The Communication Predicament of Aging Model (CPA) proposes that characteristics of an older person can act as cues that trigger age stereotypes, and that patronizing speech is often produced in response to these stereotypes. The CPA is cyclical, with reinforcement of age-stereotyped behaviors and reduced opportunities for meaningful communication leading to negative changes in the elderly recipient (Ryan, Giles, Bartolucci, & Henwood, 1986; Hummert, 1990). Repeated exposure to patronizing speech can result in avoidance of future interactions or internalizing of age stereotypes as part of self-image. An understanding of the specific predictions of this model is critical to improving communicative interactions with older adults and is also relevant to clinical work with persons with aphasia, particularly in light of current focus on life participation, partner training, and communicative interactions.

Patronizing speech has been studied in institutional and community settings with a wide range of subjects and tasks. A variety of attributes have been found to play a role in activating age stereotypes (e.g., perceived vocal age, off-topic verbosity, and physiognomic cues). Further, positively stereotyped older persons (e.g., active, healthy, well-informed, productive, future-oriented) receive more affirming messages, while negatively stereotyped seniors (e.g., depressed, hopeless, neglected, lonely) receive more overtly nurturing messages. Patronizing speech has a continuum of stereotype-sensitive styles, which may relate more to perceived emotional, rather than cognitive and sensory, needs (Thimm, 1998).

Despite these studies, the link between age stereotypes and speech accommodations remains unclear. Research findings are potentially confounded by differences in age cues, tasks, and the strong linkage of negative stereotypes with presumed memory and hearing deficits. In general, older adults are perceived as experiencing more language difficulties than young adults due these deficits (Ryan, Kwong See, Meneer & Trovato, 1992). Accommodations to presumed disabilities may conflict with needed accommodations for persons with aphasia.

This study was designed to explore differences between hearing and cognitive impairment (implied comprehension deficit) as components of more global stereotypes of older persons. This research is important in aphasia management because partner accommodations in communication may be powerfully influenced by stereotypes about other assumed client attributes. Experimental questions were:

Q1: Are there significant differences among linguistic accommodations, if any, made toward: a) an elderly partner, b) an elderly partner with a hearing impairment, and c) an elderly partner with a cognitive impairment?

Q2: How are targets who described as young adults (YA), old adults (OA), old adults with hearing impairment (HI), and old adults with cognitive impairment (CI) differentially perceived in terms of their ability to learn, desire to learn, comprehension, and familiarity with technology, and how are these factors related to speech accommodations?

Q3: How are YA, OA, HI, and CI targets differentially perceived in terms of how much instructions will help them, and is this perception related to speech accommodations?

Methods

Participants:

Forty-eight female student volunteers aged 18 to 25 years served as subjects.

Testing Process

Subjects were told they were participating in a referential communication task, addressing a randomly-assigned partner who would use their tape-recorded instructions to learn how to operate a universal remote control. The partner was described via a single sheet

purporting to be notes from a telephone interview. There were no time limits for any experimental activity. Messages were recorded in a quiet room with only the experimenter and participant present. After completing the recording, participants answered a short questionnaire.

Stimuli and Conditions

Participants were randomly assigned to view one of four partner descriptions (see Table 1) embedded in the mock telephone interview form. The Young Age Only (YA) and Old Age Only (OA) conditions were identical except for direct and implied references to chronological age. The Old Age Hearing Impairment (HI) condition contained additional information implying a hearing impairment. The Old Age Cognitive Impairment (CI) condition presented notes suggesting empty speech (pronouns without referents) and cognitive impairment.

Post-Recording Questionnaire

After recording instructions, each participant completed a questionnaire on which 7-point Likert scale questions probed the degree to which they felt their directions would help the partner learn the remote, plus perceptions of the partner's ability to learn, desire to learn, comprehension of instructions, and familiarity with technology.

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Analyses
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Recorded messages and comments to the experimenter were transcribed, then analyzed. Measures included: time (seconds), fluency (wpm, nonverbal fillers, repetitions/revisions, and rate of disruption), language counts (words, T-units, subordinate clauses, infinitives), length measures (words/clause and words/T-unit), syntactic complexity (infinitives/T-unit, clauses/T-unit), and information (Correct Information Units). Additional qualitative measures were developed after visual inspection of data, including: references to personal attributes, use of first name, inclusive terms such as "we" and "let's," references to confusion or need for help, use of second person pronouns, and use of language that minimized the difficulty or complexity of the task. Inter-examiner reliability for all measures fell between 83% and 97%.

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Results and Discussion

Linguistic Accommodations Across Conditions
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Means and standard deviations sorted by partner condition (Young Adult-YA, Older Adult-OA, Hearing Impaired Older Adult-HI, and Cognitively Impaired Older Adult-CI) are shown in Table 2 for: a) questionnaire ratings of believed success of task and partner attributes; b) time; c) fluency; d) quantity of output; e) syntactic complexity; f) linguistic length; and g) information. There were no significant differences across conditions.

No qualitative measure yielded useful contrasts, with the exception of comments minimizing the task. The mean number of such comments increased progressively from the YA to OA to HI and finally to CI condition (see Figure 1).

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Partner Attributes
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For partner attributes, all but ratings of Desire to Learn were significantly different across partner conditions (see Table 2), with YA>OA>HI>CI. YA ratings were always significantly better than HI and CI ratings, and OA ratings were also typically better than those for the CI condition. Thus, participants believed young partners were better able to learn and understand directions than HI or CI older partners, and unimpaired or "normal" older partners were better able to learn and understand directions than CI older partners. Spearman correlations were used to explore relationships between attribute ratings and language measures. There were no significant correlations (see Table 3).

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Task Perception
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Although the ratings for *Belief that Directions will Help* did not significantly differentiate partner conditions, higher ratings on *Belief Instructions Will Help* were significantly correlated with number of fillers, all disruptions, number of words, proportion of fillers to words, proportion of disruptions to words, clauses/T-unit, and use of personal pronouns "you/your" (see Table 4). When subjects were recoded based on Low, Medium and High levels of belief that instructions would help, there were significant differences on these same language measures.

Discussion

Results will be discussed in the context of the three defined experimental questions. However, the primary focus will be on the fact that, although ratings of *Belief Instructions Will Help* did not significantly differentiate groups, these same ratings were significantly correlated with a number of linguistic accommodations. Thus, the only factor that significantly affected speech production was the speaker's perception of the degree to which instructions would help. When participants felt their messages were meaningful and likely to be successful, the speakers put forth more communicative effort, evidenced by significantly longer messages (total words) that were more complex, disrupted, and personalized. This finding is tremendously important in management of aphasia, particularly in working with communication partners.

Table 1. Partner descriptions provided to subjects via phone interview notes.

Condition	Age	Occupation	Description of remote control use	Interviewer Notes
Young Age (YA) n = 12	28	Teacher	"I know how to use the remote, but my husband always uses it."	none
Old Age (OA) n = 12	82	Retired teacher	"I know how to use the remote, but my husband always uses it."	none
Old Age-Hearing Impairment (HI) n = 13	82	Retired teacher	"I know how to use the remote, but my husband always uses it. He thinks I turn the volume up too loud."	She seemed to have trouble hearing over the phone. She asked me to repeat two questions.
Old Age-Cognitive Impairment (CI) n = 11	82	Retired teacher	"I know how to use them, but he always uses it. He shows me how but he gets mad when I can't remember."	She seemed confused during the interview. I had to remind her of the topic several times. She asked her husband for the brand names and cable company because she was not sure.

Table 2. Language measures and task/listener ratings across conditions (N=48).

	Young Adult		Old Adult		Hearing-Impaired Old Adult		Cognitively-Impaired Old Adult		ANOVA	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	F-value	p-value
Task/Listener Ratings										
Directions will help	5.08	1.08	5.08	1.08	4.85	.99	4.45	1.13		ns
Ability to learn	5.75	1.22	4.83	1.11	4.31	.85	3.27	.79	12.08	<.001
Comprehension	6.08	.67	4.83	1.34	4.54	.78	3.73	.90	12.22	<.001
Familiarity with technology	5.25	1.48	3.83	1.03	3.54	.97	2.55	.69	12.28	<.001
Desire to learn	5.42	1.68	4.58	1.51	5.08	1.32	5.09	1.14		ns
Time										
Seconds	77.91	53.45	88.87	55.71	89.04	63.81	85.27	40.44		ns
Fluency										ns
Fillers (uh, um, er)	8.08	9.07	5.75	4.41	5.46	6.98	6.00	7.90		ns
Repetitions & Revisions	1.92	2.64	1.33	1.61	2.15	3.24	2.64	1.96		ns
All Disrupt.	10.00	11.62	7.08	5.23	7.62	9.80	8.46	9.44		ns
Filler/Words	3.69	2.48	2.55	1.75	2.35	2.63	3.96	4.62		ns
Disrupt/Words	4.29	2.74	3.06	1.76	3.28	3.03	4.99	5.24		ns
WPM	155.73	26.31	162.87	28.92	154.92	28.48	155.05	54.44		ns
Counts										
Infinitives	6.50	5.63	10.42	6.40	6.31	4.92	7.36	4.84		ns
T-Units	13.83	8.09	17.42	9.88	17.31	12.36	15.09	6.58		ns
Total Words	192.50	107.98	238.67	157.56	221.54	163.06	199.55	75.20		ns
Personal Pronouns	11.58	8.96	14.59	15.51	11.30	11.80	14.34	7.31		ns
Complexity										
Infinitives/T	.58	.47	.69	.41	.43	.28	.54	.34		ns
Clauses/T	1.50	.32	1.36	.24	1.46	.24	1.49	.28		ns
Lengthy										
Words/T	14.70	3.43	13.64	2.01	13.80	3.39	13.83	2.79		ns
Words/Clause	10.02	2.56	10.19	2.05	9.40	2.49	9.47	2.01		ns
Information										
Prop. CIUs	.89	.06	.90	.06	.88	.08	.87	.04		ns
CIUs/minute	139.25	26.57	4.83	26.59	139.57	30.79	139.32	38.46		ns

Table 3. Spearman rank correlation coefficients for relationships among task/listener ratings and between ratings and language measures (N=48).

Measure	Directions will Help	Ability to Learn	Comprehension	Familiarity w/ Technology	Desire to Learn
Directions will Help	1.00				
Ability to Learn	.330*	1.00			
Comprehension	.441**	.846***	1.00		
Familiarity Technology	.169	.624***	.632***	1.00	
Desire to Learn	.140	.349**	.256*	.056	1.00
Seconds	.254	-.066	.004	-.065	-.072
Fillers	.442**	.059	.196	.089	-.021
Repetition/Revision	.253	-.186	-.088	-.11	-.022
All Disruptions	.466**	.004	.146	.035	-.015
Filler/Words	.285*	.019	.170	.116	.007
Disrupt/Word	.315*	.046	.170	.067	.063
WPM	.054	-.005	-.030	.036	-.081
Total Words	.310*	-.112	-.056	-.081	-.154
Infinitives	.080	-.074	-.092	-.052	-.135
T-Units	.247	-.086	-.066	-.085	-.109
Pers. Pron.	.382**	-.018	.014	-.057	-.135
Infinitives/T	-.159	-.029	-.091	-.001	.004
Clauses/T	.357*	.007	.117	-.023	.068
Words/T	.096	-.035	.027	.045	-.003
Words/Clause	-.203	.002	-.008	.066	-.062
Prop. CIUs	-.055	.132	.101	.245	.142
CIUwpm	.022	-.053	-.069	.000	-.075

* .p<.05   ** p<..01   ***p<.001

Table 4. Differences in language measures based on level of belief that instructions will help (measure recoded into three categories).

	Belief that Instructions Will Help --Recoded							
	Low (recoded 1-3) N=15		Medium (recoded 4) N=20		High (recoded 5-7) N=13		ANOVA	
Measure	Mean	S.D.	Mean	S.D.	Mean	S.D.	F value	Probability
Seconds	72.56	52.67	79.63	35.47	108.91	69.94	ns	
Fillers	3.13	3.89	5.75	6.73	10.85	8.57	4.89	.01
Repetitions & Revisions	1.13	1.30	1.9	1.83	3.16	3.69	2.58	.087
All Disrupt.	4.27	4.91	7.55	8.13	14.00	11.61	4.75	.013
Filler/Words	3.01	3.99	2.33	2.38	4.40	2.17	ns	
Disrupt/Word	2.81	2.59	4.01	4.22	4.98	2/33	ns	
WPM	155.86	28.24	156.40	44.95	159.75	24.21	ns	
Total Words	180.73	125.36	194.25	71.76	281.00	180.79	2.62	.08
Infinitives	6.40	4.44	7.90	4.76	8.62	7.72	ns	
T-Units	14.33	10.77	14.65	5.97	19.85	11.54	ns	
Pers. Pron.	9.84	10.48	11.26	6.04	18.91	15.72	2.87	.07
Infinitives/T	.67	.52	.55	.30	.45	.29	ns	
Clauses/T	1.27	.16	1.53	.21	1.54	.35	5.86	.01
Words/T	14.2	3.80	13.75	2.64	14.13	2.26	ns	
Words/Clause	11.11	3.09	9.00	1.30	9.41	1.66	4.57	.02
Prop. CIUs	.88	.06	.90	.06	.87	.06	ns	
CIUwpm	138.01	29.66	144.13	32.86	141.93	27.81	ns	

Mean # of Comments Minimizing Task