

**THE ROLE OF STEREOTYPE ACTIVATION AND AGE ON
COMMUNICATION PATTERNS AND IMPRESSION JUDGMENTS IN THE
CONTEXT OF INTERPERSONAL INTERACTIONS**

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**THE ROLE OF STEREOTYPE ACTIVATION AND AGE ON
COMMUNICATION PATTERNS AND IMPRESSION JUDGMENTS IN THE
CONTEXT OF INTERPERSONAL INTERACTIONS**

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SUMMARY

Age stereotypes have been associated with patterns of communication toward older adults as well as an individual's impression of older adults. Thus far, researchers have not explored these associations using paradigms in which participants engage interactively with the target; rather, studies have placed participants in the role of an objective observer of the target. The current study made use of a simulated communication paradigm to examine change in age stereotype activation, communication patterns and the impressions that are formed of an older adult target over the course of an interaction. Target individuals were portrayed either very positively (as a healthy active older adult) or more negatively (as an unwell stereotypical older adult). The competence of the target was manipulated to examine the effect of this trait on stereotype activation, communication and impressions. Individuals of all ages were found to initially speak in an affirmative way to the older adult target, regardless of initial impression, and then adjusted their speech to reflect the competency of the target. Impressions reflected both initial impressions as well as information gained from the interactive task; middle-aged and older adults focused on diagnostic information while young adults made use of all available information to inform their judgments.

CHAPTER 1

INTRODUCTION

Social interactions between individuals occur in most everyday situations. During the course of these interactions individuals make judgments about their conversational partner, often to determine the traits or attitudes of their interaction partner and to make decisions to guide the conversation in terms of what to say next or how to say it.

Research suggests that the way in which people communicate with others and the impressions that are formed during interactions can be influenced by stereotypes about the target partner (Hummert, Garstka, Ryan & Bonnesen, 2004). In particular, this idea has been examined with respect to older adult targets; older adults who are negatively stereotyped tend to be spoken to in a more condescending manner than are older adults who are stereotyped more positively (Hummert, Shaner, Garstka & Henry, 1998).

Studies have examined a variety of factors that may influence stereotype activation during conversations with older adult targets, including the context of the interaction (Hummert et al., 1998), age-stereotypic behaviors such as painful self-disclosures (Bonnesen & Hummert, 2002), and communicator age (Hummert et al., 1998). These studies have provided evidence that a variety of cues can activate age stereotypes; however, these studies have not examined the time course of these cues and their affect on stereotype activation and communication during an ongoing interaction. The vast majority of studies in this literature have been conducted with participants in the role of an observer rather than in the role of an active participant, therefore there is limited understanding of how initial stereotypes and communication patterns may change

with respect to the ongoing feedback that is provided by a target during an interaction. Also, there are many other cues that arise over the course of an interaction that could activate age stereotypes and impact communication which have not yet been investigated. For example, one trait associated with aging is a decline in competency, which is a trait that may become evident from a target's behaviors during the course of an interaction.

The present study addressed four main questions that had not yet been adequately addressed in the existing literature. 1) Does initial stereotype activation persist or change throughout an interaction as a function of age-related cues provided by the target? One aspect of the older adult stereotype is an expected decline in cognitive abilities, as reflected in poorer memory or reduced competency. For that reason, this study directly manipulated the older adult target's behavioral cues to project various levels of competency in a joint communication task. After an initial stereotype was activated, the interactive design of the communication task allowed me to examine how competency cues influenced stereotype activation in positive or negative ways during an ongoing interaction. Stereotype activation was measured multiple times throughout the course of the interaction in an attempt to examine the change in stereotype activation across these time points. 2) Do initial communication patterns toward an older adult target change over the course of an interaction as a function of the competency of that target? Negative age stereotypes have been linked to overaccommodation in speech (Hummert et al., 1998); however, research has not looked at how subtle changes in stereotype activation during a conversation may impact speech patterns. For example, if an older target was initially stereotyped negatively but then later provided feedback that indicated that he/she was competent, how would the interacting partner adjust his/her communication, if at all?

This study's interactive paradigm allowed me to examine changes in overaccommodative speech as a function of the competency of the target during an ongoing interaction. 3) Do changes in stereotype activation as a function of competency level influence subsequent evaluative impressions of the target? While research has found that stereotypes relate to evaluative impressions of targets, this study investigated how stereotype change related to the extremity of impression ratings and also the attributions that are reported for the target's behavior. And finally, 4) How does the age of the interaction partner moderate the above three relationships? Members of different age groups may react in different ways to the older target due to the difference in the complexity of age stereotypes that members of different age groups hold (Hummert, 1990). In addition, there are differences in the ways that individuals of different ages process individuating information about target individuals (Hess, 1999). Therefore, the sample for this study included young, middle-aged and older adults to examine how age related to differences in stereotype activation, communication patterns toward the older adult target as well as impressions that were formed about the older adult target.

To provide background with respect to the above questions, previous research on stereotyping of older adults and the influence of stereotypes on impressions is presented first. Second, literature on the role of stereotypes in communication with older targets is reviewed. And finally a consideration of how age group may moderate the effects of stereotypes on communications and impressions is addressed.

Stereotypes of older adulthood and the impact of age-stereotypes on impressions

Stereotypes are beliefs about characteristics and behaviors of members of a particular group in a culture. They are useful in that stereotypes help individuals

categorize and understand incoming information available to a person at any given time (Hilton & von Hippel, 1996). When a member of a group is perceived, he or she is categorized automatically as a member of that group and this activates the stereotypic associations, attributes and plausible behaviours associated with group members for a given social group (Bodenhausen & Macrae, 1998). Although stereotypes often operate in a way which results in correct inferences, the use of stereotypes as a heuristic for forming impressions of others can also bias the perceiver to judge a person based on the stereotypic expectations rather than judging a person based on actual behaviors that are perceived.

Older adult stereotypes are typically found to be predominantly negative (Ryan, 1992; Ryan & Kwong See, 1993) and can be automatically activated (Chasteen, Schwartz & Park 2002). However, more recent research shows that stereotypes about older adults are multifaceted, including both negative, e.g. Shrew/Curmudgeon or Despondent, and positive subcategories, e.g. Perfect Grandparent or Golden Ager (see Hummert, 1999 for an overview). Similarly, within the recent prejudice literature arguments have been made that many outgroups are perceived ambivalently because their traits can be categorized into dimensions of warmth and competence, where individuals are positive in one of those dimensions but not the other, i.e. warm but not competent, or competent but not warm (Fiske, Xu, Cuddy & Glick, 1999). With respect to age stereotypes, the multifaceted subcategories appear to be relatively consistent across age groups; however, older adults have more differentiated concepts of the older adult category than do individuals of other age groups (Brewer & Lui, 1984; Hummert, Garstka, Shaner & Strahm, 1994).

Age stereotypes can be triggered in individuals in a variety of ways. Individuals who looked at photographs of older adults rated older looking individuals more negatively than younger looking individuals (Hummert, Garstka & Shaner, 1997). When given a stereotypical description of a target, young individuals were more likely to rate the positive stereotypes as belonging to a young-old age, e.g. around 60, whereas more negative descriptions, e.g. the despondent stereotype, were thought to represent old-old individuals, e.g. older than 80 (Hummert et al., 1997). Vocal characteristics also have been shown to predict perceptions of age; older sounding individuals received higher ratings for negative stereotypic traits such as frail and incompetent by young individuals (Mulac, & Giles, 1996). On the whole, the research suggests that young adults tend to view negative stereotypes as more typical of older adults, whereas older adults find both positive stereotypes and negative stereotypes typical of older adults. This pattern is consistent with the notion that older adults have a more complex view of age stereotypes (Hummert, Gartska, Shaner & Strahm, 1995).

Stereotypes relate to impression formation by operating as a guide to organize incoming information. Both young and older adults form impressions by assimilating new information that is consistent with their previous schemas or stereotypic representations (see Hess, 1999 for an overview). When new information becomes available, young adults use this information to construct their impressions. On the other hand, older adults make less use of additional or inconsistent information unless they perceive this information as relevant, i.e. when they are motivated to use this information (Hess & Auman, 2001; Blanchard-Fields & Horhota, 2005). Another factor that affects impression formation is the valence of the information to be incorporated into the

impression (Skowronski & Carlston, 1989). Individuals of all ages emphasize negative information over positive information when forming their impressions but there is some evidence that this depends on the type of trait that is being evaluated. Research has shown that middle-aged and older adults emphasize negative traits to a greater extent when they perceive the negative information as more diagnostic of underlying traits whereas young adults are less affected by trait diagnosticity (Hess, Bolstad, Woodburn & Auman, 1999; Hess & Auman, 2001). For example, in the morality domain negative information was diagnostic because liars may be honest but honest people do not lie. In this case, middle-aged and older adults showed larger impression change when additional information was negative. Alternatively, in the ability domain positive behaviors were viewed as more diagnostic, e.g. intelligent people can fail at a difficult task but it is harder for an unintelligent person to succeed at a difficult task, thus positive behaviors influenced impression change more heavily in this case (Hess et al., 1999). Overall the literature in this area suggests that young adults initially use stereotypes or schemas to form initial impressions however with additional information they will often alter their impressions accordingly. Middle-aged or older individuals also initially rely on stereotypes and schemas to guide impressions and they will use individuating information to alter their impressions but only when they are motivated to process the new information because the information is relevant or diagnostic.

The aforementioned impression studies had participants in a passive role, evaluating characters in vignettes. In interactive situations, stereotype activation appears to dissipate over time unless the stereotype becomes relevant (Kunda, Davies, Hoshino-Browne & Jordan, 2003). Although this previous work has focused on young adults and a

racial stereotype, it suggested that during interactions with a stereotypic target certain types of feedback from the target may lead to the perpetuation of the stereotype activation and in situations when feedback does not confirm the stereotype that the stereotype may dissipate.

The idea that behavioral characteristics of a target can cause stereotype activation to persist throughout an interaction is one that has recently been the focus of attention in the communication literature. Research in this area suggests that once negative stereotypes are activated in an interaction they may be more difficult to change to positive stereotypes compared to vice versa. For example, when an older adult target responded to patronizing speech in a passive or confrontational way this actually confirmed negative stereotypes and perpetuated the stereotype in the interaction partner. Although it may seem that an assertive response to patronizing speech should counter the stereotype of a passive older adult, such responses were actually viewed in a negative way, e.g., as less polite, which perpetuated a negative age stereotype (Ryan, Kennaley, Pratt & Shumovich, 2000). Alternatively, more appreciative or humorous responses to patronizing speech projected a more positive image and led to more positive impressions of the older adult target (Ryan et al., 2000). The appreciative and humorous responses may also implicitly convey that the older adult target was competent; however, research has not examined behavioral feedback that reflects competency in an explicit way.

The present study examined the role of an older target's feedback on stereotype activation. The feedback was in the form of competent or incompetent behaviors with respect to a joint task that was being completed between the participant and the older adult target. This manipulation addressed the first question of the proposed study: Does

initial stereotype activation persist or change throughout a communicative interaction as a function of age-related cues provided by the target? In addition, this study examined evaluative impressions of the target following the interaction between participant and target to address the question of whether changes in stereotype activation influenced subsequent evaluative impressions of the target. These impression judgments included ratings of both positive and negative traits with some traits related to competence and others related to warmth to explore whether the feedback manipulation impacted impressions only for traits directly related to observed behavior (i.e., competency), or whether the feedback manipulation also affected traits that were unrelated to the manipulated trait of competency.

The role of stereotypes in communication with older targets

Research from the communication literature highlights the unique challenges that older adults face when communicating with members of other age groups due to changes in older adult cognition, social stereotypes and impressions that arise in the context of intergenerational and intragenerational communications (Nussbaum, Hummert, Williams & Harwood, 1996). There are distinct patterns in the styles of communication adopted by young and older adults. Older adults tend to maintain conversational topics more than young adults, who shift gradually from one topic to another more often (Garcia & Orange, 1996), older adults produce fewer links between ideas across utterances, tend to use less definitive wording (e.g. using referent words that can't be identified by the previous sentence), and also speak more slowly (Ska & Joannette, 1996; Garcia & Orange, 1996). These differences may either reflect cognitive declines or they may reflect

strategies used to compensate for working memory or attentional difficulties (Garcia & Orange, 1996).

In addition to cognitive changes, there are social changes with age and the bulk of the literature on communication and aging has focused on the impact of stereotypes and differing communicative goals. Among the leading theories about communication involving older adults is the Communicative Predicament of Aging Model (CPA; Ryan, Giles, Bartolucci, & Henwood, 1986). The CPA model stems from Communication Accommodation Theory which states that when people interact they accommodate their speech in response to features, both actual and perceived, of their interaction partner. These accommodations may include adapting one's speech rate, volume and formality, and may be in a complementary way or may be in a way to diverge and distance oneself away from the conversational partner (Harwood, Giles & Ryan, 1995). Adapting this theory to fit the context of communication with older individuals, the CPA Model suggests that contextual cues, such as a person's appearance, activate negative stereotypes of aging in the listener. This then leads the listener to modify their own speech to accommodate the perceived needs of the older adult, encouraging age stereotyped behaviors of the older adults and in turn reducing the opportunities for the older adult to communicate in a non-age stereotyped way (Nussbaum et al., 1996). The modification of listeners' speech toward older adults is most commonly referred to as overaccommodation or elderspeak. Characteristics of this type of speech are slower rates of speech, simplified sentence structures, restricted vocabulary and higher pitch. These features are commonly assumed to make speech more comprehensible to older adults, however it is not always the case that this form of speech is helpful (Kemper,

Vandeputte, Rice, Cheung & Gubarchuk, 1995). The CPA model has received a wide-range of empirical support. Individuals are able to discriminate between young and old voices with accuracy and judge older voices as more reserved, passive and inflexible than younger targets (Ryan & Capadano, 1978); young and older adults have less positive expectations of the communication competence of older adults (Ryan, Hummert & Boich, 1995); and individuals spontaneously produce patronizing communication towards older targets (Kemper, 1994; Kemper et al., 1995).

The CPA Model emphasizes the effects of negative age stereotypes; however, stereotypic impressions of older adults are not wholly negative and communication patterns with older adults can also be influenced by positive stereotypes of aging. Hummert (1994) developed the Age Stereotypes in Interactions Model which extends the CPA Model by incorporating the influence of both positive and negative stereotypes on communication in addition to suggesting that characteristics of the communicator, the target and context can impact stereotype activation in interactions. Hummert and colleagues have found evidence that messages to an older adult target differed depending on the nature of the stereotype a speaker was presented with. For example, if the description of the older target fit a negative stereotype, messages to this older target were shorter, less complex and were more demeaning in tone than if the target was stereotypically positive (Hummert & Shaner, 1994). Further, there has been support for the notion that characteristics of the older target may activate age stereotypes. Such studies have shown that individuals who looked or sounded older (e.g. in their 80s or 90s) were associated with more negative traits than positive ones (Hummert et al, 1997). Certain behaviors also act as cues for older adult stereotypes. Older adults are more prone

to making painful self-disclosures in which they disclose negative personal information (Bonnesen & Hummert, 2002) and are also more prone to off-topic verbosity when they discuss topics that are irrelevant to the current conversation they are engaging in (Buscher & Hurley, 2000).

The second question the present study addressed was whether communication patterns change to match the change in stereotype activation during interaction. As outlined previously, research suggests that age stereotypes relate to styles of speech toward older adults, however little research has examined whether changing a stereotype during conversation relates to reversing the negative cycle of the CPA model. That is, could an initially negative stereotype be changed to a positive stereotype during an interaction? And would communication patterns subsequently change to be less overaccommodating? Although it has been suggested that humorous and appreciative styles of response have potential to reverse the negative cycle (Hummert & Ryan, 2001), at this point in time the idea that a change in stereotype activation over the course of conversation can lead to a change in communication patterns has not been empirically tested.

Age group as a moderator of stereotype effects on communication and impressions

Although stereotypes of aging are pervasive and contain similar content for individuals across age groups, there is reason to believe that stereotype effects on communication and impressions may be different for individuals of different ages. As mentioned previously, studies have shown that older adults have a more differentiated concept of older adult stereotypes compared to young and middle-aged adults (Brewer & Lui, 1984; Hummert, 1990). Perhaps as a result, older adults are less likely than young

adults to use overaccommodating styles of speech with other older adults (Hummert et al., 1998). Older adults may also show less of an impact of stereotypes on their impressions of older adult targets due to the fact that these targets may be more personally relevant and when relevance is high that older adults are more motivated to process individuating information (Hess, 1999). Relevance is also an important motivation for young adults, as studies show that accuracy of their trait judgments are higher when they are making judgments about relevant contexts and on relevant traits (Gill & Swann, 2004). With respect to older adult targets, young adults may be less likely to focus on individuating feedback because older adult targets are a less relevant target group to them.

One theory that relates to the relevance of the older adult target to individuals of varying age is Social Identity Theory. This theory has been cited to account for interethnic communication patterns, and it could also be appropriately applied to intergenerational communication patterns (Harwood, et al., 1995). This theory suggests that a large part of an individual's personal identity is made up of the identity related to the social groups that he or she is a member of. Individuals compare themselves to members of other social groups and are motivated to find positive distinctions between one's own group over another. This pattern is evident in both interpersonal judgments and communication patterns. In the US, young and older adult groups perceive themselves as holding lower status than middle-aged adults (Garstka, Schmitt, Branscombe & Hummert, 2004) and as being on the receiving end of more age discrimination (Garstka, Hummert & Branscombe, 2005). Therefore, the theory suggests that in particular, middle-aged adults will try to distance themselves from older age

groups because the older age group is a less desirable social group that they do not want to identify with. In fact, middle-aged and older adults tend to report younger age identities when comparing their perceived age to their actual chronological age (Montepare & Lachman, 1989) although other research suggests that these younger identities are not necessarily outside of the age range of the older or middle-aged adult categories and there is variability within age groups in the extent to which middle-aged and older adults report younger age identities (Westerhof & Barrett, 2005).

Middle-aged adults present a special case because they are in the process of transitioning into older adult category themselves, representing a shift downward in social status. Therefore, although it is expected that the majority of middle-aged adults will try to distance themselves from the older age group, it is also possible that late-middle-aged adults who are in the process of transitioning into the older age group may adjust their attitudes to be more positive toward older adults who will soon belong to their in-group. With respect to older adults, they were expected to identify with older adult targets the most of any age group because the target belonged to the same age category and therefore should be viewed in a more individuated way rather than a stereotypic way according to social identity theory. To investigate how age-group identity relates to stereotype activation during intergenerational interactions, two measures of this construct were administered to our sample of young, middle-aged and older participants.

Methodological Contributions of the Present Study

A methodological issue within the existing literature is that research has primarily focused on the types of impressions that young and older adults form of older adult targets in static scenarios. The majority of these studies examined perceptions of target

individuals based on the presentation and ratings of characters in vignettes (e.g. Blanchard-Fields, 1994; Blanchard-Fields & Beatty, 2005), materials attributed to a target (e.g. Blanchard-Fields & Horhota, 2005; Horhota & Blanchard-Fields, 2006), lists of traits (e.g. Hess & Auman, 2001; Hess et al., 1999; Hummert, 1990, Hummert et al., 1995), and judging targets on the basis of interview transcripts (Erber & Prager, 2000). These static approaches inferred the underlying process on the basis of the outcomes that were elicited, and many of these studies found that schematic or stereotypic beliefs affected impression outcomes. However, in everyday life, individuals make attributions or judgments about an individual based on interactions involving the exchange of information. In the current study, an interactive methodology allowed for a more direct examination of stereotype activation that occurs during an ongoing interactive situation. Importantly, by more directly measuring stereotype activation multiple times over the course of an interaction, I attempted to determine whether individuals of different ages were changing their stereotypes due to feedback from the target and whether this difference in activation resulted in different attributions and judgments of the target. Although some recent studies have examined feedback originating from the target none of these studies have examined feedback that the target provides during an ongoing interaction. Interestingly, even within the stereotypes and communication literature it is uncommon for studies to use interactive methods where participants believe they are currently interacting with another individual. This literature suggests that stereotypes lead to differential communication; however, they have only examined participants in the role of an observer rather than an interacting partner (see Hummert et al., 2004 for an overview). Therefore, although the existing methods have provided the groundwork for

research on interpersonal communication and impression judgments, there is a need to examine impression formation and attributions with simulated interactions through the use of videotapes or staged interviews or situations (Spencer, Fein, Strahan, & Zanna, 2005; Kunda et al. 2003).

The Current Study

The current study used a staged interactive situation to address four main questions. 1) Does initial stereotype activation persist or change throughout an interaction as a function of age-related cues provided by the target? 2) Do initial communication patterns toward an older adult target change over the course of an interaction as a function of the competency of the target? 3) Do changes in stereotype activation as a function of competency level influence subsequent evaluative impressions of the target? And 4) How does the age of the interaction partner moderate the above three relationships? To maintain control over the interaction in this study, communication occurred between a participant and a simulated older adult target through a computer. A simulated interaction was necessary in order to manipulate the initial impression of the target and then the competency of the target during the interaction to examine the role of competency cues on stereotype activation and communication patterns. The positively portrayed targets was a partner who was portrayed as a healthy, active senior whereas the more negative stereotypic partner was portrayed as an senior who had experienced some health issues and lacked confidence in her abilities in the task. Competency was manipulated by having the partner appear to do well or poorly in the communication task. To further increase the face validity of the study and to encourage participants' belief that the interaction is real, the cover story suggested that the purpose of this study was to

understand communication in the context of a computerized interactive task. Participants completed four rounds of an interactive task in order to give multiple opportunities to measure both communication patterns as well as stereotype activation. These multiple measurement points were included with the goal of charting the time course of these variables throughout the simulated interaction. Following the interactive task, participants made judgments about the traits of the older adult target as well as attributions for the behaviors of the older adult target.

CHAPTER 2

HYPOTHESES

This study addressed how stereotype activation changes over the course of an interaction with an older adult target, how this stereotype activation relates to communication patterns that are overaccommodative and how this stereotype activation relates to subsequent judgments of the older adult target. For clarity, the hypotheses are also presented in a table in Appendix A in a simplified format.

1) The trajectory of stereotype activation with respect to competence feedback.

For this first set of hypotheses, several trajectories of stereotype activation were predicted. Stereotype activation was measured at four time points, T1 was the initial activation, T2-T4 were measurements of stereotype activation that alternated with the interactive task. When changes in stereotype activation are described as quick this indicates that there was a pronounced difference in the stereotype that was activated from T1 to T2. When changes in stereotype activation are described as slow this indicates that stereotype activation gradually changed from T1 to T4 such that the incremental differences between each time point was not pronounced.

In general, when the competence feedback matched the stereotype (i.e., positively portrayed target paired with competent behaviors or a more negatively portrayed target paired with incompetent behaviors), no change in stereotype activation was expected over time. When the competence of the target did not match the initial stereotype, stereotype change in the direction of the competency information was anticipated (Hess & Follett, 1994). For example, participants who worked with a more negatively framed target who subsequently was competent in the task were expected to show activation that became

positive over time. Alternatively, a person who worked with a positive target who subsequently was incompetent was expected to show activation that became more negative over time.

Individuals of all age groups were expected to view the positively portrayed competent target similarly across time and therefore no change in stereotype activation was expected in this condition. In the other consistent condition, the initially negative target who was portrayed as incompetent during the interaction, young and middle-aged adults were expected to show no change in negative activation over time. Alternatively, older adults were expected to show a slow increase in positive activation over time. Negative stereotype activation was expected to slowly become more positive for older adults in this condition because although this information reinforces the negative stereotype, older adults have a more differentiated concept of older age (Brewer & Lui, 1984; Hummert, 1990) and therefore should hold negative stereotypes about other older adults less strongly over time.

For the positive-incompetent condition, young and middle-aged adults were expected to show a quick shift to negative stereotype activation whereas older adults were expected to take longer to activate negative stereotypes about their partner. Stereotype activation for older adults was not expected to become as negative as that displayed by young or middle-aged adults in this condition because past work suggests that young and middle-aged adults hold more negative stereotypes of aging in general (Ryan, 1992).

For the negative-competent condition, young adults were expected to slowly shift from positive to negative stereotype activation, because it was thought that initial

negative impressions may be harder to change. A different pattern was expected for middle-aged and older adults. Middle-aged and older adults tend to weigh diagnostic information more heavily (Hess, et al., 1999) and in the ability domain positive information is perceived as more diagnostic (Skowronski & Carlston, 1989). Therefore it was expected that middle-aged and older adults would more quickly shift to positive stereotype activation when the target was initially negative but proved to be competent.

2) Change in overaccommodation toward older adult target with respect to competence feedback

In general, when the target's behavior matched the stereotype, i.e in the positive-competent and negative-incompetent conditions, no change in communication was expected over time. When the competence feedback did not match the initial stereotype, participants were expected to adjust their communication in the direction of the competence information; participants who worked with incompetent targets were expected to become more overaccommodative and those who worked with a competent target were expected to become more affirmative following the pattern suggested by the Age Stereotypes in Interactions Model (Hummert et al., 2004). Initially positive targets were expected to receive affirmative tones initially, whereas more negative targets were expected to receive more overaccommodative tones initially, in keeping with past literature (Hummert & Shaner, 1994).

Individuals of all age groups were expected to view the positively portrayed competent target similarly across time and therefore were expected to speak to the target in an affirmative tone throughout the interaction. In the other consistent condition, negative-incompetent, young and middle-aged adults were expected to speak with an

overaccommodative tone throughout the interaction, however, older adults were expected to initially speak to their partner in an affirmative way and then slowly shift to overaccommodative speech by the end of the task. The amount of overaccommodation by older adults was expected to be less than the amount that is produced by young and middle-aged participants, as has been shown in past research (Hummert et al., 1998).

For the conditions that involved behavior that did not conform to expectations, different age patterns were expected. For the positive-incompetent condition, young and middle-aged adults were expected to quickly shift to overaccommodating speech. Older adults were expected to take longer to shift in speech tone because of their tendency to speak in affirmative ways to other older adults (Hummert et al., 1998). For the negative-competent condition, young adults were expected to slowly shift from overaccommodative speech to affirming speech. Middle-aged adults were expected to adopt an overaccommodative style of speech initially but were expected to quickly adjust to using an affirmative style following signs of competence in the target. Older adults were expected to speak in an affirming tone throughout the interaction with the negative competent target.

3) Influence of stereotype activation on subsequent impressions and attributions

Overall, members of all age groups were expected to report more positive impressions when initially introduced to a positive stereotypic partner (a healthy, active senior) than when they were initially introduced to a more negative stereotypic partner (an unwell senior who lacked confidence in abilities).

For the conditions in which stereotype activation was initially positive, the following patterns were expected. When the target behaved competently, individuals of

all ages were expected to rate the older adult target positively. When the target was initially portrayed positively but subsequently behaved incompetently, all ages were expected to have negative impressions. In this positive-incompetent condition both young and older participants' impressions of the target were expected to be more negative than the impressions of middle-aged adults. We expected that young adults would have the most negative impressions due to past research suggesting that young adults tend to hold negative views of older adults in general (Ryan, 1992). For older adults, this condition was expected to be an interesting case where the style of communication would not match up with the actual impressions of the target for older adults; no signs of overaccommodation were expected to appear in the speech of older adult participants but older adults were expected to report holding negative impressions of this partner. This result was anticipated because the majority of the older adult participants who participate in our studies are highly active seniors, so it was expected that we would see a 'black sheep effect' (Marques, Yzerbyt, & Leyens, 1988). Older adults should rate a positive target who failed to meet their expectations more harshly because the target did not match their perceptions of the type of older adult who participates in these sorts of studies, i.e. this person should not fit the older adults' schema of fellow research participants.

For the conditions in which target was initially portrayed negatively, young and middle-aged adults were expected to rate the target negatively when the target's behavior was consistent with expectations (negative/incompetent). When the initially negative target's subsequent behavior was competent, we expected the target would be rated moderately positively. Overall, older adults were expected to view the negative incompetent target less negatively than the other age groups due to their overall more

positive attitudes to other members of their age group (Ryan, 1992). Older adults who interacted with a negative target who proved to be competent were expected to rate the partner positively at the end of the task.

Age group identity as a moderator

Young and older adults were expected to report that they identified with their chronological age group (Garstka, et al., 2004). Middle-aged adults were expected to primarily identify with a young middle-aged age group (Montepare & Lachman, 1989), however a subset of middle-aged adults who are in late middle-age were expected to identify with an older age group. For the middle-aged individuals who had a weaker age-identity, it was hypothesized that their patterns of stereotype activation, overaccommodating speech, and judgments of the target would follow a pattern more similar to those described for older adults, rather than the middle-aged group to which they belong based on chronological age.

Exploratory Variables

Finally, literature suggests several other factors that may potentially impact communication patterns during an intergenerational conversation. These factors include the amount of time and quality of typical interactions with older adults (Williams & Harwood, 2004), and pre-existing attitudes and beliefs about intergenerational communication (Harwood & Williams, 1998; Hummert et al., 2004). Scales of these variables were included in the present study to examine whether they contributed to the prediction of speech styles.

CHAPTER 3

METHOD

Pilot Studies

Before running the main study, the stimuli for the study were created and pilot tested. First, the communication task was designed and tested to ensure that the different conditions conveyed either competent or incompetent performance. The communication task was also tested to ensure that participants believed that they were interacting with a real person. Second, the target partner was designed to reflect either positive (healthy active senior) or negative traits (unwell less active senior) and then these descriptions were pilot tested to ensure that participants viewed the two targets differently.

Part 1: Determining feedback patterns to convey competent and incompetent performance

This study used a one-sided simulated referential communication task in which participants thought that they were describing pictures to a target partner, however the target partner was a computer program designed to respond in a particular way. Participants were told to describe a picture out of a display on a computer screen such that his/her partner could choose that same picture out of a different display that was in front of him/her (modified from Horton & Spieler, 2007). Feedback to the participant was manipulated by altering the number of items that the partner answered correctly or incorrectly. This pilot was conducted to evaluate a participant's impression of their partner's performance to ensure that the competent performance was viewed more positively than the incompetent performance conditions.

Participants

48 participants (18 young, aged 18-25, $M = 20.80$, 8 middle-aged, aged 40-56, $M = 50.15$ and 22 older adults aged 65-80, $M = 70.95$, 54% female) were recruited from a volunteer participant pool and from the undergraduate psychology student pool. Participants were compensated for their time at a rate of \$10/hr for middle-aged and older adults and at a rate of 1 extra credit point/hr for young adults who are students of the university at which the experiment was conducted.

Materials

Creating the “Interactive” computer-based task. A referential communication task was used. This task required participants to view a display of nine pictures that were similar to each other and to describe a target picture such that their partner could identify the same picture out of a similar display. Participants were told that their partner’s display had the same nine pictures but that the pictures were arranged in a different position on the target display. Therefore, participants had to describe the content of the picture in order to describe the correct picture to their partner. Young and middle-aged participants were allowed a maximum of 20 seconds to describe the target picture. Older adults were allowed 25 seconds to describe the target picture because previous studies showed that older adults should be allowed extra time because it takes older adults longer to locate the target picture in the complex display and to form their description (Horton & Spieler, 2007). To record the picture description, participants wore a lapel microphone that was plugged into a digital recorder. The digital recorder and cords were positioned so that it appeared to be plugged into the computer the participant was sitting at. Participants believed that their partner could hear them directly through the microphone during the

communication task segments. After describing the picture verbally, participants who did not use the full amount of time allowed were asked to press a key to indicate to their partner that the description was complete and that it was time for the partner to choose the picture that had been described. After a brief pause, participants received feedback in the form of a check mark, to indicate that the partner correctly guessed the picture, or an X, indicating that the partner selected the incorrect picture. Following an X, participants were given a second chance to describe the picture. In order to maintain control over the feedback that the participant received the interactive partner's responses were pre-programmed to reflect either competent or incompetent performance. In the competent feedback condition, the computer responded correctly 91% of the time (a total of 2 errors). In the incompetent feedback condition, the computer only responded correctly 44% of the time (a total of 19 errors). Participants completed four rounds of the task with each round containing five target pictures. Therefore, in the competent conditions each participant produced a total of 22 descriptions and in the incompetent condition each participant produced a total of 34 descriptions. In the competent condition, the feedback response screens came up after a 3.5 to 5 second delay to give the impression that the partner was performing at a relatively quick pace. In the incompetent condition, the feedback response screens took between 6.5 and 8 seconds to appear. Each round used different picture cards from different categories (e.g. fish, flowers, trees and birds) to prevent the participant from creating a standard response to use in future rounds.

Post-task Competence Questionnaire Measure. This measure asked participants to rate their partner on a list of 20 character traits. Participants evaluated each item using a 7-point Likert scale (1 – strongly disagree, 7 – strongly agree). Traits related to

competence, e.g., competent, unskilled, as well as traits unrelated to competence, e.g. family-oriented, unhealthy, were embedded within the list of traits. Higher scores indicated that the participant perceived the target as possessing a given character trait. For the purposes of the pilot study, we were interested in seeing that the competence related traits were higher in the competent condition compared to the incompetent condition.

Procedure

Participants were recruited to complete a pilot study to test measures to be used in future studies. After signing a consent form, participants were given instructions for the interactive task and completed a practice trial with the experimenter. Participants were told that their partner may be a person of any age group and was participating on a computer in a different room. Participants then completed four rounds of the task. Each round had five pictures that were drawn from the same category (e.g. fish). After each round, the picture category changed and a new set of target pictures appeared. Within each round, participants received varying feedback from their target partner (computer) consistently reflecting a competent or incompetent condition. Following the fourth round of the game, participants were asked to complete the post-task questionnaire in which the participant rated the target partner on a list of traits. Participants were then debriefed and compensated.

Results and Outcome

A 2 (competence feedback: competent, incompetent) X 3 (age: young, middle-age, older) MANOVA was run on the competence items from the post-task questionnaire. A trend for competence was found in the overall MANOVA, $F(4, 38) = 2.34, p = .07, \eta^2 = .20$. Investigating the individual items, the items of competent, unskilled and incapable

were all significant, $F_s(1, 41) > 4.10$, $p_s < .05$, $\eta^2 = .09, .11, .19$ respectively, whereas the trait intelligent did not differ between competence conditions, $p = .10$. See Table 1 for means and standard errors. Furthermore, there was no main affect of age and no age X competence interaction, $p_s > .40$ suggesting that all age groups viewed the competent or incompetent performance similarly. These findings suggested that the communication task feedback reflected competence in the competent condition and incompetence in the incompetent condition similarly across participants.

Table 1: Means and Standard Errors for Impressions of Competence

Trait	Competent		Incompetent	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Competent*	6.28	.318	5.29	.37
Unskilled*	2.05	.38	3.36	.44
Incapable*	1.44	.33	3.00	.38
Intelligent	5.85	.29	5.10	.34

Note: * $p < .05$

Part 2: Creating and evaluating the older adult target partner

To activate stereotypes of the target partner, participants were presented with a combination of a photograph and a brief description of an older adult target to activate age stereotypes. For the target to be believable, participants had to accept the premise that the target individual was participating in another room. Therefore, the negative target

could not be portrayed in an extremely negative fashion. This differed from much of the past research that has focused on behavior towards extremely negative stereotypic targets, e.g. severely impaired or despondent targets (Hummert et al., 1998). It was thought that participants would find it implausible that someone who was severely impaired would be a participant in a study that required them to come to the testing facility. Thus, in the current study the negative target was portrayed in a stereotypical way, however she was not as severely negative a target as has been depicted in some previous research. After creating the target individuals, participants were brought into the lab to evaluate the target individuals to ensure that the positive individual was viewed more positively than the more negative portrayed individual.

Participants

The same participants as those who participated in the first pilot study participated in this second pilot study. Individuals were recruited for both parts of the pilot study simultaneously.

Materials

Creating the target partner. Two target individuals were created, one who was positive and one who was framed to be more negative. The photographs used were standard photos of a woman who had previously been identified as looking like a woman in her 70s (Hummert, Garstka & Shaner, 1997). In the positive condition the woman was smiling and in the negative condition the same woman is pictured, but her expression was neutral. The reason for holding the photograph constant was to control for attractiveness and gender of the target.

To create the partner self-descriptions, traits were selected from a list of adjectives previously used in positive or negative age descriptions (Schmidt & Boland, 1986). The traits selected for the positive target were: active, willing to learn, family-oriented, friendly, likes to help out. The traits selected for the negative target were: inactive, unwell, forgetful, confused, unhelpful. For the self-descriptions to be believable, the description was designed to sound as though the person was revealing these traits about herself in the context of answering basic questions about herself and her interest in participating in psychology studies. To fit with the cover story, the positive target also mentioned that she was familiar with computers whereas the negative target reported she was unfamiliar with using a computer. In the main study, participants also created a self-description by responding to questions about themselves and their interest in participating in psychology studies to decrease suspicion. Both positive and negative targets began their self-description by giving their age as 75. The partner self-descriptions are located in Appendix B.

An older woman in her early 80s who was born in the South, where the study took place, was recorded reading through the self-descriptions so that our target individual sounded as though she was locally from the area. The same woman recorded the positive and negative descriptions. Aside from content differences, the positive description was read slightly faster and with a positive tone, whereas the negative description was read more slowly and with a few more hesitations in between sentences in order to further enhance the negativity of the target individual.

Lexical decision task. (Chasteen, Bhattacharyya, Horhota, Tam & Hasher, 2005)

To measure stereotype activation, participants completed a lexical decision task that was

modified from the lexical decision task used in Chasteen et al., 2005. In this task, participants viewed a series of words flashed on the computer screen and responded on each trial whether the word they saw was a real word or a nonsense word. Embedded within the words that were displayed were both positive and negative words related to aging stereotypes. To determine an index of stereotype activation, reaction times were compared across word type to determine whether participants were responding to stereotypic words faster than non-stereotypic words. When reaction times were faster for stereotypic words than non-stereotypic words this indicated that a stereotype was activated. By including both positive and negative stereotypic traits it was possible to examine whether negative activation decreased as positive activation increased.

In this task, there were four lexical decision tasks created so that stereotype activation could be measured at multiple time points. Each lexical decision task had a total of 100 trials with 35 trials containing pronounceable nonwords (e.g. kitchen) and 65 trials containing actual words. Of these real words, 30 were target items with 13 words reflecting positive age stereotypes (e.g., wise) and 13 words reflecting negative age stereotypes (e.g., frail). The stereotypic trait words and their synonyms were culled from words that had been previously used in studies of age stereotypes (Chasteen et al., 2005; Levy, 1996; Hess, Hinson & Statham, 2004; Hummert, 1990; Schmidt & Boland, 1986). Of the remaining words, 26 were neutral nouns (e.g., mountains) and 13 were trait words that are nonstereotypic of the elderly (e.g., pretty). These additional words served as filler items so that participants would not notice or suspect the target items. The target items were created to be equal to the nontarget items in terms of word length and word frequency. Word frequency was the combined written and spoken frequency per 18

million words as listed in the Celex list for English language words (obtained from Dan Spieler, personal communication, 2002). In the case of words that had multiple entries, the averages of the frequencies were taken in order to establish comparable lists. (See Appendix C for the words that were used in the lexical decision task with their frequencies).

Impression task. To measure impressions of the target partner, participants provided a written statement about their impressions of their partner and any thoughts that crossed their mind when listening to their partner's description. These impressions were coded on a 5 point scale (1=very negative through 5= very positive) by two raters. Inter-rater reliability was 80% and discrepancies were resolved through discussion. For the first 35 participants, this task was presented after the lexical decision task. During the pilot testing phase, we noticed that the stereotype activation measure was not consistently picking up on strong activation. Therefore, we moved this written impression task to occur before the lexical decision task. This was done to ensure that participants were thinking about their partner prior to completing the lexical decision measure of stereotype activation.

Demographics Form. Participants filled out a demographics form that included information about age, gender, ethnic background and health.

Procedure

Participants were asked to participate in a pilot study in which we were interested in determining the impressions that people form about another person. Participants read a consent form and then were asked to look at a photograph and listen to a target description about an older adult individual. Half of the participants received the negative

stereotypic picture and description and the other half received a positive stereotypic picture and description. Immediately after reading the target description, participants completed four blocks of the lexical decision task to determine stereotype activation. Participants were also asked to complete an impression questionnaire asking them their thoughts and impressions of their partner and the tasks they completed. Participants were then thanked, debriefed as to the nature of the pilot study and compensated for their time.

Results and Outcome

To determine whether the partner was being viewed positively or negatively we looked at two measures. First, we examined the impression task, i.e., the participants' written impressions of the target. These impressions were coded on a 5-point scale (very negative through very positive) and these codes were subjected to a 2 (target: positive, negative) X 3 (age: young, middle, old) ANOVA. A main effect of condition was observed, $F(1, 41) = 7.05, p < .05, \eta^2 = .15$ with positive targets being viewed more positively ($M = 3.98, SE = .36$) than negative targets ($M = 2.72, SE = .31$). There was also an age X target interaction, $F(2, 41) = 4.03, p < .05, \eta^2 = .16$ that showed that middle-aged individuals viewed the positive target positively and the negative target negatively, $p < .01$ but the differences between conditions were not significant for young and older adults, $ps > .10$. Despite the non-significant result, the means were in the expected directions for all age groups, with young and middle-aged adults viewing the positive target more positively and older adults reporting a smaller difference between targets, see Table 2.

Table 2: Means and Standard Errors for Impressions of Target

	Young Adults		Middle Adults*		Older Adults	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Negative	3.09	0.44	1.40	0.65	3.67	0.48
Positive	3.86	0.55	4.67	0.84	3.42	0.40

Note: * $p < .05$

Second, we examined the lexical decision data for evidence of stereotype activation. We initially looked at the data after the first 35 participants and examined whether their stereotype activation for positive and negative aging words differed from neutral in block 1. To calculate the means for the target words, first all incorrect responses were removed from the data. Second, outliers (greater than 2 standard deviations from an individual's mean) were calculated and removed for each individual participant based on the individual participant's performance level as has been done in previous studies (Chasteen et al., 2005). And finally, a difference score was calculated to determine the difference between the stereotypic word and the participant's response to neutral words. This was done so that each participant served as his/her own control. A 2 (target: positive, negative) X 3 (age: young, middle-aged and older) MANOVA was conducted on the positive-neutral and negative-neutral scores. No effects of age, $p > .50$ or condition were found, $p > .25$. Due to the low power of a small sample size, we next examined the data to determine if the means were in the expected direction for each

individual participant. Sixteen of 18 participants in the negative condition and 13 of 16 in the positive condition showed the expected pattern at time 1 in either the positive words or negative words. However, these differences were not consistently strong. Therefore, we adjusted the protocol to include the initial impression task before the lexical decision task to ensure that participants had been thinking about their partner immediately before the stereotype activation measure. We then ran another 13 individuals in this revised protocol and examined their data in the same way. A 2 (target: positive, negative) X 3 (age: young, middle-aged and older) MANOVA was conducted on the positive-neutral and negative-neutral scores. There was a significant condition difference, $F(2,7) = 7.05$, $p < .05$, $\eta^2 = .67$. Examining the between-subjects effects, there was a significant difference between the conditions for the positive-neutral variable, $F(1, 13) = 16.10$, $p < .01$, $\eta^2 = .67$ but not for the negative-neutral measure, $p > .20$. Means for the positive-neutral variable were in the expected directions, as shown in Table 3.

Table 3: Means for Positive minus Neutral Reaction Times from Lexical Decision task

Condition	<i>M</i>	<i>SE</i>
Negative Target	45.16	16.25
Positive Target	-16.70	15.96

Note: Negative values reflect higher positive stereotype activation

This finding in combination with the results from the initial impression task suggested that the positive and negative targets were being interpreted in the expected direction. Given the boost in activation that appeared when participants were asked to provide their initial impressions prior to the lexical decision task, this change in the method was retained for the main study.

Main Study

Overview

Participants were contacted to participate in a study that “looked at communication during a computer-based task in which you are working with a partner”. The study required participation in two sessions. The first session was a mailout packet of questionnaires that was sent to middle-aged and older adult participants’ homes in advance of their in-lab session. Young adult students were instructed to pick up and complete this packet of questionnaires in advance of their in-lab sessions. Individuals who failed to do that were given the packet to complete and return after the in-lab session. The in-lab session had a 3 (age: young, middle, older) X 2 (target: positive, negative) X 2 (competence feedback: competent and incompetent) design with a repeated measure of stereotype activation with four measurement points.

Participants

128 young, 90 middle-aged and 115 older adults were recruited to participate in this study. 31 young, 4 middle-aged and 13 older adults were excluded from the analyses for various reasons. Thirty-six participants were excluded due to not believing the premise that a real partner was participating with them, 6 people experienced technical difficulties during their sessions that prevented them from providing complete data, 5

people failed to follow instructions and one person fell outside of our age range and was too young to participate. Therefore analyses were conducted on 97 young adults, 86 middle-aged adults and 103 older adults. Please see Table 4 for number of participants per condition and Table 5 for demographic information about the sample.

Table 4: Age Group by Condition Crosstabulation

	Condition				Total
	Competent Negative	Incompetent Negative	Competent Positive	Incompetent Positive	
Young	24	24	25	24	97
Middle	20	22	23	21	86
Older	26	27	26	24	103
Total	70	73	74	69	286

Participants were recruited from existing participant pools, as well as through advertisements in local area papers, senior centers and community websites. Participants were compensated for their time at a rate of \$10 per hour for middle-aged and older adults and at a rate of 1 extra credit point per hour for young adults who are students of the university at which the experiment was conducted.

Table 5: Demographic Information about the Sample

	Young	Middle-age	Old
Age range	18-24	40-56	61-81
Mean Age	20.17	49.63	70.65
% female	50.5%	55.8%	51.5%
Vocabulary	17.15 ^a (.59)	18.76 ^a (.63)	22.49 ^b (.57)
Letter Sets	23.60 ^a (.44)	18.12 ^b (.47)	17.09 ^b (.43)

Note: Vocabulary and letter set means are presented with standard errors in parentheses; Superscripts indicate significant differences

Materials and Procedure

Part 1 – Mailout Questionnaire

Age group Identity Scale. (Garstka, Branscombe & Hummert, 1997 as reported in Garstka et al., 2004). Participants were asked to consider their chronological age group in responding to the 5-items of this 7-point Likert scale (1 – strongly disagree, 7 – strongly agree). The instructions for this scale define age groups such that 18-25 year olds are young adult, 40-55 are considered middle-aged and 65 and over are classified as older adults. The items included statements such as, I like being a member of my age group. A mean age group identification score was calculated with higher scores reflecting stronger age group identification. In the present study the reliability of this scale was $\alpha = .88$ overall and $\alpha = .87$ for young, $\alpha = .84$ for middle-aged and $\alpha = .91$ for older adults.

Cognitive Age (Age group identity) Scale. (Barak, 1987). This measure asked participants to indicate the specific age group that they feel they most identify with on

four dimensions, Feel, Look, Do and Interests. Participants read each statement (e.g. I do most things as though I am in my...) and indicated on the scale which age group they identified with (teens, 20s, 30s, 40s, 50, 60s, 70s, 80s). Higher mean scores indicated a higher age group identity. In the present study the reliability of this scale was $\alpha = .96$ overall and $\alpha = .80$ for young, $\alpha = .76$ for middle-aged and $\alpha = .85$ for older adults.

Language in Adulthood Questionnaire. (Ryan, Kwong See, Meneer & Trovato, 1992) This questionnaire assessed beliefs about expressive and receptive qualities of older adults. Participants read statements and responded on a 7-point bipolar scale indicating their beliefs (1 = strong disagreement through 7 = strong agreement). Expressive problems included items such as dominating conversations or finding it difficult to speak when pressed for time. Receptive problems included items such as difficulty understanding others in noisy situations and losing track of topics in conversation. This questionnaire was adapted to assess beliefs about the participants own experiences (self-rating) and then also to assess their perceptions of 25-year old, 55-year old and 75-year old targets. Mean values for the receptive and the expressive measures were calculated for self and others separately, with higher scores indicating perceptions of greater problems. In the present study the reliability of the self scale was good, $\alpha = .80$, for the receptive subscale ($\alpha = .79, .73, .85$ for young, middle-aged and older adults) but was poor, $\alpha = .62$, for the expressive subscale ($\alpha = .45, .62, .68$ for young, middle-aged and older adults). For the scales in which participants gave their perceptions of others' abilities, the receptive subscale was $\alpha = .78, .85, .84$ for perceptions of young, middle and older adults respectively ($\alpha > .75$ for all age groups). For the perception of other's expressive abilities the reliabilities were again poor, $\alpha = .64, .67, .63$ for perceptions of

young, middle and older adults respectively (young adults $\alpha = .55, .56, .43$ across scales, middle-aged adults $\alpha = .55, .61, .58$ across scales and older adults $\alpha = .62, .71, .72$).

Communicative Behaviors questionnaire. (McCann, Dailey, Giles & Ota, 2005).

Participants were asked to consider how they felt and acted when talking with people who they considered to be young, middle-aged and older adults. Participants were asked to answer the same 10 items on 7-point Likert-type scales where 1 = strongly disagree and 7 = strongly agree for each age group separately. The scale consisted of two subscales, respect and avoidance. Higher mean scores indicated higher levels of respect or avoidance of the target person, respectively. In the present study the reliabilities of the respect subscales were acceptable overall. For the respect toward young adults scale, $\alpha = .76$ ($\alpha = .62, .73$, and $.80$ for young, middle-aged and older adults). For the respect toward middle-aged adults scale, $\alpha = .80$ ($\alpha = .78, .78, .80$ for young, middle-aged and older adults). For the respect toward older adults scale, $\alpha = .86$ ($\alpha = .80, .77, .89$ for young, middle-aged and older adults). The reliabilities of the avoidance subscales were $\alpha = .72$ for avoidance of young adults ($\alpha = .70, .70, .74$ for young, middle-aged and older adults). For the avoidance of middle-aged adults scale, $\alpha = .79$ ($\alpha = .69, .72, .79$ for young, middle-aged and older adults). For the avoidance of older adults scale, $\alpha = .83$ ($\alpha = .82, .75, .74$ for young, middle-aged and older adults).

Image of Aging Scale. (Levy, Kasl & Gill, 2004) This measure was a 20-item scale in which participants read an adjective and then indicated on a 7 point scale the degree to which this adjective reflected what they think about older adults (0 = furthest from what you think, 6 = closest to what you think). The scale was modified to omit the items related to will to live and death because they were not relevant for the present study

and some of our initial older adult participants reacted negatively to their inclusion. The scale in our study contained 17 items that were classified as positive or negative and the reliability of this scale was $\alpha = .85$ for positive items, $\alpha = .76, .88, .85$ for young, middle-aged and older adults respectively. For negative items the overall scale reliability was $\alpha = .81$, with $\alpha s = .79, .82, .84$ for young, middle-aged and older adults respectively.

Expectations regarding Aging scale. (Sarkisian, Steers, Hays, & Mangione, 2005). This measure was a 12-item scale that assessed people's expectations about aging on three dimensions, expectations of physical health (e.g. When people get older, they need to lower their expectations of how healthy they can be), expectations of mental health (e.g. Being lonely is just something that happens when people get old), and expectations of cognitive functioning (e.g. It is impossible to escape the mental slowness that happens with aging). Participants responded on a 4 point scale that ranged from definitely false to definitely true. Higher scores indicated more negative expectations of aging. In the present sample, $\alpha = .85$ for the combined scale, $\alpha s = .79, .88, .86$ for young, middle-aged and older adults respectively.

Everyday experiences with older adults. Three items were created to measure participants' typical amount of interaction with older adults and the perceived quality of that typical interaction. Participants responded using 7-point Likert scales to indicate the amount of interactions they typically have with older adults in a typical week (1= no interaction with an older adult, 7 = a great deal of interaction with an older adult). Participants also reported the quality of typical interaction with older adult partners on a 7-point scale (1=very negative, 7 = very positive). A third item asked whether the participant had interacted with an older adult in a caregiving role. If so, participants were

asked to indicate the most recent time they were in a caregiver for an older adult and how long this caregiving role lasted.

Technology Experience Questionnaire. (Czaja, Charness, Fisk, Hertzog, Nair, Rogers & Sharit, 2006). This questionnaire measured how frequently individuals use technology for a variety of purposes, the type of technology used and the frequency of technology use for these various purposes and technologies. To fit with the cover story of the present study, a subset of these items focusing on use of technology for communication purposes, for shopping, for customer service, and for healthcare purposes were included. Participants read statements and checked off their experiences by marking Xs in the appropriate boxes. Czaja et al., 2006 reported that this measure has been widely used in the literature and demonstrates good reliability and validity for both young and older adults. For the purpose of this dissertation this data was not analyzed, rather was included for cover story purposes only.

Computer Use Questionnaire. (Czaja, Charness, Fisk, Hertzog, Nair, Rogers & Sharit, 2006). This 15-item scale asked participants to read statements about their computer use and indicate the degree to which they agreed with each statement by marking an X in the appropriately labeled box. The boxes made up a 5 point scale and were labeled strongly agree through disagree strongly. Czaja et al., 2006 reported that this measure demonstrates good reliability and validity for both young and older adults. Again this measure was included for the purpose of maintaining the cover story for the main study and was not included in analyses.

Procedure

Older and middle-aged participants were mailed a consent form and the packet of questionnaires to complete at home. A cover letter in the packet provided instructions for responding on the questionnaires and the phone number of the laboratory was included for participants to call in the event that they had any questions about the materials. Participants returned the mailout packet when they came into the lab for their in-lab session and were reimbursed at that time. Young adult student participants were asked to pick up the questionnaires prior to their in-lab session, to complete them at home and then return the packet when they arrived for their in-lab session. In the sample, 18% of young adults, 11% of middle-aged adults and 21% of older adults did not complete the packets in advance and were given the questionnaires after their session to complete and return at a later date. Overall, 84% of the young adult, 99% of the middle-aged and 99% of the older adult mailout packets were returned.

Part 2 – In lab session

Materials

Self-description. Participants were asked to create a self-description to share with their partner by writing down responses to three prompts: Please list one thing about yourself; Why do you participate in studies at Georgia Tech and how often? And what interested you about today's study? Participants then were asked to read through their answers while being recorded by the experimenter. Participants were told this recording would be shared with their partner who was participating at the alternative location. Participants also had their picture taken to share with their partner. This task was included to enhance the believability of partner when the participant viewed the target partner's picture and listened to her self-description.

Demographics Form. Participants filled out a demographics form that included information about age, gender, ethnic background and health.

Modified PANAS. Participants were asked to indicate the extent to which they were currently feeling 12 emotion words taken from the Positive Affect/Negative Affect Scale (Watson, Clark & Tellegen, 1988). Participants made their ratings on a 5 point scale ranging from very slightly or not at all to extremely. This measure was included before the participant was introduced to their partner and also after the interactive task to assess whether the task negatively affected participants' moods in the incompetent condition. This measure was added after pilot testing suggested that the incompetent condition was frustrating to several participants. In the present sample, the α was .89 for the positive affect scale and α was .74 for the negative affect scale.

Trait description of older adult target. Two target descriptions were used in this study, one was a positive stereotypic description (healthy active senior) and the other was a more negative stereotypic description (unwell, less active senior). These targets were created and described in the Pilot Part 2 section above (see Appendix B for self-descriptions of the target).

Initial Impression task. To measure initial impressions of the target partner, participants were asked to provide a written statement about their impressions of their partner and any thoughts that crossed their mind when listening to their partner's description. These descriptions were coded by two raters on a 5-point scale ranging from 'extremely negative' to 'extremely positive' with the mid-point indicating the impressions were a balance of both positive and negative traits. The coders achieved 80% reliability and discrepancies were resolved through discussion.

Lexical decision task. (Chasteen, Bhattacharyya, Horhota, Tam & Hasher, 2005)

To measure stereotype activation, participants completed a lexical decision task, as described in the materials section for Pilot Part 2. In this task, participants were asked to view a series of words flashed on the computer screen and to respond on each trial whether the word they saw was a real word or a nonsense word. Embedded within the displayed words were both positive and negative words related to aging stereotypes. To determine an index of stereotype activation, reaction times were compared across word type to determine whether participants were responding to stereotypic words faster than non-stereotypic words. When reaction times were faster for stereotypic words than non-stereotypic words this indicated that a stereotype was activated.

Interactive communication task. As described in detail in the materials section of Pilot Part 1, this task was a referential communication task in which participants described a picture such that a target partner could identify the same picture out of an array of nine similar pictures. To record the picture description, participants wore a lapel microphone which was attached to a digital recorder that recorded the verbal descriptions as audio files. The recorder was positioned so that it looked as though it was attached to the computer, despite not actually being connected. After describing the picture verbally, participants were asked to press a key to indicate that they had finished if they had not used the full amount of time allotted to them. After a brief pause, the participant received feedback that varied to give differential impressions of competence of the target, as described in pilot study Part 1.

Impressions of target task. The impressions task was designed much like the competence measure in Pilot Part 2. Participants rated the target partner on a list of 20

positive and negative traits. Participants evaluated these traits using a 7-point Likert scale (1 – strongly disagree, 7 – strongly agree). Some of the traits were related to competency (e.g. intelligent, competent), others were related to warmth (e.g. family-oriented, kind) and others were unrelated to either of those dimensions (e.g. active, unhealthy). A mix of traits was included to explore whether the trait impressions would be confined to the competence domain which was manipulated, or whether initial target stereotypes also influenced trait judgments in non-competence domains. This scale was subjected to a factor analysis using Maximum Likelihood extraction with oblimin rotation to determine the underlying subscales. Two subscales were theoretically interpretable into competence and warmth dimensions and accounted for 48.86 % of the variance. Scale scores were created such that higher mean scores indicated that the participant perceives the target to possess a given character trait. In the present sample, the reliabilities were acceptable, $\alpha = .92$ for the competence scale ($\alpha = .92, .86, .93$ for young, middle-aged and older adults respectively) and $\alpha = .73$ for the warmth subscale ($\alpha = .69, .76, .73$ for young, middle-aged and older adults respectively).

Accommodative Actions Scale. (Cai, Giles & Noels, 1998) The respect/obligation scale from the Accommodative Actions scale was used to determine what adjustments participants felt that they made to their partner, if any. Participants were asked to think about the interaction that they had with their partner and indicate the extent to which they agreed with the ten items on the scale, using 7-point Likert scales (1- strongly disagree through 7 – strongly agree). Items included statements such as, I spoke slower and I felt obligated to be polite. Higher mean scores indicated reporting of greater amounts of

accommodation to the partner. In the present sample, reliability was good, $\alpha = .82$ ($\alpha = .82, .79, .82$ for young, middle-aged and older adults respectively).

Attributions of performance. Participants were asked to indicate their impression of their partner's overall performance on the communication task and their own performance on the communication task on a 7-point Likert scale (1-very poor, 7- very good). Participants were also asked to indicate the extent to which they believed various factors may have influenced their partner's performance using a 7-point scale (1-strongly disagree, 7 – strongly agree). Items included statements such as, My partner's performance was due to her mental ability, and My partner's performance was due to external distractions. These scores were factor analyzed using Maximum Likelihood extraction with an oblique rotation. A 3 factor solution emerged reflecting variables related to internal states of the partner, external states of the partner, and the participant's ability to describe the pictures. This solution accounted for 46.92% of the variance. Factor loadings are listed in Table 6. Mean scores for each of the factors were created so that higher values indicated higher endorsement of that factor. In the present sample, $\alpha = .84$ for factor 1, $\alpha = .82$ for factor 2 and $\alpha = .65$ for factor 3 in the partner attribution scale.

Table 6: Factor Loadings for Partner Performance Questionnaires

	Factor
--	--------

	1	2	3
Understanding of task	0.85		
Ability to learn task	0.80		
Focused on Task	0.68		
Motivation	0.66		
Researcher's explanation of task	0.65		
Computer Skills	0.54		
Mental Ability	0.39		
Frustration with task		0.72	
External distractions		0.60	
Microphone not working		0.60	
Personal state		0.58	
Pictures unclear		0.56	
Feeling rushed		0.52	
Luck		0.51	
Pressure to be accurate		0.43	
Technical difficulties		0.43	
Difficulty of Task		0.37	
Researcher making him/her uncomfortable		0.36	
Physical Abilities		0.32	
Ability to describe picture clearly			0.62
Understanding of descriptions			0.58
Detailed descriptions			0.46

Participants were also asked to make attributions for their own performance using a similar scale. These scores were factor analyzed using Maximum Likelihood extraction

with oblique rotation and a 2 factor solution emerged. The first factor reflected internal states and the second factor reflected external influences. This solution accounted for 97% of the variance. Factor loadings are listed in Table 7. Mean scores for each of the factors were created so that higher values indicated higher endorsement of that factor. In the present sample, $\alpha = .99$ for factor 1, $\alpha = .99$ for factor 2 in the self attribution scale.

Table 7: Factor Loadings for Self Performance Questionnaire

	Factor	
	Figure 2.	2
Personal Frustration w/ task	.997	
Pressure to be accurate	.993	
Personal State	.989	
Discomfort due to researcher	.989	
Motivation	.961	
Technical difficulties		.999
External distractions		.986
Level of focus on task		.978
Difficulty level of task		.975
Understanding of task		.950

Open-ended report of Accommodation towards Partner. Participants were also given an open item response option at the end of the post-task questionnaire asking them if they accommodated to their partner (yes/no) and if yes to please indicate what they did to accommodate. In this sample, 47% of participants reported that they had

accommodated in some way for their partner. These open-ended responses were coded by two coders into 10 categories: slower, louder, simplify, repetition, focus on specific detail, speak clearly, added extra detail, spatial focus, avoided slang, not codeable. Codes indicated the presence of this type of accommodation being mentioned. Raters achieved 86% reliability and discrepancies were resolved through discussion.

Vocabulary Test. The Advanced Vocabulary Test (Ekstrom, French, Harman, & Derman, 1976) measured verbal ability. In this test, participants were asked to circle the one word, from a list of four words, which was closest in meaning to a target vocabulary word. The test had 36 items which increase in difficulty as the participant works through the test. The score was the number of correct responses.

Letter Sets Test. Participants completed the letter sets test (Ekstrom, French, Harman, & Derman, 1976). This task had a set of five letter sets (e.g. ABCD) and asked participants to infer the rule that tied the letter sets together. Participants eliminated the letter set that deviated from the pattern rule (e.g. JKMN violates the rule that all members of a set are in alphabetical order). The test had 30 items which varied in difficulty as the participant worked through the test. The score was the number of correctly completed sets.

Procedure

In the in-lab session, participants were informed that the purpose of the study was to investigate how people communicated in the context of an interactive computer task. Participants completed a consent form in which they were told that they would be

speaking to their partner through a microphone and that the session would be audio-recorded. Participants were also told that their partner was participating at our other testing facility (either off-campus or on-campus depending on participant's testing location). To increase the plausibility of the partner's existence, the first thing participants did was to complete a self-description and had their picture taken to share with their partner. Next they completed a demographics form while the experimenter claimed to be uploading the self-description information so that their partner could access it at the alternate location. The researcher then explained the interactive communication task and the lexical decision task to participants. After completing practice trials and indicating that they understood the procedure, participants were "introduced" to their partner by looking at the photo and listening to the self-description provided by the partner. Immediately following either a positive or negative target description, participants completed the initial impression task while the experimenter left the room to "check in with the experimenter at the other facility to make sure that the partner was ready to begin the interactive task". After participants finished the initial impression task, participants completed the first block of the lexical decision task. Next participants completed the interactive task which alternated with the lexical decision task for a total of 4 blocks each. The computer program provided responses for the simulated older adult target based on the condition to which the participant was assigned (competent or incompetent). Following the final block of the communication task, participants filled out questionnaires to assess their impressions of the target and their attributions about the partner's performance. Finally, participants completed a vocabulary measure and a measure of fluid intelligence to assess their overall cognitive functioning. At the end of

the session, participants were fully debriefed as to the purpose of the study and the reason for involving deception in the method.

Post-data collection- Coding of the verbal protocols

Following data collection, the audio files were cut into segments so that each individual picture description was one file. Each individual file lasted approximately 30 seconds to capture both the time that the picture was on screen as well as the participant's reaction to the feedback screen. The order of these files were then scrambled so that the coders were unable to determine what condition the participant was in and whether or not the verbal description was a first or second attempt. In total, 8408 segments were coded.

The spoken directives made by the participant were classified into three different message styles, one that reflected speech that was affirmative and two that reflected overaccommodating styles of speech. The three classifications are affirming, patronizing-directive and patronizing-overly nurturing as described in Hummert et al. (1998).

Affirming messages were appropriately directive, respectful and acknowledging of the target's competence. Such messages were characterized by intonation that varied indicating interest and statements that recognized the competence of the target.

Patronizing-directive messages were bossy, disrespectful, unsympathetic and were characterized by word emphasis or tone that suggested exasperation or impatience with the target partner. Alternatively, patronizing messages of the overly nurturing type were superficially respectful, implicitly questioned the target's competence, or were inappropriately intimate. Overly nurturing messages included highly varied intonation similar to that used in baby talk and simple childlike language. Descriptions were categorized by two coders by listening to the description and using both the content of the

message as well non-verbal markers like tone to determine the message type as outlined above. If messages fit multiple categories, coders categorized the message based on the predominant tone. The overall reliability of the coders was 92% (based on a random selection of 20% of codes). Codes were then aggregated to reflect the predominant tone used at each time point.

CHAPTER 4

RESULTS

This study was designed to address four research questions. The results section presents manipulation checks first and then is organized to address each of the four research questions in turn. All analyses were initially run including gender as a variable, however no systematic effects were found. Therefore, gender is not discussed further in the results.

Manipulation check: Initial impression matched positive/negative condition

Participants provided a written impression of their partner immediately after viewing the partner's picture and listening to the partner's self-description. These impressions were coded by two raters for negative or positive stereotypes of aging. These ratings were analyzed by a 3 (age: young, middle-aged, old) X 2 (target: positive, negative) X 2 (competence feedback: competent, incompetent) Univariate ANOVA which only found a significant effect of target, $F(1, 270) = 221.66, p < .01, \eta^2 = .45$. Supporting the hypothesis, positive stereotypes were reported in the positive condition ($M = 4.38, SE = .09$) more than in the negative condition ($M = 2.54, SE = .09$).

The initial impressions were also evaluated with the Linguistic Inquiry Word Count (LIWC; Pennebaker, Francis & Booth, 2001) program to determine the extent to which the content of the impressions reflected traits previously defined as warm, cold, competent or incompetent (see Appendix D). These proportions were analyzed with a 3 (age: young, middle-aged, old) X 2 (target: positive, negative) MANOVA. Both age differences, $F(20, 534) = 4.23, p < .01, \eta^2 = .14$ and target differences, $F(10, 267) = 13.07, p < .01, \eta^2 = .33$ emerged at the multivariate level. Examining the between

subjects effects showed age differences in the use of positive aging words, positive warmth words, positive competency words, negative health words, and grandparent related words, (see Table 8 for F values, means and Tukey post-hoc results). More importantly, target differences occurred for positive aging words, negative aging words, both positive and negative warmth words, negative competency words, negative health words, and grandparenting words, (see Table 8 for F values, means and Tukey post-hoc results). All of these condition differences were in the expected direction suggesting that our target was being perceived stereotypically in the intended direction at the start of the interactive task.

Manipulation check: Post-task impression of partner as a reflection of competency condition

The post-task impression scale was used to determine whether participants rated their partner in a way that reflected changes due to the competence feedback that occurred during the interaction. Examining a 3 (age: young, middle-aged, old) X 2 (competence feedback: competent, incompetent) UNIANOVA on the competency subscale showed that there was an age group X competence feedback interaction, $F(2, 280) = 4.15, p < .05, \eta^2 = .03$. Breaking down this interaction shows that all age groups gave higher ratings of competence in the competent condition compared to the incompetent condition $ps < .01$. However, in the incompetent condition middle-aged adults viewed the target more competently than did older adults or young adults (Tukey's HSD, $p < .05$ between each group, See Table 9 for means and standard errors).

Table 8: LIWC Analysis of Initial Impression Text: Differences in Word Type Category by Age

Factor	LIWC Word Type	<i>df</i>	<i>df</i> error	<i>F</i>	Means and Standard Errors					
					Young		Middle-aged		Older	
					<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Age Group	Positive Aging	2	276	3.64**	5.79 ^a	.82	8.95 ^b	.89	7.91 ^{a,b}	.80
	Warmth	2	276	5.64**	4.93 ^{a,b}	.53	6.15 ^b	.57	3.58 ^a	.52
	Competence	2	276	3.71*	1.50 ^a	.71	3.66 ^{a,b}	.77	4.02 ^b	.69
	Negative Health	2	276	7.50**	.32 ^a	.15	.49 ^a	.16	1.10 ^b	.15
	Grandparent	2	276	18.26**	1.62 ^a	.19	.40 ^b	.20	.12 ^b	.18

Table 8 (continued)

					Negative Target		Positive Target	
					<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Target	Positive	1	276	20.93**	5.34	.68	9.76	.68
	Negative	1	276	39.70**	2.32	.21	.45	.21
	Warmth	1	276	55.00**	2.58	.44	7.19	.44
	Coldness	1	276	5.80*	.13	.04	.01	.04
	Neg. Comp	1	276	11.25*	.54	.097	.08	.097
	Neg. Health	1	276	51.25**	1.28	.13	0.00	.13
	Grandparent	1	276	3.92*	.50	.16	.93	.16

Table 9: Age and Competency Feedback Differences in Impressions of Partner Competency

Competency Feedback	Young		Middle-aged		Older	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Competent	47.33	1.10	50.48	1.17	50.06	1.06
Incompetent	34.13 ^a	1.11	43.81 ^b	1.17	39.51 ^a	1.07

Question 1: Does initial stereotype activation persist or change throughout a communicative interaction as a function of age-related cues provided by the target?

In the literature using lexical decision tasks to measure stereotype activation, many researchers have used difference scores to determine whether individuals were responding more quickly to the stereotypic words compared to their own speed for neutral words. Therefore, the data was examined using difference scores comparing the difference in reaction time between positive aging words (or negative aging words) and the reaction time to neutral words. To prepare the data, all incorrect responses were first removed (4463 out of 132400 responses) then all outliers, defined as +/- 2 STD of the participant's own mean, were removed (6194 responses removed). These difference scores were then analyzed with a 3 (age: young, middle-aged, old) X 2 (target: positive, negative) X 2 (competence feedback: competent, incompetent) mixed model ANOVA with time included as a 4 level within-subjects repeated measure. For the measure of positive activation, a time X age interaction was significant $F(6, 536) = 2.22, p < .05, \eta^2 = .02$. The time X competence feedback condition was a trend $F(3, 267) = 2.28, p < .10$,

$\eta^2 = .03$. which was qualified by a time X target X competence feedback interaction, $F(3, 267) = 3.62, p = .05, \eta^2 = .04$ at the multivariate level. None of the other interactions were significant. All of these effects remained the same at the level of within-subjects effects. Within-subjects contrasts suggest a linear change, $F(2, 269) = 6.18, p < .01, \eta^2 = .04$ for the time X age interaction and a cubic change, $F(1, 269) = 7.61, p < .01, \eta^2 = .03$ for the time X target X competency feedback interaction. The patterns of data in Figure 1 and Figure 2 show that the data do not fit the expected pattern nor are they readily interpretable. Figure 1 shows that young adults begin with a positive view of older adults and this progressively changes to neutral. Middle-aged adults begin neutral, become positive during the task and then return to neutral at the end of the task. Older adults begin neutral and become positive over time.

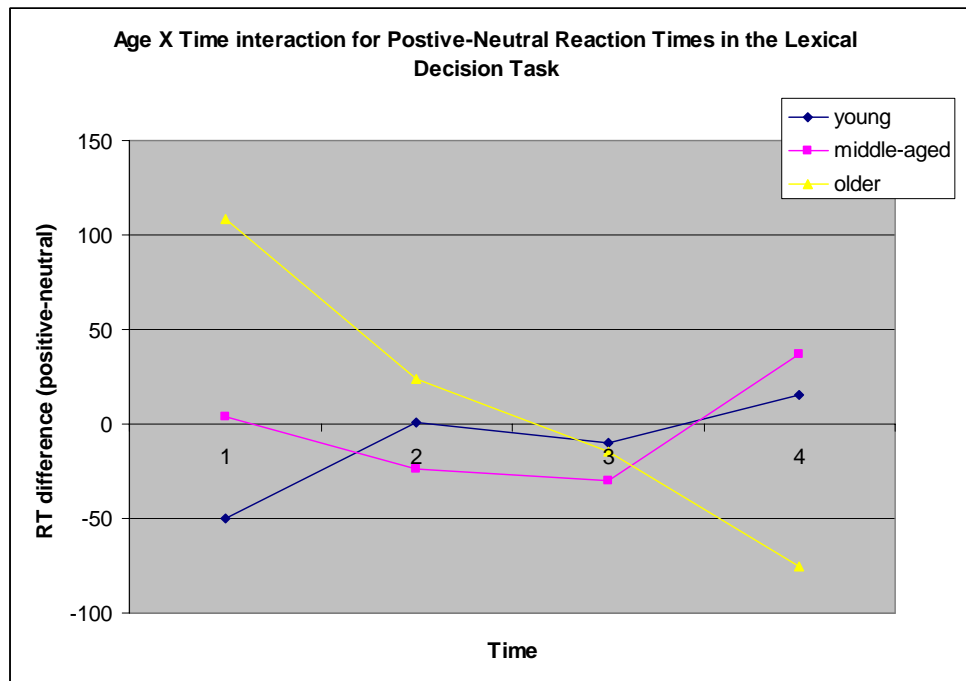


Figure 1. Note: Negative values indicate positive stereotype activation

The time X target X competence feedback interaction is more important for the present purposes because the initial impression coupled with the partner's feedback should either encourage or discourage a particular stereotype. However, the patterns observed do not fully match with the expectations of each condition (see Figure 2).

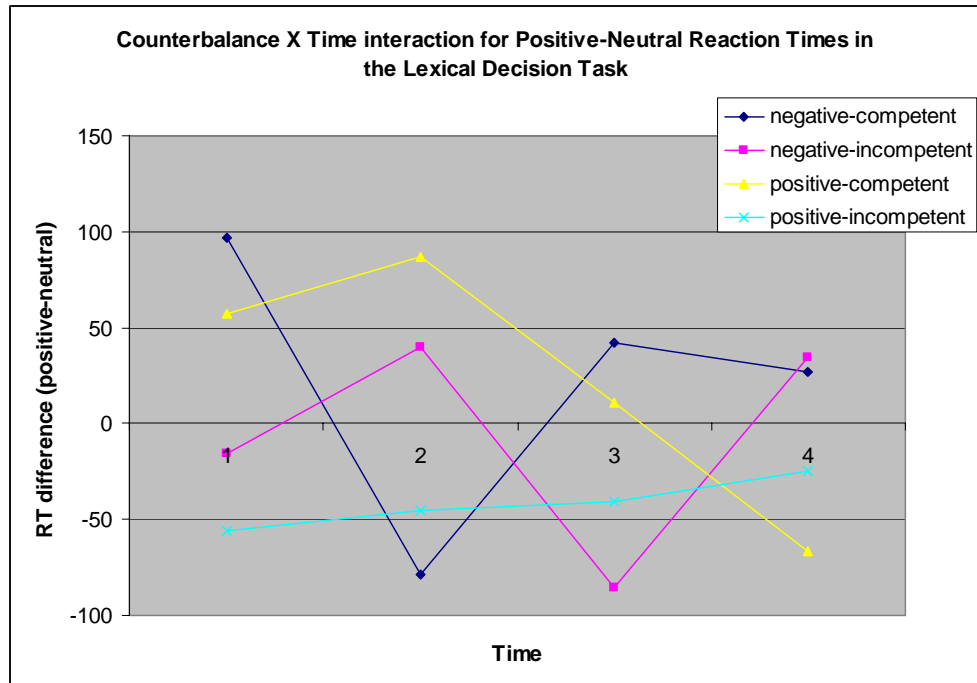


Figure 2. Note: Negative values indicate positive activation

For the negative-competent target, participants initially perceived their partner as neutral, this became more positive after the first interaction and then returned to neutral. This suggested that the competent feedback activates positive stereotypes but that this positive activation dissipated quickly. The rest of the patterns did not conform to expectations, nor are they easily interpretable. For the negative-incompetent target, we expected that participants would view this person negatively and this impression would remain negative; however, the pattern of results shows that this person was viewed positively

initially and then alternated between neutral and positive. The initial positive activation is concerning because the target was identical to the target in the negative-competent condition who produced negative initial activation. Furthermore, the manipulation checks showed that the negative partner was viewed negatively. For the positive-competent condition, this partner was not perceived positively until the final block prior to the end of the task. However, in the positive-incompetent condition this partner was viewed positively throughout the task. Again, it is problematic that the initial amount of positive activation was not equivalent for the two positive conditions. Further, the differences between conditions are not very large indicating that there may not have been as extreme a separation between positive and negative target conditions, despite separation between the conditions in the manipulation check.

A 3 (age: young, middle-aged, old) X 2 (target: positive, negative) X 2 (competence feedback: competent, incompetent) mixed model ANOVA with time included as a 4 level within-subjects repeated measure was used to examine the negative-neutral difference scores. This analysis showed no evidence for negative stereotypes activation; there were no significant effects or interactions by time, condition or age group, all non-significant $ps > .13$.

Given that pilot testing suggested that the lexical decision task was effectively tapping into stereotype activation, these results were perplexing. Several attempts were made to clarify the data and they are listed in Appendix E. None of the attempts produced interpretable differences in patterns between initial target conditions at Time 1 or in the patterns of change across time, target conditions or competence feedback condition.

Examining the post-task questionnaire for evidence of stereotype change

Given that the lexical decision task did not appear to accurately tap into changes in stereotypes throughout the task, the tasks used as a manipulation check were examined in more detail to determine whether they were consistent with the presence of stereotypes at the end of the interactive task. The post-task questionnaire had a total score and subscales of warmth, competence, positive and negative. These five scores were entered into a 3 (age: young, middle-aged, old) X 2 (target: positive, negative) X 2 (competence feedback: competent, incompetent) MANOVA. Main effects for age, target, competence feedback were found at the multivariate level, all $ps < .01$, η^2 ranging from .09 to .32. A target X competence feedback interaction was also found, $F(5, 267) = 2.55, p < .05, \eta^2 = .02$. Examining the between-subjects level effects shows that age differences were found for all scales except for warmth (all $ps < .01$, warmth $p > .20$, see Table 10 for values) with young adults reporting less positive impressions overall compared to middle-aged and older adults. The target X competence feedback interaction did not hold at the level of between-subject effects, $ps > .68$, however main effect differences of target and competence feedback were found in the expected directions for all scales, $ps < .01$, except for warmth did not differ by competence feedback condition, $p > .10$ (see Table 10 for F s, significance values, and means). Participants viewed the competent targets more competently than the incompetent targets suggesting that participants adjusted their impressions to reflect the competence information that was gained during the interaction. Participants viewed the positive targets more positively for all traits compared to negative targets.

Table 10: Post Task Questionnaire Differences by Age, Target and Competence Feedback

Trait	<i>df</i>	<i>df</i> error	<i>F</i>	η^2	Means and Standard Errors					
					Age Group					
					Young		Middle-aged		Older	
					<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Overall	2	271	23.03**	.15	98.01 ^a	1.44	111.83 ^b	1.53	107.41 ^b	1.41
Competence	2	271	16.43**	.11	40.83 ^a	.77	47.14 ^b	.82	44.89 ^b	.75
Warmth	2	271	1.45	.01	10.35	.23	10.88	.25	10.39	.23
Positive	2	271	20.67**	.13	4.97 ^a	.07	5.63 ^b	.08	5.41 ^b	.07
Negative	2	271	19.26**	.12	3.15 ^a	.09	2.38 ^b	.09	2.62 ^b	.09

Table 10 (continued)

					Target			
					Positive		Negative	
					<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Overall	1	271	26.12**	.09	110.05	1.19	101.44	1.20
Competence	1	271	9.37**	.03	45.67	.64	42.91	.64
Warmth	1	271	32.82**	.11	11.32	.19	9.78	.19
Positive	1	271	27.21**	.09	5.56	.06	5.12	.06
Negative	1	271	20.45**	.07	2.49	.07	2.95	.07
Competence Feedback								
					Competent		Incompetent	
					<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Overall	1	271	112.72**	.29	114.69	1.19	96.81	1.20
Competence	1	271	120.79**	.31	49.25	.64	39.33	.64
Warmth	1	271	2.39	.01	10.75	.19	10.33	.19
Positive	1	271	76.34**	.22	5.71	.06	4.97	.06
Negative	1	271	107.30**	.28	2.19	.07	3.25	.07

Summary for Question 1: The lexical decision task did not appear to be sensitive to changes in stereotype activation over the course of this task, therefore Question 1 can not fully be addressed. Speculation as to why this measure may have failed will be discussed further in the Discussion section of this paper. The lack of sensitivity of the lexical decision task, however, does not preclude analyses for the remaining research questions. Tasks that were used as a manipulation check suggested that stereotypes were activated initially, as individuals in the positive condition viewed their partner more positively than negatively. Analysis of the words used in these impression descriptions suggested that individuals in the positive conditions used more positive words and fewer negative words. In the follow-up questionnaire, participant responses indicated that the initial impressions were updated to reflect the competence information gained during the interactive task. Age differences on the post-task questionnaire were consistent with previous studies in that young adults had less positive impressions of their older partner compared to middle-aged and older adults who had more positive impressions overall.

Question 2) Do initial communication patterns directed towards an older adult change over the course of an interaction as a function of the competency of that target?

Speech segments were coded into one of three categories of speech style (affirming, patronizing-directive, patronizing-overly nurturing). Due to the categorical nature of the dependent variable, Chi-square tests were employed to analyze the initial communication data. To address the within-person and between-person variation over time, the data were analyzed using the hierarchical linear modeling (HLM) program developed by Bryk & Raudenbush (1992).

Initial communication patterns

Initial communication patterns were assessed by conducting a Chi-square analysis to examine age and initial target (positive or negative) differences at the very first time point of speech (Time 1, Picture 1). No age or initial target differences were found for the very first instance of speech, χ^2 significance values all greater than $p > .11$; participants predominantly used an affirmative tone (91.5% of young adults, 82.7% of middle-aged adults, 88.7% of older adults).

Examining the prevalence of overaccommodative speech throughout the interactive task

Examining the data suggested that the nurturing tone was used infrequently, with 20% of participants coded as using this tone for at least one picture description. Of those individuals who used a nurturing tone, it was used more frequently by middle-aged and older adults (29.1% and 19.4% respectively) compared to young adults (11.3%), $\chi^2 (2) = 9.10, p < .05$. By comparison, directive tone was used by 76.6% of participants to describe at least one picture. There were no age differences $\chi^2 (2) = .45, p > .79$ in the use of directive tone. Differences emerged in the use of directive tone by competence and target conditions; directive tones were used with incompetent targets more than competent targets, $\chi^2 (3) = 10.12, p < .05$. It is interesting to note that within the competent condition, directive tones appeared less frequently for targets initially portrayed more negatively (62.9%) compared to those initially portrayed positively (79.7%), $\chi^2 (3) = 10.12, p < .05$. However there were no differences between initial target type for incompetent targets, $p > .10$.

The individual picture descriptions were aggregated to create a predominant tone variable for each time point. Given that use of a nurturing tone occurred infrequently it

rarely appeared in the aggregate levels of predominant tone (31 out of 1104 possible codes). Therefore individuals who exhibited a nurturing tone were combined with those classified as using directive speech to form a binary variable reflecting the use of overaccommodative or patronizing speech.

Examining differences in speech styles across time using Hierarchical Linear Modeling

The HLM program developed by Bryk and Raudenbush (1992) was used to examine the change in speech style over time by age group, initial target and competence feedback conditions. Bernoulli modeling was implemented to account for the categorical nature of the outcome variable (overaccommodative or not overaccommodative tone). The level 1 model included the repeated measure of speech tone over time per individual. Both linear and curvilinear models were tested but there were very minimal differences between the two models, therefore the more parsimonious linear results are reported. The level 2 model tested whether the change in overaccommodative speech over time could be explained by the variables of age group (young, middle-aged and older), competence feedback (competent, incompetent) and target (negative, positive) and the interactive term of competence feedback X target. Unit-specific model with robust standard error values were interpreted.

Table 11 shows the conditional model results. Focusing initially on the fixed effects in the upper portion of the table, the estimate for the intercept is statistically significant in a negative direction. This suggests that on average, an affirmative speech tone was more likely than an overaccommodative tone. The expected log-odds overaccommodation rate = $1/1+\exp\{-1.587\}$ (Bryk & Raudenbush, 1992), thus there was a 38.7% rate of overaccommodation on average. Next a trend appeared for age group,

suggesting that older adults used an overaccommodative tone slightly more frequently on average (increases the log-odds by 3.7%). Being assigned to the incompetent feedback condition and working with a positive target condition were also related to an increased likelihood of receiving overaccommodative tone on average (increase in log-odds by 18.4% 15.6% respectively). A competence feedback and target interaction also emerged reflecting the finding that the positive incompetent targets had an increased probability of receiving overaccommodative speech compared to the other conditions.

Table 11: HLM Model for change in Overaccommodation Across Time (T1-T4)

Fixed Effect		Coefficient	SE	T-ratio
For Intercept 1 (P0)				
Intercept	(B00)	- 1.59	.13	- 12.61 ^{**}
Age group	(B01)	0.27	.15	1.77 ⁺
Competence	(B02)	2.34	.80	2.91 ^{**}
Target	(B03)	1.75	.81	2.17 [*]
Competence X Target	(B04)	- 1.13	.50	- 2.25 [*]
For Time slope (P1)				
Intercept	(B00)	0.21	.08	2.67 ^{**}
Age group	(B01)	- 0.09	.09	- 1.01
Competence	(B02)	- 0.88	.49	- 1.80 ⁺
Target	(B03)	- 0.93	.50	- 1.85 ⁺
Competence X Target	(B04)	0.74	.31	2.42 ^{**}

Note. ⁺ $p < .10$ ^{*} $p < .05$ ^{**} $p < .01$, $df = 271$ for Level 1 and 809 for Level 2

Examining the effects on the slope of change in overaccommodative tone over time shows that variation over time occurs, with a slight increase in overaccommodative speech from Time 1 through Time 4 (expected log-odds rate of 83%). Age was not a predictor of change over time and trends emerged for competence feedback and target, however these trends were qualified by a competence feedback X target interaction. Examining the intercepts for each of the competence feedback X target slopes separately showed that only the slope for the initially positive followed by incompetent feedback showed a significant change over time (see Table 12 for values).

Table 12: Competence Feedback by Target Interaction on the Slope of Time

Interactive Term	Coefficient	<i>SE</i>	<i>T</i> -ratio
Negative Competent	0.17	.15	1.10
Negative Incompetent	0.04	.13	0.32
Positive Competent	-0.02	.11	-0.17
Positive Incompetent	0.61	.13	4.81**

Note. ** $p < .01$, $dfs = 266, 268, 289, 270$ respectively

It was also of interest to examine whether change between successive time points occurred at different rates by age group, competence feedback and initial target condition. Therefore, contrasts were used to examine whether at each successive time point the direction of the slope changed, i.e. examining the amount of overaccommodative tone change as feedback was gained from the partner. In all analyses, the competence by target interaction was not significant therefore the models were run with only the main effects

of age group, competence feedback and target included (see Table 13). The first contrast showed an increase in overaccommodative speech from Time 1 to Time 2 which was predicted by the target variable. Positive targets received more overaccommodative speech in Time 2; this effect likely reflects the appearance of unexpected errors that occur in Time 2. The second contrast showed a slight decrease in overaccommodative speech at Time 3, and this was predicted by age group; younger individuals shifted to using less overaccommodative speech at Time 3 when compared to changes in speech that occurred in the other age groups. And finally, examining the third contrast suggested that in Time 4 there was an increase in overaccommodative tone overall, but this was not predicted by any of the fixed factors that were included in the Level 2 model.

Table 13: HLM Model using Contrasts to Measure Incremental Change over Time

Fixed Effect		Coefficient	SE	T-ratio
For Contrast 1 Slope (Time 1 to Time 2)				
Intercept	(G10)	0.51	.12	4.21**
Age group	(G11)	- 0.00	.15	-0.02
Competence	(B02)	0.01	.24	0.45
Target	(B03)	0.41	.24	1.70 ⁺
For Contrast 2 Slope (Time 1 and Time 2 to T3)				
Intercept	(B00)	- 0.24	.06	- 4.05**
Age group	(B01)	- 0.15	.07	- 2.30*
Competence	(B02)	0.20	.12	1.63
Target	(B03)	0.05	.12	0.46

Table 13 (continued)

For Contrast 3 Slope (Times 1, 2, and 3 to Time 4)

Intercept	(B00)	0.17	.03	4.88**
Age group	(B01)	- 0.01	.04	- 0.20
Competence	(B02)	0.09	.07	1.29
Target	(B03)	0.08	.07	1.22

Note. ⁺ $p < .10$ ^{*} $p < .05$ ^{**} $p < .01$, $df = 1093$

Examining speech styles during second description attempts.

In the event that the partner made a mistake, participants were asked to make a second attempt at describing the picture they had just seen. The predominant tone for these second attempts were also coded and analyzed for differences between age groups. The analyses in Time 1 and Time 3 only include second attempts for participants in the incompetent condition and therefore can not be modeled using HLM due to missing data. Examining these two blocks using a Chi-square analysis found no differences in speech by age group or by target (positive, negative), $\chi^2_s(1) < 1.4$, $ps > .23$. Second attempts occurred at Time 2 and at Time 4 for both competent and incompetent targets, so the analyses at these two time points included both competency feedback conditions. As with the initial speech attempt data, HLM with Bernoulli modeling was implemented to account for the categorical nature of the data and the unit-specific model with robust standard error values was interpreted.

Table 14 shows the conditional model results. The estimate for the intercept is statistically significant in a negative direction suggesting that on average, an affirmative speech tone was more likely than an overaccomodative tone on second attempts. Calculating the expected log-odds overaccomodation rate showed a 54.6% rate of overaccomodation on average. Mirroring the initial attempt data, older age group, incompetent feedback condition and positive initial target condition all were associated with using an increased amount of overaccomodative tone on second attempts on average (increase in log-odds by 8.5%, 31.3% and 28.3% respectively). In contrast, the factors that predicted the slope of overaccomodative speech over time differed between first and second attempts. For the second attempts, the age group, competence feedback and initial target condition did not predict the slope of overaccomodative speech over time in the Level 2 analysis.

Table 14: HLM Model for Second Attempts

Fixed Effect		Coefficient	SE	T-ratio
For Intercept 1 (P0)				
Intercept	(B00)	- 0.83	.12	- 7.11**
Age group	(B01)	0.34	.13	2.67**
Competence	(B02)	2.46	.75	3.28**
Target	(B03)	1.97	.80	2.46*
Competence X Target	(B04)	- 1.17	.46	- 2.53*

Table 14 (continued)

For Time slope (P1)				
Intercept	(B00)	0.14	.07	2.00*
Age group	(B01)	- 0.01	.08	- 0.18
Competence	(B02)	- 0.48	.47	- 1.04
Target	(B03)	- 0.82	.49	- 1.67
Competence X Target	(B04)	0.44	.28	1.59

Note. * $p < .05$ ** $p < .01$

Summary for Question 2. Participants, regardless of age or initial impression of their partner initially spoke to their partner with an affirmative tone. HLM analyses showed that age, competence feedback and whether the target was initially portrayed in a positive or negative way all influenced the odds of a person using overaccommodative speech on both initial and second attempts at describing the pictures. Examining the rate of change over time showed that competence feedback and target were predictors of the change in overaccommodative speech on first description attempts across the course of the interaction but age group was not. None of the fixed factors predicted change in overaccommodative tone used on second attempts at describing the pictures over the course of the interaction.

Question 3) Do changes in stereotype activation as a function of competency level influence subsequent evaluative impressions of the target?

Due to the problems with the lexical decision task as a measure of stereotype activation, this study does not have a measure of stereotype change. However this study can still address whether initial stereotypes predict subsequent evaluative impressions over and above the competency manipulation and age. Evaluative impressions included perceptions of the partner as well as attributions of causes for their partner's behavior.

Predicting impressions of the partner by initial stereotype and feedback condition

Separate hierarchical regression analyses were used to determine the predictive utility of initial stereotypes, age and competence condition in predicting evaluative impressions overall, and impressions of warmth and competence. Cognitive variables were uncorrelated with impressions of the partner, all r s $< .10$, so they were not included in the regressions. First, the initial impression was entered into the model, followed by competence condition and then age. An incremental F test of the difference in R^2 between the three variables was computed to determine whether age made a significant contribution to the total R^2 .

Table 15: Regression Predicting Final Impressions from Initial Impression, Competency Condition and Age

<u>Step Predictor Entered</u>	<u>R^2</u>	<u>F_{change}</u>	<u>β</u>
Overall Impression			
1. Initial Impression	0.12	32.69	0.32**
2. Initial Impression	0.34	99.84	0.30**
Competence Condition			-.49**
3. Initial Impression	0.39	20.13	0.30**
Competence Condition			-.49**

Table 15 (continued)

Age			0.21**
<hr/>			
	Warmth		
1. Initial Impression	0.12	37.77	0.35**
2. Initial Impression	0.13	2.32	0.34**
Competence Condition			-.09
3. Initial Impression	0.13	0.01	0.34**
Competence Condition			-.09
Age			-.01
<hr/>			
	Competence		
1. Initial Impression	0.04	12.27	0.21**
2. Initial Impression	0.31	108.38	0.18**
Table 15 (continued)			
Competence Condition			-0.52**
3. Initial Impression	0.34	13.89	0.18**
Competence Condition			-.52**
Age			0.18**
<hr/>			

Overall impression. Table 15 reveals that initial impression, competence condition and age all influenced the overall evaluative impression of the target partner.

The more positive the initial impression, the older the participant and the more competent the person appeared to be the more positive the overall impression was of the target partner. The same pattern of results for initial impression and competence condition held when each individual age group was examined separately.

Warmth impression. Table 15 reveals that initial impression was the only influence on the final warmth impression of the target partner. Targets who were initially viewed positively were more likely to be viewed as warm after completing the interactive task. The same pattern of results held when each individual age group was examined separately.

Competence impression. Table 15 reveals that initial impression, competence condition and age all influence the final competence impression of the target partner. The more positive the initial impression, the older the participant and the more competent the person appeared to be the more the target partner was viewed as competent at the end of the interactive task. Examining the data to see whether this pattern of results held for each age group individually showed that part of this effect was driven by the young adults. Both middle-aged and older adults based their competence impression solely on the feedback that occurred during the task; however, young adults used both the feedback from the task in addition to their initial impression to inform their final impression of competence of the target partner (see Table 16).

Table 16: Regression Predicting Final Impressions from Initial Impression and Competency Condition, Split by Age Group

Step Predictor Entered	<i>R</i> ²	<i>F</i> _{change}	β
Young Adult			
1. Initial Impression	.06	5.92	0.24**
2. Initial Impression	.48	74.49	0.22*
Competence Condition			-0.65**
3. Initial Impression	.49	1.98	0.22*
Competence Condition			-.65**
Age			-.12
Middle-aged Adult			
1. Initial Impression	.03	2.77	0.18**
2. Initial Impression	.20	17.72	0.14
Competence Condition			-0.42**
3. Initial Impression	.21	0.44	0.14
Competence Condition			-.42**
Age			.07
Older Adult			
1. Initial Impression	.03	2.68	0.16
2. Initial Impression	.31	39.22	0.15
Competence Condition			-0.53**
3. Initial Impression	.31	.61	0.14
Competence Condition			-.53**
Age			-.07

Predicting attributions of performance by initial stereotype and feedback condition

A second question was whether or not initial impressions, competence condition and age would predict attributions that were made of the target partner's performance on the task. Attributions fell into three factors, performance due to a characteristic of the partner, performance due to something external to the partner, or performance due to one's own ability to describe pictures. First, the affects of age, target condition and competence feedback on perceptions of one's partner and one's own performance were examined. Second, participants' attributions for the partner's performance were analyzed by age, target condition and competence feedback. And finally, separate hierarchical regression analyses were used to determine the predictive utility of the coded initial impression, competence condition, and age in predicting the three types of attributions of partner performance.

Age, target and competence feedback differences in perceptions of performance

A 3 (age: young, middle-aged, old) X 2 (target: positive, negative) X 2 (competence feedback: competent, incompetent) MANOVA was conducted on the ratings of partner and personal performance. Multivariate tests showed main effects of age, target and competence feedback but these were qualified by an age X competency feedback interaction, $F(4, 542) = 5.51, p < .01$ and a target X competence feedback interaction, $F(2, 271) = 3.13, p < .05$. Between subjects effects tests showed that there was a significant age X competency feedback interaction in evaluation of the partner's performance, $F(2, 272) = 10.16, p < .01, \eta^2 = .07$ but not in the evaluation of own performance, $p > .10$. Breaking down the interaction, for the evaluation of the partner's performance, all age groups reported that the competent target had better performance

than the incompetent target, Tukey post hoc, $p < .01$ (see Table 17 for marginal means and standard errors). Young adults rated their partner as having poor performance overall compared to middle-aged and older adults in the two incompetent conditions, and all age groups rated the competent targets similarly.

Between subject effects tests showed that the target X competence feedback interaction occurred in the evaluation of own performance, $F(2, 272) = 4.90, p < .05, \eta^2 = .02$. All participants reported positive performance in the competent and less positive performance in the incompetent conditions. Individuals rated their own performance as worst in the positive incompetent condition (see Table 16 for marginal means and standard errors).

Table 17: Means and Standard Errors for Perceptions of Performance

Perceptions of Partner Performance						
Competency feedback	Young		Middle-aged		Older	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Competent	6.46	.09	6.64	.10	6.60	.09
Incompetent	3.54	.20	5.09	.21	4.61	.19
Perceptions of Own Performance						
	Positive Target		Negative Target			
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>		
Competent	6.14	.09	6.09	.09		
Incompetent	4.67	.13	5.11	.13		

Age, target and competence feedback differences in attributions for partner performance

A 3 (age: young, middle-aged, old) X 2 (target: positive, negative) X 2 (competence feedback: competent, incompetent) MANOVA was conducted on the factor scores. Multivariate tests showed that age, target and competence feedback condition were significant but this was qualified by an age X target interaction, $F(6, 542) = 1.664$, $p = .05$. There was also a target X competence feedback interaction $F(3, 271) = 5.55$, $p < .01$. Examining the tests of between subject effects showed that the age x competence feedback interactions were not significant for the individual factor scores, $ps > .20$ and the target X competence feedback interaction was only found in the use of internal attributions of the partner $F(1, 273) = 11.20$, $p < .01$. No differences were found in the amount of internal reasons for performance attributed to the negative partner ($M = 4.04$, $SE = .16$ for competent and $M = 4.07$, $SE = .15$ for incompetent), whereas more internal reasons were cited for positive competent ($M = 4.68$, $SE = .15$) compared to positive incompetent partners ($M = 3.68$, $SE = .16$).

Comparing the endorsement of items that made up the factors by competence condition suggested that individuals endorsed items such as understanding the task, focus on the task, motivation, and researcher's explanation of the task more for the competent target than for the incompetent target,. Endorsement of items such as frustration, feeling rushed, luck and technical difficulties were higher for the incompetent target compared to the competent target, all t values > 3.55 , $p < .0025$ (Bonferroni correction; see Table 18 for t values, means and standard errors).

Table 18: Competence Condition Differences in Attributions of Partner Performance

	<i>t</i>	<i>df</i>	Competent		Incompetent	
			<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Factor 1						
Understanding of task	3.56	261.19	4.56	.18	3.77	.13
Focused on Task	3.56	265.83	5.08	.16	4.38	.12
Motivation	3.82	262.39	4.65	.16	3.91	.12
Researcher's explanation of task	4.42	267.50	4.27	.18	3.27	.14
Factor 2						
Frustration with task	-6.98	280.25	2.94	.13	4.15	.12
Feeling rushed	-3.78	279	2.90	.15	3.68	.14
Luck	-3.91	280	2.42	.14	3.21	.15
Technical difficulties	-4.42	280	2.54	.13	3.42	.15
Factor 3						
Detailed descriptions	4.83	275.56	5.97	.11	5.19	.12

Note: All values are significant at .0025 level (Bonferroni adjustment for number of tests)

Predicting attributions of partner's performance by initial impression, competence and age

First, the initial stereotype activation level was entered into the model, followed competence condition and then age. An incremental *F* test of the difference in R^2 between the three variables was computed to determine whether age made a significant

contribution to the total R^2 . Speech style was also examined as a predictor of attributions but it was non-significant across attribution types, $ps > .30$.

Internal attributions of the partner's performance. Table 19 reveals that competence condition was the only influence on internal attributions of the target partner. Incompetent target performance in the task was related to weaker internal attributions. Examining the data to see whether this pattern of results held for each age group individually showed that both middle-aged and older adults showed this pattern whereas young adults' internal attributions were not predicted by their initial stereotypes or the competence condition (see Table 20).

Table 19: Regression Predicting Attributions by Initial Impression, Competency Condition, and Age

Step Predictor Entered	R^2	F_{change}	β
Regression: Internal Attributes of Partner's Performance			
1. Initial Impression	.001	.28	0.03
2. Initial Impression	.033	9.17	0.02
Competence Condition			-0.18*
3. Initial Impression	.033	.05	0.02
Competence Condition			-0.18*
Age			0.01
External Attributes			
1. Initial Impression	.20	5.62	-0.14**

Table 19 (continued)

2. Initial Impression	.09	20.53	0.13*
Competence Condition			0.26**
3. Initial Impression	.13	13.67	-0.13*
Competence Condition			0.26**
Age			-0.21**

Participant's Ability as Cause for Performance

1. Initial Impression	.001	.35	0.04
2. Initial Impression	.01	3.46	0.03
Competence Condition			-0.11**
3. Initial Impression	.03	5.03	0.03
Competence Condition			-0.11
Age			-0.13*

External attributions of the partner's performance. Table 19 reveals that initial impression, competence condition and age were predictive of external attributions of the target partner. Weaker external attributions were made when the partner was positive and incompetent and when the participant was older. However, the pattern was different within each age group; competency condition was significant only for young and older adults. When the partner appeared more competent more external attributions were made for her performance. Neither initial impression or competence condition predicted

middle-aged adults' attributions (see Table 20). The external attributions in the scale tended to be reasons that could explain poor behavior rather than positive behavior so at first glance this result is hard to interpret. Examining specific items showed that endorsement on this scale was lower for competent compared to incompetent targets, but for the competent targets the items most highly endorsed on average were the pressure to be accurate, difficulty of the task, and physical abilities (e.g. eyesight).

Table 20: Regression Predicting Attributions by Initial Impression and Competency Condition, Split by Age Group

<u>Step Predictor Entered</u>	<u>R^2</u>	<u>F_{change}</u>	<u>β</u>
Internal Attributes			
Young Adults			
1. Initial Impression	.004	.43	-0.07
2. Initial Impression	.007	.27	-0.07
Competence Condition			-0.05
Middle Adults			
1. Initial Impression	.00	.01	0.01
2. Initial Impression	.06	5.12	-0.01
Competence Condition			-0.24*
Older Adults			
1. Initial Impression	.02	1.72	0.13
2. Initial Impression	.07	5.57	0.12
Competence Condition			-0.23*

Table 20 (continued)

	External Attributes		
	Young Adults		
1. Initial Impression	.01	.73	-0.09
2. Initial Impression	.09	8.97	-0.07
Competence Condition			0.29*
	Middle Adults		
1. Initial Impression	.04	3.35	-0.20
2. Initial Impression	.07	3.21	-0.18
Competence Condition			0.19**
	Older Adults		
1. Initial Impression	.02	1.72	-0.13
2. Initial Impression	.10	8.73	-0.12
Competence Condition			0.29*
	Participant Ability as Attribution of Performance		
	Young Adults		
1. Initial Impression	.00	.003	-0.01
2. Initial Impression	.05	5.19	-0.02
Competence Condition			-0.23*
	Middle Adults		
1. Initial Impression	.00	.00	-0.01
2. Initial Impression	.001	.06	-0.01
Competence Condition			-0.03

Table 20 (continued)

	Older Adults		
1. Initial Impression	.01	.91	0.10
2. Initial Impression	.02	1.22	0.09
Competence Condition			-0.11

Participant's ability as a cause of partner's performance. Table 18 reveals that age was the only predictor of this attribution, with increased age being associated with attributing their partner's performance to the participant's own personal ability. Examining the data to see whether specific predictors matter for each age group individually showed that competency predicted attributions only for young adults. Young adults in the incompetent condition were less likely to attribute their partner's performance to the participant's own personal descriptive ability (see Table 20).

Summary for Question 3: Initial impressions appear to impact overall impressions and impressions of warmth for young, middle-aged and older adults. Competence impressions appear to be based solely on the relevant competent feedback information for middle-aged and older adults, whereas young adults also factor in their initial impressions when making competence judgments. Attributions of performance were predominantly influenced by the competence feedback participants received, rather than initial impressions of the target. For targets that were initially viewed positively, competent performance was attributed to internal characteristics whereas incompetent performance was less strongly attributed to internal characteristics.

Question 4: Age identity as an influence on middle-aged adults' speech patterns

Middle-aged individuals who feel that they are in the process of transitioning into an older adult group may behave as though an older adult is a member of his/her ingroup and treat this person in a more affirmative way (Harwood et al., 1995). Age group identity was measured with two different scales. The first was a measure of how old a person feels and the second was how identified with their age group they feel. To determine whether there were age group differences, a MANOVA was run on the two age group identity measures. There was a main effect of age group at the multivariate level, $F(4, 524) = 169.02, p < .01$, which remained at the between subjects level for both scales, $F(2, 263) = 542.36, p < .01$ and $F(2, 263) = 3.36, p < .05$ respectively. Examining the means for the measure of how old a person feels, young adults reported on average feeling in their teens ($M = 1.71, SE = .08$), middle-aged adults felt in their late 30s ($M = 3.85, SE = .08$) and older adults felt in their early 50s ($M = 5.25, SE = .07$), Tukey post hoc $ps < .01$.

It is also informative to look at the distribution of responses for this scale. Young adults were all accurate in saying they were felt in their teens or 20s. Middle-aged adults reported feeling younger than their actual age, with 54.1% of middle-aged adults saying they felt 37.5 or younger, 40% feeling between 40-50 and 6% reporting they felt older than 50 years old. Of the older adult group, 42.2% said they felt 50 or younger, 45% said they felt between 50-60 and 12.9% said they felt between 62.5 – 72.5 years old. Actual chronological age was highly correlated with this scale score, $r = .93, p < .01$, with older individuals reporting higher age identities. This pattern held within each age group as

well, $r = .42$ for young adults, $r = .51$ for middle-aged and $r = .61$ for older adults, all $p < .01$.

On the second scale, young adults identified more strongly with their age group ($M = 5.55$, $SE = .14$) compared to older adults ($M = 5.06$, $SE = .13$) but did not differ from middle-aged adults ($M = 5.15$, $SE = .14$), middle-aged adults did not differ from older adults and all age groups responded in the “slightly” to “somewhat” agree range on the scale. Only 15.3% of middle-aged individuals reported that they didn’t feel identified with their age group compared with 18.6% of older adults and 9.9% of young adults. 63.5% of middle-aged adults had an average score indicating that they at least slightly agreed that they identified with being a member of their age group which was similar to the other two age groups (66.7% of older and 79% of young adults). The age group identity score correlated with age $r = -.13$, $p < .05$ overall, but within each age group, chronological age was uncorrelated with identification with one’s age group, $r = .11$ for young adults, $r = .10$ for middle-aged and $r = .19$ for older adults.

Combined, these data suggest that middle-aged and older adults reported younger age group identities than would be assumed based on the participants’ chronological age although they are not significantly underestimating their age groups. Further, it does not appear that middle-aged adults feel differently about identification with their age group compared to older adults and identification with one’s age group is not related to one’s current age. It is not that case that ‘younger’ middle-aged adults are more strongly identified with their middle-aged group than older middle-aged adults who may be nearing the transition into older adulthood. The majority of middle-aged adults report feeling identified with their middle-aged age group.

Age group identity scores were entered into logistic regressions to determine whether they predicted overaccommodative speech styles at Time 1 and/or predicted speech styles at Time 4. The first scale, which measured how old a person feels, was not a significant predictor of overaccommodative speech at Time 1, $p > .10$ or Time 4, $p > .40$. The second scale that measured identification with one's age group was not predictive at Time 1, $p > .31$ but showed a trend at Time 4, $p = .07$. This trend was eliminated after including age and competence condition as predictors into the model, age group identification, $p > .10$.

Exploratory Variables and Analyses

Several scales were included to measure variables that may have been predictive of individuals' speech styles when interacting with an older adult. Two measures of expectations about language use, two measures of age stereotypes, a measure of amount and quality of interaction with older adults and a measure of caregiver status were included. All of the scales, with the exception of one age stereotype measure, showed age differences in typical directions (see Appendix F for details). In the interactive task, the participant was in the speaking position, therefore, it was thought that the scores of the perceptions of older adults' receptive language, respect towards older adults, the amount of interaction with older adults and caregiver status may be relevant to the type of speech participants used initially with their partner. All of these measures were included in logistic regressions to determine whether they predicted speech styles at Time 1 (initially) and Time 4 (at the end) with the partner. Only the Respect toward Older Adults subscale of the Communicative Behavior questionnaire was predictive of speech at Time 1, $B = -.27$, $SE = .13$, $n = 275$, $p < .05$ where increased levels of respect was related to more

affirmative speech tone. By Time 4, Respect toward Older Adults was no longer a predictor of speech tone, $B = -.007$, $SE = .11$, $n = 274$ $p > .90$. All other analyses were non-significant, $p < .70$.

Participant speech adjustments: self-reported written response

This study also had measures of whether participants noticed that they had adjusted their speech toward their partner and if so, what adjustments participants reported making. In this sample, 47% of the participants reported that they had accommodated in some way to their partner. Young and older adults were equally likely to report an adjustment for all partners but middle-aged adults were more likely to report accommodations in the incompetent conditions, $\chi^2 (2) = 19.30$, $p < .01$. Nine different categories were coded, speaking slower, speaking louder, simplifying speech, repeating words, specific detail, clear enunciated speech, added details, focused on spatial aspects of picture and avoiding slang. Of the individuals who reported that they spoke more slowly, 50% were young adults, 22.7% were middle-aged and 17.6% were older adults $\chi^2 (2) = 13.89$, $p < .01$. Slower speech was reported most frequently in the negative incompetent condition (44.7%), $\chi^2 (3) = 7.60$, $p = .05$. Almost 30 % of young adults who reported adjusting reported that they simplified their speech, compared to 15.9% of middle-aged and 5.9% of older adults, $\chi^2 (2) = 8.32$, $p < .05$. Only young adults (17.5%) reported avoiding slang or colloquial terms in their speech compared to middle-aged and older individuals who never mentioned this speech accommodation, $\chi^2 (2) = 14.78$, $p < .01$. Finally, individuals of all ages reported adding extra details to clarify the information when their partner was initially perceived negatively (33.3% for negative competent and 19.1% for negative incompetent) but few individuals reported this when the partner was

positive (7.4% and 2.7% for competent and incompetent respectively), $\chi^2(3) = 12.70, p < .01$. Further coding of the participant audio segments will allow us to determine whether or not participants' assessments were accurate; however, that additional coding was outside the scope of the current research project.

Participant speech adjustments: Accommodative Actions scale

Participants reported the degree to which they adjusted to their partner on the Accommodative Actions Respect/Obligation scale. The overall scale score was examined in a 3 (age group: young, middle, old) X 2 (target: positive, negative) X 2 (competence feedback: competent, incompetent) ANOVA which resulted in main effects for age, $F(2, 273) = 10.67, p < .01, \eta^2 = .07$, target, $F(1, 273) = 4.46, p < .05, \eta^2 = .02$ and competence feedback, $F(1, 273) = 19.78, p < .01, \eta^2 = .07$. These main effects were qualified by a three way interaction of age group X target X competence feedback, $F(2, 273) = 3.39, p < .05, \eta^2 = .03$.

Table 21. Means and Standard Errors for the Accommodative Actions Scale

Young		
Competency feedback	<i>M</i>	<i>SE</i>
Competent	4.02	.18
Incompetent	4.49	.18
Middle-aged		
	<i>M</i>	<i>SE</i>
Competent	3.47	.18
Incompetent	4.22	.18

Table 21 (continued)

	Older Adults			
	Positive		Negative	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Competent	2.62	.23	3.74	.22
Incompetent	3.85	.23	3.75	.22

Breaking down the interaction showed that young and middle-aged adults report more accommodation for incompetent partners compared to competent partners (see Table 21 for means and standard errors). Older adults show a target by competence feedback interaction such that older adults report using the least amount of accommodation towards a positive competent partner compared to all the other conditions (see Table 21 for means and standard errors).

Summary of Exploratory Variables:

Speech tones in Time 1 were only predicted by responses from the Respect toward Older adults subscale from the Communicative Behaviors scale. About half of our participants noticed that they adjusted their speech and of those who reported accommodating to their partner, young adults were more likely to say that they spoke slower, simplified their speech and avoided slang. Participants reported adjusting the least to the competent targets; this was particularly noticeable for older adult participants.

CHAPTER 5

DISCUSSION

The results of this study suggest that communication and impression formation processes are fluid in nature and reflect not only the initial impression of a target but the information gained during an interaction over time. Past research has typically captured an initial snapshot of behavior that does not reflect the whole range of behavior that is observed in a dynamic interactive context. This study showed that participants of all ages reported similar initial impressions of the target partner and when initially speaking to the older adult target, individuals of all age groups used more affirmative speech than overaccommodative speech. Increases in the amount of overaccommodative speech only emerged over time as participants gained information about the competency of their partner and this information informed their communication patterns, final impressions and attributions for partner performance differently.

Speech patterns

Much of the past research in the stereotypes and communication literature has examined how individuals speak to a target person at one point in time. The present study extended this work by showing that individuals accommodate and adjust their speech based on cues of competency that emerge over the course of an interaction. The initial speech patterns found at Time 1 were consistent with past research; individuals used more overaccommodating speech toward negative targets compared to positive targets (Hummert & Shaner, 1994; Thimm, Rademacher & Kruse, 1998). However, contrary to previous research, in the present study the initial speech style toward the partner was affirmative regardless of the positive or negative nature of the partner, and the

predominant tone throughout Time 1 was affirmative across age groups. This is likely due to differences in the nature of the tasks used in past research as compared to the present study. Past research showing stereotypic differences in tone have been based on tasks that have not simulated interactions; i.e. participants do not believe that they are working directly with a partner, rather they are asked to record a message for the target to hear at a later time (Hummert & Shaner, 1994; Hummert et al, 1998). The present study simulated an interaction in a more ecologically valid way; when participants believed they were working with a real person who was listening and responding they were more likely to speak in an affirmative way initially regardless of their initial impression of the target.

A second difference between the present study and past research was the degree of difference between the positive and negative targets. Past studies have portrayed the target older adult as fitting a Severely Impaired or Despondent stereotype (Hummert et al., 1998). In the present study's self-description, the negative partner reported that she had been unwell, was unfamiliar with computers and was not sure how helpful she will be. Several participants mentioned in their initial impression of the negative target that it was a positive thing that this person was still willing to come into the lab and try to do the tasks, even when she was unsure of herself. Therefore, it appears that the severity of the negative target mattered. The participants in the present sample may have spoken in a more affirmative way than was expected because their overall negative initial impression of the target was not wholly negative. The target was viewed as moderately negative overall but participants also felt some compassion for her.

Adding to the past literature, this study showed that as the interaction progressed over time participants gained additional information and this information altered the way that participants interacted with the target individual. On average, participants used overaccommodative speech 38.7% of the time. Age, incompetence and initial depiction of the target influenced the base rate of overaccommodative speech on both initial and second attempts at describing the pictures, but not always in the directions predicted. It was expected that older adults would show the least amount of overaccommodative speech, however the results of this study showed that older adults showed an increased likelihood of using overaccommodative speech overall. As expected, incompetent partners increased the likelihood of using overaccommodative speech however contrary to expectations positive targets also increased the likelihood of overaccommodative speech. Why may these unexpected findings have emerged?

With respect to age, it may have been the case that older adults used more overaccommodative speech overall because they were more reactive to mistakes made by the target partner than young and middle-aged adults were. Several research studies show that older adults are more quick to blame a target for adverse outcomes (Blanchard-Fields, 1994; Blanchard-Fields & Beatty, 2005). Further, in this context the task appears to be a relatively easy one and therefore older adults may not be expecting many mistakes from his/her partner. A 'black sheep effect' suggests that individuals derogate in-group members that do not conform to positive expectations as a way to maintain a positive self-identity with respect to the in-group (Marques, Yzerbyt, & Leyens, 1988). Therefore, when the older adult partner made a mistake, it is possible that older adults began using more overaccommodative speech than was necessary when addressing this individual

because the partner was not conforming to expectations. These findings are similar to past work by Kemper, Finter-Urczyk and colleagues (1998) who found that older adults adjusted their speech for partners who they perceive as impaired. Past research suggests that older adults use a more limited range of accommodations to their partners compared to younger individuals (Kemper, Ferrell, Harden, Finter-Urczyk & Billington, 1998) and speech tone is one of many accommodations that may occur. Further analysis of this dataset in the future will be able to elaborate more specific types of adjustments that older adults tend to make.

The finding that incompetent targets received more overaccommodative speech on average was expected given research suggesting that individuals of all ages adjust to try and meet the needs of their partners (Kemper, Finter-Urczyk, Ferrell, Harden & Billington, 1998). More surprising was the finding that targets who were initially positive tended to receive more overaccommodative speech on average. Studies from social psychology suggest that negative information is more powerful than positive information (Skowronski & Carlson, 1989). Therefore, it may have been the case that when positive targets made a mistake, participants on the whole reacted more strongly to the unexpected negative information and adjusted their speech more than necessary. This result also may be further explained by the finding that over time, the highest increase in overaccommodative speech occurred for the initially positive target who subsequently behaved in an incompetent way. This finding is discussed further below.

Measuring speech throughout the course of an interactive task allowed for the examination of how speech changed over time. This study showed that overaccommodative speech increased over time for both initial and second attempts. Age

was not a predictor; all age groups showed equal increases in overaccommodative speech towards their partner. Instead, the change in overaccommodative speech for initial attempts at describing the picture was predicted by a competence feedback by target interaction.

When the target was initially perceived negatively, all participants spoke to her in an affirming way and did not change the proportion of affirming and overaccommodating speech over time, regardless of whether the partner was portrayed as competent or incompetent. This was consistent with expectations for older adults however it was contrary to expectations for young and middle-aged adults who were expected to speak to both negative targets initially with overaccommodating tones (Hummert et al., 1998), and in the case of the negative-competent target to shift to an affirming tone over time. As mentioned earlier, participants used more affirmative tones with the negative target than was expected and this was likely due to the difference in the severity of the targets in past research compared to the target used in the current study. Thus, in the negative competent condition there was no need to adjust to affirmative because participants were already using that tone. Participants who interacted with positive targets who had competent performance also did not change the amount of overaccommodative speech over time because there was no reason to do so. For the negative incompetent target, it was surprising that overaccommodative tone did not increase over time. It may be the case that participants did not have high expectations for the negative incompetent target, so poor performance did not signal a problem that required the participant to adjust his/her communication. However, in the case of the positive incompetent partner, poor performance strongly indicated to participants that something was going wrong.

The Age Stereotypes in Interactions Model (Hummert et al., 2004) suggests that individuals should be affirmative across time with a positive target but should shift to overaccommodative tones quickly when the positive target did not conform to expectations and appeared incompetent. This is exactly the pattern that was found in this study for initial speech attempts. The positive-incompetent target made frequent mistakes and therefore participants appeared to respond to the mistake information by adjusting to the use of overaccommodative tones. These results are also in keeping with work from Hess and colleagues (1999) that suggest that individuals update their impressions with trait diagnostic information. In the context of this study, the most diagnostic information that suggested a participant needed to adjust their speech to accommodate to their partner was the feedback about unexpected mistakes.

This study also predicted that individuals of different ages would shift to overaccommodative speech more quickly or more slowly depending on the initial description of the partner and the subsequent competence information, however this was not supported by the data. From Time 1 to Time 2, overaccommodative speech increased significantly for positive targets however this effect did not differ by age. As the interaction progressed in Time 3, young adults were slightly more likely to reduce the amount of their overaccommodative speech. To try to explain this reduction in overaccommodative speech at this time point, the errors made during Time 3 by the incompetent partner were examined. This showed that during Time 3 there were a series of pictures in the middle of the set in which the partner makes a few correct answers in a row. Therefore, it may have appeared to young adults that the partner was improving in performance slightly as compared to her performance in Time 1 and Time 2 blocks which

may explain the overall reduction in overaccommodative speech in Time 3. And finally, at Time 4 there was an increase overall in overaccommodative speech however this was not predicted by any of the variables that were included in the model. At Time 4 all partners, both competent and incompetent, made at least one mistake so this increase in overaccommodative speech at the end of the interaction is likely a combination of the increase in errors across all groups.

Impression change

Initially, participants of all ages viewed the positive target more positively than the negative target. Over the course of the interaction, participants updated their initial impressions with the competence information gained from the feedback within the task. All participants viewed the positive-competent target most positively, followed by the negative-competent, positive-incompetent and negative-incompetent partner. Young adults had the least positive ratings overall compared with middle-aged and older adults in keeping with past literature (Ryan, 1992). Furthermore, examining the predictors of these impressions showed that individuals of all ages appeared to only use the relevant available information to form their impressions, for example, initial descriptions of the partner carried information about warmth and for all individuals this was the sole predictor of warmth impressions. Ratings of competence were informed in slightly different ways for members of different age groups. Middle-aged and older adults' impressions of competence were predicted only by the competence manipulation; those in the competent conditions formed more positive impressions of the partner's competence than individuals in the incompetent conditions. This is in keeping with work in the impression formation literature from Hess and colleagues (1999) mentioned

previously that suggests that middle-aged and older adults update their impressions with trait diagnostic information. In the context of this task the most diagnostic information for evaluating the trait of competency was the competency feedback. For the young adults, both competency feedback and initial impression were predictors of their final competency impression. The initial impressions had information about the target's competency with respect to her computer usage however this information was minimal. For young adults, the use of this information fits impression formation models in that young adults typically use all of the information that is available and relevant to form their impressions, regardless of whether it is the most diagnostic (Hess et al., 1999).

Contrary to previous studies, this study did not find that positive information was considered more informative and diagnostic of underlying traits of the target, rather participants appeared to adjust their impressions based on the incompetence information. This difference is likely due to differences in methodologies; the past research on diagnosticity had participants read a list of traits to form an impression of an individual and then participants received an additional list of traits to incorporate into his/her impression before making an evaluation (Hess et al., 1999). In the joint communication task used in the present study, the individuating information about the partner was provided through feedback that appeared to be based on descriptions provided by the participant. In this context, the most diagnostic information that can help the participant successfully complete the task with his/her partner was the negative feedback information. When the partner made a mistake this negative information was highly salient; it suggested a miscommunication and the participant must then try to describe the picture differently for a second time. Therefore, in this more dynamic context the

information that is most relevant for achieving the goal of successful communication was not information suggesting that the partner is understanding but negative information suggesting that the communication needed to be adjusted.

Attributions

Individuals of all ages rated both the target's performance and their own performance as worse in the incompetent conditions compared to the competent conditions. Given that all participants were in the role of speaker, logically some of the blame for poor performance could fall on their own descriptions so it makes sense that their ratings of own performance would be lower in the incompetent conditions. Attributions that were made of the target's performance fit with an actor-observer effect pattern, where positive events for one's own behavior (in this case, the participant) are attributed to internal reasons and positive events for others' behavior (in this case the older target) are attributed to external reasons (Jones & Nisbett, 1971). Young and older individuals in this study were particularly reluctant to give full credit to the partner when the target exhibited good performance, rather they attributed good performance to external reasons like 'the task wasn't very hard'. Interestingly, this attribution pattern was only observed for good performance. Past research has found that young adults report negative internal attributions for older adults' performance on tasks (see Erber & Prager, 1999 for a review), but this was not the case in the present study. Poor performance was not directly blamed on internal factors related to the partner by any age group. It is possible that this finding deviates from past work because previous studies have involved rating a fictitious person in a static setting, e.g. reading a scenario and making attributions for the behavior. In the present interactive scenario, social

desirability may have been operating in the task situation; people believed that the partner was a real person and they may have been disinclined to say that their partner's mental ability impacted performance on a fairly easy task. And finally, attributions were unrelated to speech styles, suggesting that the attributions that people report do not necessarily coincide with their outward behavior. Although some of the attributions suggested a negative attitude toward the older adult target, it was not the case that these attributions were only endorsed by individuals who spoke with overaccomodative speech. For example, young adults overall spoke in the most affirmative way towards older adults, yet they attributed good performance by their partner to external factors.

Age identity

Within the middle-aged group, some individuals were expected to identify with the middle-aged group and others were expected to identify less with their age group as they begin to transition into older adulthood. In the current sample, this split within the middle-aged group was not found. The majority of the middle-aged and older adults reported younger age identities than their chronological age, although age identity and chronological age were highly correlated. On the measure of age group identity that assessed identification with one's current age group, members of all age groups reported feeling somewhat identified with their current age group. Middle-aged adults did not differ from either young or older adults in the degree to which they identified with their age group; individuals of all ages responded in the "slightly" to "somewhat" agree range on the scale. It was expected that middle-aged adults who felt they were transitioning to an older adult phase in life would be more likely to behave like older adults however neither measure of age group identity was predictive of speech tone at Time 1 or Time 4.

This was likely due to the fact that there was little variability in age group identity within the middle-aged group; members of the middle-aged adult group were between the ages of 40-56 rather than on the cusp of the traditional older adult defining age of 60. Thus, not many individuals in the sample were currently feeling that they were in a transitional phase, moving from middle-age to older adulthood. Further, in current society the age boundaries are shifting such that age 60 is no longer defined as 'old'. Perhaps individuals who are closer to 65 years old would show more variability in age identity as this age is closer to the current societal definition of older adult. This is an issue to be explored in future studies.

Limitations: Lexical decision task as a measure of stereotype activation

One of the main questions that this study aimed to address was the change in stereotype activation that may occur throughout the course of an interaction. To measure stereotype activation a lexical decision task was used; however, it was unsuccessful in tapping into ongoing stereotype activation. There are several reasons why this measure may have failed. Past research suggests that both positive and negative aging attitudes can be activated automatically (Chasteen, Schwarz and Park, 2002). Therefore, it may be the case that the presence of both positive aging words and negative aging words within the same block created competing activation, effectively cancelling one another out. For example, if the word friendly activates a positive stereotype and is followed by the word lonely which activates a negative stereotype, the resulting activation may appear as zero. However, past research has used lists that include positive and negative words, so it is unlikely that this is the reason for the failure of this task. A second possibility is that the word lists held the word lengths and frequencies equivalent for each type of word within

a given block to control for the influence of ease of reading the word and the accessibility of the word. When balancing the lists, the content meaning of the words that were included were not controlled for. By not controlling for conceptual relationships between traits within each list, some lists may have internal semantic priming that was stronger than the conceptual priming coming from the target partner. Finally, one major difference between the lexical decision task used in the present study and tasks used in some previous studies (e.g. Hess, Auman, Colcombe & Rahhal, 2003) is that the present study did not include a categorical subliminal prime prior to the trait target words. Many studies include a category prime, e.g. young or old, prior to flashing the target word that the participant is responding to, e.g. frail. This method consistently produces reaction times that are faster for young related traits following the young prime compared to the old prime and vice versa. The present study did not include a category prime because we were interested in whether stereotypes were already activated in the context of the interactive task, not whether stereotypes would be activated by a categorical prime. Studies that have included the categorical prime show that categorical prime can have a stronger effect on reaction times than the context prime (Hess et al., 2003). Recently, it has come to my attention that other researchers have tried to use lexical decision tasks without the categorical prime and also experienced difficulties with measuring stereotypic differences. Therefore it appears that the lexical decision task may not be sensitive to stereotypes that are naturally activated (T. M. Hess, personal communication, April 12, 2008). It may be the case that stereotypes that are activated in everyday interactions are initially strong but diminish as individuating information becomes available; therefore tasks that repeat the categorical prime prior to the target word

reactivate the stereotype and pick up on activation whereas tasks without the categorical prime do not have the added boost of activation and therefore do not vary over time.

Conclusions and Future Directions

This study added to a growing body of literature on stereotypes by examining the communication that occurs during an ongoing interaction with a simulated older adult target and determining how the feedback that the target provided altered the communication patterns and the subsequent impressions that were formed of the target. The use of a simulated interactive design moved the method of study of speech patterns closer to actual online functioning in communicative situations. This study clearly demonstrated that participants used competency information gained over the course of an interaction as a cue to adjust their speech accordingly. Information gained over the course of the interaction also affected the way in which the target impression was updated. This study disconfirms some past research that have used static scenarios because a person's perception of what they will do in a situation did not always align with what they actually did. For example, past research suggests that young adults will speak predominantly in an overaccommodating fashion towards negatively portrayed older adults but in the present study this was not the case; affirmative speech was more frequently used by all age groups. However, this study does not completely invalidate previous research as it also showed that the snapshot approach to studying speech reflects what people do at Time 1, for example that more overaccomodative speech was used with negative compared to positive targets.

This study provided further support for the idea in the impression formation literature that middle-aged and older adults use diagnostic information to a greater extent

when forming their impressions compared to young adults. With respect to competence, middle-aged and older adults informed their impressions solely based on the competence manipulation whereas young adults used all of the available information, i.e. initial impression and competence feedback, to form their impression. Contrary to previous results, this study did not find that positive information was considered more informative and diagnostic of underlying competency traits of the target, however this difference is likely due to differences in methodologies between the present research and past literature.

This study also added to the literature by demonstrating that communication patterns in an interactive context are not strongly guided by the participants' initial impression; both positive and negative targets were predominantly addressed with affirmative tones initially. As information about the target's competency became evident over the course of an interaction, participants adjusted their speech accordingly. Despite young adults had more negative impressions of older adults overall, in communicative contexts this negative impression was not necessarily reflected in speech tones. This may be due to the fact that young adults reported high levels of respect in communicative contexts with older adults and the amount of respect was predictive of higher amounts of affirmative speech. Middle-aged and older adults spoke in less affirming tones toward their partners over time however overall their impressions of the target were more positive.

Future studies should continue to use interactive paradigms to assess communication with older adults in other contexts. The present study suggested that the older target was able to come into the lab for the test and several participants remarked

that this was a positive trait. It would be interesting to manipulate the severity of the impression of the target, to examine whether similar speech patterns are found for targets that are portrayed more negatively, for example as an impaired older adult who is participating directly from a nursing home. The current study also suggested that speech was adjusted based on traits of the target partner. It would therefore be beneficial to determine what types of behaviors or partner characteristics are most effective in discouraging overaccommodative speech when it is directed towards older adults unnecessarily. Future studies could include behavioral feedback from a target, through videos or confederate partners, to manipulate and determine what feedback is most useful. Additionally, new approaches for measuring stereotype activation in an ongoing context need to be considered. The current study does not provide evidence for or against the idea that stereotype activation is the mechanism driving the communication patterns that are seen. Models of communication rely on the fact that individuals are guided by stereotypes and an effective measure of stereotype activation is necessary to tease apart whether stereotypes or the individuating information gained over the course of an interaction is the more influential factor guiding speech toward a target.

In sum, this study suggested that adopting an interactive approach broadens our understanding about the way in which people communicate with older adults. These new results provide a more positive perspective, in that they suggest individuals of all ages may not behave as negatively towards older adults as was previously thought. Individuals addressed older adult targets in a positive way initially and only adjusted to more negative forms of speech over time as the target provided evidence that the adjustment was necessary. Further, in interactive situations, individuals appeared to base

their impressions on individuating information that was gained throughout the interaction rather than solely on initial stereotypic impressions. Further work will need to address whether these findings hold in other contexts and to examine what older adults can do to encourage affirmative speech patterns among their conversational partners.

APPENDIX A

Chart of Hypotheses.

Initial Stereotype	Age Group	Feedback of target	Stereotype Activation	Overaccomodative Speech	Impression
Positive	Young	Competent	no change	affirmative style	+
		Incompetent	quick	quick →	-
			decline	overaccomodative	
	Middle	Competent	no change	affirmative style	+
		Incompetent	quick	quick →	moderate -
			decline	overaccomodative	
	Older	Competent	no change	affirmative	+
		Incompetent		slow →	-
			slow decline	overaccomodative	

			slow	slow →	
		Competent	increase	affirmative	moderate +
	Young	Incompetent	no change	overaccomodative	-
			quick	quick →	
		Competent	increase	affirmative	moderate +
		Incompetent	no change	overaccomodative	-
Negative	Middle	Incompetent	no change	overaccomodative	-
			quick		
		Competent	increase	affirmative	+
		Incompetent	no change	overaccomodative	-
			slow	slow →	
	Older	Incompetent	increase	overaccomodative	moderate -

APPENDIX B

Target Descriptions.

Positive audio condition

“I’m 75 and I come to Georgia Tech quite often to participate in these research studies. I like coming because I always learn something. I was interested in this study today because I use my computer to keep in touch with my grandkids. I’ve got five grandkids and they’re spread out all over so it’s so convenient to use my computer to e-mail them. And I also use my computer for other things, like looking up recipes and such.”

Negative audio condition

“I’m 75 and I come to Georgia Tech to participate in these studies when I feel up to it. I’m afraid my health hasn’t been great the last few years so I don’t get to come in very often anymore. I do find computers very confusing so I’m afraid I don’t know much about them. My grandson has tried to show me how to use e-mail several times, but I forget just exactly how to do it when he’s not there. So I’m afraid I may not be very helpful to you today.”

APPENDIX C

Words used in the Lexical Decision Task for Stereotypic Positive Words

Trial 1		Trial 2		Trial 3		Trial 4	
Word	Frequency	Word	Frequency	Word	Frequency	Word	Frequency
sociable	31	understanding	608	skilled	335	reminisce	30
trustworthy	31	fond	416	astute	50	intelligent	598
altruistic	29	generous	457	successful	1460	loving	276
earnest	86.5	sensible	669	alert	145.3	vigilant	31
volunteer	211.5	sentimental	199	mature	201.5	willing	775
careful	1015	gentle	652	active	508.5	pleasant	751
interested	1823	independent	620	distinguished	324	knowledgeable	67
witty	116	patience	321	joyful	64	patriotic	115
wise	374	supportive	74	reliable	348	helpful	471
veteran	105.5	loyal	201	prudent	127	dignified	120
engaging	31	nostalgic	59	genuine	698	honest	644
determined	836	gracious	118	cheerful	331	cautious	185
discerning	7.5	lively	277	courageous	100	clever	618

Words used in the Lexical Decision Task for Stereotypic Negative Words

Trial 1		Trial 2		Trial 3		Trial 4	
Word	Frequency	Word	Frequency	Word	Frequency	Word	Frequency
widow	367	incoherent	42	dependent	578	conservative	278
inflexible	32	miserable	340	powerless	100	anxious	736
frailty	39	passive	145.5	stubborn	133	confused	313
tired	1171	tremble	261	slow	613	fragile	207
timid	139	complaining	8	nosy	34	senile	47
balding	31	weak	1063	afraid	2012	prejudiced	32
inarticulate	45	rigid	429	forgetful	21	ill	416.7
vulnerable	400	sick	618.5	demanding	136	frail	171
ancient	756.5	incapable	259	irritate	366	depressed	289
lonely	511	feeble	165	useless	380	selfish	212
annoying	83	clumsy	216	incompetent	37	conventional	834
bitter	221	suspicious	332	frugal	34	helpless	331
nervous	855	critical	786	hopeless	230	worried	798

APPENDIX D

Word classification for the LIWC analysis of initial impression text

Positive Aging

Active, alert, altruistic, articulate, astute, calm, careful, cares, caring, cautious, cheerful, clever, comfortable, conservative, courageous, cute, determined, dignified, distinguished, eager, earnest, engaging, enjoy, experienced, family, family-oriented, fond, friendly, fun, generous, gentle, genuine, gracious, happy, helpful, honest, humble, independent, inquiring, intelligent, interest, involved, joyful, kind, knowledgeable, learn, lively, lovely, loving, loyal, mature, nice, nostalgic, open, participate, patience, patriotic, pleasant, pleasurable, polite, positive, productive, prudent, quick, reliable, reminisce, self-confident, sensible, sentimental, skill, sociable, successful, supportive, thoughtful, trustworthy, try, understand, understanding, useful, veteran, vigilant, volunteer, warm, well, well-spoken, willing, wise, witty

Positive Warm

Affectionate, altruistic, amicable, approachable, cares, caring, cheerful, close, comfortable, companionable, comradely, convivial, cordial, devoted, earnest, engaging, enjoy, extroverted, familiar, family, family-oriented, fond, friendly, fun, generous, genial, gentle, genuine, gracious, gregarious, happy, helpful, hospitable, intimate, jolly, jovial, joyful, kind, lively, loving, merry, neighborly, nice, nostalgic, open, outgoing, pleasant, pleasurable, polite, positive, reminisce, sentimental, sociable, social, supportive, sweet, thoughtful, understanding, volunteer, warm, warmhearted, wise, witty

Positive Competent

Accomplished, alert, adept, articulate, astute, clever, determined, engaging, experienced, helpful, independent, inquiring, intelligent, interest, involved, knowledgeable, learn, master, open, participate, practiced, prepared, productive, proficient, quick, schooled, seasoned, self-confident, sensible, skill, successful, trained, try, understand, understanding, useful, veteran, well-spoken, willing, wise

Positive Health

Active, health

Negative Aging

Afraid, ancient, anxious, apprehensive, balding, bitter, clumsy, complaining, confused, conventional, critical, demanding, dependent, depressed, difficult, discerning, feeble, forgetful, fragile, frail, frailty, frugal, not healthy, helpless, hopeless, ill, inarticulate, incapable, incoherent, incompetent, irritate, lack, matronly, miserable, nervous, nosy, passive, powerless, prejudiced, problems, rigid, selfish, senile, sick, slow, stubborn, suspicious, talkative, timid, tired, tremble, uneasiness, uneasy, unsure, unwell, useless, wary, weak, not well, widow, worried

Negative Warm

Annoying, antagonistic, bellicose, belligerent, bitter, cold, complaining, contentious, cool, critical, demanding, difficult, frigid, hostile, inflexible, irritate, miserable, nosy, pessimistic, prejudiced, quarrelsome, rigid, selfish, stubborn, suspicious, unfriendly

Negative Competent

Confused, difficult, feeble, forgetful, helpless, inarticulate, incapable, incoherent, incompetent, inept, inexperienced, inexpert, poor, powerless, senile, slow, unfit, unprepared, unqualified, unschooled, unseasoned, unskilled, unsure, untested, untrained, untried, useless, not well

Negative Health

Dependent, feeble, fragile, frail, frailty, not healthy, ill, unwell, weak, not well

Old Age

Ancient, average, elderly, health, mature, old, older, typical

Grandparent

Grandma, grandmother, grandparent, loving

APPENDIX E

Alternative classification schemes for Lexical Decision Task

When the original scheme for the lexical decision task did not reflect stereotype activation, the words in the lexical decision task were reclassified to reflect two other possible activation schemes. The first activation scheme was a warmth/competence scheme. Our feedback manipulation should reflect competence, therefore it would not be surprising if thoughts of competence or incompetence were activated in the different conditions. Furthermore, our positive target was designed to reflect traits such as family-oriented, friendly and helpful which are all considered “warm” traits whereas the negative target did not reflect warm traits. The original coding of the lexical decision task included both warm and competent words within the positive aging subset or within the negative aging subset depending on the valence of the words. Therefore, the first revised lexical decision scheme reclassified words from the task into those that reflected warmth, coldness, competence and incompetence. For this revised scheme, word length and frequency was not taken into consideration as it had been in when designing the original classification scheme. Two raters achieved 93 % agreement and the discrepancies were resolved through discussion. All of the adjectives, regardless of age-relevance, were also reclassified into a second, more general, positive or negative scheme by two coders who achieved 94% agreement and discrepancies were resolved through discussion. A list of the reclassified items is located at the end of Appendix E.

Difference scores based on these two new classification scheme were then subjected to 3 (age: young, middle-aged, old) X 2 (target: positive, negative) X 2 (competence feedback: competent, incompetent) mixed model ANOVAs with time

included as a 4 level within-subjects repeated measure. No significant differences in the activation levels were found for any of the new classifications in the different target or competence feedback conditions over time, $ps > .20$. Also, no significant difference between positive and negative targets at Time 1 was found although it was expected that there would be differences in activation for warmth traits, $ps > .86$.

Reclassified lexical decision words

Warm

Sociable, altruistic, witty, wise, engaging, outgoing, understanding, fond, generous, sentimental, gentle, patience, supportive, nostalgic, gracious, lively, fun, romantic, joyful, genuine, cheerful, playful, affectionate, friendly, humorous, reminisce, loving, willing, pleasant, honest

Cold

Inflexible, bitter, aggressive, rigid, suspicious, critical, rude, hostile, demanding, disrespect, prejudiced, selfish, indifferent, ignorant, cruel

Competent

Careful, wise, engaging, determined, discerning, capable, understanding, sensible, resourceful, ambitious, skilled, astute, successful, mature, prudent, curious, intelligent, vigilant, knowledgeable, helpful, clever, quick, educated, confident

Incompetent

Vulnerable, incoherent, incapable, clumsy, immature, slow, forgetful, useless, incompetent, confused, senile, ignorant, oblivious, foolish

Positive

Sociable, trustworthy, altruistic, volunteer, interested, witty, wise, engaging, creative, glamorous, capable, adventurous, outgoing, stamina, understanding, fond, generous, sensible, gentle, independent, patience, supportive, loyal, gracious, lively, fun, resourceful, spontaneous, romantic, ambitious, skilled, astute, successful, alert, active, distinguished, joyful, reliable, genuine, cheerful, courageous, popular, curious, pretty, loving, willing, pleasant, knowledgeable, helpful, dignified, honest, clever, attractive, eager, quick, imaginative, educated, confident, playful, affectionate, friendly, humorous, hopeful, intelligent

Negative

Widow, inflexible, frailty, inarticulate, vulnerable, ancient, lonely, annoying, bitter, risky, angry, nasty, aggressive, frivolous, incoherent, miserable, passive, complaining, weak, rigid, sick, incapable, feeble, clumsy, suspicious, critical, dangerous, noisy, rude, insecure, immature, hostile, dependent, powerless, stubborn, slow, nosy, afraid, forgetful,

demanding, irritate, useless, incompetent, hopeless, sloppy, disrespect, loud,
conservative, anxious, confused, fragile, senile, prejudiced, ill, frail, depressed, selfish,
helpless, worried, indifferent, cruel, ignorant, cynical, oblivious, foolish, lazy

APPENDIX F

Exploratory Measures

Expectations about Language Use. Two measures of expectations about language use were included in this study. The Language in Adulthood (LIA) scale has two subscales that assess respondent's perceptions of expressive and receptive language abilities of one's self and of others of varying age groups. The Communicative Behaviors questionnaire has two subscales that assess respect toward different age groups and avoidance of other age groups in communicative contexts. First, the two LIA self assessment scales were analyzed with a 3-way (age group: young, middle-age, old) MANOVA. Second, both the LIA and the Communication Behaviors scales were analyzed with separate 3 (age group: young, middle-age, old) mixed model ANOVAs with a 3 level age of target (time: 25 years old, 55 years old, 75 years old) as a repeated measure.

For the Language in Adulthood scale, there was an age group main effect at the multivariate level, $F(16, 506) = 5.70, p < .01$. Between-subjects effects showed that age differences were only found in perceptions of one's own expressive language abilities, $F(2, 260) = 5.39, p < .01$, with young adults reporting more perceived problems ($M = 30.54, SE = .77$) with expressive language than middle-aged ($M = 28.17, SE = .74$) and older adults ($M = 27.22, SE = .69$).

Examining participants' expectations of change in receptive and expressive abilities showed that for receptive language abilities, individuals of all ages expected that problems with receptive abilities, e.g hearing difficulty, would increase with age, $F(1.54, 406.17) = 589.05, p < .01, \eta^2 = .69$. This effect did not differ by age group, as the

interaction was non-significant, $p > .15$. For expressive abilities, there was a main effect of perceived age, such that participants reported increases in difficulty with expressive abilities with increased age, $F(1.56, 408.08) = 132.74, p < .01$. This was qualified by a perceived age X age group interaction, $F(3.13, 408.08) = 6.02, p < .01, \eta^2 = .04$, which suggested that young and middle-aged adults reported more modest rates of decline than did older adults.

Table F1: Age Differences in the Language in Adulthood Questionnaire

Receptive Problems						
	25 year old		55 year old		75 year old	
	<u>M</u>	<u>SE</u>	<u>M</u>	<u>SE</u>	<u>M</u>	<u>SE</u>
Young	30.11	.98	41.19	1.07	51.70	1.14
Middle	29.55	.96	39.05	1.04	52.30	1.11
Older	23.76	.87	34.89	.94	48.53	1.01
Expressive Problems						
Young	32.95	.78	34.48	.71	37.77	.77
Middle	32.23	.76	32.63	.69	39.16	.75
Older	26.46	.69	30.28	.63	35.81	.69

For the Communicative Behaviors scale, significant age of target (time) X age group (of participant) differences emerged for the respect scale $F(3.62, 472.54) = 40.95$, $p < .01$, $\eta^2 = .24$. Young adults project a linear increase of respect with age, $F(1, 79) = 33.48$, $p < .01$, whereas middle-aged and older adults show linear and quadratic effects, $F(1, 84)$, $F_s > 26.06$, $p_s < .01$ for middle-aged and $F(1, 99)$ $F_s > 3.52$, $p < .01$ for linear and a trend $p < .06$ for quadratic, where respect towards young and respect towards middle-aged adults are equal and respect increases towards older adults.

For the avoidance scale, significant age of target (time) x age group (of participant) differences emerged $F(4, 520) = 28.59$, $p < .01$, $\eta^2 = .18$. Young and older adults showed linear patterns $F(1, 80) = 76.46$, $p < .01$, $\eta^2 = .49$ and $F(1, 100) = 5.437$, $p < .05$, $\eta^2 = .05$, where young adults showed increase in avoidance as the target person gets older and older adults showed less avoidance as the target person was older. Middle-aged adults showed a quadratic pattern, $F(1, 84) = 24.74$, $p < .01$ with most avoidance toward young and older adults.

Table F2: Age Differences in the Communicative Behaviors Scale

	Respect					
	25 year old		55 year old		75 year old	
	<u>M</u>	<u>SE</u>	<u>M</u>	<u>SE</u>	<u>M</u>	<u>SE</u>
Young	4.00	.12	5.27	.12	6.12	.12
Middle	4.82	.11	4.72	.12	5.90	.12
Older	4.82	.10	4.59	.11	5.33	.11

Table F2 (continued)

	Avoidance					
Young	2.44	.13	3.41	.13	4.01	.15
Middle	2.73	.13	2.17	.13	2.93	.15
Older	2.45	.12	2.14	.11	2.17	.13

Expectations about Aging. Two measures of age stereotypes were included in this study. The Images of Aging Scale (IAS) has two subscales, positive and negative traits, that assess perceptions of older adults. The Expectations Regarding Aging -12 scale has three subscales that assess perceptions of changes that will occur with age in the physical domain, cognitive domain and mental domain (e.g. loneliness). The two IAS scales and the ERA-12 subscales were analyzed with a 3 way (age group: young, middle-age, old) MANOVA. An age group difference was found at the multivariate level, $F(10, 516) = 4.26, p < .01, \eta^2 = .08$. The only difference that emerged at the between subjects effects level was an age difference in the positive scale of the IAS, $F(2, 262) = 8.50, p < .01, \eta^2 = .06$, where young adults reported that fewer positive adjectives were associated with older age ($M = 31.91, SE = .80$) compared to middle-aged ($M = 35.10, SE = .79$) and older adults ($M = 36.28, SE = .72$) who were equally positive in their attitudes towards adults. As there were age differences in positive impressions of older adults, this scale was entered into logistic regressions to determine whether it predicted the overall tone at time 1, however it was unrelated to speech tone, $p > .70$.

Amount of interaction with older adults. Participants were asked to report the amount of interaction that they had with older adults in an average week and what the

quality of this interaction was. A 3 way (age group: young, middle-aged, old) MANOVA showed an age difference only in the amount of interaction with older adults, $F(2, 264) = 43.18, p < .01, \eta^2 = .25$, with each age group reporting significantly different amounts of interaction with older adults, Tukey HSD $p < .01$ (young adults $M = 3.37, SE = .16$; middle-aged $M = 4.81, SE = .16$; old $M = 5.33, SE = .14$). The quality of interaction did not significantly differ across age groups, $p > .80$ with all age groups reporting that interaction was slightly to somewhat positive.

Caregiver status. Participants were asked to report if they had ever been a caregiver for an older adult. A Chi-square analysis showed that older adults were more frequently caregivers to older adults compared to middle-aged and young adults, $\chi^2(2) = 37.36, p < .01$ with 18.5% of young adults, 54.8% of middle-aged adults and 61.8% of older adults reporting that they had been a caregiver. Caregiving status was included in a logistic regression to predict speech style at time 1 but was not a significant predictor, $p > .25$.

REFERENCES

- Barak, B. (1987). Cognitive age: A new multidimensional approach to measuring age identity. *International Journal of Aging and Human Development*, 25, 109-128.
- Blanchard-Fields, F. (1994). Age differences in causal attributions from an adult developmental perspective. *Journals of Gerontology: Psychological Sciences and Social Sciences*, 49B, 43-51.
- Blanchard-Fields, F., & Beatty, C. (2005). Age Differences in Blame Attributions: The Role of Relationship Outcome Ambiguity and Personal Identification. *Journals of Gerontology: Psychological Sciences and Social Sciences*, 60B, P19-P26.
- Blanchard-Fields, F., & Horhota, M. (2005). Age differences in the correspondence bias: When a plausible explanation matters. *Journals of Gerontology: Psychological Sciences and Social Sciences*, 60B, P259-P267.
- Bodenhausen, G. V., & McCrae, C.N. (1998). Stereotype activation and inhibition. In R. S. Wyer (Ed.), *Stereotype activation and inhibition* (pp. 1-52). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Bonnesen, J.L., & Hummert, M. L. (2002). Painful self-disclosures of older adults in relation to aging stereotypes and perceived motivations. *Journal of Language and Social Psychology*, 21, 275-301
- Brewer, M. B., & Lui, L. (1984). Categorization of the elderly by the elderly: Effects of perceiver's category membership. *Personality and Social Psychology Bulletin*, 10, 585-595.
- Bryk, A. S. & Raudenbush, S. W. (1992). *Hierarchical linear models*. Newbury Park, CA: Sage
- Buscher, J. B., & Hurley, M. M. (2000). Off-target verbosity evokes negative stereotypes of older adults. *Journal of Language and Social Psychology*, 19, 141-149.

- Cai, D., Giles, H. & Noels, K. (1998). Elderly perceptions of communication with older and younger adults in China: Implications for mental health. *Journal of Applied Communication Research*, 26, 32-51.
- Chasteen, A. L., Bhattacharyya, S., Horhota, M., Tam, R., & Hasher, L. (2005). How feelings of stereotype threat influence older adults' memory performance. *Experimental Aging Research*, 31, 235-260.
- Chasteen, A. L., Schwarz, N. & Park, D.C. (2002). The activation of aging stereotypes in young and older adults. *Journals of Gerontology: Psychological Sciences and Social Sciences*, 57B, 540-547.
- Czaja, S.J., Charness, N., Fisk, A.D., Hertzog, C., Nair, S.N., Rogers, W.A., Sharit, J. (2006). Factors predicting the use of technology: Findings from the Center for research and education on aging and technology enhancement (CREATE). *Psychology and Aging*, 21, 333-352.
- Ekstrom, R.B., French, J.W., Harman, H.H., & Dermen, D. (1976). *Manual for kit of factor-referenced cognitive tests*. Princeton, NJ: Educational Testing Services.
- Erber, J. T., & Prager, I. G. (1999). Age and Memory: Perceptions of forgetful young and older adults. In T. Hess, & F. Blanchard-Fields (Eds.). *Social cognition and aging* (175-196) San Diego, CA: Academic Press.
- Erber, J. T., & Prager, I. G. (2000). Age and excuses for forgetting: Self-handicapping versus damage-control strategies. *International Journal of Aging and Human Development*, 50, 201-214.
- Fiske, S. T., Xu, J., & Cuddy, A. C. (1999). (Dis)respecting versus (Dis)liking: Status and interdependence predict ambivalent stereotypes of competence and warmth. *Journal of Social Issues*, 55, 473-489.
- Garcia, L. J. & Orange, J. B. (1996). The analysis of conversational skills of older adults: Current research and clinical approaches. *Journal of Speech-Language Pathology and Audiology*, 20, 123-135.

- Garstka, T.A., Schmidt, M.T., Branscombe, N. R. & Hummert, M.L. (2004). How young and older adults differ in their responses to perceived age discrimination. *Psychology and Aging, 19*, 326-335.
- Garstka, T. A., Hummert, M. L., & Branscombe, N. R. (2005). Perceiving age discrimination in response to intergenerational inequity. *Journal of Social Issues, 61*, 321-342.
- Gill, M. J., & Swann, W. B. Jr. (2004). On What It Means to Know Someone: A Matter of Pragmatics. *Journal of Personality and Social Psychology, 86*, 405-418.
- Harwood, J., Giles, H., & Ryan, E. B. (1995). Aging, communication, and intergroup theory: Social identity and intergenerational communication. In J.F. Nussbaum, & J. Coupland (Eds.), *Handbook of communication and aging research* (pp. 133-159). Hillsdale, NJ, England: Lawrence Erlbaum Associates
- Harwood, J., & Williams, A. (1998). Expectations for communication with positive and negative subtypes of older adults. *International Journal of Aging and Human Development, 47*, 11-33.
- Hess, T. M.. (1999). Cognitive and knowledge-based influences on social representations. In T. Hess, & F. Blanchard-Fields (Eds.). *Social cognition and aging* (pp. 237-263). San Diego, CA: Academic Press.
- Hess, T. M., & Auman, C. (2001). Aging and social expertise: The impact of trait-diagnostic information on impressions of others. *Psychology and Aging, 16*, 497-510.
- Hess, T. M., Bolstad, C. A., Woodburn, S. M., & Auman, C. (1999). Trait diagnosticity versus behavioral consistency as determinants of impression change in adulthood. *Psychology and Aging, 14*, 77-89.
- Hess, T. M., & Follett, K. J. (1994). Adult age differences in the use of schematic and episodic information in making social judgments. *Aging and Cognition, 1*, 54-66.

- Hess, T. M., Hinson, J. T., & Statham, J. A. (2004). Explicit and implicit stereotype activation effects on memory: Do age and awareness moderate the impact of priming? *Psychology and Aging, 19*, 495-505.
- Hilton, J. L., & von Hippel, W. (1996). Stereotypes. *Annual Review of Psychology, 47*, 237-271.
- Horhota, M., & Blanchard-Fields, F. (2006). Do beliefs and attributional complexity influence age differences in the correspondence bias? *Social Cognition, 24*, 310–337.
- Horton, W.S., & Spieler, D. H. (2007). Age-related differences in communication and audience design. *Psychology and Aging, 22*, 281-290.
- Hummert, M. L. (1990). Multiple stereotypes of elderly and young adults: A comparison of structure and evaluations. *Psychology and Aging, 5*, 182-193.
- Hummert, M. L. (1994) Stereotypes of the elderly and patronizing speech. In M. L., Hummert, J. M. Wiemann, & J. F. Nussbaum (Eds.) *Interpersonal communication in older adulthood: Interdisciplinary research* (pp. 162-184) Newbury Park, CA: Sage.
- Hummert, M. L. (1999). A social cognitive perspective on age stereotypes. In T. Hess, & F. Blanchard-Fields (Eds.). *Social cognition and aging* (175-196) San Diego, CA: Academic Press.
- Hummert, M.L., Garstka, T. A., & Shaner, J. L. (1997). Stereotyping of older adults: The role of target facial cues and perceiver characteristics. *Psychology and Aging, 12*, 107-114.
- Hummert, M. L., Garstka, T. A., Shaner, J. L., & Strahm, S. (1995). Judgments about stereotypes of the elderly: Attitudes, age associations, and typicality ratings of young, middle-aged, and elderly adults. *Research on Aging, 17*, 168-189.
- Hummert, M. L., Garstka, T. A., Shaner, J. L., & Strahm, S. (1994). Stereotypes of the elderly held by young, middle-aged and elderly adults. *Journals of Gerontology: Psychological Sciences, 49B*, 240-249.

- Hummert, M. L., Garstka, T. A., Ryan, E. B., & Bonnesen, J. L (2004). The role of age stereotypes in interpersonal communication. In, Nussbaum, J. F., & Coupland, J. (Eds.) *Handbook of Communication and Aging Research*, 2nd ed.(pp.91-114). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers
- Hummert, M. L., & Shaner, J. L (1994). Patronizing speech to the elderly as a function of stereotyping. *Communication Studies*, 45, 145-158.
- Hummert, M. L., Shaner, J. L., Garstka, T. A., & Henry, C. (1998). Communication with older adults: the influence of age stereotypes, context, and communicator age. *Human Communication Research*, 25, 124-142.
- Hummert, M. L., & Ryan, E. B. (2001). Patronizing. In W.P. Robinson & H. Giles (Eds.) *The new handbook of language and social psychology* (2nd ed). (pp.253-269). Chichester, UK. Wiley.
- Jones, E. E., & Nisbett, R. E. (1971). *The actor and the observer: Divergent perceptions of the causes of behavior*. Morristown, NJ: General Learning Press.
- Kemper, S. (1994). Elderspeak: Speech accommodations to older adults. *Aging, Neuropsychology, and Cognition*, 1, 17-28
- Kemper, S., Ferrell, P., Harden, T., Finter-Urczyk, A., & Billington, C. (1998). Use of elderspeak by young and older adults to impaired and unimpaired listeners. *Aging, Neuropsychology, and Cognition*, 5, 43-55.
- Kemper, S., Finter-Urczyk, A., Ferrell, P., Harden, T., & Billington, C. (1998). Using elderspeak with older adults. *Discourse Processes*, 25, 55-73.
- Kemper, S., Vandeputte, D., Rice, K., Cheung, H., & Gubarchuk, J. (1995). Speech adjustments to aging during a referential communication task. *Journal of Language and Social Psychology*, 14, 40-59

- Kunda, Z, Davies, P. G., Hoshino-Browne, E., & Jordan, C. H. (2003). The impact of comprehension goals on the ebb and flow of stereotype activation during interaction. In S. J. Spencer, S. Fein, M. P. Zanna, & J. M. Olson (Eds.), *Motivated social perception: The Ontario symposium, Vol. 9.* (2003). Mahwah, NJ, US: Lawrence Erlbaum Associates.
- Levy, B. (1996). Improving memory in old age through implicit self-stereotyping. *Journal of Personality and Social Psychology, 71*, 1092-1107.
- Levy, B., R., Kasl, S.V., & Gill, T.M. (2004). Image of Aging Scale. *Perceptual and Motor Skills, 99*, 208-210.
- Marques, J. M., Yzerbyt, V. Y., & Leyens, J. P. (1988). The "black sheep" effect: Extremity of judgments towards ingroup members as a function of group identification. *European Journal of Social Psychology, 18*, 1-16.
- McCann, R. M., Dailey, R. M., Giles, H., & Ota, H. (2005). Beliefs about intergenerational communication across the lifespan: Middle age and the roles of age stereotyping and respect norms. *Communication Studies, 56*, 293-311.
- Montepare, J. M., & Lachman, M.E. (1989). 'You're only as old as you feel': Self-perceptions of age, fears of aging, and life satisfaction from adolescence to old age. *Psychology and Aging, 4*, 73-78.
- Mulac, A. & Giles, H. (1996). 'You're only as old as you sound': Perceived vocal age and social meanings. *Health Communication, 8*, 199-215.
- Nussbaum, J. F., Hummert, M. L., Williams, A., & Harwood, J. (1996). Communication and older adults. In B. R. Burleson (Ed.), *Communication yearbook 19* (pp. 1-47). Thousand Oaks, CA: Sage Publications, Inc
- Pennebaker, J. W., Francis, M. E., & Booth, R. J. (2003). *Linguistic Inquiry and Word Count Manual*. Erlbaum Publishers: Mahwah, NJ
- Ryan, E. B. (1992). Beliefs about memory changes across the adult life span. *Journal of Gerontology: Psychological Sciences, 47B*, P41-P46.

- Ryan, E. B., & Capadano, H. L. (1978). Age perceptions and evaluative reactions toward adult speakers. *Journal of Gerontology*, 33, P98-P102.
- Ryan, E.B., Giles, H., Bartolucci, G., & Henwood, K. (1986). Psycholinguistic and social psychological components of communication by and with the elderly. *Language and Communication*, 6, 1-24
- Ryan, E.B., Hummert, M. L., & Boich, L. H. (1995). Communication predicaments of aging: Patronizing behavior toward older adults. *Journal of Language and Social Psychology*, 14, 144-166.
- Ryan, E. B., Kennaley, D.E., Pratt, M. W. & Shumovich, M.A. (2000). Evaluations by staff, residents and community seniors of patronizing speech in the nursing home: Impact of passive, assertive or humorous responses. *Psychology and Aging*, 15, 272-285.
- Ryan, E. B., & Kwong See, S. (1993). Age-based beliefs about memory changes for self and others across adulthood. *Journals of Gerontology: Psychological Sciences*, 48B, 199-201
- Ryan, E. B., Kwong See, S., Meneer, W. B. & Trovato, D. (1992). Age-based perceptions of language performance among younger and older adults. *Communication Research*, 19, 423-443
- Sarkisian, C. A., Steers, W. N., Hays, R. D., & Mangione, C. M. (2005). Development of the 12-item expectations regarding aging survey. *The Gerontologist*, 45, 240-248.
- Schmidt, D. F., & Boland, S. M. (1986). Structure of perceptions of older adults: Evidence for multiple stereotypes. *Psychology and Aging*, 1, 255-260.
- Ska, B., & Joanne, Y. (1994). Discourse in older adults: Influence of text, task, and participant characteristics. *Journal of Speech-Language Pathology and Audiology*, 20, 101-108
- Skowronski, J. J. & Carlston, D. E. (1989) Negativity and extremity biases in impression formation: A review of explanations. *Psychological Bulletin*, 105, 131-142.

- Spencer, S. J., Fein, S., Strahan, E. J., & Zanna, M. P. (2005). The role of motivation in the unconscious: How our motives control the activation of our thoughts and shape our actions. In Forgas, J. P. , Williams, K. D., & Laham, S. M. (Eds.) *Social Motivation: Conscious and Unconscious Processes*. Cambridge University Press.
- Thimm, C., Rademacher, U., & Kruse, L. (1998). Age stereotypes and patronizing messages: Features of age-adapted speech in technical instructions to the elderly. *Journal of Applied Communication Research*, 26, 66-82.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070.
- Westerhof, G. J., & Barrett, A. E. (2005). Age identity and subjective well-being: A comparison of the United States and Germany. *Journal of Gerontology: Social Sciences*, 60B, 129-136.
- Williams, A., & Harwood, J. (2004). Intergenerational communication: Intergroup, accommodation and family perspectives. In J. F. Nussbaum & J. Coupland (Eds.) *Handbook of communication and aging research*, 2nd edition. (pp. 115-137). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.