Elder Perceptions and Knowledge of Communication Changes During the Older Adult Years

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Abstract:

This research examined perceptions and knowledge of the elderly regarding communication changes and aging in their own lives. Awareness of changes in memory, language, swallowing, and voice was also investigated. The findings indicated that the majority of participants were aware of the cognitive and communicative difficulties facing them. Furthermore, the results suggested a need for appropriate information about the effects of the aging process on communication skills, with special emphasis on receptive and expressive language, vocabulary, and voice; and about the relationship between illness/health problems and changes in communication. The survey used in this study may be useful to professionals who are involved with screening for possible language and cognitive difficulties or deficits in an elderly population.

Keywords: Elderly; perceptions; knowledge; communication changes; older adulthood

1. Introduction

As part of the aging process, skills underlying communication undergo significant changes which can greatly affect the quality of life for elderly adults (Lubinsk, 1981; Nussbaum & Coupland, 2004; Nussbaum, Pecchioni, Robinson, & Thompson, 2013). It is important for early identification and treatment of communication disorders that the elderly differentiate between common changes associated with the aging, and changes that result from disease processes. Symptoms of disease are often attributed to normal aging, possibly delaying intervention until the problem or disorder is more advanced. Since changes in speech and language can be symptoms of various physiological conditions (e.g., amyotrophic lateral sclerosis, laryngeal cancer, dementia, hearing impairment), it is crucial that the elderly understand what constitutes normal changes associated with aging versus abnormal changes in such areas as cognition, expressive and receptive language, voice, and swallowing (Hummert & Nussbaum, 2015; Monini, Filippi, Baldini, & Barbara, 2015). Furthermore, these areas of functioning are often intertwined.

There is great variability in communicative style and performance during late adulthood (Bayles & Kaszniak, 1987; Beasley & Davies, 1981). Changes that are observed in older adults' language abilities can be found in their vocabulary, how they express themselves, the type of sentence structure they use, and in their understanding of language, both written and verbal. The changes that occur are complex and include a combination of factors, i.e., memory, emotional status, perception, and physical and social expectations and opportunities (Cruice, Worrall, & Hickson, 2005; Ryan, Giles, Bartolucci, & Henwood, 1986).

2. Age Related Changes in Communicative Abilities and Functioning

Language has three components that are essential for effective communication: receptive language (comprehension), expressive language (discourse), and lexicon. Normally aging adults will experience changes in all three areas, and these changes will affect their communication skills to some extent. Research has shown that the ability to comprehend language decreases as a result of the natural aging process (Bilodeau-Mercure, Lortie, Sato, Guitton, & Tremblay, 2015). Thus, the receptive language skills of the normal aging adult will most likely be impaired, particularly in the "old-old" (i.e., 85+) (Beasley & Davies, 1981; Cohen, 1979; Feier & Gerstman, 1980; Shadden, 1988).

Many factors can interfere with comprehension. Rate of speech is an important factor when speaking to the elderly. Researchers (e.g., DiCarlo & Taub, 1972; Konkle, Beasley, & Bess, 1977; Salthouse, 1985; Schmitt & McCroskey, 1981) report a significant decrease in the elderly listeners' comprehension when the rate of speech is rapid. Elderly listeners' comprehension is improved when the speaker's rate of speech is presented to them at a slower speed. Other factors that have been found to affect comprehension are: (a) memory (Gilbert & Levee, 1971; Shadden, 1988); (b) complex or embedded sentences, i.e., sentences that contain a main clause and one or more subordinate clauses (Feier & Gerstman, 1980; Shadden, 1988); (c) making inferences, i.e., when given general information a conclusion or deduction is made (Cohen, 1979); (d) selective attention, i.e., attending only to one component instead of the whole (Beasley & Davies, 1981); and (e) processing of information (Fullerton & Smith, 1980; Howard, Shaw, & Heisey, 1986; Rankin & Collins, 1985).

As a person grows older changes in the production of language will also be noticeable (Bowles & Poon, 1985; Ohler & Albert, 1981). Expressive language involves object naming, naming latency (response time in naming objects or answering questions), and word fluency (sentence structure and grammar). With aging comes an increase in the number of errors in all of these tasks. Errors on naming tasks and latency, which include retrieving a wrong word, substituting another word, or using a favorite word or phrase, increase as one grows older (Bowles & Poon, 1985; Critchley, 1984; Obler & Albert, 1981). Word fluency also declines significantly with aging (Beasley & Davies, 1981; Obler, Mildworf, & Albert, 1977). Thus, it appears that expressive language skills also decrease during the elderly years.

Lexicon or vocabulary plays an important role in communication. As receptive and expressive language competencies decline, one would expect vocabulary to decrease also. However, vocabulary is one of the skills that remains intact or even improves with age (Katzman & Terry, 1983; Shadden, 1988). As one ages, a larger range of vocabulary is acquired and wider variety of responses given (Riegel, 1968).

Acoustic measures of voice generally become poorer later in life, indicating a decline of the vocal signal (e.g. Honjo & Isshiki, 1980; Xue & Deliyski, 2001). Frequency (pitch) and intensity (loudness) are two vocal parameters important for effective communication that change in most individuals. Structural changes related to aging in the larynx, including but not limited to, muscle atrophy, ossification of laryngeal cartilages, and decreases in laryngeal tissue density occur as a natural consequence of aging, changes in the voice occur in most individuals (Beasley & Davies, 1981; Boone & McFarlane, 1988; Hutchinson & Beasley, 1976; Schow, Christensen, Hutchinson, & Nerbonne, 1978). Studies on women's fundamental frequency have documented changes associated with aging, suggesting that womens ' fundamental frequency systematically decreases from 20 - 90 years of age (Benjamin, 1981; Honjo & Isshiki, 1980). As males approach 65 years and older, most study findings report that fundamental frequency or pitch tends to increase in older men (Hollien, 1987; Honjo & Isshiki, 1980). However, findings from perceptual voice studies indicate that listeners associate lower pitched voices with older age (Hartman & Danhauer, 1976; Walker, Hardiman, Hedrick, & Holbrook, 1981). The average intensity of voice has been found to decrease with age among both men and women (e.g., Kreul, 1972; Morris & Brown, 1987).

Finally, one study showed that, although most of the participants were satisfied with their own voices, 65% of the sample judged their voice to be qualitatively altered, and in 31.5% of the participants, pathology was found on phoniatric evaluation (Monini, et al., 2015).

In sum, the process of normal aging affects various areas fundamental to communication. Generally, communication abilities have been found to show some decline during the older adult years. As changes occur it is important for the elderly to identify normal changes caused by aging or opposed to those related to aging disease processes.

3. Purpose of the Study

The purpose of this exploratory study was to document the perceptions and knowledge of normal aging adults regarding age-related changes in communication. Specifically, it was our intention to investigate the changes in communication that older adults consider as "normal" because of the aging process and the areas of change they think have occurred. We also examined whether there was an association between how the elderly felt about such areas as general health and their perceived changes in communication. Finally, we were interested in possible relationships between personal or demographic variables such as age, sex, occupation, and level of education, and communication knowledge or perceptions of changes in communication.

4. Method

4.1 Sample

A total of 213 adults who voluntarily attended speech/language/hearing screenings in five different locations throughout a mid-western rural state were screened for possible inclusion in the study. These evaluations were sponsored by the U S WEST Speech Hearing Outreach Program (SHOP). One-hundred thirty people qualified as participants (N = 130) according to the following criteria: (a) were 60 years or older, and (b) had normal cognitive functioning which was determined by a passing score on the cognitive section of the adult screening protocol (see Procedures). All participants were in independent living situations, and were considered active, cognitively alert adults.

The age range of elder participants was 60 to 93 years (mean age =74 years), with 40 60- year-olds, 54 70-year-olds, and 36 80+-year-olds. Of the 130 participants, 53 were male and 77 were female. Educational level ranged from 5th grade to post graduate work (24+ years), with a mean level of 12.8. Information about present or past occupation was collected. Elders were classified into one of five occupational categories: (a) lower working - unskilled or semi-skilled workers (housewives, cooks, etc.), (b) upper working - skilled workers (railroad workers, construction crew, etc.), (c) lower middle - trained professionals who usually have 2 to 4 years of trade school or college (nurses, teachers, sales, office work), (d) upper middle - professionals who have at least a 4 year college degree (management, doctors, etc.), and (e) old middle - (small business owners and farmers) (Gidden, 1991). Most participants (39%) were classified in the lower middle occupation category.

4.2 Procedures

A questionnaire designed by the investigators was given to each participant as part of a US WEST project. The questionnaire consisted of 26 questions that focused on
knowledge and perception of communication changes which may have occurred as a result of aging. Questions addressed various areas of language, cognition, voice, swallowing, self-rated health, and general information. The questionnaire was organized so that each area of communication was represented by one question about knowledge and one question about perception. For example, if there was a knowledge question about memory, then a question was also asked about perceptual changes that may have occurred with memory. All participants completed the questionnaire prior to being administered the US WEST SHOP screening protocol, so their responses would not be influenced by the results of the screening.

The validity of the questionnaire was established by randomly asking 8% of the sample to answer questions pertaining to the questionnaire. Participants were asked to define terms such as vocabulary, swallowing, and communication, and to clarify phrases found in the questionnaire, such as, "ability to communicate" and "health problems." They responded with similar answers for each question.

The US WEST SHOP adult screening protocol assessed functioning in three areas of communication: (a) cognition, (b) swallowing, and (c) voice. A hearing test was also completed as a part of the U S WEST screening. Subjects were not eliminated from the study because of hearing status (note that there were no deaf participants).

The cognitive section of the adult screening protocol included the Short Portable Mental Status Questionnaire (SPMSQ) (Pfeiffer, 1975) and a generative naming task, the FAS (Borkowski, Benton, & Spreen, 1967). The SPMSQ was a 10 question, objective assessment, administered verbally. Questions covered the areas of orientation, memory, calculation, and general and personal information. A fail was designated by a score of 7 or less. The FAS was another indicator of cognitive function. In this test respondents were asked to name as many words as possible in one minute - excluding proper nouns, numbers, and derivatives - that begin with a specified letter. The letters used were: F, A, and S. A total score of 15 words or less indicated failure. Participants must have passed both instruments to be included in this study.

The swallowing and voice portions of the screening were subjective. A pass or fail, based upon professional judgment, was given after a personal interview and swallowing questionnaire were completed. Of the 130 screening participants, 22 failed the swallowing portion of the screening and 15 failed the voice section. Failure on either of these two sections was not used as exclusion criteria for this study.

Descriptive statistics (i.e., frequencies) were used to tabulate subjects' responses to questions regarding knowledge (Questions 14 - 22) and perceptions (Questions 3 - 7, 9 - 13, & 25) of communication change. All "sometimes" answers (Questions 3 - 7) and answers noting changes in function (Questions 9 - 13) were counted as "yes" responses. This scoring system aided interpretation, as well as helped to increase the number of subjects in the "yes" category on some questions which had small numbers responding "yes" or "sometimes". Thus, percentages were based on yes/no responses. Chi square tables were generated with the contingency coefficient ($\underline{C}$) providing the statistical measure of correlations between health status (Question 26) and perceptions of communication changes. It should be noted that self-assessed health status has been reported to correlate well with results of physician's exams (LaRue, Banks, Jarvik, & Hetland, 1979). The Pearson chi-square test of independence yielded probabilities that were used to indicate the significance of levels of $\underline{C}$ values between self-reported health and perceptions of change (alpha level of .05). Analysis of variance (ANOVA) and multiple regression were used to determine statistical associations among demographic data (age, gender, education, & occupation) and knowledge and perceptions regarding communications changes.

In order to evaluate knowledge and perceptions using chi-square and ANOVA statistics, two scores were given to each subject. One score represented subjects' knowledge of change and one reflected perceptions of change. The knowledge score was determined by totaling the correct responses for Questions 14 - 22. A numerical value was then given to each participant for the number of correct responses. Nine was the highest possible score that a participant could receive. The right answer for questions 14 - 17 & 20 - 22 was "yes". For Questions 18 and 19 "no" was the right answer. Any score less than nine indicated that at least one wrong answer was given. Perceptual scores were determined by counting the number of positive responses on Questions 3 - 7, 11, 13 and 25. These specific questions were chosen so that each area discussed in the review of literature was represented only once. On Questions 3 - 7, and 25, "yes" answers received a score of 2, "sometimes" a 1 and "no" a score of 0. For Questions 11 and 13 a 0 was recorded for a "no" response, whereas a 1 was coded to designate a change whether it was for better or worse. The highest score that could be given was 16, which indicated that changes were perceived in all areas of communication.

5. Results

A total of 43 (33%) of the participants thought that memory and information processing declined as a result of normal aging (Questions 14-22). Forgetting events, conversations, and other items were considered normal consequences of aging. Likewise, difficulty in understanding information when presented by a speaker who talked rapidly was also judged as reflecting normal aging. None of the other communication areas were indicated by a majority (50% or more) of the respondents as being changed due to the aging process.

Just over half ($\underline{n} = 75$) of the respondents believed that changes in communication occurred because of the aging process. A similar number of individuals ($\underline{n} = 67$) indicated that they had noticed changes in their ability to communicate as they became older.

Many participants (n = 96) reported having experienced health problems; however, only 24% (n = 31) thought that health problems had caused communication difficulties. Less than half (31%) indicated that communication could be affected by health problems.

To assess individual knowledge regarding communication changes that normally occur/do not occur due to aging, the number of correct responses on Questions 14 to 22 was computed. Questions about memory, information processing, orientation, and swallowing were answered correctly by over 60% of the participants. Fewer than 50% displayed accurate knowledge about the effects of normal aging on expressive language, comprehension, vocabulary, and voice.

Results from responses to Question 3 through 7 and Question 25 were analyzed to determine perceived problems in communication. Over 70% of the sample reported that these skills were problematic: recent memory (76%) and information processing (71%). The participants reported having difficulties remembering recent events and conversations. Problems were also indicated in understanding conversations when the speaker talked too rapidly, even though the message was heard. Neither comprehension nor swallowing was considered as problematic by the majority of the respondents. Only memory was perceived as changed with aging by half or more (51%), as indicated by responses to Questions 9 through 13. Most respondents did not think that changes had occurred in voice (pitch or loudness level), expressive language, or vocabulary. Almost half (49%) of the participants indicated that memory had gotten worse with age; whereas only 2% reported that memory had improved. The two communication skills noted most frequently by respondents as unchanged with aging were pitch of voice (69%) and vocabulary (69%). Because pitch changes associated with aging have been found to differ between males and females (Burzynski, 1987), pitch was analyzed to determine if perceptions (lower pitch, higher pitch, same pitch) were influenced by sex of subjects. Although no significant differences were found, almost twice as many women (n = 23) as compared to men (n = 12) felt that their pitch had lowered as they aged.

Participants (N = 130) were placed into three groups according to personal assessment of present health status: (a) excellent (n = 19), (b) good (n = 65) and; (c) fair-to-poor (n = 46) to determine the relationships between self-rated health and changes thought to have occurred in communication skills. Participants who rated their health as poorer noted significantly more changes in their ability to communicate (C = .26, p = .01) as compared to those in better health. Similarly, a greater number of those in worse health thought that changes in communication could be caused by health problems (C = 32, p = 00045). As self-rated health status declined, more participants felt that changes in communication were the result of the aging process (C = .28, p = .005).

A greater proportion of participants in poorer health considered their memory to have declined (C = .23, 12 = .025), as contrasted to those in better health (Question 9). Two individuals felt that their memory had improved with aging; they both rated their health as excellent. Only three respondents who judged their health as excellent felt that their memory had deteriorated with age, as contrasted with 32 in good health and 29 in fair health who felt that memory had worsened with age.

Self-rated health was also significantly related to perceived pitch changes. As perceived health declined, more participants reported that their pitch had changed (C = .28, p = .004). For example, in the fair-to-poor health group almost half (41%, n = 19) observed that their voices had lowered in pitch.

As health was perceived as declining, a significantly larger percentage of respondents reported that they had difficulty with swallowing liquids and solid foods (C = 28, p = .003). Almost half (46%, n = 21) of those in the fair-to-poor health group noted that they had swallowing problems. This number was contrasted with 26% (n = 17) in the good health group and 5% (n = 1) in the excellent health group.

Self-rated health status was not significantly related to the following linguistic items: (a) perceived problems with memory for recent and past events, although the percentages of those reporting trouble increased with decreasing health (Question 3 responses, recent memory): 63% (12/19) in excellent health, 77% (50/65) in good health, and 80% (37/46) in fair-to-poor health; (Question 4, past memory) 32% (6/19) excellent health, 45% (29/65) good health, and 48% (22/46) fair-to-poor health; (b) comprehension of written material-- ratios of those observing problems increased somewhat as health status declined (16% in the excellent group, 37% in good health group, 41% in fair-to-poor group); (c) information processing, or understanding rapid speech;

(d) general voice changes with aging-- a similar trend was noted as cited previously: 21% reported changes in excellent health group, 32% in good health group, 41% in fair-to-poor group; (e) ability to express oneself -- over half (56%) of subjects who felt that their expressive ability had declined rated their health as fair - to - poor; (f) intensity of voice -- a trend was seen in the percentages of those stating that their voice had gotten softer or louder, with more subjects noting changes as health declined, and (g) vocabulary. In general, even though there were no significant correlations between health and perceptions in these areas, the better health was rated, the fewer changes were noted in communication skills.

The mean knowledge score for women was 5.21 (out of a possible 9) as compared to 4.64 for men. Females demonstrated a greater amount of knowledge regarding communication changes that are expected with normal aging than males. ANOVA results indicated that knowledge of changes to be expected was not significantly affected by sex ($F(1,120) = 3.109$, $p = .08$), or occupation: $F(4,120) = .848$, $p = .50$). Regression analysis revealed that knowledge could not be predicted by age and education ($R = .022$, $p = .97$).

On perceptions of the number of changes which have occurred with aging, no significant differences were found for sex $F: (1,120) = 1.536$, $p = .218$) or occupation $F: (4, 120) = 2.127$, $p = .082$). Women ($M = 4.90$) noted only slightly more changes than men $M = 4.45$). In general, as occupational status declined from upper middle to lower working, more changes in communication skills were thought to have happened. The occupational ranking which observed the most changes was the old middle category, which was composed of small business owners and farmers. A significant multiple correlation ($R = .228$, $p=.033$) was found between participants' perceptions with aging, and the two predictor variables of education and chronological age. However, only 5% of the variance in perceptions was accounted for by education and age. As the number of years in school decreased, the amount of communication changes perceived increased.

6. Discussion

The primary purpose of this investigation was to document the perceptions and knowledge of the elderly concerning certain communication skills. The major findings were:

1. Although changes were noted in every communication skill, memory of recent events and information processing were the two areas perceived as problematic by the majority of respondents. When only positive or "yes" answers to Questions 3-7 were considered for analysis, disregarding "sometimes" responses, memory of recent events appears to be the area of most difficulty for participants. Memory and information processing were also regarded as processes which declined as a consequence of normal aging.

2. Written comprehension, voice (pitch and loudness level), expressive language, vocabulary, and swallowing ability were reported to have remained unchanged with age by many respondents.

3. Most of the participants lacked accurate understanding of age-related changes in language (receptive/expressive language and lexicon) and voice (pitch and loudness), while greater knowledge was displayed about the changes/lack of changes to be expected in cognition (memory, information processing, and orientation) and swallowing.

Memory difficulties have been cited as a common complaint among healthy aging adults (Reisberg & Ferris, 1982), and memory has been reported to decline with aging by many researchers (Bayles & Kaszniak, 1987; Botwinick & Storandt, 1974; Erber 1974; Perlmutter, 1978; Poon & Fozard, 1980; Shadden, 1988; Spilich, 1983); thus, it was anticipated to be an area of perceived change in this investigation. While trouble remembering recent events or conversations was identified by most participants (76%), difficulty remembering past events appeared less of a problem to the respondents.

When asked if memory had stayed the same or improved/declined as they aged, only around half (49%) felt that memory had declined with the passage of time.

Information processing was expected to be judged as declining with age, given the amount of research which has confirmed this trend (Beasley & Davies, 1981; Bayles & Kaszniak, 1987; Gaylord & Marsh, 1975; Howard et al., 1985; Salthouse & Somberg, 1982). Approximately the same percentage of subjects who thought that they had difficulties processing spoken information when the speaker spoke too rapidly (71%) also knew that information processing should decline with normal aging (74%).

Although difficulties were not observed by most participants, perceptions of reduced performance were predicted in written comprehension (Beasley & Davies, 1981; Cohen, 1979; Feier & Gerstman, 1980; Shadden, 1988), voice (Benjamin, 1981; Hollien, 1987; Hollien & Shipp, 1971; Honjo & lsshiki, 1980; Mueller, 1985), and expressive language (Bowles & Poon, 1985; North-, Ulatowska, Macaluso-Haynes, & Bell, 1986; Ohler & Albert, 1981). In contrast, possible improvement in vocabulary was expected (e.g., Reigel, 1968), and swallowing was anticipated to have remained stable (Blonsky, Logemann, Boshes, & Fisher, 1975; Elliott, 1988). The perception of maintenance of these abilities may be accurate, considering that most (65%) of these subjects felt that they were in good to excellent health, and that all were in independent living situations within the various communities. However, four of these communication processes--written comprehension, voice, expressive language, and vocabulary--were identified as those on which the elderly were least knowledgeable.

Comparisons between responses to perception and knowledge questions on each of these processes suggested that awareness may have been influenced by a lack of correct information. Most (70%) of the participants did not think that the ability to comprehend information in a written form changed with normal aging. Likewise, the majority (65%) reported no difficulty with this task. Pitch and intensity of the voice were also anticipated to be reported as changed; however, 66% thought that their voices had remained the same as they grew older (i.e., no change in vocal pitch (69%) or loudness level (65%)). Similarly, many subjects (58%) felt that it was not normal for voice to change with aging. Thus, participants in *this* investigation did not expect any changes in their voice due to aging; likewise, few noticed modifications. Many (67%) reported that their ability to express themselves had stayed the same as they had grown older, while 53% felt that expressive skills do not change with normal aging.

Passive vocabulary, i.e., word meanings/definitions/word recognition (Obler & Albert, 1981; Shadden, 1988), may be one of the few communication skills that improves with age, or at least maintained during the elderly years (Bowles & Poon, 1985), especially in those who remain in an active lifestyle. Since respondents in this investigation were considered representatives of active, healthy older adults, it was assumed that vocabulary, defined by those participants who were used for validity testing as words and meanings of words (i.e., passive vocabulary), would be reported as improving with age. However, only 31% reported that their vocabulary had increased with aging. It appears that passive vocabulary remains fairly stable in the healthy, active elderly population. Although aging adults have been reported to complain that they forget more words as they age during both speaking and writing (Obler & Albert, 1981; Shadden, 1988), these difficulties may be more related to the active use of vocabulary.

The findings that the ability to swallow is not perceived to change with aging for the majority of elderly (70%) was in agreement with previous results which have reported that normal aging adults do not experience notable changes in their swallowing ability as they age (Blonsky et al., 1975; Elliott, 1988; Logemann, 1983). This percentage is higher than reported by Chen, Golub, Hapner, and Johns (2009), who found that 15% (n = 16) of elders living in an independent living facility indicated problems with swallowing. Most (65%) elders in *this* investigation thought that it was not normal to experience problems with swallowing as one grows older.

As health was perceived as declining, a significantly larger percentage of respondents reported that they had difficulty with swallowing liquids and solid foods ($\underline{C}$ = 28, $\underline{p}$=.003). Almost half (46%, $\underline{n}$= 21) of those in the fair-to-poor health group noted that they had swallowing problems. This number was contrasted with 26% ($\underline{n}$ = 17) in the good health group and 5% (n = 1) in the excellent health group.

A lack of accurate knowledge about written comprehension, voice, expressive language, and vocabulary skills may have influenced the perceptions of the elderly in this study. Conceivably, changes may have been overlooked due to faulty information or minimal facts about these areas. In other words, their expectations may have been self- fulfilling, in that if no changes were anticipated, then actual alterations were not perceived.

A secondary purpose of this study was to examine the relation between participants' self-rated health and their perceptions of changes in communication processes. The positive correlation between perceived health and the number of problems noticed in communication was not unexpected. The results suggest that more changes may be anticipated in memory, pitch of voice, and swallowing by those who judge their health as poorer than those who consider health as better. Specifically, memory may be perceived as declining with age in those who rate health as poorer; although those in worse health did not indicate that specific problems occurred in memory for past or recent events to any greater degree than those who thought their health was better.

It may be that those participants who perceived their health as poorer did not associate the decline of memory with problems in remembering certain happenings. The process of normal decline in memory functioning with age has been reported to accelerate in the presence of illness (Goldfarb & Antin, 1975). Although significant relationships were not found between health and the remaining areas surveyed, a trend of declining performance was reported in the following: problems with memory, comprehension of written materials, general impressions of changes in voice, expressive abilities, and intensity of voice. These findings suggest that professionals should be aware of possible decreases in functioning in those communication skills of aging individuals who feel that their health is poorer.

The lack of correct information about certain communication skills emphasizes specific educational needs of the elderly regarding speech/language changes which are the result of the normal aging process. Less than half of the elderly were aware that as one ages, it is normal to experience: (a) difficulty comprehending written material, (b) problems expressing oneself, (c) somewhat of an expansion in the ability to define words (i.e., vocabulary), and (d) change in voice. However, most (over 60%) knew that memory and information processing decline as a result of normal aging, whereas orientation and swallowing remain relatively stable as one ages. This paucity of correct information about certain linguistic areas becomes critical when considering the role of language deterioration in the diagnosis of dementia (e.g., Bayles, Boone, Tomoeda, Slauson, & Kaszniak, 1989) or the importance of recognizing alterations in voice which are essential for the early diagnosis of laryngeal cancer (e.g., Aronson, 1990). For example, patients with mild Alzheimer's dementia can be differentiated from normally developing older adults on the basis of language tasks measuring verbal memory, receptive vocabulary, and the ability to pantomime, when combined with an assessment of mental status (Bayles et al, 1989). If changes in language associated with common aging are not known, then abnormal alterations can be interpreted as normal. Early diagnosis and intervention are contingent upon older adults' knowledge of modifications that are considered normal versus abnormal.

7. Conclusion

Every area of communication examined in this study was reported to have changed by at least some of the participants; however, difficulties with memory and information processing were evidenced by the majority of participants. Respondents were most knowledgeable about changes to be expected with aging in these two areas. Perceptions of change in communication processes may be linked to knowledge of what changes to expect. With increased knowledge and awareness of what constitutes normal versus abnormal changes, aging adults may help facilitate early detection of disease processes through self-identification, and thus expedite intervention.

Perceived health of the population is also an important element to consider. Those who think of their health as poorer should be expected to report more changes in communication skills, especially in the areas of memory, voice, and swallowing. Since certain speech parameters have been found to be related to physiological status (e.g., Ramig & Ringel, 1983), and since self-rated health has been established as a valid indicator of actual physical status (LaRue et al., 1979), the perceived health of aging individuals should be ascertained, and expectations of speech and language skills adjusted accordingly.

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