my own. It's too late to get one of those absentee ballots.

29. I gave a door-to-door salesman my check and he hasn't delivered what I ordered.

APPENDIX F

ERROR PERFORMANCE AS DEPENDENT VARIABLE, LEGIBILITY RESEARCH

Accuracy of reading reference materials may be even more important to readers themselves than time spent reading. Two kinds of reading errors were anticipated: errors of omission and errors of commission.

Errors of omission generally took the form of omitting to read suffixes on words, e.g., "and they're all gone" (when the hand marked material indicates an error in reading). Unfortunately, it is almost impossible to judge whether such errors reflect lapses in legibility or more accurately reflect differences in linguistic patterns. It is true that some subjects consistently dropped "they're," "can't," "they'll" and "I've." It is also true that such errors occurred most often among subjects for whom English was not their first language.

Errors of commission may be exemplified as follows:

1. Addition:
   a. "I want to vote, but I can't get to the polls on my own. And It's too late to . . .
   b. "... and he's going to raise the rent again." S: "That doesn't make sense." E_1: "Read from the beginning."
2. Repetition:
   a. "I have to find work -- even part time

~~will help~~." help will help--even part-time....

b. "... without an (iden)ification card. 2x

3. Inversion/Transposition:

a. "But (are they) radical?"

4. Substitution:

a. "... and she's very ~~fragile~~ frail now.

b. "Where can I go ~~for~~ to get help?"

c. "How do I find out about publications for older ~~readers~~ seniors?"

5. Multiple:

a. "They just ignore you when you get old. No one will ~~talk~~ take to me anymore. I can't stand this lonely room anymore, anymore one more day."

b. "My house hasn't been painted or plastered for years and it's in terrible condition. I can can't pay pay for the paint and stuff, but I can't afford a professional repair man and paint print job and paint job."

In almost all cases, errors did not substantially alter the conceptial integrity of the test passage. In addition, almost all errors of substance were self-corrected. In fact, inspection of obtained data suggests that time taken to read each passage reflects error performance rather well.

Both a per unit and an aggregated count of errors were taken. In the former instance, all possible words, omitted suffixes, etc., were counted per unit. In the latter instance, whole phrases or words, whichever was larger, were

counted as single errors and dropped suffixes were not counted as errors. Tables F-1 and F-2 detail the two kinds of error counts for TI_{6-20}.

Several facts contributed to the decision to analyze reading time alone. First, a large number of errors were errors of addition (self-corrections). The finding that most errors were corrected by rereading lengthy portions of the test passages were unanticipated. It may be that subject characteristics (e.g., reading habits, perseverance, or motivation to perform in the test situation) would have been reflected by such errors rather than legibility effects. Second, other errors appear to have been language based. (Some subjects were foreign born.) Third, error performance was reflected to some extent in time spent reading. Fourth, in no instance did any subject fail to comprehend the conceptual intent of any test passage (as indexed by performance in Experiment III). Fifth, error rate was regarded as modest: 1059/33,336 = 3.18% (unit) or 42/33,336 = 1.26% (aggregated). Sixth and finally, speed of reading has been shown to be a sensitive indicator of legibility of print:

> Analysis of the results, taking account of the normal reading situation, perceptual habits in reading and practicality, indicate that speed of reading when adequately controlled is the most valid of (those discussed) as a measure of readability. (Tinker, 1944, p. 395)
>
> (W)hen adequately controlled [reading speed] is the most valid of [those discussed] as a measure of readability. (Tinker, 1944, p. 395)

Table F-1. Frequency of Reading Error Performance for TI_{6-20} where All Possible Errors are Counted per Word as One Error and where Whole Phrases or Words, whichever is Larger, are Councted as One Error Each.

Units of Count	Errors Made		
	$Reading_1$ only	$Reading_{1,2}$	$Reading_2$ only
Words, Suffixes, etc.	369	85	248
Whole Phrases or Words, Whichever is Larger	125	81	66
Larger-unit Errors as Percent of Individual Word, Suffix, etc. Errors	33.87	95.29	26.61
Number of Words in Test Passages	463	926	463

Table F-2. Frequency of Reading Error Performance for TI_{6-20} where Whole Units (Words or Phrases, whichever is Larger) are Counted as One Error Each.

Occasion	Substitutions	Repetitions	Additions	Omissions	Inversions	Total
# Errors, $Reading_1$ Only	38	28	94	13	2	175
% Errors, $Reading_1$ Only	22	16	54	7	1	100
# Errors, $Readings_{1,2}$	27	6	15	5	1	54
% Errors, $Readings_{1,2}$ Only	50	11	28	9	2	100
# Errors, $Reading_2$ Only	30	14	77	21	2	144
% Errors, $Reading_2$ Only	21	10	53	15	1	100

APPENDIX G

INSTRUCTIONS TO SUBJECTS

(Introduction) You are about to participate in a study of reference materials intended for use by older readers. This study came about because many such materials do not seem easily readable by anyone -- much less to older people who may experience some trouble seeing well.

We are interested in the physical appearance of such printed materials -- everything from how they look to how their contents are organized. This is not a test of YOU. It is a test of the materials we are going to give you to read and to label.

Do you normally wear reading glasses? (If yes, have participant wear them. Excuse from testing any participant who forgets his or her glasses, etc.)

I'm going to ask you to read out loud a series of paragraphs twice each. Then I'd like you to identify a category on this Table of Contents which will help you find an agency listed in your Directory of Services to help you with this problem. It's kind of a game -- in that we know you probably don't have this problem yourself. But we'd like to pretend that it's your problem, and look up an agency to help you solve this problem. Please use the Table of Contents every time -- before opening the Directory. It's the organization of the Table of Contents we're most interested in for this part of the study.

To review, I'm asking you to read a paragraph out loud twice; choose a potentially helpful category from the Table of Contents and tell me which category you've chosen; and finally tell me the agency name and telephone number you choose.

We'll be tape recording the whole session in order to get the best possible picture of what happens. Nili will also be timing how long it takes to read each paragraph so that we can later decide how best to print reference materials for older readers like yourself. Actually, we don't want you to rush through; that's not the point. We ask only that you read at your normal speed -- not too fast and not too slow.

If you have any questions, please feel free to ask them -- now or at the very end of this session. (Wait for questions.) (If none:) If you do have questions as we proceed and they are not exactly related to what you are doing at that very moment, please hold off on asking them until the end of testing. Then we'll chat about the whole thing.

While the results of this study may not affect you directly, you may be assured that if we come up with better ways of printing reference materials for older readers, we shall make our findings generally available. There is potential, therefore, that you are helping make such materials more readable for more than 14,000,000 older Americans.

Here is the first paragraph. Please read it twice, out loud." (E_1 places TI_1 on reading stand in front of participant.) Ready, begin. (Reading one.) Ready, again. (Reading two.)

(Continue through TI_5. If questions are raised at this point regarding the presentation of the item in a different typeface and/or typesize than TI_{1-4}, E_1 will casually point out that indeed there are differences between the printing jobs on each card -- just like "in real life" -- but that the participant should try to ignore such differences and simply try to do his/her best to read each TI as they normally would at home.)

Note. TIs were not piled in front of subjects for them to pick up for two reasons: First older people may have arthritis, making such movements awkward, embarrassing, or, at least uncomfortable and irregular. Secondly, it was assumed that E_2 would make fewer mistakes such as picking up two or more cards at a time -- a sequencing error which is easy to make, but which can affect overall results -- if only by disconcerting subjects and experimenters.

APPENDIX H

OPTIMAL COMBINATIONS OF LINE WIDTHS x TYPESIZE x LEADING

6 POINT

14-pica line width with 2 to 4-point leading
21-pica line width with 4-point leading
28-pica line width with 2 to 4-point leading

8 POINT

14-pica line width with 2 to 4-point leading
21-pica line width with 2 to 4-point leading
28-pica line width with 1 to 4-point leading
36-pica line width with 2 to 4-point leading

9 POINT

14-pica line width with 1 to 4-point leading
18-pica line width with 1 to 4-point leading
30-pica line width with 1 to 4-point leading

10 POINT

14-pica line width with 1 to 4-point leading
19-pica line width 2 to 4-point leading
31-pica line width with 2-point leading (marginal)

11 POINT

16-pica line width with 1 to 2-point leading
25-pica line width with or without leading
34-pica line width with 1 or 2-point leading

12 POINT

17-pica line width with 1 to 4-point leading
25-pica line width with or without leading
33-pica line width with 1 to 4-point leading

NOTE: From Tinker, M.A. Legibility of Print. Ames, I.O.: Iowa State University, 1963.

SHORT FORMAT

TABLE OF CONTENTS

TABLE OF CONTENTS

MEDIUM FORMAT

TABLE OF CONTENTS

APPENDIX I

TABLE OF CONTENTS

LONG FORMAT

TABLE OF CONTENTS

APPENDIX I

TABLE OF CONTENTS

THE SAN FRANCISCO COMMISSION ON THE AGING

in cooperation with

The Junior League of San Francisco, Inc.

presents

A D I R E C T O R Y O F S E R V I C E S

F O R O L D E R S A N F R A N C I S C A N S

June, 1976

San Francisco Commission on the Aging
1095 Market Street (Seventh Floor)
San Francisco, C A 9 4 1 0 3
(415) 558 - 5512

COMMISSION ON THE AGING
City and County of San Francisco

1095 Market Street, San Francisco, California 94103

(415) 558-2126

May, 1976

Dear Friend,

Cordially yours,

George W. Ong, Chairman

W. Patrick Magee, Executive Director

I N S T R U C T I O N S

FOR USE OF THE DIRECTORY OF SERVICES FOR OLDER SAN FRANCISCANS

1. Turn to pages 4 and 5 for the Table of Contents.

2. Choose a term to describe your question and find that term in the Table of Contents.

3. Turn to the page indicated to identify an agency suited to respond to your question.

4. Call that agency and describe your question.

5. If the agency you have selected can help you, note down any recommendations they make. Be sure to record the name of the person with whom you speak--for possible future reference.

6. If the agency you have selected cannot adequately handle your question, ask the person to whom you are speaking to refer you to someone or some agency who can probably help you.

7. If you cannot identify the best agency for your purposes, call the San Francisco Commission on Aging's Senior Information Line at 558-5512. Perhaps they will be able to help you choose the best agency to contact.

Some problems and questions do not require the assistance of a service agency. In such cases, one of the following numbers may prove useful:

San Francisco Public Library
(General Reference) -- Main Library..... 558-3191

U.S. Postal Service --
(Rates and Information)..... 556-2500

Local Telephone Information..... Dial 411

Long Distance Information.....(area code) 555-1212

COMMUNITY SERVICE AGENCIES

FILIPINO-AMERICAN SENIOR CITIZEN CENTER, INC. 285-2076
3208 Mission Street, San Francisco
Counseling, outreach, recreational activities, group meals.

ITALIAN WELFARE AGENCY. 362-6423
678 Green Street, San Francisco
Information geared to cultural differences, language barriers; services not limited to those of Italian descent.

JEWISH COMMUNITY CENTER 346-6040
3200 California Street, San Francisco
Information, counseling, nutrition program, variety of activities for senior citizens.

KIMOCHI 563-5626
1581 Webster Street, San Francisco
Serves the Japanese community; general counseling, outreach and escort services, health screening, education classes and nutrition program.

SELF-HELP FOR THE ELDERLY 982-9171
3 Old Chinatown Lane, San Francisco
Serves the Chinese community. General counseling, outreach and escort services, nutrition program.

DISCOUNTS

SENIOR CITIZEN "GOLD DISCOUNT CARD"
Entitles persons 60 years old and over to both commercial and entertainment discounts in San Francisco. This card is free and can be obtained at the Commission on the Aging, 1095 Market Street, &th Floor, San Francisco. Call the SENIOR INFORMATION LINE, 558-5512, for further information.

SENIOR CITIZEN MUNI I.D. CARD
Entitles persons 65 years or older to ride the San Francisco Muni Railway for 5¢. The necessary identification card can be obtained free from the Commission on the Aging, 1095 Market Street, 7th Floor, San Francisco (8:30 a.m. - 5:00 p.m.) Please bring proof of birth (birth certificate, driver's license, Medi-Care card) when applying for I.D. card.

TRANSIT DISCOUNT CARD FOR HANDICAPPED PERSONS
If you receive Disability Payments, you are eligible for the Transit Discount Card for Handicapped Persons. This card can be used on BART, A.C. Transit, Golden Gate Transit, Santa Clara Transportation and San Francisco Municipal Railway. In order to qualify, a Certificate Form must first be filled out by your physician. This form can be obtained via mail or in person at the Commission of the Aging, 1095 Market Street, 7th Floor, San Francisco.Call the SENIOR INFORMATION LINE, 558-5512, for further information.

E D U C A T I O N

ADULT LITERACY CENTER 863-4402
P. O. Box 15306, San Francisco

Reading classes; no fees

BLIND CRAFT 431-1481
1097 Howard Street, San Francisco

Training for the blind.

CENTER FOR LEARNING IN RETIREMENT (CLIR) 861-6834
55 Laguna Street, San Francisco

An educational program for older San Franciscans.
Fee: $100 per year. Sponsor: Univ. of Calif. (Extension)

COMMUNITY COLLEGE EDUCATIONAL CENTERS

Day and evening classes. No fees

Alemany Adult School. 776-4639
750 Eddy Street, San Francisco

Galileo Adult School. 776-5018
1150 Francisco Street, San Francisco

John Adams Adult School 346-7044
1860 Hayes Street, San Francisco

Mission Adult School. 648-1415
938 Valencia Street, San Francisco

Pacific Heights Adult School. 626-0996
31 Gough Street, San Francisco

FROMM INSTITUTE FOR CONTINUING LEARNING 666-6320
Golden Gate and Parker Avenues, San Francisco

An educational program for older San Franciscans.
Fee is $100 per year. A few scholarships are
available. Sponsor: Univ. of San Francisco

INTERNATIONAL INSTITUTE 673-1720
2209 Van Ness Avenue, San Francisco

English for immigrants. Fee is $9 per semester.

PEOPLE'S LAW SCHOOL 285-5066
558 Capp Street, San Francisco

Classes on laws affecting daily rights. No fees.

"SIXTY PLUS" EDUCATION AND SOCIAL GROUP . . . . . .
1600 Holloway Avenue, San Francisco

"Sixty Plus" meets every Thursday from 1:30 to 3:30
for a lecture and, on alternate Thursdays, social
activities. Fee: $25 per year.

EMPLOYMENT AND VOLUNTEER OPPORTUNITIES

EMPLOYMENT OPPORTUNITIES

ECONOMIC OPPORTUNITY COUNCIL (Community Services Project) 771-7100
730 Polk Street, San Francisco

8:00 - 5:00 Monday - Friday

Employment referrals for persons 55 and older.

FOSTER GRANDPARENT PROGRAM (an ACTION program). 474-0828
1010 Gough Street

8:30 - 5:00 Monday - Friday

Low income seniors, 60 or older "adopt" a child for 4 hours a day. Seniors are paid $1.60 an hour plus 50¢ each day for transportation. Free meal each day.

ECONOMIC DEVELOPMENT DEPARTMENT

8:30 - 5:00 Monday - Friday

There is a job board in each office. All available jobs are listed on this board. Go to the office closest to your home. No fees.

Chinatown/North Beach, 661 Commercial Street. 433-0575

Downtown Area, 134 California Street. 557-2976

Hunter's Point/Bayview, 6025 Third Street 557-1939

Mission District, 2948 Sixteenth Street 557-1300

Western Addition, 1425 Turk Street. 557-1744

MATURE TEMPS. 986-7787
44 Montgomery Street (Room 2716), San Francisco

8:30 - 6:00 Monday - Friday

Job placement for persons 50 or older; job information and referral, job counseling, etc.

RETIREMENT JOBS, INC. 781-4831
225 Kearny Street (Suite 203), San Francisco

10:00 - 3:00 Monday - Friday

Job search counseling, career counseling, and job information, referral and placement for persons 55 or older. No fees.

EMPLOYMENT AND VOLUNTEER OPPORTUNITIES

VOLUNTEER OPPORTUNITIES

RETIRED SENIOR VOLUNTEER PROGRAM (an ACTION program) 346-1812

3200 California Street (Jewish Community Center)

9:00 - 5:00 Monday - Friday

Placement services for persons 60 or older who want to do volunteer work in the community.

RETIRED SENIOR VOLUNTEER PROGRAM (an ACTION program) 731-3335

2101 Twentieth Avenue (Council of Churches)

9:00 - 5:00 Monday - Friday

Connects older adults to a wide range of volunteer activities; focal point of RSVP activity are the needs and interests of the senior volunteers.

VOLUNTEER BUREAU 864-4200

33 Gough Street, San Francisco

8:30 - 4:30 Monday - Friday

The Volunteer Bureau is a referral agency for 500 non-profit organizations. If you would like to volunteer, call to arrange for an interview.

VOLUNTEER SERVICES PROGRAM 558-2151

870 Market Street (Room 1088), San Francisco

8:30 - 5:00 Monday - Friday

They have two volunteer programs:
1. Friendly visiting Program in which volunteers visit older and disabled persons; and
2. Telephone Reassurance Program in which volunteers call and give support to older, lonely, often isolated persons.

They also need clerical volunteers.

F I N A N C E S

INCOME

GENERAL ASSISTANCE 558-5711

To qualify, one must be needy and not eligible for AFDC or SSI. One must be 18 or older and must have no more than $1 in cash or savings. In addition, if one owns a car, the cash value of the car must not exceed $150 (or $600 if the car is used for work or medical reasons).

To apply for General Assistance, go to the Department of Social Services, 1680 Mission Street, or phone 558-5711 for an appointment.

MEDICALLY INDIGENT ADULT ASSISTANCE. 558-2112

To qualify, one must be needy and not eligible for AFDC or SSI. One must be between the ages of 21 and 65 and have less than $600 in cash and available funds. In addition, one's income alone must not exceed $174 per month (or, for a couple, $232)

To apply for Medically Indigent Assistance, go the Department of Social Services, 150 Otis Street between 8:00 and 11:00 am or between 1:00 and 3:00 pm weekdays, or phone 558-2112 for an appointment.

SOCIAL SECURITY. 956-3000

If you need information or have problems regarding your Social Security benefits (green check) or Supplemental Security Income (gold check), please call 956-3000 and ask to speak to a representative in the district office closest to your home:

Bayview/Hunter's Point, 1518 Third Street

Chinatown/North Beach, 145 Columbus Avenue

Civic Center, 303 Golden Gate Avenue

Inner Mission, 3199 Mission Street

Outer Mission, 5226 Mission Street

Parkside, 2311 Taraval Street

Western Addition, 1701 Divisadero

You may be eligible to receive Supplemental Security Income if you are 65 or over or you are disabled or blind and your income and resources are limited. If you think you might qualify for SSI, contact you local Social Security Security office.

F I N A N C E S

INCOME

GENERAL ASSISTANCE

To qualify for General Assistance, one must be

needy and not eligible for AFDC or SSI

18 years of age or older

F I N A N C E S (continued)

MEDICAL INSURANCE

MEDI-CAL 558-2112

Department of Social Services
150 Otis Street, San Francisco

SSI recipients should apply for Medi-Cal at 1680 Mission Street.

MEDICARE 445-5781

720 California Street, San Francisco

Blue Shield has an information booth on Medicare and benefits in the lobby of 720 California Street.

Any questions about Medicare should be directed to your local Social Security office.

TAXES

FRANCHISE TAX BOARD. 557-0540

345 Larkin Street, San Francisco

8:00 - 5:00 Monday-Friday

Senior Citizens Property Tax Assistance. To qualify, you must be 62 or older and own and occupy your own home. Total income cannot be more than $10,000 per year. To get property tax rebate from the State of California, you must file every year between May 15 and August 31. Your refund is based on the amount of property tax paid for the year.

F O O D S E R V I C E S & N U T R I T I O N I N F O R M A T I O N

FOOD SERVICES

MEALS ON WHEELS (Home Delivered Meals) 864-6470

2940 Sixteenth Street (Suite 301), San Francisco

Meals are delivered in the Sunset, Richmond, Mission, Cathedral Hill, and Ingleside-O.M.I. districts at a cost of $1.50 for three meals.

TITLE VII NUTRITION SITES: Meals served Monday-Friday (and on Sundays where noted). No fees but voluntary contributions are accepted.

Mission Adult Center 431-8000
362 Capp Street

Latin American National Senior Citizen Association 431-8000
1156 Valencia Street

Potrero Hill Neighborhood House. 431-8000
953 DeHaro Street

Mission Neighborhood Health Annex. 626-0120
457 South Van Ness Avenue

Visitacion Valley Senior Center. 467-6400
50 Raymond Street, San Francisco

Outer Mission-Ingleside Center 587-4472
Granada and Ocean Avenue, San Francisco

St. Francis Meals. 392-7463
Post and Mason Streets, San Francisco

Kimochi Nutrition Service 563-9056
1755 Laguna Street, San Francisco

Western Addition Senior Citizen Service Center 921-7030
1234 McAllister Street, San Francisco

Kosher Meals (Served also on Sundays). 665-7854
1851 Noriega Avenue, San Francisco

Kosher Meals (Served also on Sundays). 221-8736
1500 Clement Street, San Francisco

Kosher Meals (Served also on Sundays). 346-6040
3200 California, San Francisco

FOOD SERVICES & NUTRITION

F O O D S E R V I C E S & N U T R I T I O N I N F O R M A T I O N

(continued)

Canon Kip Community House 864-6470
705 Natoma Street, San Francisco

North of Market Senior Health Council 885-2275
121 Leavenworth Street, San Francisco

Turk Street Center. 734-4621
240 Turk Street, San Francisco

Telegraph Hill Neighborhood Association 421-6443
660 Lombard Street, San Francisco

San Francisco Senior Center 433-7843
890 Beach Street, San Francisco

Jean Parker School (Evening Meal) 755-1866
Broadway and Powell Streets, San Francisco

Chinese Cultural Center 433-7843
Holiday Inn - 750 Kearny Street, San Francisco

FOOD STAMPS 558-5662

To be certified for the Food Stamp Program, you must live in San Francisco, have cooking facilities and have a net income below the standards set by the U.S. Department of Agriculture. To get information, telephone 558-5662 or go to Department of Social Services, 1360 Mission Street.

NUTRITION COUNSELING

Nutrition counseling is provided by the public health nurses at your DISTRICT HEALTH CENTER. Please refer to page 15 for address and phone number of the center nearest you.

H E A L T H

DAY CARE CENTERS 558-5512

The Day Care Center is a new concept. There are five day care centers for older people in San Francisco and each offers an alternative to nursing homes by providing activities, care, and even diagnostic services in some cases to their clients.

For detailed information about each day care center, call the Senior Information Line at 558-5512.

DENTAL CARE

MOUNT ZION DENTAL CLINIC 567- 6600

1600 Divisadero Street, San Francisco

8:00 - 4:30 Monday - Friday

The dental clinic is staffed by dentists who have just graduated from dental school. Eligibility is limited to residents of the immediate area around Mt. Zion Hospital and Jewish persons anywhere in San Francisco. Fees are based on a sliding scale.

SAN FRANCISCO DENTAL SOCIETY EMERGENCY & REFERRAL SERVICE. 421-1435

450 Sutter Street, San Francisco

The Dental Society provides a free 24-hour emergency and referral service which refers callers to dentists in their area.

SAN FRANCISCO GENERAL HOSPITAL DENTAL CLINIC 648-8200

800 Potrero Street, San Francisco

9:00 - 12:00 noon and 1:00 to 4:00 pm

Emergency service for extractions only. Sliding scale fees.

UNIVERSITY OF CALIFORNIA DENTAL CLINIC 666-1891

Third and Parnassus Street, San Francisco

Variety of low cost clinics including comprehensive dentistry and oral hygiene.

UNIVERSITY OF PACIFIC DENTAL CLINIC. 929-6400

2155 Webster Street, San Francisco

9:00 - 12 noon and 1:45 to 5:00 Monday - Friday

Variety of clinics including general dentistry, pedodontics, orthodontics, oral surgery. Fees are on a reduced basis.

H E A L T H (continued)

HEALTH CARE FACILITIES

DISTRICT HEALTH CENTERS

There are five district health centers in San Francisco. Call the health center in your neighborhood for free health screening, exams, immunizations, cancer screening for women, chest x-rays, podiatry, glaucoma screening, hypertension clinic, home visits by public health nurses.

Mission District 558-3905
3850 Seventeenth Street

7:30 - 5:30 Monday - Friday

Westside District. 558-3256
1301 Pierce Street

8:00 - 5:00 Monday - Friday

Bayview District 468-3664
1525 Silver Avenue

8:00 - 5:00 Monday - Friday

Northeast District 558-3158
1490 Mason Street

8:00 - 5:00 Monday - Friday

Sunset/Richmond District 558-3246
1351 Twenty-fourth Avenue

8:00 - 5:00 Monday - Friday

MISSION NEIGHBORHOOD HEALTH CENTER. 552-3870
240 Shotwell Street, San Francisco

8:00 - 6:00 Monday - Friday

Medical, dental, x-rays, laboratory services; psychiatric consultation by appointment. Sliding scale fees based on income. Medicare and Medi-Cal accepted.

NORTH OF MARKET SENIOR HEALTH COUNCIL 885-2274
121 Leavenworth Street, San Francisco

Medical clinic, phsycial examinations, podiatry clinic. Resident physician makes home visits. North of Market residents only. No fees.

SOUTH OF MARKET HEALTH CENTER 626-2951
551 Minna Street, San Francisco

8:00 - 6:30 Monday; 8:00 - 7:30 Tuesday; 8:00 - 6:30 Wednesday; 8:00 - 12 noon Thursday; 8:00 - 7:30 Friday

Outpatient treatment for South of Market residents with backup services at San Francisco General Hospital. No fees.

H E A L T H (continued)

HOSPITALS

City Emergency Hospital. 431-2800

Children's Hospital. 387-8700
3700 California Street

Chinese Hospital 982-2400
835 Jackson Street

French Hospital. 387-1400
4131 Geary Boulevard

Garden Hospital. 921-6171
2750 Geary Boulevard

Kaiser Hospital. 567-4400
2425 Geary Boulevard

Laguna Honda Hospital. 664-1580
375 Laguna Honda Boulevard

Langley Porter Neuropsychiatric Institute. 681-8080
401 Parnassus

Marshall Hale Memorial Hospital. 387-2500
3773 Sacramento Street

Moffit U.C. Hospital 666-9000
Parnassus and 3rd Avenue

Mount Zion Hospital. 567-6600
1600 Divisadero Street

Presbyterian Hospital. 563-4321
2333 Buchanan Street

Ralph K. Davies Hospital 565-6060
Castro and Duboce Streets

St. Francis Memorial Hospital. 775-4321
900 Hyde Street

St. Joseph's Hospital. 431-3900
355 Buena Vista Avenue

St. Luke's Hospital. 647-8600
3555 Army Street

St. Mary's Hospital. 668-1000
450 Stanyon Street

San Francisco General Hospital 648-8200
1001 Portrero Street

Veteran's Administration Hospital. 221-4810
42nd Avenue and Clement

H E A L T H (continued)

HEALTH SERVICES

HEARING AND SPEECH

DIAL-A-TEST (Telephone Hearing Screening Test) 776-1291

HEARING SOCIETY FOR THE BAY AREA, INC. 775-5700
1428 Bush Street, San Francisco

9:00 - 5:00 Monday - Friday

Social work services for hard of hearing and deaf people and their families; hearing aid loans and trials on doctor's recommendations; audiological counseling. Classes in lip reading and sign communication.

SAN FRANCISCO HEARING AND SPEECH CENTER. 921-7658
2340 Clay Street, San Francisco

9:00 - 5:00

Rehabilitation classes; hearing and speech evaluations. Referral letter from phsycian required. Medicare and Medi-Cal accepted.

PODIATRY

CALIFORNIA COLLEGE OF PODIATRY (CLINIC). 563-3444
1770 Eddy Street, San Francisco

9:00 - 4:00 Monday - Friday

Low cost outpatient center for minor podiatry problems.

VISION (EYES)

AID TO THE VISUALLY HANDICAPPED. 221-3201
2301 Balboa Street, San Francisco

8:30 - 5:00 Monday - Friday

Information about medical and optical aids, employment, and living skills. Large print books for loan.

BAY AREA LOW VISION CLINIC 431-7696
1340 Haight Street, San Francisco

9:30 - 5:30 Monday - Friday

Clinic for people with low vision (partially sighted); specialized visual aids. Medicare and Medi-Cal accepted.

FREDERICK CORDES EYE CLINIC. 666-2142
U.C. Ambulatory Care Center, Parnassus Avenue

8:30 - 4:30 Monday - Friday

Complete eye care. Referrals for glasses at a discount. Registration fee is $2. Other visit costs are on a sliding scale.

H E A L T H (continued)

HOME HEALTH / HOMEMAKER SERVICES

There are several agencies in San Francisco that provide services which include skilled nursing care, medical social work, supervised patient care, light housekeeping, cooking, shopping and bathing assistance. These agencies are licensed to provide such services.

Because the services and fees vary, please call Senior Information Line, 558-5512, for a referral to meet your individual needs.

MENTAL HEALTH SERVICES

MENTAL HEALTH

For counseling related to mental health problems, call the Mental Health Center in your community:

Bayview District (Geriatric Screening) 558-2656
800 Potrero Street
8:00 - 5:00 Monday - Friday

Northeast District (Senior's Unit) 441-4800
121 Leavenworth Street
8:00 - 5:00 Monday - Friday

Mission District 648-8200
995 Potrero Street
8:30 - 5:00 Monday - Friday

Westside District (Crisis Clinic). 567-6600
1600 Divisadero Street
24 hours

Richmond/Sunset Mental Health Center (Geriatric Screening) . 665-0575
2101 Twentieth Avenue
8:30 - 5:00 Monday - Friday

COUNSELING

CATHOLIC SOCIAL SERVICES. 387-8200
2255 Hayes Street, San Francisco
9:00 - 5:00 Monday - Friday
Counseling with individuals and families.
Sliding scale fees.

H E A L T H (continued)

COUNSELING (continued)

FAMILY SERVICE AGENCY 474-7310

1010 Gough Street, San Francisco

9:00 - 5:00 Monday - Friday

Counseling for individuals and families.

LUTHERAN CARE FOR THE AGING 928-7770

1101 O'Farrell Street, San Francisco

9:00 - 4:30 Monday - Friday

Counseling and social casework. Must be 62 or older. No fees.

TELEPHONE REASSURANCE

If you are lonely, sick or would just like to talk to someone, there are three programs with volunteers who "adopt" an older person over the telephone. The volunteer will call you to chat, to see how you're feeling, to give you the support you might need.

COUNCIL OF CHURCHES. 752-1400

FRIENDSHIP LINE. 752-3778

VOLUNTEER SERVICES PROGRAM (Dept. of Social Services). . . 558-2151

NURSING CARE

SAN FRANCISCO PUBLIC HEALTH NURSE

Call the Distric Health Center in your area. See page 15.

VISITING NURSE ASSOCIATION. 861-8705

401 Duboce Street, San Francisco

8:30 - 5:00 Monday - Friday

In-home nursing care under supervision of physician. Sliding scale fees.

(Also see Home Health Services, page 18.)

H E A L T H (continued)

INFORMATION ABOUT SPECIFIC HEALTH QUESTIONS

ALCOHOLISM

NATIONAL COUNCIL ON ALCOHOLISM 563-5400

2340 Clay Street (Room 407/408), San Francisco

24 hour information and referral and phone counse counseling for problem drinkers, families, and others. Counseling appointments Monday-Saturday.

ARTHRITIS

THE ARTHRITIS FOUNDATION 621-3976

399 Buena Vista Avenue East, San Francisco

CANCER

AMERICAN CANCER SOCIETY. 673-7979

1550 Pacific Avenue, San Francisco

CEREBRAL PALSY

UNITED CEREBRAL PALSY ASSOCIATION OF SAN FRANCISCO 387-5202

1511 Clement Street, San Francisco

DIABETES

SAN FRANCISCO DIABETES ASSOCIATION 681-0210

250 Hugo Street, San Francisco

EPILEPSY

CALIFORNIA EPILEPSY SOCIETY. 885-2476

693 Sutter Street, San Francisco

HANDICAPPED

CALIFORNIA LEAGUE FOR THE HANDICAPPED. 441-1980

1299 Bush Street, San Francisco

EASTER SEALS SOCIETY 752-4888

6221 Geary Boulevard, San Francisco

Provides information and referral and follow-up services for all types of handicapping conditions.

H E A L T H (continued)

HEART

SAN FRANCISCO HEART ASSOCIATION 982-5753

259 Geary Boulevard, San Francisco

MEDICAL (GENERAL)

SAN FRANCISCO MEDICAL SOCIETY. 567-6230

250 Masonic Street, San Francisco

Aid persons in getting the best possible medical care. Persons can get by telephone the names of family doctors or specialists.

TEL-MED 929-0200

10:00 a.m. - 8:00 p.m., Monday - Saturday

The Tel-Med health library is designed to help you remain healthy by giving preventive health information; help you recognize early signs of illness; help you to adjust to a serious illness. Free health and medical information is available. Call Tel-Med and ask to hear a tape on your particular problem.

MULTIPLE SCLEROSIS

NATIONAL MULTIPLE SCLEROSIS SOCIETY 771-0300

1100 Gough Street, #12A, San Francisco

MUSCULAR DYSTROPHY

MUSCULAR DYSTROPHY ASSOCIATION OF AMERICA 433-3313

278 Post Street, San Francisco

H O U S I N G

ALEXIS APARTMENTS. 495-3690
390 Clementina Street, San Francisco 94103

A government assisted housing development for the elderly; 158 studios and 48 one-bedroom apartments. Residents must be 62 years of age or permanently disabled. First preference to displaced persons. Long waiting list.

APARTAMENTOS DE LA ESPERANZA 648-6113
3590 - 19th Street, San Francisco 94110

This is a 39-unit development available to persons 62 years and older or those whose head of household is permanently handicapped. There are 27 studios and 12 one-bedroom apartments; units are not furnished.

BETHANY CENTER 282-0287
580 Capp Street, San Francisco 94110

Housing unit for senior citizens. This 134 unit is sponsored by the Grace Methodist Church. There are 100 studios and 34 one-bedroom apartments; rent is based on income and preference is given to low income persons.

EL BETHEL ARMS 567-5495
1234 McAllister Street, San Francisco 94115

Sponsored by the El Bethel Baptist Church. Moderately priced rental housing for the elderly; 36 studios, 209 one-bedroom apartments and 10 two-bedroom apartments.

HOUSING AUTHORITY. 673-5800
440 Turk Street, San Francisco 94102

Low income housing for senior citizens with first preference to persons who have been displaced due to fire, condemned housing, or redevelopment and also to veterans. Persons must apply for housing at the 440 Turk St. office. There is a waiting list for each of the 18 housing sites.

JONES MEMORIAL HOMES 922-4770
2045 Sutter Street, San Francisco 94115

Moderately priced rental units for the elderly; 46 studios and 57 one-bedroom apartments. This four-story structure has patios for ground floow units and balconies for second, third and fourth floor units.

MARTIN LUTHER TOWERS 928-7770
1001 Franklin Street, San Francisco 94109

Thirteen-story building priced at market rate for rentals to senior citizens; 50 studios and 74 one-bedroom apartments.

H O U S I N G (Continued)

NIHONMACHI TERRACE 346-1200
1629 Sutter Street, San Francisco 94109

Sponsored by the Japanese-American Religious Federation of San Francisco. Moderately priced rental housing for family and elderly persons. Elderly units include 51 studios and 124 one-bedroom apartments; 70 one, two, three and four-bedroom units for families.

NOTRE DAME APARTMENTS 673-2011
1590 Broadway Street, San Francisco 94109

A government-assisted housing development for the elderly; 147 studios and 58 one-bedroom apartments. A resident must be 62 years of age or older or, if a couple, one person must be at least 62.

SILVER CREST APARTMENTS 543-5381
133 Shipley, San Francisco 94107

Government subsidized housing units for the elderly. There are 257 units -- 195 studios and 62 one-bedroom units. Residents must be 62 years of age or permanently disabled. Displaced persons given first priority. Long waiting list.

SUNSET APARTMENTS 661-8411
1353 - 7th Avenue, San Francisco 94122

Sponsored by the Presbyterian Church; thirty-unit building with 12 one-bedroom apartments and 18 studios.

VINCENTIAN VILLA 621-5305
1825 Mission Street, San Francisco 94103

Sponsored by the Society of St. Vincent de Paul Central Council. Vincentian Villa has 124 studio apartment units equipped with refrigerator, stove, carpet and drapes. To qualify, applicant must be 62 years old or totally disabled, or displaced by government action.

WESTERN PARK APARTMENTS 922-5436
1280 Laguna Street, San Francisco 94115

Western Park has 183 low- to moderate-priced units for the elderly. This 13-story tower has a patio adjoining a dining/multi-purpose room, a roof terrace, a lounge, hobby room, meeting and laundry room.

FOR INFORMATION ON CONVALESCENT CENTERS (NURSING HOMES) IN SAN FRANCISCO, CALL THE SENIOR INFORMATION LINE AT 558-5512.

LEGAL AND CONSUMER INFORMATION

AMERICAN CIVIL LIBERTIES UNION 777-4545
814 Mission Street, 3rd Floor, San Francisco

CALIFORNIA RURAL LEGAL ASSISTANCE. 989-3966
942 Market Street, Room 606, San Francisco

9:00 a.m. - 5:00 p.m., Monday-Friday

Legal assistance to senior groups and organizations that deal with senior citizens. Legal work and background research on issues affecting the elderly. No fees.

CONSUMER FRAUD 553-1809
880 Bryant Street, Room 301, San Francisco

COUNCIL FOR CIVIC UNITY 781-2033
582 Market Street, Room 310, San Francisco

9:00 a.m. - 5:00 p.m., Monday-Friday

Free assistance in finding housing; handles discrimination complaints of all sorts -- particularly employment and housing. Landlord-tenant counseling.

DISTRICT ATTORNEY. 553-1752
880 Bryant Street, San Francisco

HAIGHT ASHBURY LEGAL PROJECT 864-2240
1310 Haight Street, San Francisco

3:00 p.m. - 5:00 p.m., Monday-Friday

Operated by law students serving the Haight Ashbury community. They can assist on all kinds of legal questions, criminal and civil. No fees for legal advice.

IMMIGRATION & NATURALIZATION 556-2070
620 Sansome Street, San Francisco

LAWYER REFERRAL SERVICE. 391-6102
220 Bush Street, 21st Floor, San Francisco

8:30 a.m. - 5:30 p.m., Monday-Friday

If you have a legal problem, call the Referral Service to get name of an attorney in your area. There is a $15 fee for 1/2 hour consultation with attorney.

PUBLIC DEFENDER. 553-1671
850 Bryant Street, San Francisco

SAN FRANCISCO CONSUMER ACTION 626-4030
26 - 7th Street, San Francisco

8:30 a.m. - 5:00 p.m., Monday-Friday

Informs community of its rights through a monthly newsletter and publication of consumer education guides and fact sheets. Represents and advises individual consumers who have been victimized by unfair business practices. Membership for senior citizens is $4.00.

L E G A L A N D C O N S U M E R I N F O R M A T I O N

SAN FRANCISCO NEIGHBORHOOD LEGAL ASSISTANCE

Legal Assistance regarding SSI, Social Security, Welfare, Medicare, Medi-Cal, and Homemaker Chore problems.

Main Office: 1095 Market Street, Suite 302. 626-3811

Neighborhood Offices:

Bayview-Hunter's Point, 1433 Mendell Street. 822-8510

Central City, 532 Natoma Street. 626-5285

Chinatown-North Beach, 250 Columbus Street 362-5630

Mission, 2701 Folsom Street. 648-7580

Western Addition, 721 Webster Street 567-2804

TENANT'S ACTION GROUP 552-1741
1310 Haight Street, San Francisco

1:00 p.m. - 5:00 p.m., Monday-Friday;

7:30 p.m. - 9:00 p.m., Thursday

3151 - 16th Street, San Francisco

1:00 p.m. - 5:00 p.m., Monday-Friday;

6:30 p.m. - 9:00 p.m., Tuesday

Assists in development of tenant unions; individual tenant counseling and group consultation. No charge except for membership fee of $1.

VOTING

LEAGUE OF WOMEN VOTERS. 986-0480
12 Geary Boulevard, San Francisco

Information on every election and bond issue; biographical sketches on candidates, lists of assemblymen, etc.

REGISTRAR OF VOTING 558-6161
City Hall, Room 155

S E N I O R O R G A N I Z A T I O N S A N D A C T I V I T I E S

AMERICAN ASSOCIATION OF RETIRED PERSONS (Chapter 99). 731-1532

1851 Thirty-fifth Avenue, San Francisco

AMERICAN ASSOCIATION OF RETIRED PERSONS (Chapter 1032). 585-4451

P.O. Box 27383, San Francisco

BAYVIEW-HUNTER'S POINT SENIOR CITIZENS CENTER 822-5255

1715 Yosemite Avenue, San Francisco

BOOKER T. WASHINGTON COMMUNITY SERVICE CENTER 921-4758

800 Presidio Avenue, San Francisco

CALIFORNIA LEGISLATIVE COUNCIL FOR OLDER AMERICANS. 771-0352

330 Ellis Street, Room 201, San Francisco

Membership fee is $2.00 which includes quarterly newsletter.

CALIFORNIA RETIRED TEACHERS ASSOCIATION (San Francisco Division). . . 566-1827

2959 Twentieth Avenue, San Francisco

CALVARY PRESBYTERIAN SENIOR CENTER. 346-3832

Calvary Presbyterian Church
2515 Fillmore Street, San Francisco

CANON KIP COMMUNITY HOUSE 861-6801

705 Natoma Street, San Francisco

CATHOLIC COMMITTEE ON AGING 864-4044

50 Oak Street, San Francisco

Call to find out the name, meeting place and time of the Catholic Senior Citizen club in your area.

CHINESE SENIOR CITIZENS ASSOCIATION 362-6075

832 Kearny Street, San Francisco

S E N I O R O R G A N I Z A T I O N S A N D A C T I V I T I E S

COMMUNITY COLLEGE EDUCATIONAL CENTERS

Day and evening classes. No fees.

ALEMANY ADULT SCHOOL. 776-4639
750 Eddy Street, San Francisco

GALILEO ADULT SCHOOL. 776-5018
1150 Francisco Street, San Francisco

JOHN ADAMS ADULT SCHOOL 346-7044
1860 Hayes Street, San Francisco

MISSION ADULT SCHOOL. 648-1415
938 Valencia Street, San Francisco

PACIFIC HEIGHTS ADULT SCHOOL. 626-0996
31 Gough Street, San Francisco

COMMUNITY MUSIC CENTER 647-6015
544 Capp Street, San Francisco

DOWNTOWN SENIOR CENTER 771-1585
465 O'Farrell Street, San Francisco

FILIPINO-AMERICAN SENIOR CITIZEN CENTER, INC. 285-2076
3208 Mission Street, San Francisco

FIRST BAPTIST CHURCH SENIOR GROUP. 863-3382
First Baptist Church,
21 Octavia Street, San Francisco

FORTNIGHTERS OF FIRST CONGREGATIONAL CHURCH. 392-7461
432 Mason Street, San Francisco

FRATERNAL ORDER OF EAGLES (Golden Gate Aerie #61). 431-4134
65 Hermann Street, San Francisco

GLIDE MEMORIAL CHURCH SENIOR CENTER. 771-0226
330 Ellis Street, San Francisco

GRAND LODGE FREE & ACCEPTED MASONS OF CALIFORNIA 776-7000
1111 California Street, San Francisco

GRAY PANTHERS OF SAN FRANCISCO 731-0858
120 Belgrave Street, San Francisco

GREYHOUND RETIREES CLUB. 474-1018
536 Leavenworth Street, San Francisco

(continued)

S E N I O R O R G A N I Z A T I O N S A N D A C T I V I T I E S

ILWU PENSIONERS OF SAN FRANCISCO BAY AREA. 474-0300

Longshoreman's Hall,
400 North Point, San Francisco

INTERNATIONAL INSTITUTE. 673-1720

2209 Van Ness Avenue, San Francisco

KIMOCHI, INC. 563-5626

1581 Webster Street, San Francisco

KOREAN SENIOR CENTER 781-2908

Korean Methodist Church,
1123 Powell Street, San Francisco

LATIN-AMERICAN NATIONAL SENIOR CITIZENS ASSOCIATION #1. 824-9973

3550 Army Street, San Francisco

LATIN-AMERICAN NATIONAL SENIOR CITIZENS ASSOCIATION #2. 648-0276

1156 Valencia Street, San Francisco

MANILATOWN CENTER. 362-6075

832 Kearny Street, San Francisco

MISSION NEIGHBORHOOD CENTERS, INC. 826-0440

362 Capp Street, San Francisco

MISSION SENIOR CITIZEN CENTER. 648-1754

St. Peter's Church,
Twenty-fourth & Alabama Streets,
San Francisco

MONTEFIORE PRESIDIO CENTER 921-3275

3200 California Street, San Francisco

NATIONAL ASSOCIATION OF REITRED FEDERAL EMPLOYEES. 584-1967

NATIONAL ASSOCIATION OF RETIRED & VETERAN RAILROAD EMPLOYEES. 467-6647

NATIONAL COUNCIL ON AGING. 864-4460

1182 Market Street, Room 417, San Francisco

Annual membership is $10.00 for retirees.

NATIVE DAUGHTERS OF THE GOLDEN WEST. 362-4127

2850 Vicente Street, San Francisco

NATIVE SONS OF THE GOLDEN WEST 392-1223

414 Mason Street, San Francisco

S E N I O R O R G A N I Z A T I O N S A N D A C T I V I T I E S

NORTH OF MARKET SENIOR ORGANIZATION. 885-2274
121 Leavenworth Street, San Francisco

ORDER OF SONS OF ITALY IN AMERICA. 586-1316
5051 Mission Street, San Francisco

RECREATION AND PARK DEPARTMENT 558-4952
Sponsors several senior clubs throughout the city. Call for more information.

RETIRED EMPLOYEES OF CITY & COUNTY OF SAN FRANCISCO. 285-2825
3650 Mission Street, San Francisco

RETIREES CLUB, DEPARTMENT STORE EMPLOYEES UNION 1100. 863-3590
1345 Mission Street, San Francisco

RUSSIAN AMERICAN NURSES ASSOCIATION OF SAN FRANCISCO 752-5746
651 Thirty-Seventh Avenue, San Francisco

SAN FRANCISCO HOUSING AUTHORITY SENIOR CITIZENS GROUPS . . . . . 673-5800 ext. 269
440 Turk Street, San Francisco

SAN FRANCISCO SENIOR CENTER. 775-1866
890 Beach Street,
Maritime Museum, San Francisco

"SIXTY PLUS" EDUCATION & SOCIAL GROUP. 469-1378
San Francisco State University,
1600 Holloway Avenue, San Francisco

ST. FRANCIS OF ASSISI SENIOR CENTER. 421-4095
610 Vallejo Street, San Francisco

TEAMSTERS UNION LOCAL 85 RETIREES CLUB 648-9666
973 Valencia Street, San Francisco

TELEGRAPH HILL NEIGHBORHOOD ASSOCIATION. 421-6443
660 Lombard Street, San Francisco

TELEPHONE PIONEERS OF AMERICA. 542-7053
445 Bush Street, San Francisco

VISITACION VALLEY SENIOR CENTER. 467-6400
66 Raymond Avenue, San Francisco

WESTERN ADDITION SENIOR SERVICE CENTER 921-7030
1234 McAllister Street, San Francisco

WESTERN GERONTOLOGICAL SOCIETY 621-7244
1095 Market Street, Seventh Floor
San Francisco

T R A N S P O R T A T I O N

A. C. TRANSIT (East Bay) INFORMATION 653-3535

AMBULATORY HEALTH CARE FACILITY. 822-3320

5033 Third Street, San Francisco

8:00 a.m. - 5:30 p.m., Monday - Friday

Free transportation to hospitals and clinics for residents of Bayview, Hunter's Point, Sunnydale and Visitacion Valley. Advance notice of 24 hours is required.

BART - INFORMATION 788-2278

CALIFORNIA LEAGUE FOR THE HANDICAPPED 441-1980

1299 Bush Street, San Francisco

8:30 a.m. - 4:30 p.m., Monday - Friday

Transportation to medical appointments for handicapped persons. Minimum advance notice of 3 days is needed.

GOLDEN GATE TRANSIT (Marin County) - INFORMATION 332-6600

GREYHOUND BUS LINES. 433-1500

50 Seventh Street, San Francisco

24 - hour fare and schedule and information service.

MUNICIPAL RAILWAY (MUNI) - INFORMATION 673-6864

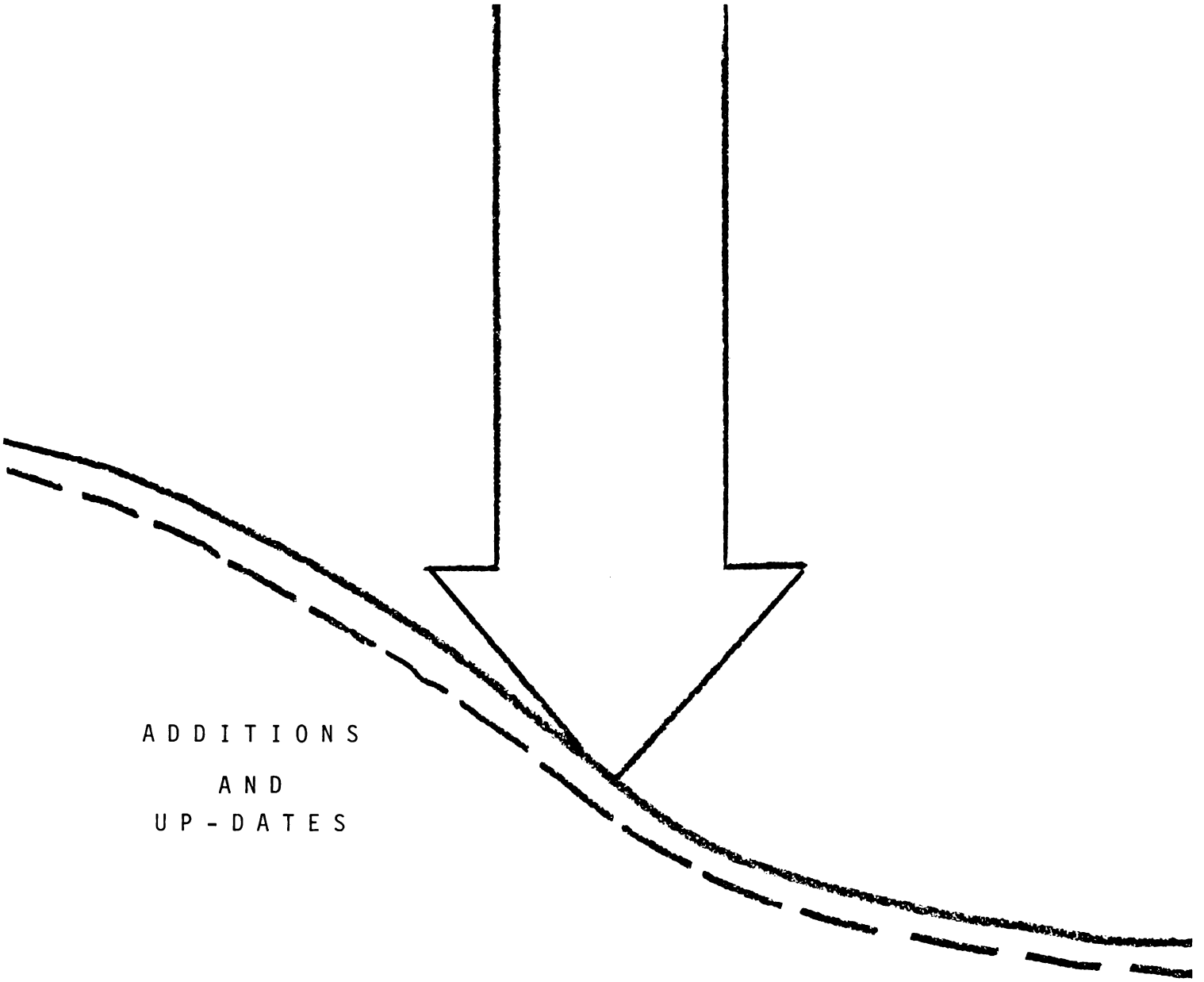
949 Presidio Street, San Francisco

RED CROSS (Golden Gate Chapter). 776-1500

1625 Van Ness Avenue, San Francisco

8:30 a.m. - 4:30 p.m., Monday - Friday

Transportation to medical appointments only. Advance registration required and should be authorized by a doctor, nurse or social worker.



A D D I T I O N S

A N D

U P - D A T E S

ABOUT THE SAN FRANCISCO COMMISSION ON THE AGING

The San Francisco Commission on the Aging (also known as the Area Agency on Aging) is....

E M E R G E N C Y !

P O L I C E 553-0123

F I R E 861-8020

A M B U L A N C E 431-2800

P G & E (Service Department). . 981-3232

WATER DEPARTMENT. 558-4101

NIGHT MINISTRY. 986-1464

SUICIDE PREVENTION. 221-1423

OR DIAL OPERATOR: "0"

"SENIOR INFORMATION LINE"..... 558-5512

MY DOCTOR _____
(NAME) (TELEPHONE)

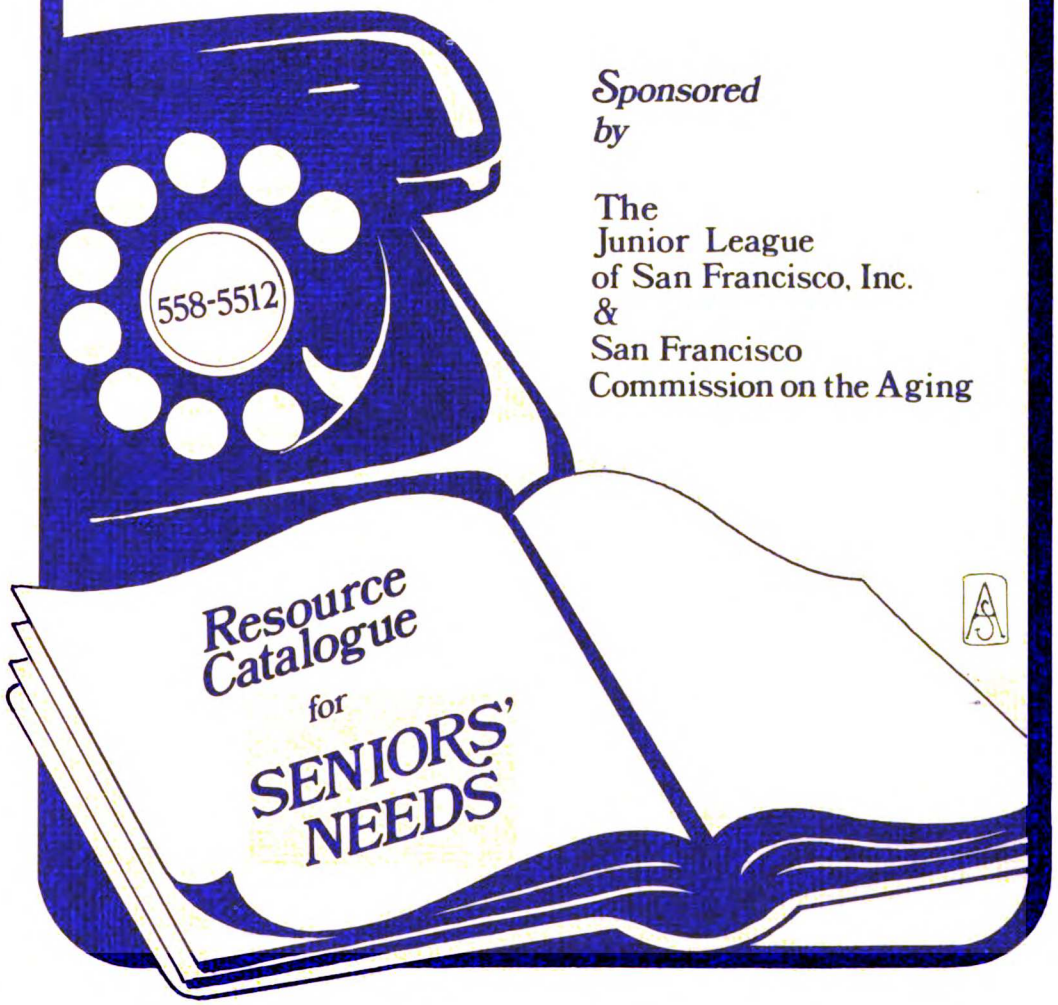
MY DENTIST _____
(NAME) (TELEPHONE)

_____

_____

_____

SENIOR SERVICES DIRECTORY



Sponsored by

The
Junior League
of San Francisco, Inc.
&
San Francisco
Commission on the Aging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San Francisco Commission on the Aging
FIRE 861-8020
POLICE 553-0123
SENIOR 558-5512
INFORMATION LINE
FIRE
POLICE
SENIOR

24-HOUR EMERGENCY SERVICES

POLICE DEPARTMENT	**553-0123**
FIRE DEPARTMENT	**861-8020**
AMBULANCE SERVICE	**431-2800**
P G & E (SERVICE DEPARTMENT)	**981-3232**
WATER DEPARTMENT (SERVICE)	**558-4101**
NIGHT MINISTRY	**986-1464**
SUICIDE PREVENTION	**221-1423**
FOR ANY EMERGENCY	**DIAL "O" FOR OPERATOR**

24-HOUR
SENIOR INFORMATION LINE
558-5512

DOCTOR

_____
Number

_____
Telephone

DENTIST

_____
Number

_____
Telephone

TABLE OF CONTENTS

Some problems and questions will not require the assistance of an agency. If so, one of the following numbers may prove useful:

San Francisco Public Library
(General Reference)—Main Library **558-3191**
U.S. Postal Service
(Rates and Information) **556-2500**
Local Telephone Information ..... **Dial 411**
Long Distance Information ..... (area code) **555-1212**

COMMISSION ON THE AGING
City and County of San Francisco
1095 Market Street, San Francisco, California 94103
(415) 558-2126

Dear Senior Citizen:

On behalf of the Commission on the Aging and the Junior League of San Francisco, Inc., we are very pleased to present you with a copy of the Senior Citizens Resource Directory.

This directory was designed with you in mind. You will find it has been specially prepared to be easy to read and a handy size to carry with you or leave next to your telephone. The information should be very helpful to you in finding the many services that are available to senior citizens in San Francisco.

If at any time you need additional help or information, please call our 24 hour Senior Information Line 558-5512 and we will be pleased to assist you.

We are sure you will use this directory often and find it very useful.

Sincerely,

George W. Ong
Chairman

W. Patrick Magee
Executive Director

DISCOUNTS

SENIOR CITIZEN "GOLD DISCOUNT CARD"

The "Gold Discount Card" entitles persons 60 years and older to a variety of merchants and entertainment discounts in the City of San Francisco. This card is FREE and can be obtained at the Commission on Aging, 1095 Market Street, 7th Floor, San Francisco (8:00 A.M.-5:00 P.M.). Any further information about this card can be obtained by calling the **SENIOR INFORMATION LINE, 558-5512.**

SENIOR CITIZEN MUNI I.D. CARD

If you are 65 years or over, you are entitled to ride the San Francisco Muni Railway for 5¢. Muni requires an identification card which can be obtained, FREE OF CHARGE, from the Commission on Aging, 1095 Market Street, 7th Floor, San Francisco (8:00 a.m.-5 p.m.). Please bring proof of birth (birth certificate, driver's license, Medicare card) when applying for this I.D. card.

TRANSIT DISCOUNT CARD FOR HANDICAPPED PERSONS

If you receive Disability Payments, you are eligible for the Transit Discount Card for Handicapped Persons. This card is usable on BART, A.C. Transit, Golden Gate Transit, Santa Clara Transportation and San Francisco Municipal Railway. A Certificate Form must first be filled out by your physician. This form can be obtained via mail or in person from the Commission on Aging, 1095 Market Street, 7th Floor, San Francisco. Call the **SENIOR INFORMATION LINE, 558-5512,** for further information.

FOR FURTHER INFORMATION, PLEASE CALL
SENIOR INFORMATION LINE
558-5512

EMPLOYMENT & VOLUNTEER OPPORTUNITIES

EMPLOYMENT OPPORTUNITIES

ECONOMIC OPPORTUNITY COUNCIL—
SENIOR SERVICES PROJECT **771-7100**
730 Polk Street, San Francisco
Hours: 8:15 a.m.—5 p.m., Monday-Friday
Services: Employment referrals for persons 55 years and over. No fees.

FOSTER GRANDPARENT PROGRAM **474-0828**
1010 Gough Street, San Francisco
Hours: 8 a.m.-5 p.m., Monday-Friday
Services: Low income seniors, 60 years/over, "adopt" an institutionalized child for 4 hours a day. Seniors are paid $1.60 an hour plus 50¢ each day for transportation. Free meal each day.

EMPLOYMENT DEVELOPMENT DEPARTMENT
Hours: 8 a.m.—4:30 p.m., Monday-Friday
Services: There is a job board posted in each office. All available jobs are listed on this board. Go to the office closest to your home. No fees.

Chinatown-North Beach, 658 Sacramento Street **557-2730**
Downtown Area, 134 California Street **557-2976**
McLaren/Balboa District, 4889 Mission Street **587-5993**
Mission District, 2948-16th Street **557-0521**
Western Addition, 1425 Turk Blvd. **557-1740**

MATURE TEMPS **986-7787**
44 Montgomery Street, Room 2716, San Francisco
Hours: 8:30 a.m.-5:00 p.m., Monday-Friday
Services: Job placement for persons 50 years and over; job information and referral; job counseling. No fees.

RETIREMENT JOBS, INC. **781-4831**
225 Kearny Street, Suite 203, San Francisco
Hours: 10 a.m.-3 p.m., Monday-Friday
Services: Job search counseling, career counseling, and job information, referral and placement for persons 55 years and over. No fees.

VOLUNTEER OPPORTUNITIES

RETIRED SENIOR VOLUNTEER PROGRAM **346-1812**
3200 California Street (Jewish Community Center)
Hours: 9 a.m.-5 p.m., Monday-Friday
Services: Placement services for persons 60 years and older who want to do volunteer work in the community.

RETIRED SENIOR VOLUNTEER PROGRAM **731-3335**
2101-20th Avenue (Council of Churches)
Hours: 9 a.m.-5 p.m., Monday-Friday
Services: Connects older adults to a wide range of volunteer activities.

VOLUNTEER BUREAU **864-4200**
33 Gough Street, San Francisco
Hours: 8:30 a.m.-4:30 p.m., Monday-Friday
Services: The Volunteer Bureau is a referral agency for 600 non-profit organizations. If you can volunteer your time, call to arrange for an interview.

VOLUNTEER SERVICES PROGRAM
(DEPARTMENT OF SOCIAL SERVICES) **558-2151**
870 Market Street, Room 1088, San Francisco
Hours: 8:30a.m.-5 p.m., Monday-Friday
Services: They have 2 volunteer programs.
1) Friendly Visiting Program where volunteers visit older and disabled persons.
2) Telephone Reassurance Program where volunteers call and give support to older, lonely and often isolated persons.

FOR FURTHER INFORMATION, PLEASE CALL
SENIOR INFORMATION LINE
558-5512

FINANCES

INCOME

GENERAL ASSISTANCE **558-5711**
Department of Social Services, 1680 Mission Street

- A person must be needy and not eligible for AFDC or SSI*
- Must be 18 years old or older
- Must have no more than $1 in cash or savings
- If one owns a car, the cash value can be no more than $150 (or $600 if used for work or medical reasons)
- Written explanation as to why previous employment terminated or why without funds.

MEDICALLY INDIGENT ADULT ASSISTANCE **558-2112**
Department of Social Services, 150 Otis Street
(Mission and Duboce)

- A person must be needy and not eligible for AFDC or SSI*
- Must be between ages of 18 and 64
- The value of all personal property (homes are exempt) must be less than $1500 including cash and available funds

SOCIAL SECURITY—INFORMATION **956-3000**
If you need information or have problems about your Social Security benefits (green check) or Supplemental Security Income (gold check), call the above number and ask to speak to a representative in the district office closest to your home.

Bayview-Hunter's Point, 5815 3rd Street **556-0160**
Chinatown-North Beach, 145 Columbus Avenue ... **556-0165**
Civic Center, 303 Golden Gate Avenue **956-3000**
Inner Mission, 3199 Mission Street **556-6368**
Outer Mission, 5226 Mission Street **556-1937**
Parkside, 2311 Taraval Street **556-8953**
Western Addition, 1701 Divisadero Street **556-8373**

*Effective January 1, 1974, you can receive Supplemental Security Income (SSI) monthly payments if you are 65 years or over or you are disabled, or blind, and, your income and resources are limited. If you think you qualify, contact your local Social Security office.

MEDICAL INSURANCE

MEDI-CAL **558-2112**
Department of Social Services, 150 Otis Street
(Note: SSI recipients with Medi-Cal problems, go to Department of Social Services, 1680 Mission Street.)

MEDICARE **445-5781**
Blue Shield, 720 California Street
Blue Shield has an information booth on MEDICARE and benefits in the lobby of 720 California Street.
Any questions about MEDICARE should be directed to your local Social Security office.

TAXES

FRANCHISE TAX BOARD **557-0540**
345 Larkin Street, San Francisco
Hours: 8 a.m.-5 p.m., Monday-Friday
Services: Senior Citizens Property Tax Assistance. To qualify, you must be 62 years/over and own and occupy your own home. Total income cannot be more than $10,000 a year. To get property tax rebate from the State of California, you must file every year between May 15-August 31.

HOME OWNERS EXEMPTION
Assessor's Office
Room 101, City Hall
Hours: 8 a.m.-5 p.m., Monday-Friday **558-3877**

INTERNAL REVENUE SERVICE
450 Golden Gate Ave.
Hours: 8 a.m.-5 p.m., Monday-Friday **864-1040**

FOR FURTHER INFORMATION, PLEASE CALL
SENIOR INFORMATION LINE
558-5512

FOOD SERVICES & NUTRITION INFORMATION

FOOD SERVICES

MEALS ON WHEELS—HOME-DELIVERED MEALS
Central Office **552-4343**
2940-16th Street, Suite 301, San Francisco
Services: Meals are delivered in the Sunset, Richmond, Mission, Cathedral Hill and Ingleside districts at a cost of $2.00 for 3 meals a day.

ST. ANTHONY'S DINING ROOM **552-3838**
45 Jones Street, San Francisco
Services: Free meals served Monday through Saturday at 11 a.m. to 12:30 p.m.

TITLE VII NUTRITION SITES: Meals served Monday through Friday (and on Sundays where noted). No fees but voluntary contributions are accepted.

Mission Adult Center **431-8000**
362 Capp Street, San Francisco

Salvation Army Mission Corps Community Center
1156 Valencia Street, San Francisco **431-8000**

Potrero Hill Neighborhood House **431-8000**
953 DeHaro Street, San Francisco

Visitation Valley Senior Center **467-6400**
50 Raymond Street, San Francisco

Outer Mission-Ingleside Center **587-4472**
Granada and Ocean Avenue, San Francisco

St. Francis Meals **392-7463**
Post and Mason Streets, San Francisco

Kimochi Nutrition Service **931-2287**
1755 Laguna Street, San Francisco

Western Addition Senior Citizen Service Center **921-7030**
1234 McAllister Street, San Francisco

Kosher Meals **665-7854**
1851 Noriega Avenue, San Francisco

Kosher Meals **221-8736**
1500 Clement Street, San Francisco

Kosher Meals (served also on Sundays) **346-6040**
3200 California Street, San Francisco

Canon Kip Community House **861-6801**
705 Natoma Street, San Francisco

North of Market Senior Health Council **885-2274**
121 Leavenworth Street, San Francisco

Turk Street Center **928-7078**
240 Turk Street, San Francisco

Telegraph Hill Neighborhood Association **421-6443**
660 Lombard Street, San Francisco

San Francisco Senior Center **775-1866**
890 Beach Street, San Francisco

Jean Parker School (Evening Meal) **421-2988**
Broadway and Powell Streets, San Francisco

Chinese Cultural Center **433-7843**
Holiday Inn—750 Kearny Street, San Francisco

FOOD STAMPS

FOOD STAMP OFFICE
(DEPARTMENT OF SOCIAL SERVICES) **558-5662**
1360 Mission Street, San Francisco

Services: To be certified for the Food Stamp Program, you must be living in San Francisco, have cooking facilities and have a net income below the standards set by the U.S. Dept. of Agriculture.

NUTRITION COUNSELING

Nutrition counseling is provided by the public health nurses at your DISTRICT HEALTH CENTER. Please refer to page 13 for address and phone number of the center nearest you.

FOR FURTHER INFORMATION, PLEASE CALL
SENIOR INFORMATION LINE
558-5512

HEALTH

DAY CARE CENTERS

The Day Care Center is a new concept. There are 5 day care centers for older people in San Francisco and these centers offer an alternative to nursing homes for persons who choose to remain in their community.

For detailed information on each day care center, call the **SENIOR INFORMATION LINE, 558-5512.**

DENTAL CARE

MOUNT ZION DENTAL CLINIC **567-6600**
1600 Divisadero Street, San Francisco **EXT 2113**
Hours: 8 a.m.-4:30 p.m., Monday-Friday
Services: The dental clinic is staffed by permanent doctors as well as dental school graduates. San Francisco residents are eligible. Waiting list.

SAN FRANCISCO DENTAL SOCIETY
EMERGENCY & REFERRAL SERVICE **421-1435**
450 Sutter Street, San Francisco
The Dental Society provides a free 24-hour emergency and referral service which refers callers to dentists in their area.

SAN FRANCISCO GENERAL HOSPITAL
DENTAL CLINIC **565-8200**
800 Potrero Street, San Francisco
Hours: 9 a.m.-12 noon; 1 p.m.-4 p.m., Monday-Friday
Services: Emergency service for extractions only. Sliding scale fees.

UNIVERSITY OF CALIFORNIA DENTAL CLINIC ... **666-1891**
Third Avenue and Parnassus Street, San Francisco
Hours: 8:30 a.m.-12:00 p.m., 1:00 p.m.-5:00 p.m., Monday-Friday
Services: A variety of low cost clinics including comprehensive dentistry and oral hygiene. Registration fee is $2.

UNIVERSITY OF PACIFIC DENTAL CLINIC **929-6589**
2155 Webster Street, San Francisco
Hours: 9 a.m.-12 noon; 1:45 p.m.-5 p.m., Monday-Friday
Services: A variety of clinics including general dentistry, orthodontics, oral surgery. Fees are on a reduced basis. First come, first served basis.

HEALTH CARE FACILITIES

DISTRICT HEALTH CENTERS

There are 5 District Health Centers in San Francisco. Call the Health Center in your neighborhood for: FREE health screening exams, immunizations, cancer screening for women, chest X-rays, podiatry services, glaucoma screening, hypertension clinic, home visits by public health nurses.

MISSION DISTRICT **558-3905**
3850 17th Street, San Francisco
Hours: 8 a.m.-5:30 p.m., Monday-Friday

WESTSIDE DISTRICT **558-3256**
1301 Pierce Street, San Francisco
Hours: 8 a.m.-5 p.m., Monday-Friday

BAYVIEW DISTRICT **468-0456**
1525 Silver Avenue, San Francisco
Hours: 8 a.m.-6 p.m., Monday-Friday

NORTHEAST DISTRICT **558-3158**
1490 Mason Street, San Francisco
Hours: 8 a.m.-5 p.m., Monday-Friday

SUNSET-RICHMOND DISTRICT **558-3246**
1351-24th Avenue, San Francisco
Hours: 8 a.m.-5 p.m., Monday-Friday

MISSION NEIGHBORHOOD HEALTH CENTER **552-3870**
240 Shotwell Street, San Francisco
Hours: 9 a.m.-6 p.m., Monday-Friday
Services: Medical, dental, X-rays, laboratory services; psychiatric consultation by appointment. Sliding scale fees based on income. Medicare and Medi-Cal accepted.

NORTH OF MARKET SENIOR SERVICE CENTER .. **885-2274**
121 Leavenworth Street, San Francisco
Hours: 8 a.m.-5 p.m., Monday-Friday
Services: 9-11:30 a.m. Medical clinic, physical examinations, podiatry clinic. Resident physician and nurse make home visits by appointment. North of Market residents only. NO FEES. Dental screening, physical exercise, MediCal & Medicare program, alcoholism program.

SOUTH OF MARKET HEALTH CENTER **626-2951**
551 Minna Street, San Francisco
Hours: 8 a.m.-6:30 p.m., Monday and Wednesday
8 a.m.-4:30 p.m., Tues. and Fri.,
8 a.m.-12 noon, Thursday
Services: Outpatient treatment for South of Market residents only. Back-up services at San Francisco General Hospital. Medicare and Medi-Cal accepted.

HOSPITALS

Children's Hospital, 3700 California Street **387-8700**
Chinese Hospital, 835 Jackson Street **982-2400**
City Emergency Hospital **431-2800**
Davies, Ralph K. Hospital, Castro & Duboce Streets **565-6779**
French Hospital, 4131 Geary Boulevard **386-9000**
Garden Hospital, 2750 Geary Boulevard **921-6171**
Kaiser Hospital, 2425 Geary Boulevard **929-4000**
Laguna Honda Hospital,
375 Laguna Honda Boulevard **664-1580**
Langley Porter Neuropsychiatric Institute,
401 Parnassus **681-8080**
Letterman Army Medical Center, Presidio **561-2231**
Marshall Hale Memorial Hospital,
3773 Sacramento Street **386-7000**
Moffit U.C. Hospital, Parnassus and 3rd Avenues **666-9000**
Mount Zion Hospital, 1600 Divisadero Street **567-6600**
Presbyterian Hospital, 2333 Buchanan Street **563-4321**
St. Francis Memorial Hospital, 900 Hyde Street **775-4321**
St. Joseph's Hospital, 355 Buena Vista Avenue **431-3900**
St. Luke's Hospital, 3555 Army Street **647-8600**
St. Mary's Hospital, 450 Stanyan Street **668-1000**
San Francisco General Hospital, 1001 Potrero Street ... **565-8200**
U.S. Public Health Hospital, 15th Ave. & Lake **752-1400**
Veteran's Admin. Hospital, 42nd Ave. & Clement **221-4810**

HEALTH SERVICES

HEARING AND SPEECH

DIAL-A-TEST (Telephone Hearing Screening Test) **776-1291**

HEARING SOCIETY FOR THE BAY AREA, INC. **775-5700**
1428 Bush Street, San Francisco
Hours: 9 a.m.-5 p.m., Monday-Friday
Services: Social work services for hard of hearing and deaf people and their families; hearing aid loans and trials on doctor's recommendation. Audiological counseling, classes in lip reading, sign communication and rehabilitation.

SAN FRANCISCO HEARING AND
SPEECH CENTER **921-7658**
2340 Clay Street, San Francisco
Hours: 9 a.m.-5 p.m., Monday-Friday
Services: Rehabilitation classes; hearing and speech evaluations. Referral letter from physician required. Medicare and Medi-Cal accepted.

PODIATRY (FEET)

CALIFORNIA COLLEGE OF PODIATRY (CLINIC) ... **563-3444**
1835 Ellis Street, San Francisco
Hours: 9 a.m.-5 p.m., Monday-Friday
9 a.m.-1 p.m., Saturday
Services: Low cost outpatient center for any podiatry problems.
(ALSO refer to District Health Center Services, page 13).

VISION (EYES)

NATIONAL ASSOCIATION FOR
VISUALLY HANDICAPPED **221-3201**
3201 Balboa Street, San Francisco
Hours: 9 a.m.-5 p.m., Monday-Friday
Services: Large print books for loan. Information about medical and optical aides. Discussion groups for older people.

BAY AREA LOW VISION CLINIC **431-7696**
1340 Haight Street, San Francisco
Hours: 9:30 a.m.-6:00 p.m., Monday-Friday
Services: Clinic for people with low vision (partially sighted); Medicare and Medi-Cal accepted.

FREDERICK CORDES EYE CLINIC **666-2142**
U.C. Ambulatory Care Center, 400 Parnassus Ave., San Francisco
Hours: 9 a.m.-12 noon; 1 p.m.-3 p.m., Mon., Tues., Wed., Fri.
Services: Complete medical eye care. Contact lenses, referrals for glasses at a discount. Fees on a sliding scale basis.

HOME HEALTH/HOMEMAKER SERVICES

There are several agencies in San Francisco that provide services which range from skilled nursing care, medical social work, supervised patient care, light housekeeping, cooking, shopping and bathing assistance. These agencies are licensed to provide such services.

Because the services and fees vary, please call the **SENIOR INFORMATION LINE, 558-5512,** for a referral to meet your individual needs.

MENTAL HEALTH SERVICES

MENTAL HEALTH

For counseling related to mental health problems, call the Mental Health Center in your community.

SOUTHEAST MENTAL HEALTH CENTER
(Geriatric Services) **558-2656**
800 Potrero Street, San Francisco
Hours: 8:30 a.m.-5 p.m., Monday-Friday

NORTHEAST DISTRICT (Senior's Unit) **441-4800**
121 Leavenworth Street, San Francisco
Hours: 8 a.m.-5 p.m., Monday-Friday

MISSION DISTRICT (Information and Referral) **558-2564**
1665 Mission Street, San Francisco
Hours: 8:30 a.m.-5 p.m., Monday-Friday

WESTSIDE DISTRICT (Crisis Clinic) **567-6600**
1600 Divisadero Street, San Francisco
Hours: 24-hours

RICHMOND-SUNSET MENTAL HEALTH CENTER
(Geriatric Screening) **665-0575**
2101-20th Avenue, San Francisco
Hours: 8:30 a.m.-5 p.m., Monday-Friday

COUNSELING

CATHOLIC SOCIAL SERVICES **387-8200**
2255 Hayes Street, San Francisco
Hours: 9 a.m.-5 p.m., Monday-Friday
Services: Counseling with individuals and families. Sliding scale fees.

FAMILY SERVICE AGENCY **474-7310**
1010 Gough Street, San Francisco
Hours: 9 a.m.-5 p.m., Monday-Friday.
Evening appointments—Monday-Thursday.
Services: Counseling for individuals and families. Sliding scale fees.

JEWISH FAMILY SERVICE **567-8860**
1600 Scott Street, San Francisco
Hours: 8:30 a.m.-5 p.m., Monday-Friday
Services: Two social workers offer counseling for senior citizens. Sliding scale fees.

LUTHERAN CARE FOR THE AGING **928-7770**
1101 O'Farrell Street, San Francisco
Hours: 9 a.m.-4:30 p.m., Monday-Friday
Services: Counseling and social work. Must be 62 years or over. No fees.

NURSING CARE

SAN FRANCISCO PUBLIC HEALTH NURSE
Call the District Health Center in your area. See page 9

VISITING NURSE ASSOCIATION OF
SAN FRANCISCO, INC. **861-8705**
401 Duboce Street, San Francisco
Hours: 8 a.m.-4:30 p.m., Monday-Friday
Services: In-home nursing care under supervision of physician. Sliding scale fees.

(ALSO refer to HOME HEALTH SERVICES, page 16).

FOR FURTHER INFORMATION ON HEALTH SERVICES,
PLEASE CALL THE **SENIOR INFORMATION LINE**
558-5512

HOUSING

HOUSING REFERRAL SERVICE **558-5512**
Commission on the Aging, 1095 Market Street
Services: The Commission on the Aging has a housing referral service with city-wide listings for senior citizens. If you are looking for a place to live, call the SENIOR INFORMATION LINE **558-5512**

LICENSED RESIDENTIAL CARE HOMES **558-5206**
Department of Social Services, 1680 Mission Street
Services: These homes are licensed by the Department of Social Services and provide room, board and care but not nursing care.

NURSING HOMES—INFORMATION **558-5512**
Commission on the Aging, 1095 Market Street
Services: For information on individual nursing homes, call the SENIOR INFORMATION LINE. A list of nursing homes can be found in the yellow pages of the phone book.

SAN FRANCISCO HOUSING AUTHORITY **673-5800**
440 Turk Street, San Francisco
Services: Low income housing for senior citizens with first preference to persons who have been displaced due to fire, condemned housing, or redevelopment and also to veterans. Persons must apply at the 440 Turk Street office. There is a waiting list for each housing unit.

SENIOR CITIZEN HOTELS—INFORMATION **558-5512**
Commission on the Aging, 1095 Market Street
Services: Listing of the hotels that offer a government rent subsidy program to senior citizens as well as a meal program. Please call the SENIOR INFORMATION LINE **558-5512**

FOR FURTHER INFORMATION
ON HOUSING, PLEASE CALL
SENIOR INFORMATION LINE
558-5512

INFORMATION ON SPECIFIC SERVICES

ALCOHOLISM

NATIONAL COUNCIL ON ALCOHOLISM **563-5400**
2131 Union Street, San Francisco
Services: 9:00 a.m.-5:00 p.m. information & referral and phone counseling service for problem drinking individuals. Counseling appointments Monday through Friday.

ARTHRITIS

THE ARTHRITIS FOUNDATION **621-3976**
399 Buena Vista Avenue East, San Francisco
Hours: 9:00 a.m.-5:00 p.m., Monday-Friday
Services: Information geared to the needs of arthritic patients.

CANCER

AMERICAN CANCER SOCIETY **673-7979**
1550 Pacific Avenue, San Francisco
Hours: 9:00 a.m.-5:00 p.m., Monday-Friday
Services: Information, referral and counseling to cancer patients and their families.

DIABETES

AMERICAN DIABETES ASSOCIATION—
S.F. CHAPTER **681-0210**
255 Hugo Street, San Francisco
Hours: 9:00 a.m.-4:30 p.m., Monday-Friday
Services: Provides information on any area pertinent to diabetes.

ETHNIC SERVICE AGENCIES

ITALIAN WELFARE AGENCY, INC. **362-6423**
678 Green Street, San Francisco
Hours: 9:00 a.m.-4:45 p.m., Monday-Friday
Services: Information geared to cultural differences and language barriers. Service is not limited to those of Italian descent, though this group comprises most of the clients.

JEWISH COMMUNITY CENTER **346-6040**
3200 California Street, San Francisco
Hours: 9:00 a.m.-10:00 p.m., Monday-Thursday
9:00 a.m.-5:30 p.m., Friday
10:00 a.m.-4:30 p.m., Sunday
Services: Information, counseling, nutrition program, a variety of activities for senior citizens.

KIMOCHI **931-2287**
1581 Webster Street, San Francisco
Hours: 10:00 a.m.-4:00 p.m., Monday-Saturday
1:00-4:00 p.m., Sunday
Services: Serves the Japanese community; general counseling, outreach and escort services, health screening, education classes and meal program.

SELF HELP FOR THE ELDERLY **982-9171**
950 Stockton St., Third floor, San Francisco
Hours: 8:30 a.m.-5:00 p.m., Monday-Friday
Services: Serves the Chinatown community. General counseling, outreach and escort services, meal program.

HANDICAPPED

CALIFORNIA LEAGUE FOR THE HANDICAPPED .. **441-1980**
1299 Bush Street, San Francisco
Hours: 8:30 a.m.-4:30 p.m., Monday-Friday
Services: General information and referral for handicapped persons, job referrals, recreation and transportation program.

EASTER SEALS SOCIETY **752-4888**
6221 Geary Boulevard, San Francisco
Hours: 8:30 a.m.-5:00 p.m., Monday-Friday
Services: Provides information and referral and follow-up services for all types of handicapping conditions. Speech therapy. Short term equipment loans.

HEART

SAN FRANCISCO HEART ASSOCIATION **433-2273**
421 Powell Street, San Francisco
Hours: 9:00 a.m.-5:00 p.m., Monday-Friday

MEDICAL—GENERAL

SAN FRANCISCO MEDICAL SOCIETY **567-6230**
250 Masonic Avenue, San Francisco
Hours: 9:00 a.m.-5:00 p.m., Monday-Friday
Services: Aid persons in getting the best possible medical care. Persons can get by telephone the names of family doctors or specialists.

TEL-MED **929-0200**
Hours: 10 a.m.-8 p.m., Monday-Saturday
Services: The Tel-Med telephone health library is designed to:

Help you remain healthy by giving preventative health information.

Help you recognize early signs of illness and help you adjust to a serious illness.

Free health and medical information by calling Tel-Med and ask to hear a tape on your particular problem.

TELEPHONE REASSURANCE

If you are lonely, sick or would just like to talk to someone, there are 3 programs with volunteers who "adopt" an older person over the telephone . . . the volunteer will call you to chat, to see how you're feeling, to give you the support you might need.

COUNCIL OF CHURCHES ..... **752-1400,#330**

FRIENDSHIP LINE **752-3778**

VOLUNTEER SERVICES PROGRAM
(DEPT. OF SOCIAL SERVICES) **558-2151**

IF YOU NEED HELP OF ANY KIND . . . OR JUST FEEL LIKE TALKING TO SOMEONE, CALL THE
24-HOUR SENIOR INFORMATION LINE **558-5512**

VOTING

LEAGUE OF WOMEN VOTERS **986-0480**
12 Geary Street, Suite 605, San Francisco
Hours: 9:00 a.m.-3:30 p.m., Monday-Friday
Services: Information on every election and bond issue; biographical sketches on candidates, lists of assemblymen, etc.

REGISTRAR OF VOTING **558-3417**
City Hall, Room 155

LEGAL & CONSUMER SERVICES

AMERICAN CIVIL LIBERTIES UNION **777-4545**
814 Mission Street, Suite 301, San Francisco

CALIFORNIA RURAL LEGAL ASSISTANCE **421-3405**
115 Sansome Street, Room 900, San Francisco
Hours: 9 a.m.-5 p.m., Monday-Friday
Services: SENIOR CITIZENS LAW PROGRAM: Legal assistance to senior groups and organizations that deal with senior citizens. Legal work and background research on issues affecting the elderly. No fees.

CONSUMER FRAUD **553-1814**

COUNCIL FOR CIVIC UNITY **781-2033**
582 Market Street, Room 310, San Francisco
Hours: 9 a.m.-5 p.m., Monday-Friday
Services: Free assistance in finding housing—handles discrimination complaints of all kinds—particularly employment and housing. Landlord-tenant counseling.

DISTRICT ATTORNEY **553-1752**
880 Bryant Street, San Francisco

HAIGHT ASHBURY LEGAL PROJECT **864-2240**
1310 Haight Street, San Francisco
Hours: 3 p.m.-5 p.m., Monday-Friday
Services: Operated by law students serving the Haight Ashbury community. They can assist on all kinds of legal questions, criminal and civil. No fees for legal advice.

IMMIGRATION AND NATURALIZATION **556-2070**
630 Sansome Street, San Francisco

LAWYER REFERRAL SERVICE **391-6102**
220 Bush Street, 21st Floor, San Francisco
Hours: 9:00 a.m.-5:00 p.m., Monday-Friday
Services: If you have a legal problem, call the Referral Service to get name of an attorney in your area. $15 fee for ½ hour consultation with attorney.

PUBLIC DEFENDER **553-1671**
850 Bryant Street, San Francisco

SAN FRANCISCO CONSUMER ACTION **626-2510**
26-7th Street, San Francisco
Hours: 9 a.m.-5 p.m., Monday-Friday
Switchboard 11:00 a.m.-3:00 p.m.
Services: Informs community of its rights through a monthly newsletter and publication of consumer education guides and fact sheets. Advises individual consumers who have been victimized by unfair business practices. Membership for senior citizens is $10.00 annually.

SAN FRANCISCO NEIGHBORHOOD LEGAL ASSISTANCE
Services: Legal Assistance regarding SSI, Social Security, Welfare, Medicare, Medi-Cal, and Homemaker Chore problems.

Main Office: 1095 Market Street, Suite 302 ..... **626-3811**
Neighborhood Offices:
Bayview-Hunter's Point, 1433 Mendell Street **822-8510**
Central City, 532 Natoma Street **626-5285**
Chinatown-North Beach, 250 Columbus Street **362-5630**
Mission, 2701 Folsom Street **648-7580**
Western Addition, 721 Webster Street **567-2804**

TENANT'S ACTION GROUP **552-1741**
1310 Haight Street, San Francisco
Hours: 1 p.m.-5 p.m., Monday-Friday;
7:30-9 p.m., Thursday
3151-16th Street, San Francisco **626-0994**
Hours: 1 p.m.-5 p.m., Monday-Friday;
6:30-9 p.m., Tuesday
Services: Assists in development of tenant unions; individual tenant counseling and group consultation. No charge except for membership fee of $1.

FOR FURTHER INFORMATION, PLEASE CALL
SENIOR INFORMATION LINE
558-5512

SENIOR CITIZEN ACTIVITIES

SENIOR CENTERS, CLUBS, GROUPS,
EDUCATIONAL CLASSES

AMERICAN ASSOCIATION OF
RETIRED PERSONS **333-3544**
S.F. Chapter#99, 1481 Plymouth Ave., San Francisco

AMERICAN ASSOCIATION OF
RETIRED PERSONS **585-4451**
S.F. Chapter#1032, P.O. Box 27383, San Francisco

BAYVIEW-HUNTER'S POINT
SENIOR CITIZENS CENTER **822-8400**
1715 Yosemite Avenue, San Francisco

BOOKER T. WASHINGTON
COMMUNITY SERVICE CENTER **921-4758**
800 Presidio Avenue, San Francisco

CALIFORNIA LEGISLATIVE COUNCIL
FOR OLDER AMERICANS **771-0226**
330 Ellis Street, Room 201, San Francisco

CALIFORNIA RETIRED TEACHERS ASSOCIATION
(S.F. DIVISION) **826-7211**
301 Delbrook Ave., San Francisco

CALVARY PRESBYTERIAN SENIOR CENTER **346-3832**
2515 Fillmore Street, San Francisco

CANON KIP COMMUNITY HOUSE **861-6801**
705 Natoma Street, San Francisco

CATHOLIC COMMITTEE ON AGING **864-4044**
50 Oak Street, San Francisco
Call to find out the name, meeting place and time of the Catholic senior citizen club in your area.

CHINESE SENIOR CITIZENS ASSOCIATION **362-6075**
832 Kearny Street, San Francisco

COMMUNITY COLLEGE EDUCATIONAL CENTERS
Day and evening classes. No fees.
Alemany Community College Center **885-5212**
750 Eddy Street, San Francisco
Galileo Adult School **885-0660**
1055 Bay Street, San Francisco

John Adams Adult School **346-7044**
1860 Hayes Street, San Francisco

Mission Adult School **648-1415**
890 Valencia Street, San Francisco

Pacific Heights Adult School **239-3076**
31 Gough Street, San Francisco

COMMUNITY MUSIC CENTER **647-6015**
544 Capp Street, San Francisco

DOWNTOWN SENIOR CENTER **771-7950**
465 O'Farrell Street, San Francisco

FIRST BAPTIST CHURCH SENIOR GROUP **863-3382**
21 Octavia Street, San Francisco

FORTNIGHTERS OF
FIRST CONGREGATIONAL CHURCH **392-7461**
432 Mason Street, San Francisco

FRATERNAL ORDER OF EAGLES
(GOLDEN GATE AERIE #61, S.F. #5) **431-4134**
65 Hermann Street, San Francisco

GLIDE MEMORIAL CHURCH SENIOR
INVOLVEMENT CENTER **771-0226**
330 Ellis Street, San Francisco

GRAND LODGE FREE & ACCEPTED
MASONS OF CALIFORNIA **776-7000**
1111 California Street, San Francisco

GRAY PANTHERS OF SAN FRANCISCO **731-0858**
120 Belgrave Avenue, San Francisco

INTERNATIONAL INSTITUTE **673-1720**
2209 Van Ness Avenue, San Francisco

KIMOCHI, INC. **931-2287**
1581 Webster Street, San Francisco

KOREAN SENIOR CENTER **751-8183**
856 - 42nd Ave., San Francisco

LATIN AMERICAN NATIONAL
SENIOR CITIZENS ASSOCIATION#1 ..... **824-9973**
3550 Army Street, San Francisco

LATIN AMERICAN NATIONAL
SENIOR CITIZENS ASSOCIATION#2 ..... **648-0276**
1156 Valencia Street, San Francisco

MANILATOWN CENTER **362-6075**
832 Kearny Street, San Francisco

MISSION NEIGHBORHOOD CENTERS, INC. **826-0440**
362 Capp Street, San Francisco

MONTEFIORE BROTHERHOOD WAY CENTER—
SENIOR ADULTS GROUP **334-7474**
655 Brotherhood Way, San Francisco

MONTEFIORE SENIOR CENTER— -
SENIOR ADULTS GROUP **921-3275**
3200 California Street, San Francisco

NATIONAL ASSN. OF RETIRED
FEDERAL EMPLOYEES **584-1967**
116 Lake Merced Hill South, San Francisco

NATIONAL ASSN. OF RETIRED &
VETERAN RAILROAD EMPLOYEES **467-6647**
227 Alpha Street, San Francisco

NATIONAL COUNCIL ON AGING **864-4460**
1182 Market Street, Room 417, San Francisco
Annual membership is $10 for retirees.

NATIVE DAUGHTERS OF THE GOLDEN WEST **362-4127**
703 Market Street, San Francisco

NATIVE SONS OF THE GOLDEN WEST **392-1223**
414 Mason Street, San Francisco

NORTH OF MARKET SENIOR ORGANIZATION
& SERVICE CENTER **885-2274**
121 Leavenworth Street, Room 200, San Francisco

ORDER OF SONS OF ITALY IN AMERICA **586-1316**
5051 Mission Street, San Francisco (Grand Lodge of California)

PACIFIC HEIGHTS COMMUNITY COLLEGE
EDUCATION CENTER **239-3076**
31 Gough Street, San Francisco
The Community College Center holds classes in churches throughout the City. Call the above number and ask for place, date, time and types of courses offered.

RECREATION AND PARK DEPARTMENT **558-4952**
The Recreation and Park Department sponsors several senior clubs throughout the City. Call for more information.

RETIRED EMPLOYEES OF CITY & COUNTY OF SAN FRANCISCO **285-2825**
3650 Mission Street, San Francisco

RETIREES CLUB, DEPT. STORE EMPLOYEES LOCAL 1100 ..... **863-3590**
1345 Mission Street, San Francisco

RUSSIAN AMERICAN NURSES ASSOCIATION OF S.F. **752-5746**
454-18th Avenue, San Francisco

SAN FRANCISCO HOUSING AUTHORITY— SENIOR CITIZENS SOCIAL SERVICES **467-8580**
1815 Egbert Ave., San Francisco

S.F./BAY AREA ILWU PENSIONERS **474-0300**
400 North Point Street, San Francisco

SAN FRANCISCO SENIOR CENTER **775-1866**
890 Beach Street, San Francisco

"SIXTY PLUS" EDUCATION & SOCIAL GROUP **469-1378**
S.F. State University, 1600 Holloway Ave., San Francisco

TEAMSTERS UNION LOCAL 85 RETIREES CLUB ... **648-9666**
973 Valencia Street, San Francisco

TELEGRAPH HILL NEIGHBORHOOD ASSOCIATION **421-6443**
660 Lombard Street, San Francisco

TELEPHONE PIONEERS OF AMERICA **542-7053**
370-3rd Street, #142B, San Francisco

VISITACION VALLEY SENIOR CENTER **467-6400**
66 Raymond Avenue, San Francisco

WESTERN ADDITION SENIOR SERVICE CENTER .. **921-7805**
1234 McAllister Street, San Francisco

WESTERN GERONTOLOGICAL SOCIETY **543-2617**
785 Market Street, Room 616, San Francisco
A Society working for the well-being of the older residents of the western states. Membership dues for senior citizens is $10/annually.

TRANSPORTATION

A.C. TRANSIT—INFORMATION **653-3535**

AMBULATORY HEALTH CARE FACILITY **822-5200**
5033-3rd Street, San Francisco
Hours: 8 a.m.-5:00 p.m., Monday-Friday
Services: Free transportation to hospitals and clinics for residents of Bayview, Hunter's Point, Sunnydale and Visitacion Valley. Advance notice of 24 hours required.

BART—INFORMATION **788-2278**

CALIFORNIA LEAGUE FOR THE HANDICAPPED .. **441-1980**
1299 Bush Street, San Francisco

Hours: 8:30 a.m.-4:30 p.m., Monday-Friday
Services: Transportation to medical appointments for handicapped persons. Minimum notice of 3 days required.

GREYHOUND BUS LINES—INFORMATION **433-1500**
50-7th Street, San Francisco
Services: 24-hour fare and schedule information service.

MUNICIPAL RAILWAY—INFORMATION **673-6864**

GOLDEN GATE TRANSIT INFORMATION **332-6600**

FOR FURTHER INFORMATION, PLEASE CALL
SENIOR INFORMATION LINE
558-5512

INDEX

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