CHILD- VS. ADULT-DIRECTED SPEECH AND SELF-ESTEEM: EFFECTS ON THE TASK PERFORMANCES, AROUSAL, AND FUTURE ESTEEM OF ELDERLY ADULTS

by

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(ABSTRACT)

In a sample of older individuals, the effects of speech type and initial esteem level on performance and subsequent esteem were explored in the present study. Results were inconclusive. Practice effects were found for all subjects, regardless of group membership on all tasks. Speech and Esteem effects were found for the number of errors made on the mirror-tracing task, however, with both Low Esteem subjects and subjects who received Child-Directed Speech making fewer errors than High Esteem subjects and subjects who received Adult-Directed Speech. These results were contrary to what would be predicted by current theory involving child-directed speech. Also, the cardiovascular measures of blood pressure (i.e., systolic and diastolic pressure) and heart rate showed a pattern indicating an anger response or emotion throughout experimental situation.

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TABLE OF CONTENTS

INTRODUCTION

One of the primary communication channels through which underlying meanings, emotions, and expectancies can be transmitted (even unintentionally) is voice quality. Differences in therapists' prosodic voice quality, which includes tone, pitch, complexity, and variation, have been correlated with success or failure of a client in therapy (Rosenthal, Blanck, & Vannicelli, 1984). For example, if the therapist's voice was coldly professional, clients tended to do much worse than if the therapist's voice seemed warm and caring. Other, more general and far reaching consequences of voice quality for outcome-related effects have been found. Harper, Wiens, and Martarazzo (1978) and Weitz (1979) reported that the affect and expectancies communicated in speech can influence a listener's emotional and behavioral response. Much research has been conducted on the transmittal of interpersonal expectancies (e.g., Rosenthal, 1968, 1971, 1976; Miller & Turnbull, 1986). The voice is one important mode of making these expectancies known (Harper et al., 1978; Weitz, 1979).

Researchers have begun to study characteristics of speech, other than those listed above, which convey expectations of competence and ability. Important components of speech include sentence length and complexity (Rubin & Brown, 1975; Culbertson & Caporael, 1983), emotional support such as warmth and affection, length of pauses, degree of clarity (Levin, Snow, & Lee, 1984; DePaulo & Coleman, 1986a, 1986b), and the selection of simplified words (Culbertson & Caporael, 1983; DePaulo & Coleman, 1986a, 1986b). An important focus of this research is on the characteristics and effects of child-directed speech (i.e., using speech normally addressed to a child when talking to an adult).

Characteristics of Child-Directed Speech

Child-directed speech (also termed baby talk or motherese) is characterized by a high pitch and an exaggerated intonation contour (Caporael, 1981). The intonation

contour consists of the range, frequency, and variability of tone as well as the melodic content of speech, all of which are high in this type of communication (Warren-Leubecker & Bohannon, 1984). Also, sentences are significantly shorter than for normal adult talk (Culbertson & Caporael, 1983). The text or message content of these sentences are much less complex, conveying ideas in simplest form and with frequent repetitions (DePaulo & Coleman, 1986a, 1986b). Additionally, the pause-length duration, slower pace (Rubin & Brown, 1975), and content of the sentences are similar to speech addressed to children (Rubin & Brown, 1975; Culbertson & Caporael, 1983; DePaulo & Coleman, 1986a, 1986b). Finally, there is considerable use of expectant body language such as wide eyes, leaning toward the listener, and exaggerated facial expressions (Warren-Leubecker & Bohannon, 1984).

These characteristics, particularly high pitch and exaggerated intonation, may help the speaker hold the listener's attention during a conversation (Warren-Leubecker & Bohannon, 1984; DePaulo & Coleman, 1986a, 1986b) and has been shown to do so with babies and 6- to 7-year-olds. In summarizing definitions of child-directed speech, Levin et al. (1984) noted that it consists of two major parts -- a "communicative clarity" part which acts to assure communicative success and an "affection/nurturance" part which communicates protectiveness and social relationships between an adult and a child. The affection/nurturance quality, however, can be attributed to the actual relationship between adult and child. That is, the speaker is seen as affectionate, so the speaker's voice quality is perceived as affectionate.

Stereotyping of the Elderly

According to researchers in the area of baby talk, these characteristics of speech may have far reaching effects. Speech plays an important role in determining and maintaining cognitive schemata for the organizing of information about the world. Speech can function as a stimulus which elicits certain types of responses. For instance,

research has shown that stereotypes, a form of categorizing information about certain people, are pervasive and resistant to change largely because of the ways in which people perceive (Bagby, 1957), talk to (Rubin & Brown, 1975), and interact with people from stereotyped groups (Snyder, 1984). This is particularly prominent in situations involving elderly individuals where researchers have found that even the young-old (i.e., retirees and their spouses who are healthy and vigourous, relatively well-off financially, well integrated into the lives of their families and communities, and politically active, Neugarten & Neugarten, 1986) and aging are treated to over-accommodative speech, such as child-directed speech, due to their social category membership (Rubin & Brown, 1975; Ryan, Giles, Bartolucci, & Henwood, 1986). Speech becomes over-accommodative when it is simplified to a greater-than-necessary degree for the listener's comprehension (i.e., talking to a mentally competent adult as though that adult had the mental ability of a child).

Perceptions or stereotypes of the elderly as being helpless may lead to the use of modified speech patterns when talking to individuals from this group (Caporael & Culbertson, 1986; Ryan et al., 1986). The perception most people hold of the elderly is generally negative in that college students and adults (including the elderly themselves) typically see senior citizens as depressed, lonely, intellectually deficient, dependent upon others, slow, withdrawn, self derogating, useless, and inadequate (Axelrod & Eisdorfer, 1961; Hickey & Kalish, 1968; Rubin & Brown, 1975; Weinberger & Millhan, 1975; Ward, 1977; Carver & de la Garza, 1984). Hickey and Kalish (1968) found that young people "had a predominantly negative appraisal of older people and tended to omit any consideration of the later years of their own lives. Old age appeared risky, unpleasant, and without significant positive values" (p. 215).

In a study by Weinberger and Millhan (1975) subjects were given the choice of either interacting face-to-face with or reading a written communication from an elderly

person or a 25-year-old. Of 100 subjects, 68 chose to evaluate the written communication rather than speak with the target. However, since subjects were not given a choice of whether or not to meet a 25-year-old, this finding is hard to interpret. The omission of considering or thinking about their own old age (Hickey & Kalish, 1968) and reluctance to interact with the elderly (Weinberger & Millhan, 1975) may lead individuals to selectively perceive the aged. According to Snyder and Uranowitz (1978), people will act on stereotypes regarding members of a distinct group in such a way that the perceiver's selective perceptions will stabilize and make predictable the behavior of individuals from that group. Rothbart, Evans, and Fulero (1979) found that people have a tendency to attend to, and thus encode, stereotype-consistent information.

The use of child-directed speech with the elderly may stem from stereotypes of the elderly more than from their actual physical or mental disability (Ryan et al., 1986). Also, Caporael and Culbertson (1986), found that living in a nursing home or similar institutional setting does not appear to cause older individuals to be subjected to child-directed speech. Thus preconceptions of the elderly as helpless may culminate in speech patterns that actually evoke such helpless behavior.

Why and To Whom Child-Directed Speech Is Used

Child-directed speech to children is the most widely acknowledged form of the baby-talk register (Cross, 1977). Since it is used universally from the most underdeveloped to highly sophisticated societies (DePaulo & Bonvillian, 1978), baby talk directed toward children is considered the foundation from which all other forms of child-directed speech are derived (Cross, 1977). DePaulo and Coleman (1986a, 1986b) found that people often use child-directed speech to convey affection, nurturance, or protectiveness, or when they regard the listener incapable of understanding normal adult speech.

However, Brewer, Dull, and Lui (1981) and Rosenthal (1971) reported that the degree of affection conveyed to the listener, depended upon how well that listener fit the

preconceived stereotype of the listener's categorical group. For example, someone speaking with a well-educated foreigner would tend to be perceived as having more patience and warmth in his or her voice than the same speaker conversing with a relatively self-sufficient retarded adult or an independent elderly adult living in a retirement community (Rothbart et al., 1979; DePaulo & Coleman, 1986b). Ryan et al. (1986) also found that if caregivers habitually used child-directed speech when conversing with their elderly patients, sudden withdrawal of the affective component of child-directed speech conveyed a lack of approval and affection and, thus, became disciplinary in nature.

Unfortunately, people tend to over-accommodate when interacting with senior citizens (Ryan et al., 1986). Through a number of studies and interviews of their own and those conducted by others (e.g., Henwood & Giles, 1985), Ryan et al. (1986) found that this over-accommodation may be based on either real or exaggerated handicaps and/or disabilities and is most often expressed in lowered expectations, over-protectionism, paternalistic speech, simplification of topic and syntax, and avoidance of communication. This leads to diminished self-esteem and withdrawal from social interaction since the elderly feel they no longer have adequate control of their lives (Ryan et al., 1986).

Refuted Cases For Child-Directed Speech

People tend to use child-directed speech to make communication with the elderly clearer and more understandable. Cohen and Faulkner (1986) consider the use of child-directed speech a biological necessity when talking to older individuals. The aged commonly have reduced acuity in the high frequency range of sound (Cohen & Faulkner, 1986). This loss of hearing is termed presbycusis. However, the sound frequency affected is above that of normal speech. Lower frequency sounds are heard without difficulty (Botwinick, 1978).

Further, the biological explanation assumes that the only variation between adult speech and baby talk with the elderly is surface pitch and stress on words. However, it has been found that the content of messages addressed to the elderly are simple and highly similar to messages addressed to children (Rubin & Brown, 1975; Caporael, Lukaszewski, & Culbertson, 1983; Culbertson & Caporael, 1983; DePaulo & Coleman, 1986a, 1986b).

How the Elderly Respond To Child-Directed Speech

Caporael and Culbertson (1986) found that some senior citizens like and respond favorably to child-directed speech (Caporael et al., 1983). Caporael et al. (1983) showed that when elderly residents of a nursing home were presented with tapes of someone speaking in a normal voice (e.g., such as that used between peers) and someone using child-directed speech, they preferred the baby-talk voice, finding it more comforting. Likewise, caregivers in these institutions reported that child-directed speech was more effective when giving instructions to or conversing with their elderly patients. This preference might be explained by the affective and encouraging components of child-directed speech (Culbertson & Caporael, 1983). Further, Caporael and Culbertson (1986) found that the more dependent and disabled elderly preferred child-directed speech to a greater degree than did the more independent aged.

However, similar subjects considered child-directed speech degrading (Ryan et al., 1986) despite similar hearing and ability levels. Henwood and Giles (1985) interviewed large numbers of working class elderly in England. Some of these aged had Home Care Assistance and some were totally independent. All reported that they had been the recipients of what they felt to be demeaning and degrading speech (Ryan et al., 1986).

Expectancy Theory and Self-Concept

Expectancies such as dependence or incapability can be transmitted in a number of ways. The perceiver can come right out and tell the listener what he or she expects, or the interaction between perceiver and target can be more subtle. For instance, in a now classic study by Rosenthal and Jacobson (1968) teachers were falsely lead to believe that certain students in their incoming classes had scored 10 points above average on an IQ test. Even though these students were randomly assigned to this condition, by the end of the year they were, indeed, scoring above the class average.

In addition, researchers have reported findings that voice tone relayed expectancies from speaker to listener. For instance, Duncan (1968, 1969a, 1969b) was involved in several studies of experimenter bias. It was found that subject responses differed when the experimenter's social voice quality differed. These fluctuations in voice tone depended upon whether or not the experimenter expected the results to be positive or negative.

Rosenthal et al. (1984) found that doctors were colder and more professional when speaking to patients they did not expect to do well in drug or alcohol rehabilitation than when talking with clients they did expect to be successful. These differences were most apparent in voice tone of the doctor and were highly predictive of whether the patient did, indeed, successfully complete the program. Similarly, Milmore, Rosenthal, Blane, Chafetz, and Wolf (1967) found that doctor's voice tone was highly predictive of therapy outcome. Other subtle aspects of social interaction such as the body movements and positioning of experimenters, have also been found to affect subjects' responses and reactions in experimentation of all types (Rosenthal, 1976; Harper et al., 1978; Weitz, 1979; Singer, Frankel, & Glassman, 1983).

Although research has indicated that the expectancies which others hold about an individual will often place that individual in situations which make behavioral con-

firmation (i.e., when the target's behavior matches the observer's expectations) necessary (Rosenthal, 1971, 1976; Snyder, 1984; Miller & Turnbull, 1986), this is not necessarily the only outcome. Studies by Swann and Ely (1984), Lee (1984), and Baumgardner and Brownlee (1987) have shown that when there are conflicts between an individual's self-concept and the expectancies held by others, the individual will behave in a manner that disconfirms those expectancies if the individual's self-concept is strong and well formed. For example, Swann and Ely (1984) lead interviewers to believe that outside judges had either consistently or inconsistently rated the interviewee as either extroverted or introverted. After the interview session, the interviewers rated the behavior of the interviewee. If the outside judgments of this person had been consistent, the behavior was viewed as confirming the interviewer's expectancies of introversion/extroversion. If the judges had been inconsistent, the interviewee was allowed to express his or her actual personality. Swann and Ely also rated the interviewees on the stability of their self-concept before and after the interview. If the self-concepts had been weak and uncertain, they were changed by the end of the interview to match the expectations of the interviewer. If, however, the interviewees' self-concepts were certain, they did not change as a result of the interview.

Mixed results have been found in regards to the reactions the aged have toward child-directed speech. Some subjects, especially the more disabled, found child-directed speech more pleasant than normal adult speech because it gave them a sense of comfort and security (Caporael & Culbertson, 1986). However, others neither liked nor disliked baby talk (Caporael et al., 1983; Caporael & Culbertson, 1986). Although these and similar studies (DePaulo & Coleman, 1986a, 1986b) have begun to explore the field of child-directed speech, no studies in the literature have thus far addressed how baby talk affects the esteem and performance of the listener. However, Ryan et al. (1986) speculate that:

> the consequences of tolerating over-accommodation (e.g., in the form of speech mode) can, in the long term, have serious implications for health. Elderly peoples' physical and psychological potentials may be inhibited by receiving age-related over-accommodation in a range of social situations (p. 14).

Such over-accommodation may undermine a sense of personal control over events in one's environment. In a related study, Langer and Rodin (1976) examined two groups of institutionalized elderly. One group was allowed to take responsibility for many of their activities as well as a chosen house plant. The other group was told which activities in which they would participate, and their house plant was watered for them. Langer and Rodin (1976) found that the former group was induced to feel competent and independent and showed improved health and self-esteem after the study. In contrast, subjects who were made to feel dependent on the caregivers of the institution had deteriorating health and self-esteem by the conclusion of the experiment. Tone of voice in general, and child-directed speech in particular (Caporael et al., 1983; Culbertson & Caporael, 1983; DePaulo & Coleman, 1986a, 1986b; Caporael & Culbertson, 1986), is an outward sign of expectancies (lowered expectancies in the case of child-directed speech) which the speaker holds regarding the listener. Caporael et al. (1983) and Caporael and Culbertson (1986) found that caregivers most often used child-directed speech when they expected less cognitive and physical ability from their patients.

In fact, Caporael and Culbertson (1986) hypothesized that baby talk helped place the elderly in a dependent role by transmitting expectancies of dependency. In a similar vein, Langer and Rodin (1976) found that although the nursing home patients in their study did not have choice and responsibility for their own activities, they were told in a caring manner what activities they would be doing. However, they still relied more on caregiver assistance for behaviors such as feeding and dressing themselves, of which they were capable of performing alone.

Although no studies have addressed the link directly, the findings and hypotheses of Caporael and Culbertson (1986), Brewer et al. (1981), and Ryan et al. (1986) indicate that child-directed speech may also transmit expectancies to the listener by being over-protective and patronizing and, thus, constraining the elderly individual's self-sufficiency. Therefore, these expectancies may help create the dependence of the listener upon the speaker.

Overview of the Study

The purpose of the present study was to examine the effects of speech mode (i.e., Adult-Directed Speech vs. Child-Directed Speech) on subsequent task performances as well as self-esteem in the elderly. It was not unreasonable to anticipate an effect produced by speech mode since Harper et al. (1978) and Weitz (1979) reported that the expectancies communicated in someone's voice do influence the listener's emotions and behaviors. Furthermore, Ryan et al. (1986) and Taylor (1979) found that most people view child-directed speech directed toward adults as pejorative and demeaning.

Holding with previous demonstrations of behavioral confirmation, it was predicted that child-directed speech would have a detrimental effect on the performance and esteem of the elderly. Ryan et al. (1986) offer an opinion based on their own work and reviews of other related studies that when the elderly tolerated patronizing speech, self-esteem and self-expectations were lowered (Ryan et al., 1986; Caporael & Culbertson, 1986). Evidence tends to support the notion that expectations of dependency (as transmitted via child-directed speech) produce dependent behavior, lowered performance, and lowered self-esteem. As noted above, however, Langer and Rodin's (1976) study of the institutionalized aged found that residents made to feel competent and independent had improved health and self-esteem. Therefore the following hypotheses were tested.

H1: High-Esteem subjects receiving Child-Directed Speech would have lower task performance scores, lower second affective measure scores, and increased

arousal as measured by blood pressure and heart rate than High-Esteem subjects receiving Adult-Directed Speech.

H2: Low-Esteem subjects receiving Child-Directed Speech would have lower task performance scores, lower second affective measure scores, and increased blood pressure/heart rate than Low-Esteem subjects receiving Adult-Directed Speech.

H3: In all cases, however, High-Esteem subjects would perform better than Low-Esteem subjects, and subjects receiving Adult-Directed Speech would perform better than subjects receiving Child-Directed Speech.

Blood pressure and pulse/heart rate readings were included in the present study to measure individual differences of the arousal/stress response displayed by subjects in the prospective treatment conditions. Although measurement of differences in biobehavioral responses has long been practiced (Andreassi, 1980), there has been a recent increase in the understanding of cardiovascular psychophysiology (Obrist, 1981). Blood pressure and heart rate readings have, therefore, become a widely accepted measure of reactivity to stress.

There were possible mediators of the hypothesized main effects measured in the study. These mediators included the subject's age, education level (Caporael & Culbertson, 1986), feelings of control (Langer & Rodin, 1976), competence, and the stability of the subject's self-concept (Swann & Ely, 1984). Feelings of control were measured by the subject's willingness to move to his or her current address. Competence of the subject was measured by the independence rating of the subject's residence since official competency and ability information was not available for many of the participants. The stability of the subjects' self-concept was measured by a single item asking

how confident the subject felt about his or her answers to the affective questionnaire. Therefore, exploratory hypotheses were also considered.

H4: Older subjects would have lower Esteem scores than younger subjects.

H5: More educated subjects would have higher Esteem scores than less educated subjects.

H6: Subjects who had a greater willingness to move to their current addresses would have higher Esteem scores than less willing subjects.

H7: More independent subjects would have higher Esteem scores than less independent subjects.

H8: If subjects showed stable self-concepts, speech mode would not affect task performances or the secondary affective measures.

METHODS

Overview

Forty elderly subjects participated in this two-session study. During the first session, baseline blood pressure, pulse, self-esteem, and general background information were measured. For the second session, individual subjects were given pre-recorded task instructions in either adult-directed or child-directed speech. Relevant information and instructions proceeded each of the two tasks and questionnaires. The two questionnaires concerned self-esteem and reactions to the actual experimental situation. (See Appendix A for an outline of the experiment.)

Design

The present study consisted of a 2 (esteem level: high vs low) x 2 (speech type: adult-directed speech vs. child-directed speech) between groups factorial design. The major dependent measures were (1) resultant self-esteem, (2) actual task performances, and (3) blood pressure/pulse measures.

Subjects

Forty elderly adults (females N = 27; males N = 13), ages 60 to 98 years ($\bar{X}$ = 74; sd = 8.6) were recruited from several local retirement communities, traditional nursing homes, and local church classes. Subjects were recruited either through group discussions or individual contacts in which the aims and procedures of the study were briefly explained. No indication of the voice aspect of the study was given. Volunteers were then requested and times for the first session were arranged individually with the participants. Participation was entirely voluntary. Subjects possessed a wide range of abilities and life styles. Specific descriptions (e.g., ages, gender, education level, time at present address) were collected during the first experimental session via the Background Information Sheet (Appendix B).

Procedure

Both sessions of this study were conducted in the subject's own home or room. The first session, which lasted about 20 minutes, was not video-recorded, but was administered in person by the experimenter. It began with the consent form (see Participation Agreement, Appendix C) which was read aloud to the subject. Three questions regarding what was read were then asked, making sure the subject both understood the contents and was mentally capable of participation (see Subject Checklist, Appendix D, for specific questions). The subject then signed the form. Next, the average of two blood pressure/pulse readings were taken. Following these readings the Background Information Sheet was completed by the subject. Finally, the participant filled out the Life Satisfaction Index (Appendix E), which was used to measure baseline esteem. Before the experimenter left, the final session was scheduled.

Prior to experimentation, the second-session study introduction and instructions to the tasks and questionnaires were video recorded. This was primarily to insure uniformity of instruction presentation over subjects and time. A female colleague (henceforth referred to as "the model") was recruited to record both instruction conditions (i.e., adult-directed speech and child-directed speech).

Subjects were first placed into either the high or low esteem group, based upon their Life Satisfaction Index scores. A median split was used to divide the two groups. This dividing point fell at the score of 30 out of a possible score of 40, with those individuals scoring 30 and above belonging to the high-esteem group. (This score is similar to the average score reported for the instrument's normative sample.) From these two groups, subjects were randomly assigned to one of the two instruction conditions.

Although the experimenter remained in the room during the session to operate the equipment, she kept speech contact with the subject to a minimum. As soon as the subject was seated, the video recording began. During experimenter-subject exchanges

throughout the task and questionnaire phases, the experimenter spoke in a normal voice as briefly as possible. However, while listening to the recording, subjects were limited in possible speech exchanges with the experimenter. The model began by welcoming the subject and briefly explaining why she was interested in determining what effects instruction method had on understanding and self-esteem. Although subjects were led to believe that some participants received instructions from a person, as opposed to taped instructions, all subjects received taped instructions. The only difference in presentation styles was in speech mode.

At this time the subject was presented with a copy of his or her signed participation agreement. Also, another set of blood pressure/pulse readings were taken.

The first task was the mirror-tracing task. The task board rested on the subject's lap or a small table during the instructions so that the subject had a visual aid corresponding to what was being said. (The experimenter had adjusted the board to her own vision before the session began so that only minor adjustments in shield and mirror angles were needed for the task.) After the instructions were completed, the model prompted the listener for any questions concerning the task. At this time the tape was stopped. If there were major or extensive questions, the instructions were replayed. If the question was minor or about the shield and/or mirror adjustments, the experimenter gave a one to three word answer or helped the subject with the board adjustments. The tape was restarted, and the model told the subject what to do as he or she attempted the task. This acted as a practice trial. Again, a chance for questions was allowed. The subject attempted the mirror-tracing task three times. Two minutes were allowed for each trial. The model told the subject when to start and stop. The number of errors was recorded after each trial. When all three trials were completed, the experimenter removed all of the mirror-tracing items.

The final task consisted of the completion of simple addition problems. After instructions, time was given for questions. The addition problems were composed of two two-digit numbers. Two practice problems preceded the actual trials (see Appendix F). There were five pages of problems with three minutes allowed for each page. At the completion of the addition task, another set of blood pressure/pulse readings were taken. These readings were to assess the subject's relative response to stress due to the tasks.

Next, the participant was asked to fill out two, short questionnaires. The model read the instructions to each one. The first questionnaire was a shortened version of the Affect Assessment Questionnaire (McFarland & Ross, 1982, see Appendix G). This instrument was to measure changes in esteem and general mood. Next, the subject completed an inventory of her/his reactions to the tasks, instructions, and experiment in general (see Appendix H). When these were finished, the model inquired about the subject's hearing and any physical problems which potentially interfered with performance (see Subject Checklist, Appendix D). The model then thanked the subject and turned the session over to the experimenter. At this point the tape was turned off.

The experimenter briefly explained the possible effects of the tape and the reasoning for the experiment. Actual speech differences were not mentioned until after completion of the study as a whole. It was requested that the participant not discuss the experiment with friends or other residents. Another set of blood pressure/pulse readings were taken to ensure that the subject was returning to baseline levels. He or she was again thanked and dismissed.

Speech Mode Descriptions

Adult-Directed Speech. Instructions given in the adult speech condition closely approximated normal, everyday speech between adult peers. Sentence length averaged six letters per word and nine to ten words per sentence. (See Appendix I for the tape transcript.)

Child-Directed Speech. Instructions given in the child-directed speech condition consisted of shorter sentences with an average length of four letters per word and six words per sentence (Rubin & Brown, 1975; Culbertson & Caporael, 1983). Sentences were also less complex with simpler wording (Rubin & Brown, 1975; Culbertson & Caporael, 1983; DePaulo & Coleman, 1986a). Although actual wording and syntax varied according to previously described characteristics, content information was the same in both conditions. Finally, these instructions were given with high, varied pitch, exaggerated intonation contours, and exaggerated facial expressions (Brown, 1977; Caporael et al., 1983; DePaulo & Coleman, 1986a). (See Appendix J for the tape transcript.)

Apparatus

Blood Pressure Monitor. A Marshall Medical Astropulse 90 blood pressure/pulse monitor was used. Accuracy and calibration of this device were previously described (Harrison & Kelly, 1987), and the instrument was among the best of a 22-model survey. It was fully automatic with digital readout and printing capacity. Systolic and diastolic estimates were based on phase 1 and phase 5 criterion, respectively.

Video Equipment. Panasonic's VHS AG-2400 portable video cassette recorder and WV-3240 camera with zoom lens were used to produce and play the video tapes.

Television. The subject's own television set was used since the experimental sessions took place in the participant's home. Therefore, a wide range of models was used. However, screen sizes were 19 to 24 inches in all cases.

Mirror Task. The mirror board was an electronic model from the Lafayette Instruments Co. in which errors were recorded by an electronic recorder (model #58004) attached to the board. Each time a subject moved the stylest off the star's black line, the box counter increased by one, and a small light at the top of the star came on. The light remained on until the stylest again touched the black line.

Tasks

Mirror Tracing. The traced figure was a six-pointed star resulting in twelve sides. Measures for this task included the number of errors per minute and the number of sides completed per minute for each trial. Therefore, a maximum of 12 sides or two minutes per trial was allowed. Mirror tracing has been shown to be sensitive to and to create stress in all age groups.

Addition Task. The addition problems were randomly generated by a computer. They consisted of two, two-digit numbers per problem with 72 problems on each page. Numbers were printed in large type (font = 14), black of a flat-white background, to allow the subjects to see the problems clearly. The problems, font size, paper, and timing method were the same as those used by Harrison, Kelly, and Shapiro (1987). Simple addition problems were shown to be an effective task when measuring the arousal/stress levels of elderly subjects (Harrison et al., 1987). Measures for this task included number of problems solved per minute, the number of errors per trial, and the number of errors overall. The subject had only one page of problems at a time as each was removed after the time limit. Therefore, a maximum of 72 problems or three minutes per trial was allowed.

Questionnaires and Other Measures

All questionnaires were printed in 14-point (large type) font. This allowed subjects to read all questionnaires with ease and without the help of the experimenter.

Blood Pressure/Pulse Readings. One set of readings consisted of two or three measures separated by less than one minute. Only two readings were taken per set unless the two deviated from one another by more than 10 mm Hg on either systolic or diastolic measures. The average of the two closest readings was used in the statistical analyses.

Background Information Sheet. This questionnaire asked for information on the participant's age, sex, education, income, parent's education, years since retirement, years at present address, and how voluntarily the subject had moved to the present address. (see Appendix B).

Residential Rating. Subjects received a rating from one to five depending upon the type of residence in which they lived. A one was given to subjects who were completely independent and living in the town community. A two was used for subjects who were still independent, but who lived in a neighborhood exclusively for the elderly. A three was representative of those who lived in an apartment complex in a retirement community and frequently ate at the community's cafeteria. A four indicated subjects who resided in one to four rooms in a facility with a 24-hour nursing staff and cafeteria, but, for the most part, could come and go as they pleased. A five was given to those subjects confined to a traditional nursing home with a 24-hour nursing staff, partial confinement to their one room, and meals being brought to them.

Self-Concept Stability Question. A single question was asked at the end of the Affect Assessment Questionnaire in order to assess the subject's stability of her or his self- concept. This question was, "How certain are you of these answers (in relation to how well the series of adjectives fit the person's personality)?"

Life Satisfaction Index. Developed by Neugarten, Havinghurst, and Tobin (1961), this instrument measures the psychological well-being of older individuals. This measure is relatively independent of level of activity or social participation. The Life Satisfaction Index was developed using subjects with ages ranging from 50 to 90 years old, with good physical and mental health, and socioeconomic status ranging from upper-lower to upper-middle class with the majority of the subjects being in the higher classes. Participants in the present study shared these characteristics. Components measured by this index are zest (versus apathy), resolution and fortitude, congruence

between desired and achieved goals, positive self- concept, and mood tone. Items consist of brief statements about life (e.g., "These are the best years of my life," "I feel old and tired.") with which the subject agreed, disagreed, or was uncertain. Responses were scored: two points for positive answers, 0 points for negative answers, and 1 point for uncertain responses (Kane & Kane, 1981). Responses were determined to be positive or negative depending upon the wording of the particular item. When validated against the Life Satisfaction Rating interviews (Neugarten, Havinghurst, & Tobin, 1961), a correlation of .55 was found for form A which was used in this study. (see Appendix E).

Affect Assessment. The Affect or Mood Assessment Questionnaire was designed by McFarland and Ross (1982) as a measure of affective attribution to one's own actual and perceived performance. The original instrument contains 77 adjectives to which the respondent indicates how well the adjective fits the person at that time on an 11-point Likert-type scale. For the purposes of this study, a random subsample of adjectives were used. In addition, a simpler, five-point scale was substituted for the original 11-point scale due to the present subjects' unfamiliarity with Likert-type answer techniques.

Reaction and Preference Questionnaire. This questionnaire contained many manipulation checks. It allowed subjects to express their opinions regarding the experimenter, the experimental situation, the tasks, their own perceived performance, and the video-taped instructions. Questions included both Likert-type responses as well as free opinion questions (see Appendix H).

RESULTS

Exploritory Hypotheses

Chi-square analyses of the background information showed no significant differences in group composition before experimental manipulation. All four conditions consisted of groups with average age in the mid 70s, at a two to three mixture of males and females, education between high school and four years of college, mother and father averaging junior level in high school, income of around $25,000 annually, seven to ten years in retirement, and one to three years at the current address.

Although the groups did not differ overall, significant main effects for Esteem were found for voluntariness of subject's move to his or her current address ($p < .03$) and the independence rating of his or her residence ($p < .01$). Both of these variables were highly correlated with the Life Satisfaction Index (LSI) score, the basis for assigning subjects to high- and low-esteem groups ($p < .01$ and $p < .02$), respectively. Low-esteem subjects showed more reluctance to move to their current address and lived in a more dependent environment. There was only a moderate correlation between the subject's education level and his or her Esteem rating ($p < .08$) with the more educated subjects having higher esteem scores. Age was not found to be correlated with esteem.

However, partial correlational analyses were conducted between the LSI score and each of the above four variables with the effects of all of the other demographic variables removed. When the effects of the other background variables were removed, Age was found to correlate with the LSI score ($p < .055$). Residence and voluntariness continued to be correlated with the LSI ($p < .03$ and $p < .05$, respectively) while the correlation with the subject's education level disappeared. A multiple regression analysis was also conducted, regressing the above four variables onto the LSI score. Although 30 percent of the variance was explained by the model, no significant variables emerged.

Insert Table 1 about here

In general, background variables were highly correlated with one another (see Table 1 for the correlation matrix). The subject's age positively correlated with his or her length of time since retirement ($p < .02$) and the dependence rating of her or his residence ($p < .04$). The subject's education level was positively correlated with both his or her father's education ($p < .002$), mother's education ($p < .01$), and his or his income level ($p < .0002$), but was negatively correlated with the level of residence dependency rating ($p < .001$). The subject's father's education was also positively correlated with the subject's mother's education ($p < .003$), and the subject's income level ($p < .003$), while being negatively correlated with the length of time the subject had been retired ($p < .004$) and the dependence rating of the subject's residence ($p < .01$). The subject's mother's education showed a similar correlation with the residential dependence rating ($p < .04$). Income was also positively correlated with the subject's Life Satisfaction Index or Esteem score ($p < .04$). It was negatively correlated with the dependence rating of the subject's residence ($p < .0002$). In addition, the length of time the subject had been retired was positively correlated with the subject's voluntariness to move to the current address ($p < .05$).

Main Hypotheses

Self-report measures showed no significant Chi-square differences between groups on the affect assessment questionnaire or certainty of answers item. However, the correlation between the affect measure and esteem did approach significance, with high-esteem subjects identifying more positive adjectives as fitting their personalities than low-esteem subjects ($p < .08$).

Table 1

Correlation Matrix of Demographic Variables and Esteem Scores

	Age	Sex	Self Ed.	Dad Ed.	Mom Ed.	Income	Retire	Address	Volunt	Residenc	LSI
Age	1.00										
Sex	0.03	1.00									
Self Ed.	0.19	0.27	1.00								
Dad Ed.	-0.07	0.08	0.48**	1.00							
Mom Ed.	0.02	0.06	0.39**	0.55**	1.00						
Income	-0.13	0.20	0.56***	0.47**	0.53***	1.00					
Retire	0.38*	0.21	-0.12	-0.45**	-0.17	-0.29	1.00				
Address	-0.13	-0.07	0.17	0.18	0.30	0.24	-0.15	1.00			
Volunt	0.20	0.27	-0.16	-0.09	0.00	-0.13	0.31	-0.16	1.00		
Residenc	0.33*	-0.12	-0.51***	-0.44**	-0.33*	-0.55***	0.46**	-0.28	0.40*	1.00	
LSI	0.08	-0.08	0.28	0.03	-0.06	0.33*	-0.05	0.04	-0.39*	-0.40*	1.00

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

No significant effects for Speech or Esteem were apparent on the items from the reaction questionnaire concerning the experiment/experimenter in general or the understandability of the instructions. However, Chi-squares showed that high-esteem subjects liked the instructions being video-taped to a greater extent than did low-esteem subjects ($p < .01$). Also, as shown by Figure 1, there was a Speech by Esteem effect on the reactions to the mirror-tracing task. Low-esteem/Adult-speech individuals liked this task less than any other group ($\bar{X} = 2$; sd $= 0$), while low-esteem/Child-speech subjects ($\bar{X} = 1$; sd $= .94$) liked it best ($p < .04$).

Insert Figure 1 about here

As for the speech condition manipulation checks, main effects of speech occurred for simplicity of wording and tone of voice. Child-directed speech was seen as simpler ($p < .003$, see Figure 2) and more varied in tone ($p < .02$, see Figure 3) than Adult-directed speech.

Insert Figure 2 about here

Insert Figure 3 about here

Separate mixed-design analyses of variance (ANOVAs) were performed on blood pressure/heart rate and performance data. Systolic readings showed a significant main effect of Trial ($F_{(3, 108)} = 5.21$; $p < .002$) with the mean of Trial 2 reduced to 134 mm Hg from a mean of 141 mm Hg on Trial 1, then increasing again in Trials 3 and 4 to means of 139 and 142 mm Hg, respectively (see Figure 4). The Trial 1 reading was taken at the end of the first session immediately following the subject's completion of the Background Information and Life Satisfaction Questionnaires. This session was the first

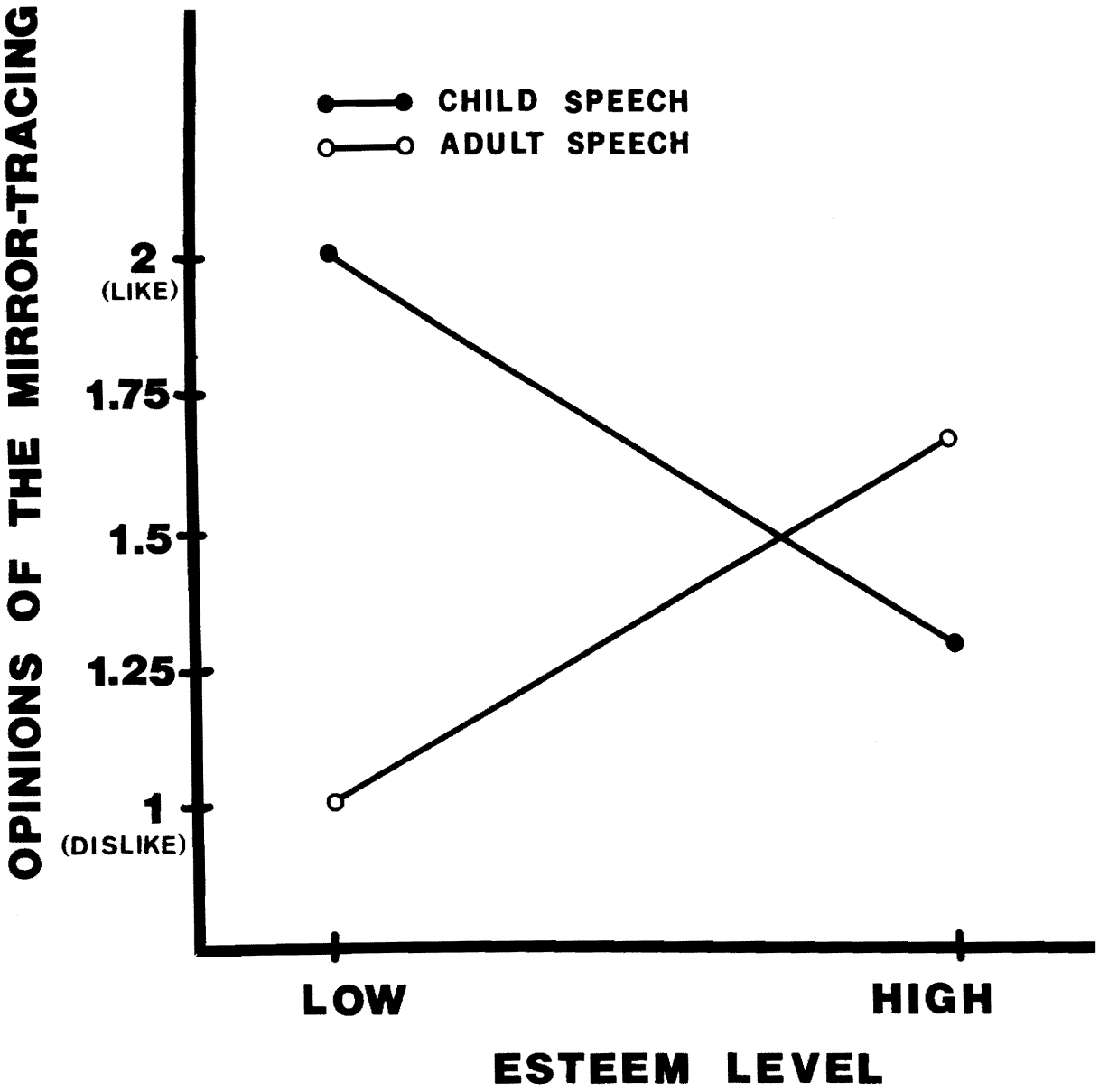

Figure 1: Subject opinions (like vs. dislike) of the mirror-tracing task as a function of Speech by Esteem.

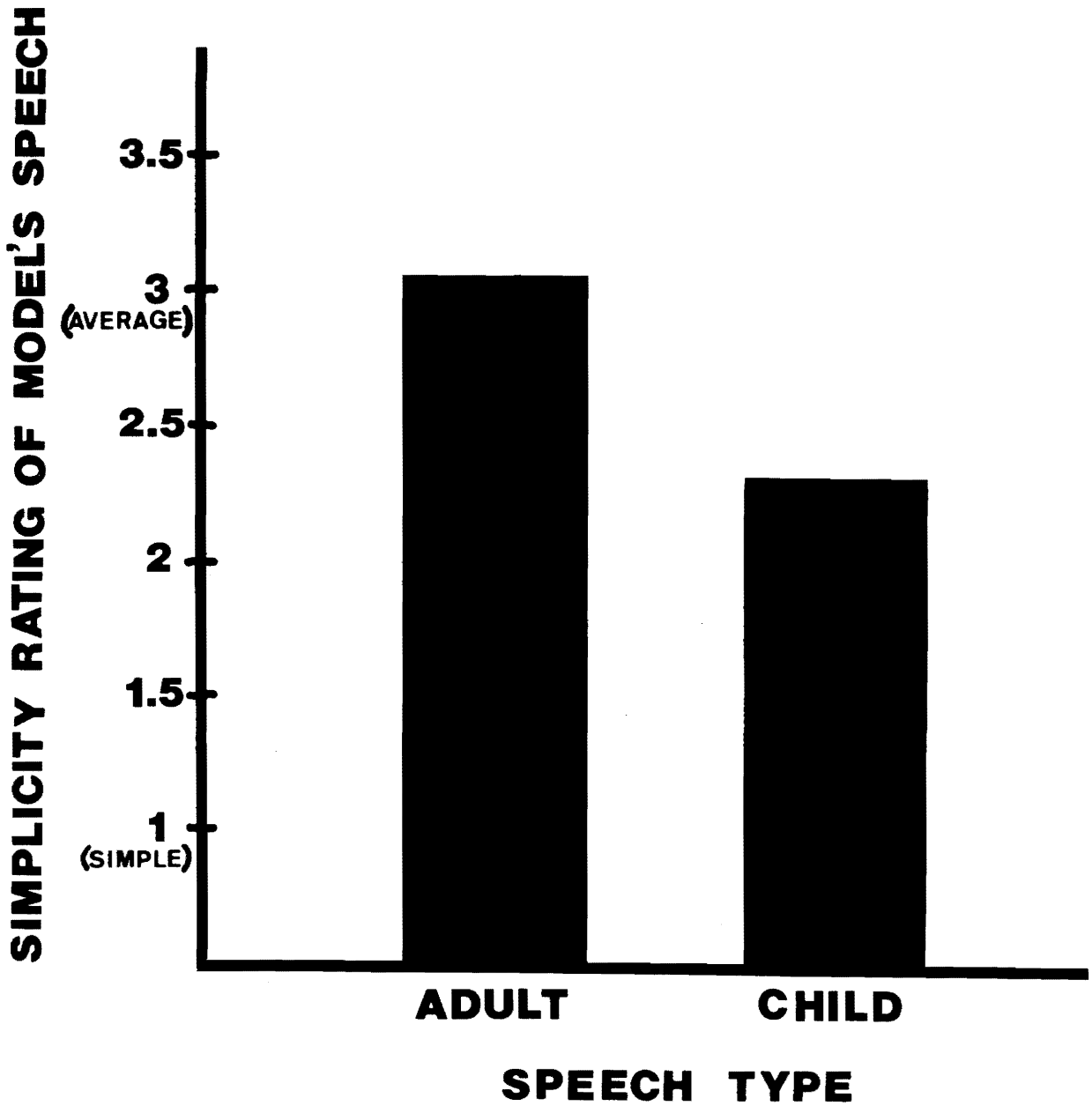

Figure 2: Subject ratings of the simplicity of the speech mode which he or she received as a function of Speech.

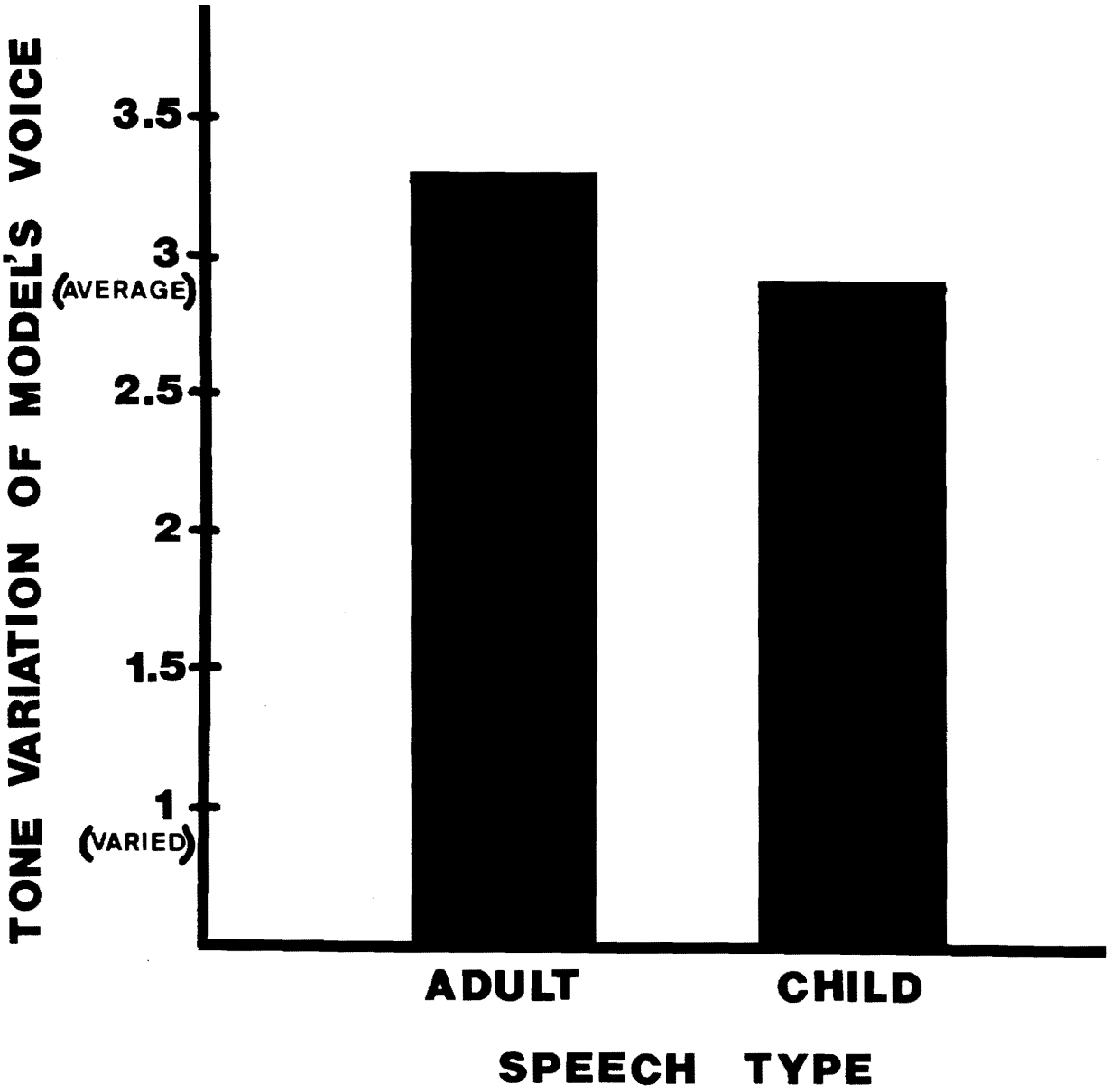

Figure 3: Subject ratings of the variation in tone of the speech mode he or she received as a function of Speech.

official encounter between the subject and the researcher in an experimental setting. The Trial 2 reading occurred in the second session following the introduction/explanation of the research by the video-taped model. The subject was also reminded of the reading taken in the first session. Trial 3 immediately followed the task segment of the second session. All trials of both the mirror-tracing and addition tasks had been attempted by this point. Finally, the Trial 4 reading was taken at the completion of the second session, following debriefing. There were no differences between groups for this measure, although the Esteem main effect approached significance ($F_{(1, 36)} = 2.14$; $p < .15$) with high-esteem subjects having a lower systolic reading.

Insert Figure 4 about here

The data were transformed in order to improve homogeneity (Winer, 1971). ANOVAs were again performed. However, the results of these analyses essentially replicated those previously described. Analyses of covariance (ANCOVAs) were also conducted for Systolic, Diastolic and Heart Rate data. Age was used as a covariate. These analyses produced no significant results. Therefore, none of these results are reported.

Insert Figure 5 about here

Diastolic readings showed similar results with a significant main effect of Trial ($F_{(3, 108)} = 5.16$; $p < .002$, see Figure 5). The mean diastolic reading increased from 75 mm Hg and 72 mm Hg in Trials 1 and 2 respectively to 76 mm Hg and 78 mm Hg in Trials 3 and 4. All of the diastolic readings were taken simultaneously with the systolic readings described above. As can be seen in Figure 6, heart rate or pulse measures also showed a significant main effect of Trial ($F_{(3, 108)} = 5.83$; $p < .001$). There was a steady decrease in the pulse rate across the testing session (i.e., the second

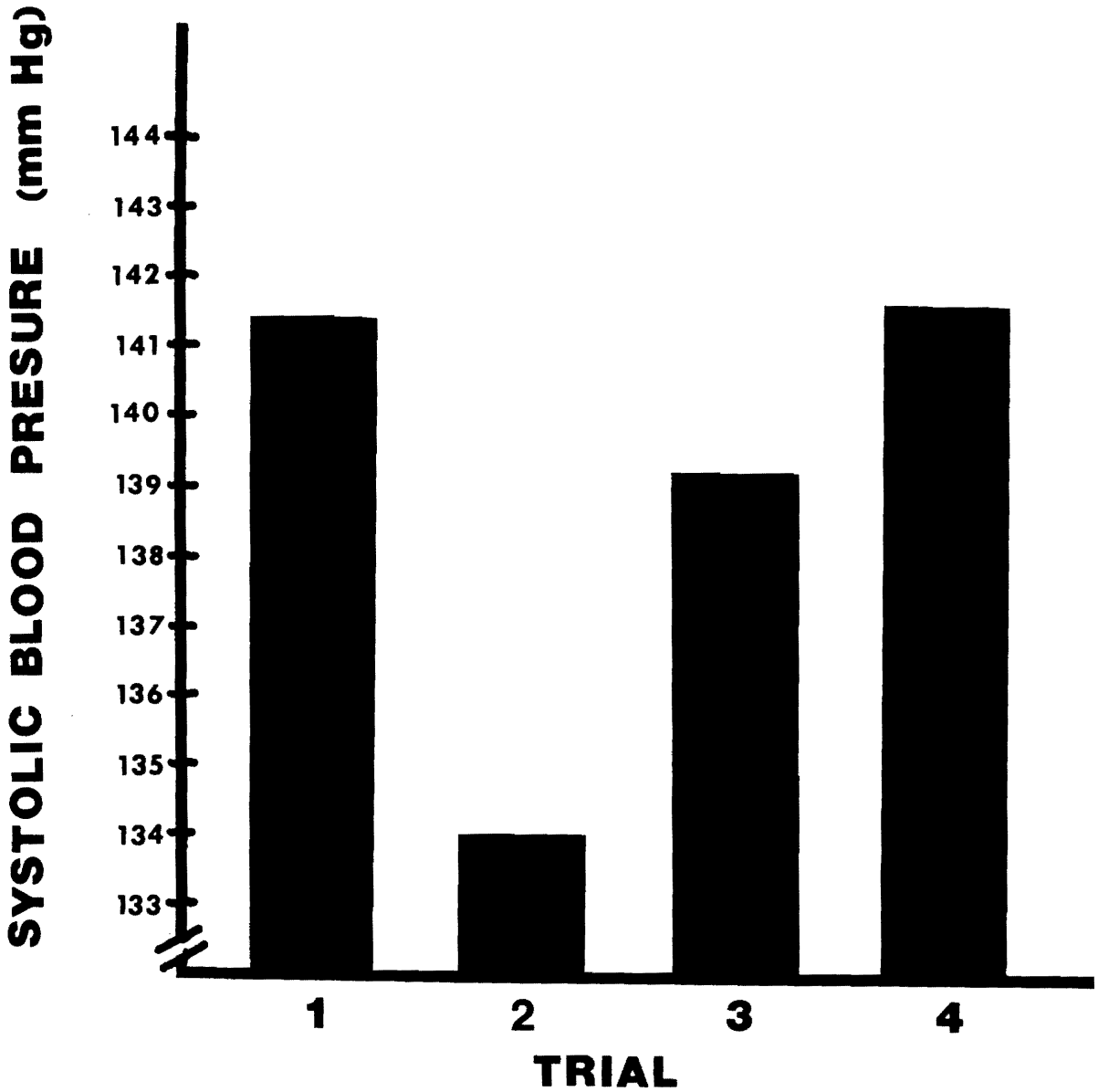

Figure 4: Systolic blood pressure measurements (mm Hg) as a function of measurement Trial.

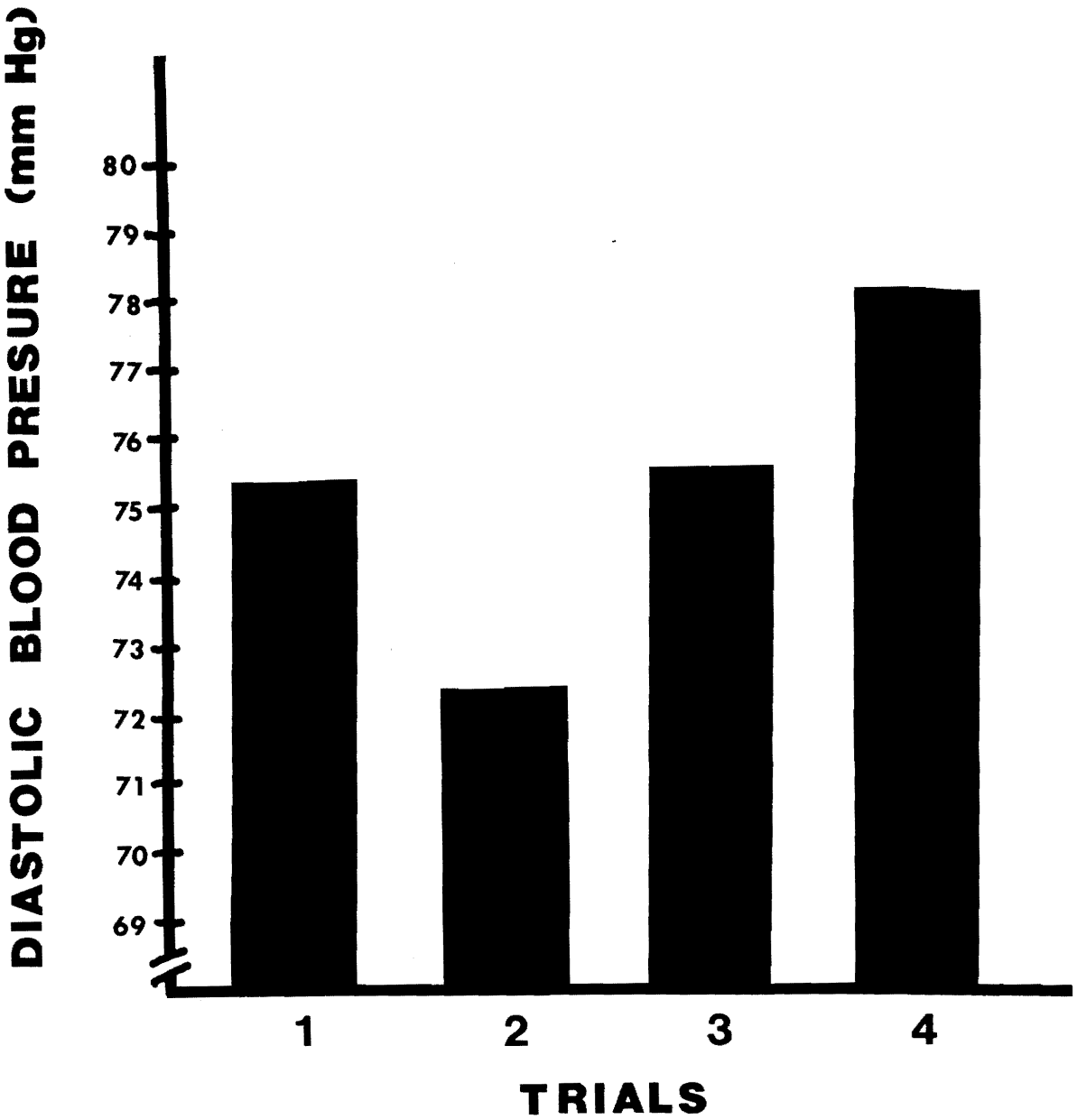

Figure 5: Diastolic blood pressure measurements (mm Hg) as a function of measurement Trial.

session) with the fourth reading showing a significant decline of over two beats per minute. Thus heart rate decreased as the experimental session progressed.

Insert Figure 6 about here

The number of errors per minute for the mirror-tracing task was first computed by dividing errors per trial by the time for that trial to give the average number of errors per second. This figure was then multiplied by 60 to give the number of errors per minute (Number of Errors/Time x 60). This computation was deamed necessary due to the cap of two minutes per session which over half of the subjects could not attain. As shown in Figures 7 and 8, the main effects for both Speech ($F_{(1, 36)} = 5.39$; $p < .03$) and Esteem ($F_{(1, 36)} = 7.67$; $p < .01$) were present. Both Adult-speech and high-esteem individuals made more errors than their counterparts.

Insert Figure 7 about here

Insert Figure 8 about here

The number of sides completed per minute for the mirror-tracing task was computed in a fashion similar to errors per minute (i.e., Number of Sides/Time x 60), for the same reasons given above. A Trial main effect was present ($F_{(2, 72)} = 3.37$; $p < .04$) with the number of sides completed per minute increasing from five in Trial 1 to six in Trial 3 (see Figure 9).

Insert Figure 9 about here

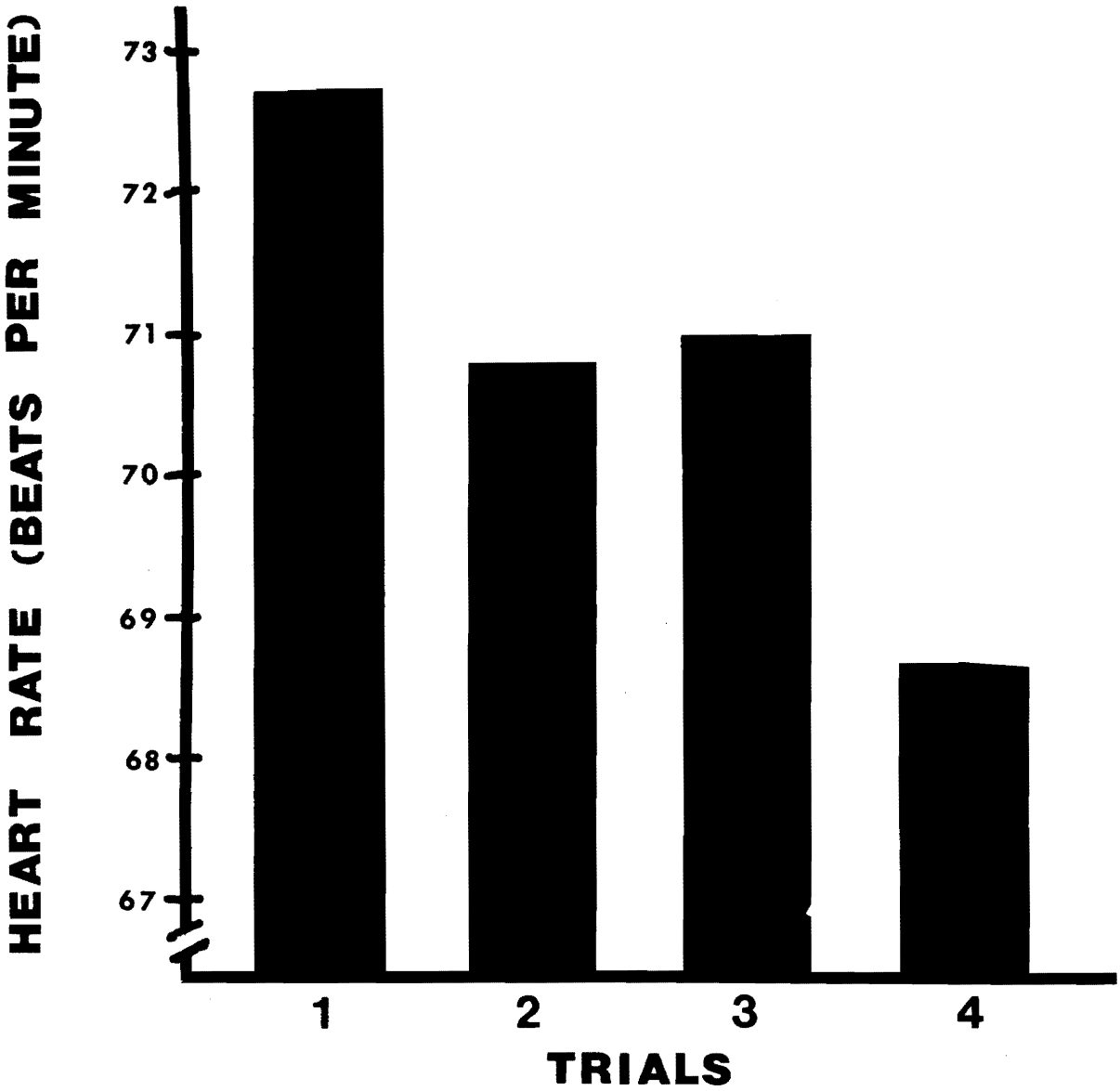

Figure 6: Heart rate measurements (beats per minute) as a function of measurement Trial.

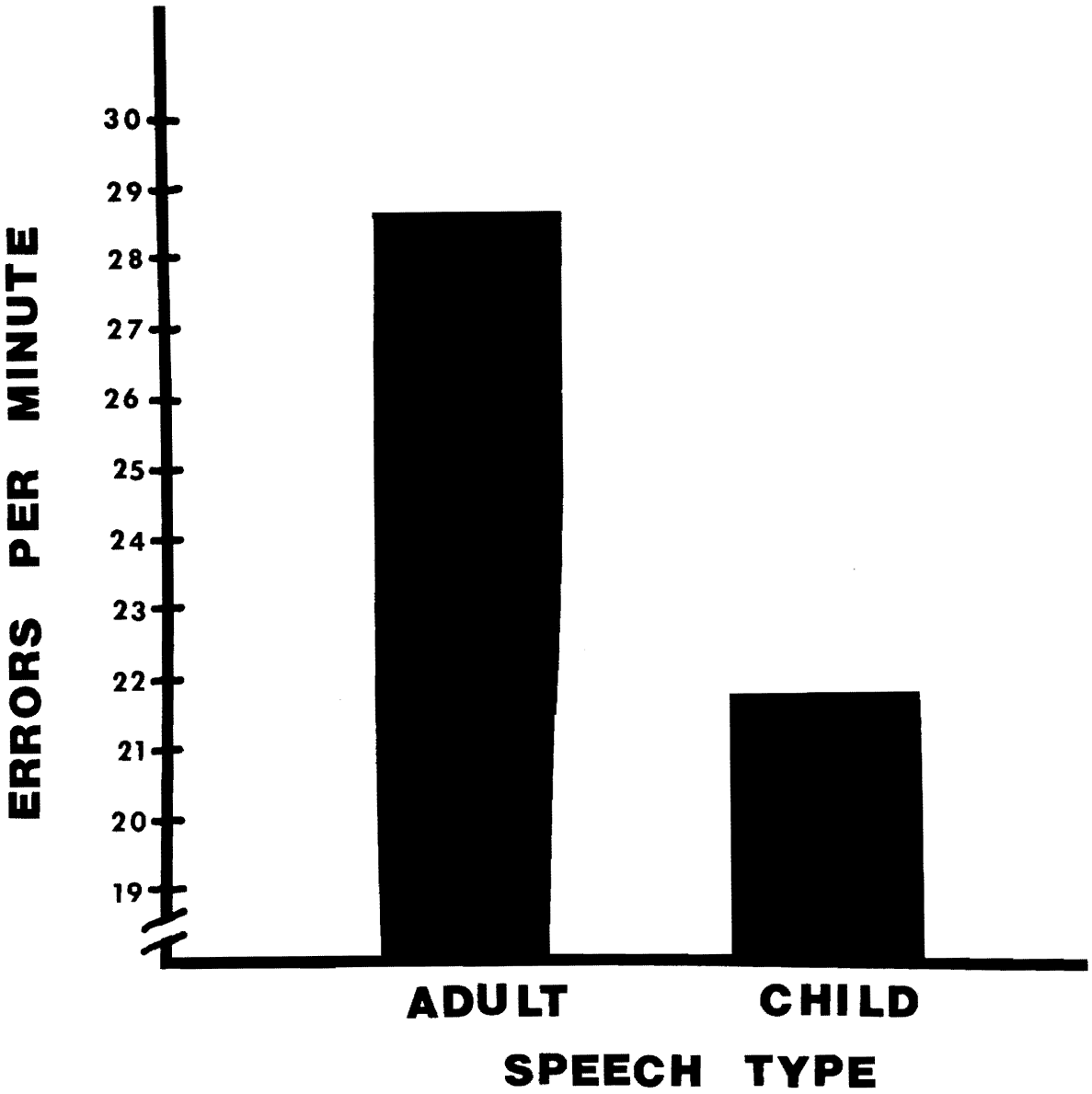

Figure 7: Number of errors per minute on the mirror-tracing task as a function of Speech.

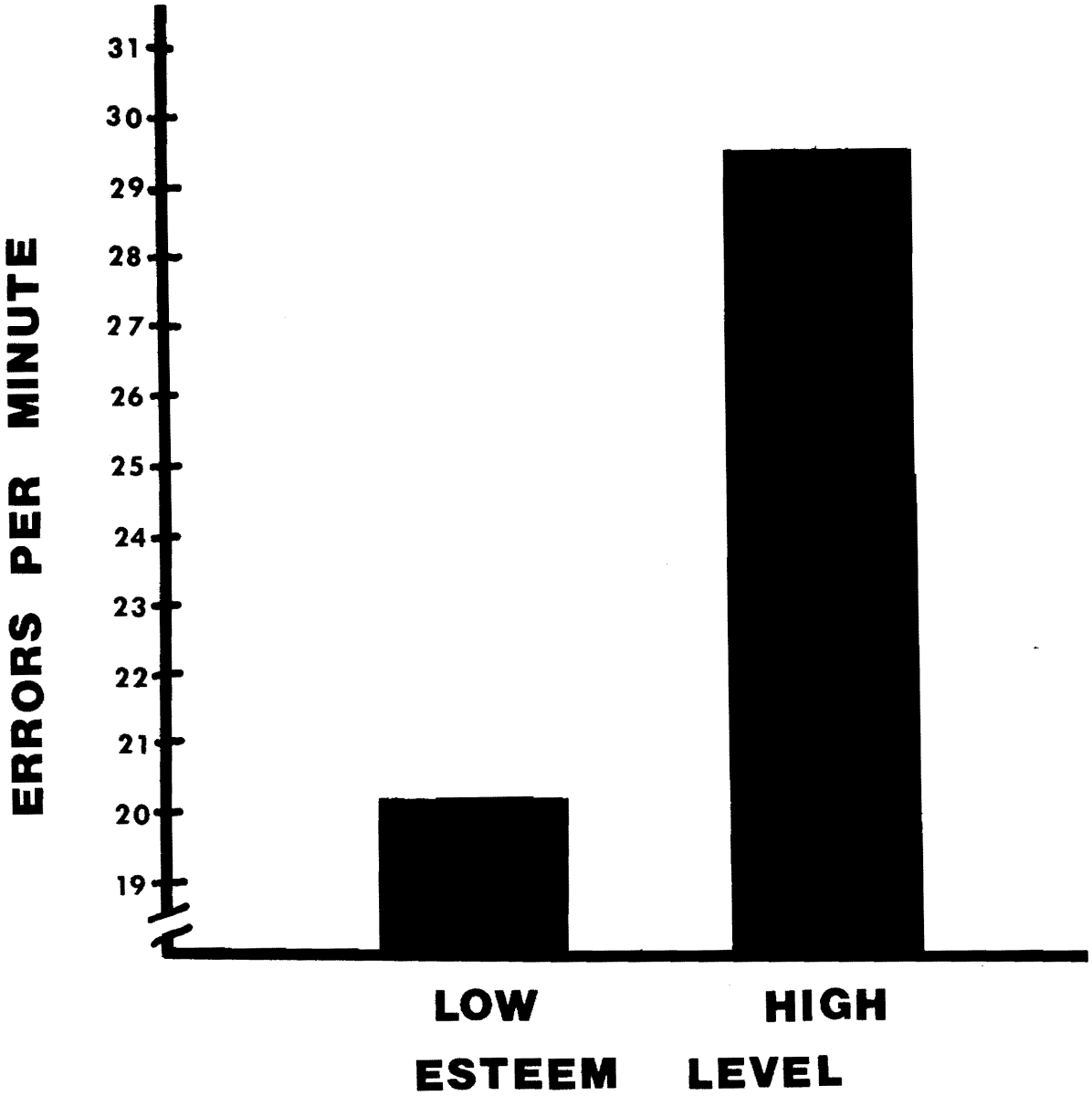

Figure 8: Number of errors per minute on the mirror-tracing task as a function of Esteem.

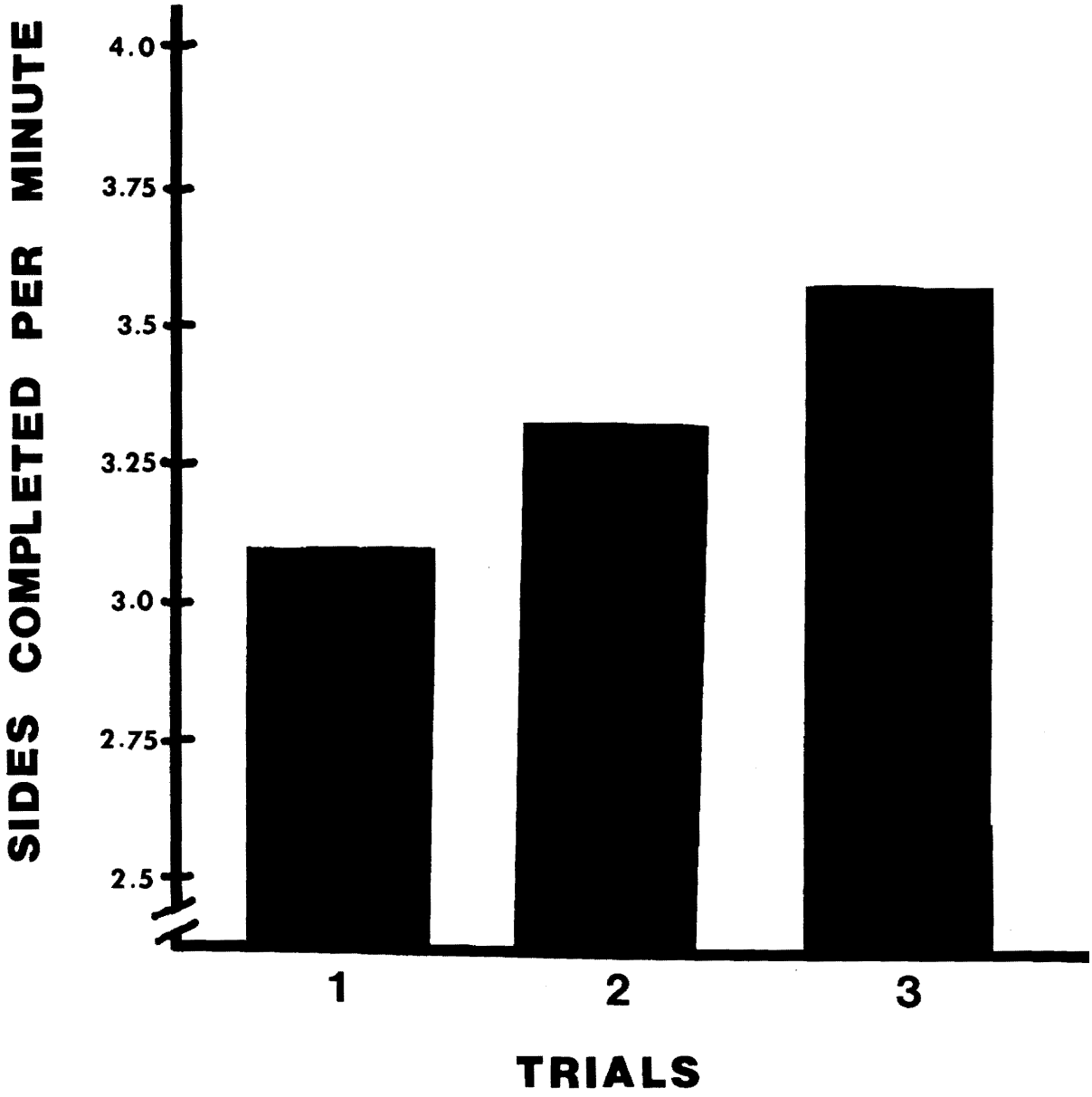

Figure 9: Number of sides completed per minute on the mirror-tracing task as a function of the measurement Trial.

ANCOVAs were conducted for both the number of errors made and the number of sides completed per minute on the mirror-tracing task. Two sets of these analyses were done, first using Trial 1 systolic readings then Age as covariates. No new significant results were found.

The analyses of variance for the number of addition problems correct per minute and the number of problems attempted, showed similar results. Therefore, the results for the number of problems attempted were not reported. The number of addition problems correct per minute was computed as described above (Number of Problems/Time x 60). Figure 10 shows the main effect of Trial ($F_{(4, 144)} = 7.82$; $p < .0001$). Subjects solved an average of 12 problems per minute on Trial 1. For Trial 2 the mean number of problems solved increased to 13.25 per minute. However, Trial 3 showed a decrease to 12.25 problems. Subjects averaged 13 problems on Trial 4 and 13.3 by Trial 5. Post hoc comparisons of the means showed that Trial 1 did not significantly differ from Trial 3. Also, Trials 2, 4, and 5 did not significantly differ from each other. However, the number of problems solved per minute for Trials 1 and 3 were significantly lower than the number of problems solved for Trials 2, 4, and 5.

Insert Figure 10 about here

The number of errors per trial and for all trials combined were also computed (Number of Errors = Number of Problems Attempted - Number of Problems Correct). A significant main effect of Trial was found ($F_{(4, 144)} = 3.64$; $p < .01$) with fewer errors being made in the first two trials (see Figure 11) than in Trial 5. However, there was no difference between groups for the total number of errors made.

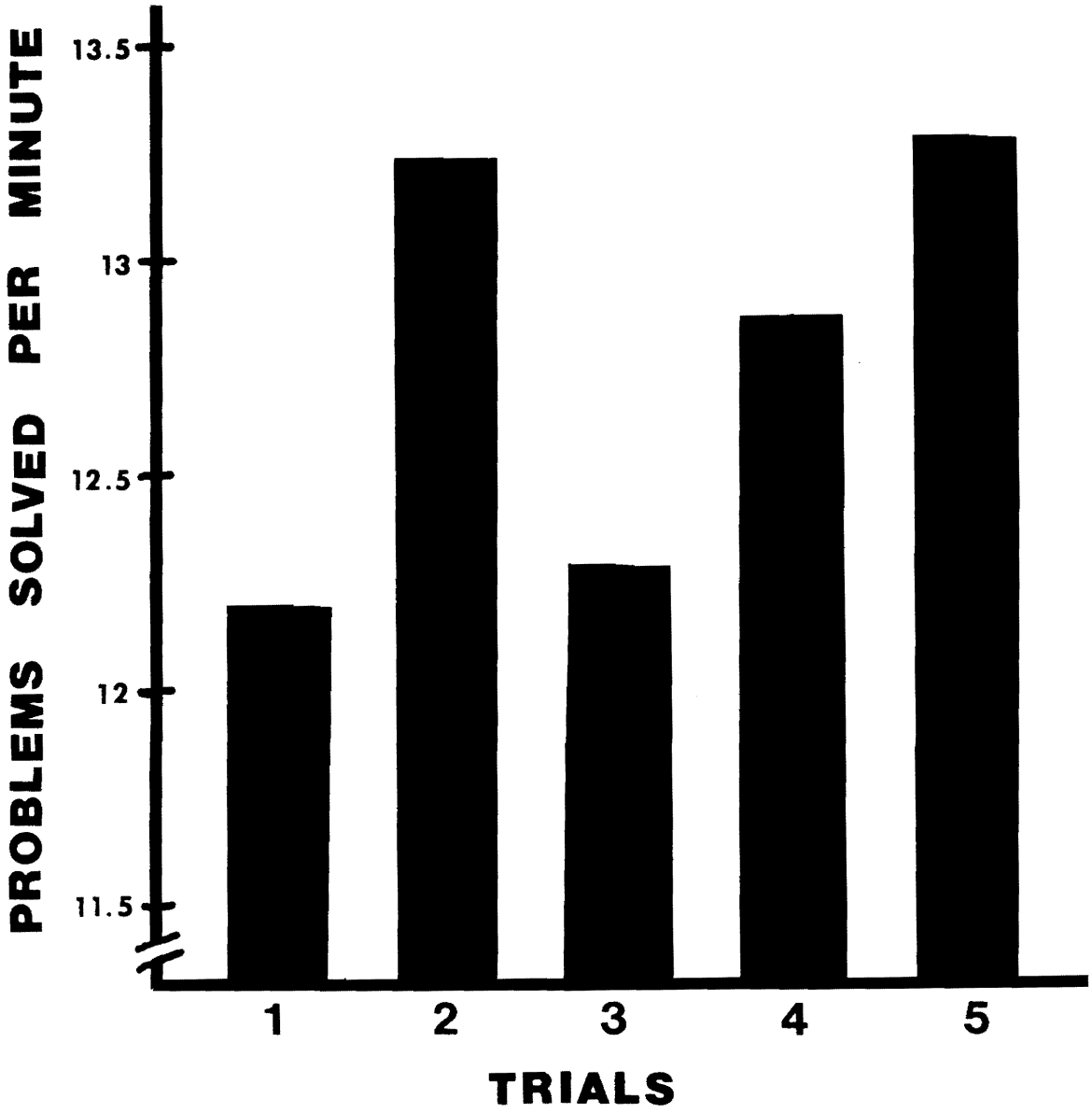

Figure 10: Number of addition problems solved per minute as a function of three-minute measurement Trials.

Insert Figure 11 about here

Again, ANCOVAs were conducted for both the number of problems solved per minute and the number of errors made per trial for the addition task. Trial 1 performance was used as the covariate in all cases. No significant results were found.

Since Speech main effects were present only in the mirror-tracing task, further analyses were conducted eliminating the speech factor and dividing esteem into three groups (i.e., high, medium, and low). Mixed-design ANOVAs were then recalculated for the blood pressure/pulse and performance data. Transforming the systolic data allowed an esteem effect to emerge ($F_{(3, 108)} = 4.98$; $p < .01$) with the high-esteem group having a significantly lower systolic reading than the medium-esteem group. However, no other significant findings emerged.

Moderated regression analyses and path analyses were also conducted on the blood pressure/heart rate and performance data. In the moderated regression analyses, speech and residence rating were used as regressors. Esteem, the subject's education level, the residence rating, and the voluntariness score were entered into the path analyses. No significant results were found for any of these analyses, although a direct link between the performance data and the subject's residence rating began to emerge.

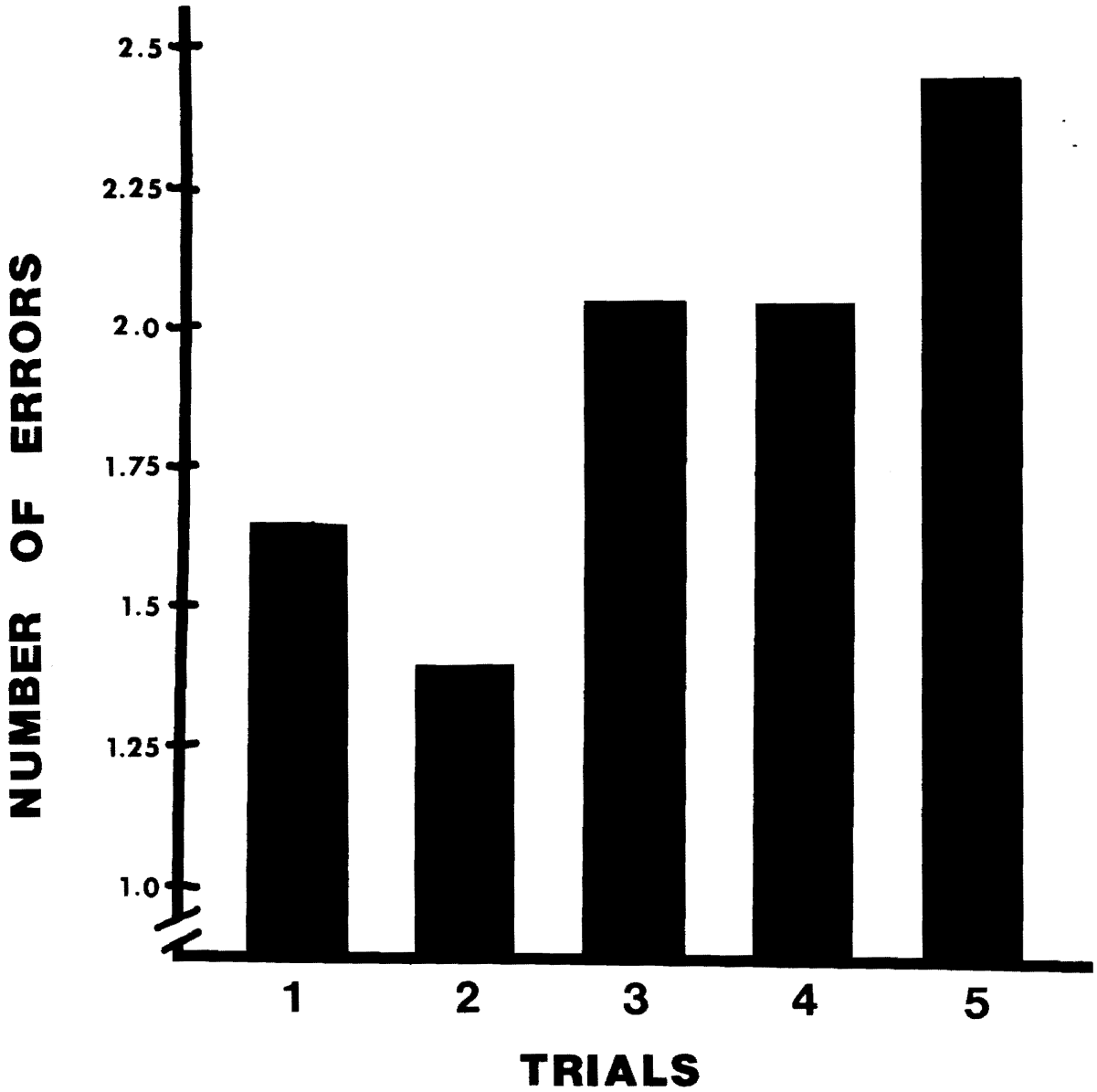

Figure 11: Number of errors on the addition task as a function of measurement Trial.

DISCUSSION

The principle findings of this study did not support the tested hypotheses. Hypotheses 1 and 2 combined both Speech and Esteem effects. Most of the analyses did not show an effect for either Speech or Esteem. The ANOVAs for mirror-tracing error per minute did show main effects for both factors, but the results were in the opposite direction of that which was predicted by Hypothesis 3.

The exploratory hypotheses received mixed support. The hypothesis that Age would be correlated with Esteem was not supported by a Pearson product moment correlation, but did gain support when all other background variables were partialled out of the correlation. Subjects who had a greater willingness to move to their current addresses or lived in more independent environments did have significantly higher Esteem scores than other subjects as predicted by Hypotheses 6 and 7. Although not hypothesized, willingness to move and the types of environments in which the subjects lived were highly related to each other. Subjects seemed less willing to move into environments in which they would be more dependent upon others. Hypothesis 5 was only moderately supported, but in the predicted direction, showing that subjects with more education had higher Esteem scores. However, when the effects of all of the other demographic variables were removed through the partial correlation technique, support for Hypothesis 5 disappeared. Finally, the hypothesis regarding the stability of the subject's esteem could not be tested since there was little variation in subjects' responses to this item.

The principle findings of this study were primarily restricted to a Trial main effect. Differences occurred across time and experience in the testing situation and with task demands. In most analyses, regardless of Speech or Esteem, subjects changed as the experiment progressed. In terms of blood pressure, subjects appeared to grow more relaxed with the second readings. These readings were taken at the beginning of the second session, therefore, the subjects had been previously exposed to the experimenter

and the experimental situation. The third and fourth readings increased after the second Trial due to the increased arousal/stress and the effort required by the tasks and questionnaires. Pulse continuously dropped throughout the experiment, reaching its lowest reading on Trial 4 which occurred after subjects were debriefed.

Research conducted by Harrison et al. (1987) used similar task materials without the inclusion of child-directed speech. The blood pressure and heart rate data from this study showed a consistent increase in all three measures (i.e., systolic, diastolic, and pulse). Schwartz (1986) has conducted numerous studies involving the physiological and psychological responses produced by differential emotions. According to this research, the physiological responses (i.e., blood pressure/heart rate) found in the Harrison et al. (1987) study matches the emotional pattern of arousal or fear. However, in the present study, blood pressure and heart rate measures produced slightly different data. When visually analyzing the rise and fall of these readings across Trials, it is apparent that the blood pressure readings are rising while the subjects' heart rates are declining. Schwartz (1986) found that systolic blood pressure is slower to return to baseline levels when subjects are in an emotional state of anger. Based on extensive research, Schwartz found that "high diastolic pressure is uniquely associated with high systolic pressure during anger, and, in turn, high systolic pressure anger is uniquely associated with lowered heart rate" (1986, p. 368). According to this research, the combined trends of the blood pressure and pulse data indicate that the subjects in the present study are perhaps exhibiting an angry emotional response to the speech mode they are receiving.

A practice or re-exposure effect seems to be accounting for the results of the number of addition problems solved per minute. Subjects improved dramatically between Trials 1 and 2. The performance on Trial 1 can be explained by the novelty of the task. Although all subjects had been exposed to addition problems previously in their lives, most of them had not performed addition computation in a testing situation for

several years. Although there was a decline on Trial 3, the general trend across Trials seems to indicate that after the initial Trial, subjects were able to perform at a fairly consistent level.

The mirror-tracing task was the only manipulation which produced a significant Speech and Esteem main effect. The subjects in the Adult-speech condition made more errors, regardless of Trial or Esteem level, than subjects in the Child-speech condition. This could have been due to the subjects in the Adult-speech condition trying harder or moving quicker around the figure. However, since there was not a significant interaction effect on the number of sides completed, this explanation was not supported by the data. Another explanation was that the Child-speech instructions allowed the subjects to feel less expectations to perform well. However, this explanation received only moderate and questionable support from the Chi-square analysis of question 16 on the Reaction Questionnaire which asked the subjects how well the model expected them to do on the tasks ($p < .15$). Subjects in the Child-speech condition reported that they thought that they were expected to perform at an average level while subjects in the Adult-speech condition reported that they felt that they were expected to perform slightly above average.

The Esteem main effect for the number of errors per minute on the mirror-tracing task showed that Low-esteem subjects made fewer errors than High-esteem subjects. Again, the explanation that Low-esteem subjects did not feel that they were expected to perform well, and, therefore took their time, could by one explanation.

As stated above, the ANOVA of the number of sides completed on the mirror-tracing task showed no interaction effect of the Speech and Esteem conditions. It did reveal a Trials main effect, however, with all of the subjects steadily improving over the course of the trials which indicates a practice effect.

Based on the combined results from the mirror-tracing task, one possibility that must be addressed and considered in the future is the validity and appropriateness of the currently hypothesized effects which child-directed speech has on the elderly population. These results, although somewhat unclear, indicated that researchers have perhaps fallen into a youngomorphic way of thinking. While intuitively one would think that child-directed speech would have an adversive affect on esteem and performance, the present data indicate that , at least in single exposures, this type of speech has a moderately beneficial affect on performance. The data seem to indicate that elderly individuals are usually underaroused. By being placed in a novel situation and subjected to child-directed speech, their arousal levels increase to an optimal level for performance. The present study was not conducted in anticipation of such an outcome and, therefore, complete data to thoroughly test this hypothesis was not gathered. However, future researchers must consider the possibility that current theories involving speech mode are erroneous.

CONCLUSIONS AND SUMMARY

The effects of speech mode type and level of esteem on affect, performance, and cardiovascular measures were explored in this study. Of the two (i.e., speech mode and esteem), level of esteem seemed to be the stronger predictor of the performance/cardiovascular measures. This is not altogether surprising. Most models of self-esteem predict a cycle in which behaviors are guided by, and in turn guide the formation of, esteem in an individual. According to one such model (Schlenker, 1980), people see themselves doing some task, how others react, and then make self-judgments about motives. This, in turn, sets up a pattern of how to behave in similar settings (Snyder, 1984). Since one aspect of esteem formation is the awareness of one's actions or performance, it would follow (and has been shown to be the case by Snyder, 1984) that when people perform poorly, they see themselves as low performers. Self-esteem is then lowered. In connection with this, the individuals become depressed and continue to perform poorly, setting up a spiral effect.

This spiral effect parallels the model of communication breakdown among the elderly proposed by Ryan et al., (1986, p. 16).

> This predicament is best characterized in terms of a vicious cycle in which the changes of aging (e.g., physical appearance, voice quality, hearing difficulties, slowness of movement, loss of job due to retirement or failing ability) elicit interpretations from others of diminished competence; and these inferences then lead to constraining conditions in which the older person has less opportunity to communicate effectively.

This, then, leads to a loss of perceived control and self-esteem which changes or worsens the physiological, psychological, and sociocultural make-up of the elderly. Burgio and Burgio (1986) have found that altered environmental conditions such as the ways in

which the elderly are spoken to often interact with biological decline to produce excessive behavioral decline as well.

While the hypotheses regarding speech mode influences were not empirically demonstrated in all of the results, speech effects did surface in the mirror-tracing task. This is probably due to the increased stressfulness and difficulty of this task, and alludes to possible long-term speech effects. As stated previously, past researchers have also hypothesized that multiple exposures to Child-directed speech places older individuals in dependent roles (Caporael & Culbertson, 1986; Ryan et al., 1986). Although the present study did not find supporting evidence for this hypothesis, it deserves further research in the form of longitudinal studies tracking the effects speech has on the esteem of individuals for several months after they first enter a retirement institution. A longitudinal study would allow the separation of the short- and long-term effects of Child-directed speech on esteem and performance. This study shows that this speech type has a possible beneficial, short-term influence on the performance of older individuals on some tasks. These results need to be somehow integrated or reconciled with the previous research which indicates the negative, long-term effects of child-directed speech.

An alternative hypothesis to the conclusion that child-directed speech is beneficial to the esteem of the subjects lies in the increased number of encouragers which are an inherent component of Child-directed speech (e.g., "Good!"). This hypothesis would indicate a direct link between speech mode and performance as opposed to the notion that speech influences performance through esteem. Although in the present study the number of encouragers were kept to a minimum and no speech effects emerged in any other measures, this explanation cannot be totally discounted by the current study. Future research in this area might try to control or delete encouraging words from the Child-directed speech used.

One important consideration of the present experiment is the rather unique nature of the measurement procedures (i.e., each subject being tested in her or his own home). It is likely that the familiar testing situation reduced the impact of both the procedures and the Speech manipulations on the subject. Future research should explore the possibility that these procedures and speech types might be more potent in situations where the elderly individual must meet task demands outside of his or her familiar and secure home environment (i.e., in a controlled and standardized setting).

Further research also needs to assess speed of performance directly and number or errors per side. The optimal mirror- tracing device for such studies would be one in which resulted in an actual pen or pencil record of the tracing pattern (i.e., use a device for which the star is drawn on paper, rather than electronically). This would help in understanding the results of the number of errors on the mirror-tracing task.

Studies of the emotional responses which elderly individuals have toward different tasks and experimental situations should also be explored further. Research questions in this area should include whether or not different emotions affect performance differentially and to what degree is performance increased or decreased by each emotion.

Although the hypotheses presented for the demographic variables were only exploratory in nature, some interesting results emerged. Primarily, the subject's voluntariness to move to her or his current address and the independence rating of that address were highly correlated with level of esteem. Further research needs to explore these relationships focusing on causal directions and methods of improving the esteem level of individuals in environments in which they are highly dependent upon others.

In the future, it would be helpful if the elderly subjects were selected for similar ability levels, as well. Even though the demographic information revealed that the subjects in this study were similar demographically for all four groups, differences in mental

and physical ability dramatically increased the variability between subjects on all of the measures. This tends to deflate possible significance levels.

Finally, this study raises serious theoretical questions in regard to what effects child-directed speech does, indeed, have on esteem and performance in elderly adults. Subsequent research should explore the possibility of age differences by looking at the effects this speech type has on younger subjects. Also, it is important to look at the individual components of child-directed speech to see which characteristics are beneficial and which ones are detrimental. If results of such studies can label specific components as helpful or harmful to the mental and physical well being of older individuals, modified speech patterns could be constructed and taught to institutional caregivers.

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APPENDICES

APPENDIX A

Experimental Outline

Outline of Experimental Sessions (with time estimates)

Pretest

approximately 5 minutes of relaxation
BP/HR measures (2 - 5 minutes)
Consent Form -- read to them (2 - 5 minutes)
Content questions about the consent form (2 - 5 minutes)
Background Questionnaire (3 - 6 minutes)
Life Satisfaction Index (5 - 10 minutes)

Total Time: 19 - 36 minutes (averaged 22 minutes)

Delay

At least 1 week, but not more than 2 weeks

Speech Session

Approximately 5 minutes of relaxation
BP/HR measures (2 - 5 minutes)
Mirror Task -- do this task three times with a maximum of two minutes for each trial (4 - 8 minutes)
Arithmatic Problems -- there will be 5, 3-minute sessions (15 - 30 minutes)
BP/HR measures (2 - 5 minutes)
Affect Questionnaire (5 - 10 minutes)
Reaction Questionnaire (5 - 10 minutes)
Total time listening to instructions (15 - 30 minutes)
Debriefing (5 - 10 minutes)
BP/HR measures (2 - 5 minutes)

Total Time: 1 - 1.5 hours (averaged 1 hour, 5 minutes)

These figures are conservative estimates, allowing for small rest periods.

APPENDIX B

Background Information Sheet

Background Information Sheet

This questionnaire requests general background information, some of which may be used in analyzing experimental results. Please DO NOT put your name on this form. In this manner, confidentiality of your answers are assured.

Please circle the most appropriate response.

1. Age:

   a) under 60

   b) 60--69

   c) 70--79

   d) 80--89

   e) 90 or older

2. Sex:

   a) female

   b) male

For all of the education and income questions, please circle the highest level achieved.

3. Education:

   a) grade school (K thru 6)

   b) completed 9th grade

   c) completed 12th grade

   d) college

   e) post bachelor's work

4. Father's Education:

   a) grade school (K thru 6)

   b) completed 9th grade

   c) completed 12th grade

   d) college

   e) post bachelor's work

5. Mother's Education:

a) grade school (K thru 6)

b) completed 9th grade

c) completed 12th grade

d) college

e) post bachelor's work

6. Average Annual Income:

a) under $10,000

b) $10,001--$20,000

c) $20,001--$30,000

d) $30,001--$40,000

e) $40,001 or up

7. Length of Time Since Retirement:

a) less than 1 year

b) 1 to 3 years

c) 4 to 6 years

d) 7 to 9 years

e) over 10 years

8. Length of Time at Current Address:

a) less than 1 year

b) 1 to 3 years

c) 4 to 6 years

d) 7 to 9 years

e) over 10 years

9. How did you decide to move here?

a) It was totally my own idea.

b) Someone told me about it, and I liked the idea.

c) Someone told me about it, but I had to be persuaded.

d) I didn't want to move here at all.

APPENDIX C

Consent Form

Participation Agreement

PRINT NAME:_____ DATE:_____

I hereby agree to participate in this study examining the effects different ways of giving instructions have on understanding and self-esteem. This study is directed by Dr. David Harrison and conducted by Ms. Vicki L. Bunce. My voluntary participation is based upon the following:

1. As part of the study, I will be asked to (a) attempt two different, nonstrenuos tasks and (b) answer several short questionnaires.

2. Any data that I provide will be kept confidential. All oral and written information I provide will only be identified by a randomly assigned number.

3. Participation in the study will require two meetings -- one lasting about 30 minutes and the other taking approximately one hour.

4. My participation in this study is voluntary, and I may quit at any time.

5. I will be debriefed fully about the extent of my participation and how the results will be used.

SIGNATURE:_____

If after participating in this experiment you have any concerns regarding the research, you may contact the researchers or the Human Subjects Committee at the phone numbers listed below.

Researchers

Dr. David Harrison 961-4422 Vicki L. Bunce 961-5388

Human Subjects Committee Contacts

Dr. Stephen Zaccaro 961-7916 Mr. Charles Waring 961-5284

APPENDIX D

Subject Checklist

Subject Checklist

Subject Number:_____ **Pretest Date:**_____

Condition:_____ **Posttest Date:**_____

PRETEST

	Trial 1	Trial 2
BP/HR:		
Pulse:		

Consent Form Questions

1. What kinds of tasks will you be doing for the experiment?

_____

2. When can you quit participating in this study?

_____

3. Who will see your answers?

_____

Comments

_____

_____

_____

Time Needed:_____

EXPERIMENTAL SESSION (POST TEST)

	Trial 1	Trial 2
BP/HR:		
Pulse:		

Mirror Tracing

Number of questions asked about the task._____

Trial 1

1. Number of errors._____ 2. Left or Right?_____
3. Sides Completed?_____ 4. Time:_____

Trial 2

1. Number of errors._____ 2. Left or Right?_____
3. Sides Completed?_____ 4. Time:_____

Trial 3

1. Number of errors._____ 2. Left or Right?_____
3. Sides Completed?_____ 4. Time:_____

Types of Problems Encountered

_____

_____

General State of Subject Throughout and at Conclusion

_____

_____

Comments

_____

_____

Addition Problems

Number of questions asked about the task._____

Practice

Number of problems correct._____

Page 1

1. Number of problems correct._____
2. Number of problems attempted._____ 3. Time:_____

Page 2

1. Number of problems correct._____
2. Number of problems attempted._____ 3. Time:_____

Page 3

1. Number of problems correct._____
2. Number of problems attempted._____ 3. Time:_____

Page 4

1. Number of problems correct._____
2. Number of problems attempted._____ 3. Time:_____

Page 5

1. Number of problems correct._____
2. Number of problems attempted._____ 3. Time:_____

Types of Problems Encountered

_____

_____

General State of Subject Throughout and at Conclusion

_____

_____

Comments

_____

_____

_____

	Trial 1	Trial 2
BP/HR:		
Pulse:		

Questionnaires

Reliability Checks

Does subject have any hearing problems?

_____

_____

Does subject have any other physical problems?

_____

_____

	Trial 1	Trial 2
BP/HR:		
Pulse:		

Debriefing

Please indicate any questions the subject had and comments of your own.

_____

_____

_____

Ending Time:_____

Total Time Needed:_____

APPENDIX E

Life Satisfaction Index

Life Satisfaction Index

Here are some statements about life in general that people feel differently about. Would you read each statement in the list and, if you agree with it, circle "agree." If you do not agree, circle "disagree." If you are not sure one way or the other, circle "?."

1. As I grow older, things seem better than I thought they would be.

   Agree Disagree ?

2. I have gotten more of the breaks in life than most of the people I know.

   Agree Disagree ?

3. This is the dreariest time of my life.

   Agree Disagree ?

4. I am just as happy as when I was younger.

   Agree Disagree ?

5. My life could be happier than it is now.

   Agree Disagree ?

6. These are the best years of my life.

   Agree Disagree ?

7. Most of the things I do are boring or monotonous.

   Agree Disagree ?

8. I expect some interesting and pleasant thing to happen to me in the future.

   Agree Disagree ?

9. The things I do are as interesting to me as they ever were.

Agree Disagree ?

10. I feel old and tired.

Agree Disagree ?

11. I feel my age, but it doesn't bother me.

Agree Disagree ?

12. As I look back on my life, I am fairly well satisfied.

Agree Disagree ?

13. I would not change my past life, even if I could.

Agree Disagree ?

14. Compared to other people my age, I've made a lot of foolish decisions in my life.

Agree Disagree ?

15. Compared to other people my age, I make a good appearance.

Agree Disagree ?

16. I have made plans for things I'll be doing a month or a year from now.

Agree Disagree ?

17. When I think back over my life, I didn't get most of the important things I wanted.

Agree Disagree ?

18. Compared to other people, I get down in the dumps too often.

Agree Disagree ?

19. I've gotten pretty much what I expected out of life.

Agree Disagree ?

20. In spite of what people say, the lot of the average man is getting worse, not better.

Agree Disagree ?

APPENDIX F

Addition Task Practice Problems

Addition Practice Problems

$$\begin{array}{r} 45 \\ +\ \ 9 \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ +\ 15 \\ \hline \end{array}$$

APPENDIX G

Assessment of Resultant Esteem

Affect Assessment

This questionnaire will be confidential, so please DO NOT put your name on this form.

List three words that describe how you are feeling right now. For example, "lonely" and "affectionate" are words that describe feelings people can have.

1) _____

2) _____

3) _____

After completing this page, please do not turn back to it.

Please circle the number on the scale which best represents how you feel right now. Work quickly. Do not dwell on any single item.

	Not at all		Somewhat		Extremely
1) satisfied	1	2	3	4	5
2) inefficient	1	2	3	4	5
3) discouraged	1	2	3	4	5
4) competent	1	2	3	4	5
5) displeased	1	2	3	4	5
6) happy	1	2	3	4	5
7) confident	1	2	3	4	5
8) pleased	1	2	3	4	5
9) inadequate	1	2	3	4	5
10) incompetent	1	2	3	4	5
11) depressed	1	2	3	4	5
12) pride	1	2	3	4	5
13) relaxed	1	2	3	4	5
14) smart	1	2	3	4	5

	Not at all		Somewhat		Extremely
15) aimless	1	2	3	4	5
16) troubled	1	2	3	4	5
17) worthless	1	2	3	4	5
18) exhilarated	1	2	3	4	5
19) frustrated	1	2	3	4	5
20) gloomy	1	2	3	4	5
21) disgust	1	2	3	4	5
22) surprised	1	2	3	4	5
23) disappointed	1	2	3	4	5
24) modest	1	2	3	4	5
25) insecure	1	2	3	4	5
26) stupid	1	2	3	4	5
27) dissatisfied	1	2	3	4	5
28) helpless	1	2	3	4	5
29) resigned	1	2	3	4	5

30) In general, how certain are you of these answers?

Not at all		Somewhat		Extremely
1	2	3	4	5

APPENDIX H

Reaction and Preference Questionnaire

Reaction and Preference Questionnaire

This questionnaire is to survey your reactions to the experimental situation and methods used. It also contains questions regarding how you felt about the tasks. Where appropriate, please either circle the response which best fits your feelings or write your answer in the space provided.

1) In general, how comfortable were you with doing the task?

very uncomfortable		neutral		very comfortable
1	2	3	4	5

2) How friendly was the experimenter during the task part of the experiment?

very friendly		neutral		very unfriendly
1	2	3	4	5

3) How helpful was the experimenter during the tasks?

extremely helpful		neutral		extremely unhelpful
1	2	3	4	5

4) How confusing were the actual instructions for the mirror tracing task?

very confusing		neutral		very understandable
1	2	3	4	5

5) How helpful were the instructions for the addition problems?

very unhelpful		neutral		very helpful
1	2	3	4	5

6) How bothered were you by the instructions being video recorded?

I didn't like it		no feelings either way		I preferred them that way
1	2	3	4	5

7) How much did you like or dislike the voice of the person giving the task instructions on the video?

I really liked it		I had no feelings about it		I really disliked it
1	2	3	4	5

8) How soothing was her voice?

not at all		moderately soothing		very soothing
1	2	3	4	5

9) Please describe your reactions to the video recorded instructions.

_____

_____

_____

10) Please describe your feelings about the mirror tracing task.

_____

_____

_____

11) Please describe your feelings about the addition task.

_____

_____

_____

12) How do you think you did on the mirror tracing task?

extremely well		average		extremely poor
1	2	3	4	5

13) How do you think you did on the addition task?

extremely poor		average		extremely well
1	2	3	4	5

14) In general, how do you feel now as compared to before you did the tasks?

much worse		the same		much better
1	2	3	4	5

15) How intelligent did the video-taped person make you feel?

very intelligent		average		very dumb
1	2	3	4	5

16) How well do you think the video-taped person expected you to do on the tasks?

very poorly		neutral opinion		very well
1	2	3	4	5

17) How competent do you think the video-taped person expected you to be?

very competent		average		very incompetent
1	2	3	4	5

18) Why do you feel that way on questions 15 through 17?

_____

_____

_____

19) How simple was the video-taped person's speech?

too simple, like those to a child		not too simple, like those to an adult		very complex, hard to understand
1	2	3	4	5

20) How slowly did the video-taped person speak?

very slow, long pauses		average speed		very quickly, hardly took a breath
1	2	3	4	5

21) What kind of tone or pitch did the video-taped person's voice have?

many high tones, much variance		about normal, not many high or low sounds		monotone, didn't change much at all
1	2	3	4	5

22) What do you think the experimenters want to find with this study?

_____

_____

_____

APPENDIX I

Adult-Directed Speech Transcript

Script for the

Adult Speech Condition

Hello and welcome to the Instruction Mode Study. Please be seated. My name is Kathy Sikkema. Unfortuantely, I could not be with you today. However, I have reviewed your file of questionnaires from the other session and am familiar with your background. Also, there is an experimenter here who will help with the experiment. Experimenter, please introduce yourself now. Professor Dave Harrison and I, both from the Psychology Department, are interested in learning more about what effects different types of instruction presentation has on understanding, performance, and how individuals feel about the tasks and themselves. In other words, does receiving instructions in person have different effects than listening to and watching instructions on a video tape. These are becoming important issues for all age groups since some teaching situations and several aspects of everyday life such as banks, airports, etc., are becoming more and more automated. Your role in this study should greatly contribute to our understanding of these issues. To help this be a better study it is important that you not talk unless I ask you a question. We can talk at the end. Okay? We really appreciate your participation.

Informed Consent and BP/HR Measures

Before we begin, the experimenter has a copy of the informed consent agreement which you signed during the earlier session. This copy is for you to keep. It has telephone numbers on it that you might want later.

Also, we would like to take another blood pressure reading at this time. Just relax quietly for a few minutes. Please do not talk or cross your arms or legs since this will alter the readings. Just think about your regular breathing.

(pause approximately three minutes)

Okay, the experimenter will now take the blood pressure reading.

Instructions and Tasks

There are two conditions in this study. You have been randomly assigned to the video recorded session. As part of the experiment, you will be completeing two tasks. Proper instructions will proceed each task. Before beginning the project, please listen closely to the instructions.

Mirror Tracing Task

The task you will be doing first is a mirror tracing task. It consists of a mirrored board and a stylest. The board's base is wooden with a metal sheet covering it. On this metal sheet is a star drawn with a thick, black line. There are two plates attached to the base. One is placed parallel to the base so that it acts like a screen, covering the star, but leaving approximately five inches of space between it and the base. The other plate is a mirror. The mirror and the shield should be adjusted so that you cannont see your hand or the star unless you look into the mirror.

The stylest is attached to an electronic box. Use the stylest like a pencil to trace around the star on the base. Please keep your fingers on the red coating. If they touch any part of the metal tip, you will get a small electric shock. The box records the number of times you move the stylest outside the black line of the star. Please touch the metal with the stylest now to see what happens.

The object of this task is to trace the star with the stylest as quickly as possible. Also, please try to stay within the black line as much as possible so that few points will be deducted.

A trial begins with the figure shielded so that you can see the entire star only through the mirror. When ready to begin, use the stylest, start at the top, and trace the

figure. You may have to lean forward a bit to see clearly. Each time you move outside the black line a point will be deducted. You may go in either direction from the top point as long as the star is completed. Watch the reflection of your hand in the mirror to help you determine how to move the stylest. Complete the star as quickly as possible. The mirror tracing task is designed to measure spacial ability, speed, and manual dexterity.

Do you have any questions regarding the task before we run through it together?

(pause)

Let's walk through a trial together now. You trace the star, and I will give instructions. First, start by adjusting the shield and the mirror so that you can see the entire shape only through the mirror. Now pick up the stylest and locate the top point of the star. Now, move the stylest around the star. Look in the mirror for an indication of which way to move your hand. You have two minutes to get around the star.

Do you have any questions before you begin?

(pause)

You will perform the tracing task three times. Two minutes will be allowed for each figure. You might not need the full two minutes, which is fine, but no more than two minutes will be allowed.

Now, please find the top point with the stylest. Please begin.

(allow two minutes to pass)

Please stop the first trial. The time limit has been reached. The experimenter will record the number of errors and reset the counter. Repeat the tracing as before. Find the top point with the stylest. Please begin.

(allow two minutes to pass)

Please stop the second trial. The time limit has been reached. The experimenter will again record the number of errors and reset the counter. Repeat the tracing as before. Find the top point with the stylest. Please begin.

(allow two minutes to pass)

Please stop the last trial. The time limit has been reached. The experimenter will remove all mirror task items at this time, and the next step of the study will begin.

Addition Task

The task you will be completing now is an addition test. This task is designed to measure general cognitive ability in the area of mathematical reasoning.

There will be five pages of problems. You will have three minutes for each page. Please show your work in the space provided for each problem. Answer as many problems as possible on each page in the time allowed. The experimenter will remove the sheet on which you are working and give you a new sheet at the end of each time period.

Do you have any questions concerning this task before we work through two problems together?

(pause)

The first practice problem is 45 plus 9. Write the answer along with your computations below the problem. ***(pause)*** The correct answer is 54. The final problem is 32 plus 15. Again, show your work and the answer below the problem. ***(pause)*** The correct answer is 47.

The experimenter will now give you the first page of problems. Remember to answer as many problems as possible in the time allowed which is three minutes per page. Again, please show your work.

Do you have any questions before you begin?

(pause)

You have three minutes to correctly answer as many problems as you can on the first page. Please begin.

(allow three minutes)

Please stop your work while the experimenter takes that sheet and gives you the next one. Again, you have three minutes. Please begin.

(allow three minutes)

Please stop your work while the experimenter takes that sheet and gives you the next one. Again, you have three minutes. Please begin.

(allow three minutes)

Please stop your work while the experimenter takes that sheet and gives you the fourth one. Again, you have three minutes. Please begin.

(allow three minutes)

Please stop your work while the experimenter takes that sheet and gives you the last sheet of problems. Again, you have three minutes. Please begin.

(allow three minutes)

Please stop your work. The experimenter will now remove all test items.

BP/HR Measures

Let's take another blood pressure reading now. As before, just relax for a few minutes. Do not talk or cross your legs. Concentrate on your breathing.

(pause approximately three minutes)

The experimenter will now take the reading.

Questionnaires

Now I would like you to fill out two short questionnaires. Please follow along as I read the instructions to each questionnaire and each item, then give your answer in the space provided. There is no right or wrong answer on any item on either of the questionnaires, so answer honestly.

The first questionnaire concerns self affect or the way you feel about yourself. Please follow with me. This questionnaire will be confidential, so please do not put your name on this form. List three words that describe how you are feeling right now. For example, "lonely" and "affectionate" are words that describe feelings people can have. Write your three words. Tell the experimenter when you have finished.

(pause)

After completing this page, please do not turn back to it. Now turn the page for the rest of this questionnaire.

Please circle the number on the scale which best represents how you feel right now. A number 1 indicates that the word does not represent how you are feeling at all. A 5 means that the word is extremely accurate of how you feel. A 3 is the middle area. Work quickly. Do not dwell on any single item.

(Each item is read, allowing adequate time for the subject to answer. If more time is needed for a particular item, the experimenter will stop the tape until the subject is ready to move on. If necessary, the experimenter will record the subjects' answers for them.)

The experimenter will collect the affect questionnaire and give you a questionnaire about your personal reactions to this experiment. It reads: This questionnaire is to survey your reactions to the experimental situation and the methods used. It also contains questions regarding how you felt about the tasks. Where appropriate, please either circle the response which best fits your feelings or write your answer in the space provided.

(Each item is read. Time is allowed for responses. If necessary, the experimenter will record answers for the subject.)

Now that you have finished all of the questionnaires, I have two questions needed for reliability checks on the data.

First, do you have any difficulty hearing? If so, please describe the problem.

And, finally, do you have any other physical problems which might interfer with your performance? If so, what are they?

Debriefing

I would like to sincerely thank you for your participation in this research. Before you leave, though, one part of the study needs to be explained. The instructions I have given you today might have effected your self-esteem and your performance on the tasks. Therefore, if you think you did better or worse on the tasks than you normally would,

it could be the result of the instructions you heard. These feelings should only last an hour or so.

We are studying the way others talk to older people. Does their speech affect the way you feel about yourself and your ability to perform. If so, people need to be taught how to and how not to talk to people of different age groups. Also, older people need to be taught how to react to the different ways in which others talk to them. Do you understand?

Now the experimenter would like to take a moment to talk with you and answer any questions you might have regarding the study.

(End of Tape)

(Experimenter)

(Answer questions, but be brief. Give no more specifics of the speech mode aspect of the study.)

Other people will be participating in this study. In order to insure that each of them provides us with useful information, it is extremely important that they not have information about the aims or procedures of this study. Therefore, I ask that you not discuss any aspect of this study with other residents or friends for at least three months. Okay?

Confirmation of Debriefing, BP, and Dismissal

Please take a moment to read and sign this confirmation of debriefing.

(Give the subject the confirmation form. After he or she signs it, put the form in the proper envelop.)

Thank you again for your help. The data you have provided us should greatly enhance our understanding of instruction effects.

Before you leave, however, let's take one last blood pressure reading. Please relax like before. Concentrate on your steady breathing. Do not talk or cross your legs.

(pause approximately three minutes)

Okay, continue to breath normally while I take the reading.

(Dismiss the subject. Please make sure the subject's number is on all questionnaires and other forms for this session.)

APPENDIX J

Child-Directed Speech Transcript

Script for the

Child Speech Condition

Hello! Welcome to our psychological study. Please sit down. Are you seated yet? Good. My name is Kathy Sikkema. Sorry, I could not be here today. But, I have looked at your answers from the other session. Remember? That was when Vicki took your blood pressure. You know what a blood pressure test is don't you? Good. You also answered some questions on paper. I looked at your answers and know what you said. But I couldn't be here so there is someone here who will help you. We are from the Psychology Department at the University. Professor Dave Harrison and I, are interested in learning more about different types of instruction. Do they effect how well you know what to do after listening. We also want to know how well you can do the task after listening. We also want to know how people feel about the tasks and themselves. Do you get more from TV or a real person? Some school classes are now on TV. Students watch TV instead of a real teacher in school so we need to know these things. Also, other things in everyday life like banks and airports use lots of TV. Now you see TV screens all over the place. You can help me understand these things better. To help you need to be quiet. Please don't talk unless I ask you a question. Okay? Thank you for helping.

Informed Consent and BP/HR Measures

Before we begin, the experimenter has something for you. Isn't that nice? It is a copy of the informed consent agreement. Remember you signed it in the earlier session? This copy is for you to keep. It has some telephone numbers on it. You might want them later.

Also, let's take another blood pressure reading now. Remember how we did it before? Just relax quietly for a few minutes. Please do not talk. If you do the blood pressure test might not work right. Don't cross your legs or arms. Just think about breathing in and out. Good.

(pause approximately three minutes)

Okay, the experimenter will now take your blood pressure reading.

Instructions and Tasks

There are two ways this study is done. You have been picked to watch me on video. You will be doing two tasks. A task is like a game. I will tell you how to play. Then you will do each task or game. Before you start, please listen closely to me.

Mirror Tracing Task

First you will be doing a mirror tracing game. It has two parts. First, there is a mirrored board. The base is made of wood. It has a piece of metal on top. Look. See the metal? There is a star drawn on the metal. See the star? The star is drawn with a thick, black line. There is also a little light. The light will help you see better. Isn't that nice? There are two metal plates hooked to the base. One is moved up over the base. It should hide the star. You can't see the star, can you? Good. The other plate is like a mirror. You know what a mirror is don't you? Good. The mirror can be moved too. Move the mirror so you can see the star in it. Good.

The other part is a stylest. A stylest is like an electric pencil. It doesn't leave a mark, but you can pretend to trace the star with it. Keep your fingers on the red part. If you touch the metal tip you will get a shock. It might sting. We don't want that to happen. The metal pencil is plugged into a box. See the box? The box counts how

many times you move the stylest outside the black lines of the star. Touch the pencil outside the star. See what happens? Each time it touches the metal, the box lights up.

This game is played by tracing the star. Use the stylest, or metal pencil. Look at the star and your hand only through the mirror. Don't peak under the plate. Try to get all the way around the star. Try to be fast, but don't go outside the line.

A game starts with the star hidden by the shield. Put the mirror so that you can see the whole star. Are you are ready to start? Pick up the metal pencil on the table. Start at the top of the star. Trace the star. Stay on the line. Each time you touch outside the line, you lose a point. Try not to draw outside the line. Then you won't lose any points. You can go either way from the top point. Just remember to draw all the way around the star. Watch your hand in the mirror. The mirror will help you know how to move the metal pencil. Complete the star as fast as you can. The mirror tracing game is to see how good you draw in space. It also sees how fast you are.

We are going to go through a game together now. Isn't that nice? But first, do you have any questions?

(pause)

Let's play a game together. You trace the star, and I will tell you how. Start by hiding the figure with the shield. Move the mirror so that you can see the whole star. You may have to lean forward a little bit. Now pick up the metal pencil. Find the top point of the star. Place the metal tip on that point. Now, move the pencil around the star. Look in the mirror to see which way to move your hand. You have two minutes to get around the star.

(pause)

Do you have any questions before you play the real game?

(pause)

You will play the tracing game three times. You will get two minutes for each game. You might not need all that time. That's okay. If you don't finish that's okay, too. But try your best to draw the star.

Now, please find the top point with your metal pencil. Are you ready? Please begin.

(allow two minutes to pass)

Please stop the first game. The time is up. The experimenter will write down the number on the box. Then she will make it say zero again. Do the tracing like before. Find the top point with your pencil. Ready? Please begin.

(allow two minutes to pass)

Please stop the second game. The time is up. The experimenter will write down the number on the box again. Then she will make it say zero. Do the tracing like before. Find the top point with your pencil. Ready? Please begin.

(allow two minutes to pass)

Please stop the last game. The time is up. The experimenter will take away all of the mirror game. Now we will do the next task. Remember what a task is? A task is like a game.

Addition Task

The task or game you will do now is an addition test. Math tests aren't so bad. This game sees how well you do math.

There will be five pages of problems. You will get three minutes to do each page. Please, show your work in the space below each problem. Your work means how you got each answer. Answer as many problems as you can. The experimenter will take the page you are working on at the end of each three minutes. Then you will get a new page to work on.

Do you have any questions about this task?

(pause)

Let's work a few problems together? Ready?

The first problem is 45 plus 9. Write the answer and all your work below the problem. ***(pause)*** The right answer is 54. The other problem is 32 plus 15. Again, put the answer below the problem. ***(pause)*** The right answer is 47.

The experimenter will now give you the first page of problems. Remember, answer as many as you can in the three minutes. Okay? Again, please show your work.

Do you have any questions before you start?

(pause)

You have three minutes. Answer as many problems as you can on the first page. Ready? Please begin.

(allow three minutes)

Please stop. The experimenter will take that page. Now she will give you the next one. Again, you have three minutes. Ready? Please begin.

(allow three minutes)

Please stop. The experimenter will take that page. Now she will give you another one. Again, you have three minutes. Are you ready? Please begin.

(allow three minutes)

Please stop. Again, the experimenter will take that page. Now she will give you the fourth one. Again, you have three minutes. Are you ready? Please begin.

(allow three minutes)

Please stop. The experimenter will take that page. Now she will give you the last page. Again, you have three minutes. Are you ready? Please begin.

(allow three minutes)

Please stop. The experimenter will now take away all of that test.

BP/HR Measures

We are going to take another blood pressure reading now. Do you still remember how it's done? Good. Just relax for a few minutes. Don't talk. Don't cross your legs either. Just think about breathing in and out. Good.

(pause approximately three minutes)

Okay, the experimenter will take your blood pressure now. Keep thinking about your breathing. Good.

Questionnaires

Now I would like you to answer some questions. Please read to yourself as I read the instructions. Instructions tell you how to do something. Remember? I will also read each question. When I do, put your answer on the paper. There is not a right answer or a wrong answer. Just say what you feel and think. I won't think badly of you. Okay?

The first bunch of questions is about how you feel about yourself. Please read with me. This questionnaire will be confidential. That means that it will be a secret

between you and me. To keep it a secret, please do not put your name on this page. Next, it tells you to write three words that tell how you are feeling right now. For example, "lonely" and "affectionate" are words that describe feelings people can have. Write your three words on the lines on the page. Tell the experimenter when you have finished.

(pause)

Please do not turn back to this page. Don't peek! Now turn the page for the rest of the questions.

Please circle the number on the scale which best fits how you feel right now. Pretend that a number 1 means that the word doesn't fit you at all. A 5 means it fits you a lot. A 3 is in the middle. Work quickly. Do not dwell on any single item. That means don't spend a lot of time on any word. Okay?

(Each item is read, allowing adequate time for the subject to answer. If more time is needed for a particular item, the experimenter will stop the tape until the subject is ready to move on. If necessary, the experimenter will record the subjects' answers for them.)

That bunch of questions is finished. Isn't that nice? The experimenter will take those pages away now. Next are questions about what you think of what we've been doing. It says: This questionnaire is to survey your reactions to the experimental situation and the methods used. That means, what do you think about being in an experiment. Also, what do you think about all that we did today? It also has questions about how you felt about the tasks. Remember, one task was the mirror game. The

other one was the math test. Please either circle the answer which best fits your feelings or write your answer on the lines.

(Each item is read. Time is allowed for responses. If necessary, the experimenter will record answers for the subject.)

Now you have finished all of those questions. Isn't that nice? I have two more questions to ask. These are to make sure you understood everything.

First, do you have any trouble hearing? If you do, will you please tell me about it?

And, finally, do you have any other problems which might have kept you from doing your best? What are they?

Debriefing

I would really like to thank you for helping me. Before you leave, though, one part of the study needs to be explained. The instructions I have given you today might have effected your self-esteem. That is the way you feel about yourself. This might have also changed your performance on the tasks. So, if you think you did better or worse on the tasks than you normally would, it could be the result of the instructions you heard. Because of this, you should not feel bad about your performance today. These feelings should only last a little while --only an hour or so. You were assigned to this condition randomly, so, please, do not think badly of yourself based on this experiment.

We are studying the way others talk to older people. Does their speech affect the way you feel about yourself? Does it change how well you can do things? If so, people need to be taught how to and how not to talk to people of different age groups. Also,

older people need to be taught how to react when people talk to them in certain ways. Do you understand?

Now the experimenter would like to take a moment to answer any questions you might have regarding the study.

(End of Tape)

(Experimenter)

(Answer questions, but be brief. Give no more specifics of the speech mode aspect of the study.)

Other people will be participating in this study. In order to insure that each of them provides us with useful information, it is extremely important that they not have information about the aims or procedures of this study. That is what we did and what the study is all about. Therefore, I ask that you not discuss any aspect of this study with other residents or friends for at least three months. Okay?

Confirmation of Debriefing, BP, and Dismissal

Please take a moment to read and sign this confirmation of debriefing.

(Give the subject the confirmation form. After he or she signs it, put the form in the proper envelop.)

Let's take one more blood pressure reading. Relax. Don't talk or cross your legs. Just think about your breathing. Good.

(pause three minutes)

I'm taking the reading now.

Thank you again for your help. The data you have provided us should greatly enhance our understanding of instruction effects.

(Dismiss the subject. Please make sure the subject's number is on all questionnaires and other forms for this session.)

APPENDIX K

Variable Names and Meanings

Variable Names

Line #1: CONDIT SPEECH ESTEEM SUBJECT BP1TOP BP1BOT PULSE1 AGE SEX SELFED DADED MOMED INCOME RETIRE ADDRESS VOLUNT LSI PRETIME BP2TOP BP2BOT PULSE2 MTQUEST MT1ERR MT1TIME MT1SIDE

Line #2: MT1LORR MT2ERR MT2TIME MT2SIDE MT2LORR MT3ERR MT3TIME MT3SIDE MT3LORR ADD1 ADD2 ADD3 ADD4 ADD5 BP3TOP BP3BOT PULSE3 AFFWORD AFFECT CERTANTY REACT1 REACT2

Line #3: REACT3 REACT4 REACT5 REACT6 REACT7 REACT8 REACT9 REACT10 REACT11 REACT12 REACT13 REACT14 REACT15 REACT16 REACT17 REACT18 REACT19 REACT20 REACT21 REACT22 BP4TOP BP4BOT PULSE4 POSTTIME ADD1TIME ADD2TIME

Line #4: ADD3TIME ADD4TIME ADD5TIME ADDATT1 ADDATT2 ADDATT3 ADDATT4 ADDATT5 ADDQ RESIDENC

Variable Name Meanings

CONDIT = Condition (i.e., 1 = Adult Speech/Low Esteem; 2 = Child Speech/Low Esteem; 3 = Adult Speech/High Esteem; 4 = Child Speech/High Esteem)

SPEECH = Speech Mode Condition (i.e., 1 = Adult Speech; 2 = Child Speech)

ESTEEM = Esteem Level Condition (i.e., 1 = Low Esteem; 2 = High Esteem)

SUBJECT = Each subject's randomly assigned identification number

BP1TOP = Average systolic measurement for Trial 1

BP1BOT = Average diastolic measurement for Trial 1

PULSE1 = Average heart rate measurement of Trial 1

AGE = Age category of the subject (i.e., 1 = under 60; 2 = 60s; 3 = 70s; 4 = 80s; 5 = over 90)

SEX = Sex of subject (i.e., 1 = female; 2 = male)

SELFED = The subject's amount of education (i.e., 1 = 6th grade; 2 = 9th grade; 3 = 12th grade; 4 = college; 5 = graduate work)

DADED = The subject's father's amount of education (i.e., 1 = 6th grade; 2 = 9th grade; 3 = 12th grade; 4 = college; 5 = graduate work)

MOMED = The subject's mother's amount of education (i.e., 1 = 6th grade; 2 = 9th grade; 3 = 12th grade; 4 = college; 5 = graduate work)

INCOME = The subject's average annual income (i.e., 1 = under $10,000; 2 = $10,001 to $20,000; 3 = $20.001 to $30,000; 4 = $30,001 to $40,000; 5 = over $40,000)

RETIRE = Length of time since the subject retired (i.e., 1 = less than 1 year; 2 = 1 to 3 years; 3 = 4 to 6 years; 4 = 7 to 9 years; 5 = over 10 years)

ADDRESS = Length of time the subject has lived at his or her current address (i.e., 1 = less than 1 year; 2 = 1 to 3 years; 3 = 4 to 6 years; 4 = 7 to 9 years; 5 = over 10 years)

VOLUNT = How willing the subject was to move to his or her current address (i.e., 1 = totally own idea; 2 = someone else's idea, but subject willingly agreed; 3 = someone else's idea, but subject was eventually persuaded; 4 = subject against the idea)

LSI = Score on the Life Satisfaction Index

PRETIME = Time needed to complete the first session

BP2TOP = Average systolic measurement for Trial 2

BP2BOT = Average diastolic measurement for Trial 2

PULSE2 = Average hear rate measurement for Trial 2

MTQUEST = Number of questions the subject asked about the mirror-tracing task

MT1ERR = Number of errors on Trial 1 of the mirror-tracing task

MT1TIME = Time of Trial 1 of the mirror-tracing task (i.e., 180 seconds unless the subject completed all 12 sides in less than 2 minutes)

MT1SIDE = Number of sides on Trial 1 of the mirror-tracing task with a maximum of 12 sides

MT1LORR = Side of the mirror-tracing star on which the subject started for Trial 1 (i.e., left or right)

MT2ERR = Number of errors on Trial 2 of the mirror-tracing task

MT2TIME = Time of Trial 2 of the mirror-tracing task (i.e., 180 seconds unless the subject completed all 12 sides in less than 2 minutes)

MT2SIDE = Number of sides on Trial 2 of the mirror-tracing task with a maximum of 12 sides

MT2LORR = Side of the mirror-tracing star on which the subject started for Trial 2 (i.e., left or right)

MT3ERR = Number of errors on Trial 3 of the mirror-tracing task

MT3TIME = Time of Trial 3 of the mirror-tracing task (i.e., 180 seconds unless the subject completed all 12 sides in less than 2 minutes)

MT3SIDE = Number of sides on Trial 3 of the mirror-tracing task with a maximum of 12 sides

MT3LORR = Side of the mirror-tracing star on which the subject started for Trial 3 (i.e., left or right)

ADD1 = Number of addition problems correct on Trial 1 (maximum of 72)

ADD2 = Number of addition problems correct on Trial 2 (maximum of 72)

ADD3 = Number of addition problems correct on Trial 3 (maximum of 72)

ADD4 = Number of addition problems correct on Trial 4 (maximum of 72)

ADD5 = Number of addition problems correct on Trial 5 (maximum of 72)

BP3TOP = Average systolic measurement for Trial 3

BP3BOT = Average diastolic measurement for Trial 3

PULSE3 = Average heart rate measurement for Trial 3

AFFWORD = Total score for written, descriptive adjectives on page one of the Affect Assessment Questionnaire (i.e., 0 = no positive words; 1 = 1 positive word; 3 = 2 positive words; 5 = 3 positive words)

AFFECT = Total score from adjective list of the Affect Assessment Questionnaire scored in the positive direction

CERTANTY = How certain the subject was of his or her answers to the Affect Assessment Questionnaire (i.e., 1 = not sure at all; 5 = absolutely certain)

REACT1 = Answer to question #1 on the Reaction Questionnaire

REACT2 = Answer to question #2 on the Reaction Questionnaire

REACT3 = Answer to question #3 on the Reaction Questionnaire

REACT4 = Answer to question #4 on the Reaction Questionnaire

REACT5 = Answer to question #5 on the Reaction Questionnaire

REACT6 = Answer to question #6 on the Reaction Questionnaire

REACT7 = Answer to question #7 on the Reaction Questionnaire

REACT8 = Answer to question #8 on the Reaction Questionnaire

REACT9 = Answer to question #9 on the Reaction Questionnaire

REACT10 = Answer to question #10 on the Reaction Questionnaire

REACT11 = Answer to question #11 on the Reaction Questionnaire

REACT12 = Answer to question #12 on the Reaction Questionnaire

REACT13 = Answer to question #13 on the Reaction Questionnaire

REACT14 = Answer to question #14 on the Reaction Questionnaire

REACT15 = Answer to question #15 on the Reaction Questionnaire

REACT16 = Answer to question #16 on the Reaction Questionnaire

REACT17 = Answer to question #17 on the Reaction Questionnaire

REACT18 = Answer to question #18 on the Reaction Questionnaire

REACT19 = Answer to question #19 on the Reaction Questionnaire

REACT20 = Answer to question #20 on the Reaction Questionnaire

REACT21 = Answer to question #21 on the Reaction Questionnaire

REACT22 = Answer to question #22 on the Reaction Questionnaire

BP4TOP = Average systolic measurement for Trial 4

BP4BOT = Average diastolic measurement for Trial 4

PULSE4 = Average heart rate measurement for Trial 4

POSTTIME = Time needed to complete the second session

ADD1TIME = Time needed for Trial 1 (i.e., 180 seconds unless the subject finished all the problems in less than 3 minutes)

ADD2TIME = Time needed for Trial 2 (i.e., 180 seconds unless the subject finished all the problems in less than 3 minutes)

ADD3TIME = Time needed for Trial 3 (i.e., 180 seconds unless the subject finished all the problems in less than 3 minutes)

ADD4TIME = Time needed for Trial 4 (i.e., 180 seconds unless the subject finished all the problems in less than 3 minutes)

ADD5TIME = Time needed for Trial 5 (i.e., 180 seconds unless the subject finished all the problems in less than 3 minutes)

ADDATT1 = Number of addition problems attempted on Trial 1 (maximum of 72)

ADDATT2 = Number of addition problems attempted on Trial 2 (maximum of 72)

ADDATT3 = Number of addition problems attempted on Trial 3 (maximum of 72)

ADDATT4 = Number of addition problems attempted on Trial 4 (maximum of 72)

ADDATT5 = Number of addition problems attempted on Trial 5 (maximum of 72)

ADDQ = Number of questions the subject asked about the addition task

RESIDENC = The independence rating of the subject's residence (i.e., 1 = totally independent and living in the community 2 = totally independent and living in a retirement community; 3 = mostly independent and, eating meals prepared by the retirement community cafeteria; 4 = living in a retirement institution with 24-hour nursing staff but free to come and go; 5 = living in a traditional nursing home)

APPENDIX L

Raw Data

1 1 1 14 147 79 59 3 2 5 3 4 4 5 3 2 28 24 136 79 65 2 32 109 12
1 17 106 12 1 22 105 12 1 51 50 50 51 50 129 79 66 2 116 3 3 5
5 5 5 3 3 3 0 2 2 2 4 3 4 3 3 2 3 3 3 2 142 89 63 70 300 300
300 300 300 51 50 51 51 51 0 2

1 1 1 31 131 76 71 4 2 4 0 3 1 5 2 3 14 30 132 83 80 5 72 200 2
1 92 200 3 1 54 118 3 1 58 63 59 57 63 136 85 75 5 74 3 3 5
5 1 3 3 4 3 0 2 0 1 5 4 2 3 3 2 3 4 3 2 137 89 72 60 300 300
300 300 300 60 64 59 60 65 1 4

1 1 1 26 225 80 73 5 1 3 1 3 2 5 2 3 26 30 215 72 75 10 35 200 4
1 28 200 1 1 40 200 2 1 49 53 36 53 55 234 90 73 3 92 3 3 5
3 1 3 3 3 1 2 2 0 1 5 3 1 1 3 2 3 3 3 2 235 90 73 70 300 300
300 300 300 54 55 43 58 60 0 4

1 1 1 6 107 78 81 3 1 4 0 0 1 5 3 3 22 25 100 65 80 0 31 200 5
2 39 200 6 2 37 200 8 2 48 46 40 39 41 86 61 77 5 86 4 1 5
5 1 5 1 3 3 2 2 1 1 5 2 3 3 3 2 3 2 3 2 105 73 76 65 300 300
300 300 300 48 46 40 41 43 0 4

1 1 1 50 150 78 73 4 1 4 5 3 4 5 2 2 26 20 149 68 65 2 59 200 2
1 57 200 1 1 58 200 2 1 31 42 40 39 41 146 74 73 1 91 3 1 3
5 5 5 3 5 3 1 2 1 1 3 3 3 3 3 2 3 3 3 2 157 80 68 68 300 300
300 300 300 36 46 45 48 46 0 4

1 1 1 27 137 68 78 4 1 4 2 4 3 5 2 1 19 30 102 73 69 5 37 200 2
1 49 200 3 2 56 200 3 1 21 22 21 22 25 101 56 64 1 100 1 3 3
3 3 3 3 3 1 0 2 0 1 3 3 3 3 5 2 3 3 3 2 101 56 64 75 300 300
300 300 300 21 23 22 23 25 0 4

1 1 1 42 137 66 77 2 1 3 3 3 2 5 2 2 21 16 133 66 75 0 38 200 4
2 59 200 6 1 86 200 9 2 51 62 57 50 49 135 67 73 3 94 3 5 5
5 5 5 3 5 5 0 2 1 1 3 3 3 5 3 2 3 3 3 2 131 67 73 70 300 300
300 300 300 56 63 63 55 58 0 4

1 1 1 37 125 63 83 4 2 4 3 4 4 5 1 3 28 20 118 56 84 3 14 200 0
2 29 200 2 1 15 200 0 1 13 11 18 23 9 113 68 83 2 95 4 5 4
4 1 5 3 5 3 0 2 1 1 3 3 3 5 3 2 3 3 3 2 123 66 82 77 300 300
300 300 300 17 19 23 25 16 0 4

1 1 1 38 156 68 100 2 1 1 1 1 1 5 1 1 26 28 158 86 90 2 34 200 1
1 26 200 2 1 37 200 4 1 24 23 25 26 29 183 100 96 1 122 4 2 5
5 1 5 3 5 5 2 2 1 1 4 4 3 3 4 2 3 1 3 2 158 94 91 65 300 300
300 300 300 24 24 26 27 29 1 5

1 1 1 45 147 75 76 3 2 3 3 3 2 5 2 2 20 22 121 65 73 1 28 109 12
1 20 53 12 1 30 125 12 1 30 30 26 28 30 145 68 76 2 94 3 3 5
5 3 1 3 5 3 0 2 0 2 3 3 5 5 3 2 3 3 3 2 136 69 66 60 300 300
300 300 300 33 30 27 28 30 0 5

2 2 1 43 128 84 66 3 2 5 3 2 2 4 2 2 18 20 114 76 63 2 23 200 2
1 68 200 3 2 74 200 4 2 63 64 58 60 60 120 78 63 1 85 3 3 5
5 4 5 3 5 4 1 0 0 3 3 3 4 3 3 2 3 3 3 2 127 90 66 68 300 300
300 300 300 65 64 62 65 63 1 2

2 2 1 44 141 72 75 3 2 5 3 3 3 5 1 2 19 20 141 88 71 0 37 200 10
1 35 127 12 1 17 118 12 1 47 50 40 39 46 148 80 66 1 132 5 3 3
3 5 5 3 3 3 0 2 1 3 5 3 3 3 3 2 3 3 3 2 144 84 65 72 300 300
300 300 300 48 50 41 39 46 0 2

2 2 1 60 115 73 66 2 1 4 5 4 3 1 1 1 20 25 103 61 55 1 20 53 12
1 15 58 12 1 15 103 12 2 60 62 53 63 60 105 74 60 1 139 5 5 5
5 4 5 4 4 5 1 1 1 4 4 5 4 3 3 2 2 2 3 2 120 74 61 72 300 300
300 300 300 60 62 56 66 64 0 2

2 2 1 25 123 79 96 4 1 4 1 4 5 5 2 2 27 22 152 78 85 0 18 200 8
1 14 200 10 1 35 200 5 2 40 37 36 37 39 151 79 85 1 109 1 3 5
5 1 5 3 1 1 2 1 1 1 3 3 2 3 4 2 1 3 3 2 150 86 87 70 300 300
300 300 300 41 39 36 37 40 1 4

2 2 1 8 198 73 65 4 1 4 4 2 1 3 1 2 26 20 195 78 76 0 50 200 3
1 74 200 4 1 32 200 7 2 32 40 39 41 40 201 59 70 2 114 4 3 5
3 2 3 4 5 3 0 2 0 2 3 4 3 4 3 2 4 3 3 2 223 81 65 70 300 300
300 300 300 36 42 44 46 44 0 4

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Diploma, Truman High School, Independence, Missouri. 1981.

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May -- September, 1985. Receptionist. National Medical Homecare, Kansas City, Missouri.

January, 1983 -- May, 1985. Secretarial Aid. President's Office, Northwest Missouri State University, Maryville, Missouri.

Summers, 1981 and 1982. Cashier. Woolco Department Store, Independence, Missouri.

May, 1979 -- November, 1980. Library Equipment/Book Processor. Independence Public School District, Independence, Missouri.

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