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Verbal play as a discourse resource in the social interactions of older and younger communication pairs

Samantha Shune^{a,*} and Melissa Collins Duff^b

^aCommunication Disorders and Sciences, The University of Oregon, Eugene, OR, USA

^bDepartments of Communication Sciences and Disorders & Neurology, University of Iowa, Iowa City, IA, USA

Abstract

Verbal play, or the playful manipulation of elements of language, is a pervasive component of social interaction, serving important interpersonal functions. We analyzed verbal play in the interactional discourse of ten healthy younger pairs and ten healthy older pairs as they completed a collaborative referencing task. A total of 1,893 verbal play episodes were coded. While there were no group differences in verbal play frequency, age-related differences in the quality and function of these episodes emerged. While older participants engaged in more complex, extended, and reciprocal episodes that supported the social nature of communicative interactions (e.g., teasing), younger participants were more likely to engage in verbal play episodes for the purpose of successful task completion. Despite these age-related variations in the deployment of verbal play, verbal play is a robust interactional discourse resource in healthy aging, highlighting an element of human cognition that does not appear to decline with age.

Keywords

AGING; COGNITIVE AGING; COMMUNICATION; DISCOURSE; SOCIAL INTERACTION; VERBAL PLAY

Introduction

Healthy aging is accompanied by changes in cognition, with old age being frequently portrayed as a period of ubiquitous decline (for reviews see Birren and Schaie, 2006; Burke and MacKay, 1997; Pickholtz and Malamut, 2008). In addition to declines in memory, processing speed, attention, and executive functioning (e.g., Mahncke *et al.*, 2006; Park *et al.*, 1996; Park and Gutchess, 2005; Reuter-Lorenz and Sylvester, 2005; Salthouse, 1996), aging can also negatively affect language and, potentially, the ability and desire for interpersonal communication (Hummert *et al.*, 1994). Verbal production in older adults is characterized by increased difficulty with lexical retrieval (e.g., Albert *et al.*, 2009; Bowles and Poon, 1985), slower and less accurate naming (e.g., LaBarge *et al.*, 1986; MacKay *et*

al., 2002), decreased specificity (i.e., increased use of pronouns and ambiguous references; e.g., Heller and Dobbs, 1993), off-target verbalities (e.g., Gold *et al.*, 1994), and decreased verbal fluency as marked by a decreased rate of verbal output and increased presence of disfluencies such as word repetitions and prolonged pauses (e.g., Kemper, 1992; Obler and Albert, 1985; Ritchie *et al.*, 1997). Research has also suggested that older adults demonstrate a decline in comprehension abilities that occurs subsequent to declines in production, marked by slower comprehension abilities and decreased speech perception abilities (e.g., Ritchie *et al.*, 1997; Thornton and Light, 2006).

Despite documenting age-related declines in language, considerably less is known about changes in interactional discourse practices in conversation and social interaction – important outcomes in understanding how older adults use language to promote and maintain social engagement and communicative interactions. Indeed, even in the context of these age-related declines in language, social interaction is known to have positive effects on the aging process, offering a physical and psychosocial buffer from the negative changes that occur in the lives of the elderly, when health may be most vulnerable (e.g., Bassuk *et al.*, 1999; Solomon, 1996; Tennant, 1990). Older adults who have higher levels of social involvement tend to enjoy better mental health and cognitive function and live significantly longer (e.g., Christensen *et al.*, 1996; Krause, 1997; Liang *et al.*, 1999; Michael *et al.*, 1999). Socialization is viewed as protective against cognitive decline, with larger and/or stronger social networks being associated with reduced risk of cognitive decline and dementia (Bassuk *et al.*, 1999; Zunzunegui *et al.*, 2003). Communication is arguably one of the most important components of social interaction. Given that the nature and quality of the interactional discourse practices of older adults may contribute to some aspects of the positive benefits of social interaction documented in the literature, more work characterizing the communicative and discourse practices of older adults is needed.

One challenge in studying the communicative practices of older adults is that the rate of social interaction decreases with age (e.g., Carstensen, 1992; Lang and Carstensen, 1994). Age-related declines in social contact have been previously described in both longitudinal and cross-sectional studies with older adults demonstrating overall reductions in their interactions with others and a more narrow range of social partners (e.g., Carstensen, 1986, 1992; Cumming and Henry, 1961; Lee and Markides, 1990; Palmore, 1981). Yet, emotional experience and regulation appear to remain stable and, at times, increase with age. Older adults report levels of well-being and life satisfaction similar to those of younger adults (Diener and Lucas, 1999; Diener and Suh, 1997). Further, while older adults demonstrate stable to increased positive emotion and affect as compared to their younger counterparts (Charles *et al.*, 2001; Mroczek and Kolarz, 1998), the frequency of negative emotions and affect declines with age (Charles *et al.*, 2001; Carstensen *et al.*, 2000). Thus, despite documented cognitive-linguistic impairments along with marked reductions in the size of social networks, individuals appear to maintain – and perhaps even improve – emotional regulation and positive emotional experiences well into older adulthood. The implications of these dissociations on communication and interactional discourse practices, however, are unknown. Systematic examination of interactional aspects of communication while older adults engage in socially collaborative tasks promises to be a useful step in creating

experimental paradigms for understanding how older adults use language to promote and maintain social engagement and communicative interaction.

Verbal play as an interactional discourse resource

Verbal play, or the playful manipulation of the elements of language, serves important interpersonal functions (Crystal, 1998; Sherzer, 2002). Ranging from isolated instances of playing with the sounds and meanings of a single word, such as when making a pun or rhyming, to more expansive episodes of continuing a playful theme over the course of a conversation and into later interactions, verbal play is a pervasive component of daily interaction (Hengst, 2006; Shune and Duff, 2012). Verbal play is also well integrated into the framework of social communication. Attempts at verbal play are recognized as such by communicative partners who routinely not only respond to the playful episode, such as by laughing at the joke, but who also then carry the theme over the course of the conversation or during subsequent interactions, creating a common thread between partners. Additionally, verbal play appears to be a strong indicator of interpersonal health. For example, the presence of verbal banter and teasing in social interactions may not only reflect a trusting relationship, but may also facilitate these social relationships (e.g., Crystal, 1998; Straehle, 1993). Likewise, Crystal argues that the use of verbal play 'is a sign that all is well with human relationships. And conversely, when a couple or a family begin to be irritated by each other's language play, or to stop using it, it is a sure sign that the relationship is breaking down' (1998: 53). Given the marked changes in linguistic abilities that can be associated with healthy aging, one might predict that the use of verbal play in social interaction would also be compromised and that such disruptions could be linked to changes in the maintenance and establishment of social relationships. However, work with individuals with aphasia, who have profound language deficits, shows robust and successful use of verbal play in their interactions with familiar communication partners, suggesting a potential dissociation between linguistic ability and communication ability (Hengst, 2006; see also Holland, 1982). Thus, older adults may instead rely on verbal play as a discourse strategy intended to promote communicative success and increased emotional closeness, thereby strengthening social connectedness, *despite* the presence of linguistic decline.

While we are unaware of any studies that have specifically examined the influence of age on the use of verbal play, the potential for an effect of age has been suggested in our previous work with neurogenic populations. In one study, we examined the use of verbal play among individuals with hippocampal amnesia and their familiar communication partners as they worked together to complete a collaborative referencing task that required the individuals with amnesia to describe a set of Chinese tangram playing cards to their partners while seated across a low barrier (Duff *et al.*, 2009). The mean age for amnesia and comparison participants was 49 years ($SD = 3.6$). The amnesia participants, who had severe declarative memory impairments, produced significantly fewer episodes of verbal play than the comparison participants and those episodes were more rotely produced. While the presence of amnesia significantly affected the quantity of verbal play episodes, there were no group differences between these similarly aged participants in the interactional forms, resources, or functions (described below) of these episodes. The verbal play in these sessions, for both groups, were overwhelmingly simple (i.e., short episodes spanning from one to three

contiguous turns), single resource (e.g., verbal, gestural, or prosodic) episodes primarily deployed for referencing the cards in the task.

In another study, we examined the use of verbal play in the communicative interactions of older individuals with very mild Alzheimer's disease (AD) and their communication partners as they completed a similar collaborative referencing task (Shune and Duff, 2012). The mean age for the AD and comparison participants was 77 years ($SD = 5.8$). In contrast to the results of the amnesia study, there were no differences in the number of verbal play episodes produced between the AD and healthy comparison participants. This finding was surprising given the similarity in the nature of the memory impairment in hippocampal amnesia and early stage AD (e.g., Braak and Braak, 1990; Eichenbaum and Cohen, 2001; McKhann *et al.*, 1984). There were also no group differences in the interactional forms, resources, or functions of the verbal play episodes between AD and comparison pairs. However, we observed a different pattern of verbal play use between the younger participants in our previous study (individuals with and without amnesia) and the older participants with and without AD. While the verbal play productions of younger amnesia patients and their matched comparison participants were overwhelming simple, single resource episodes for referencing the cards, the older participants in the AD study (those with AD and the comparison participants) produced verbal play episodes that were extended (spanned more than three contiguous turns), utilizing multiple resources (combining verbal, prosodic, and/or gestural) for teasing each other both during and outside of the task. We suspect these differences are attributable to age. That is, the short and simple verbal play episodes in the sessions of the younger pairs (irrespective of the presence or absence of brain damage) appeared to be used to support successful completion of the task, while among the older pairs (again, irrespective of the presence or absence of brain damage) verbal play was more expanded and complex and appeared to be used more to support the interaction – a clear difference in how pairs engaged with each other and the task.

Such findings raise the question of what factors might be accounting for the observed differences in how older and younger adult pairs use verbal play to approach the collaborative referencing task and perhaps, more broadly, general communicative interactions. These changes, likely reflective of changes in social behavior and preferences, may be explained through shifts in motivation that ultimately influence goal-directed behavior towards the pursuit of emotionally meaningful goals with advancing age. The socioemotional selectivity theory, developed by Laura Carstensen, posits that such changes are motivated by the fluctuating salience given to specific goals that are influenced by the life cycle (Carstensen, 1992, 1995; Carstensen *et al.*, 2003). Particularly as related to the later parts of the aging process (i.e., into adulthood and older adulthood), perceived limitations on time result in a shift in attention from more expansive goals related to the obtainment of novel information/experience (e.g., acquiring new knowledge, making new social contacts) to more feeling-related goals related to the obtainment of more immediate emotional gratification (e.g., seeking emotional comfort from close social contacts). Such differences, however, are likely to only be visible when potential goals compete. That is, motivation for a behavior will be high across all ages when competition between goals is not present (e.g., no alternative choices, constraints are imposed on task selection) while

differences in behavior across the lifespan will be observed when competition is present (e.g., two conflicting activities to choose from).

Such a framework can be used to better understand cognitive aging: not all changes are part of a passive process resulting from chronological age itself, but rather are prompted by motivational shifts that result in behavioral changes. Thus, changes in interactional discourse practices may indeed reflect a shiftss toward the pursuit of more emotionally meaningful goals, such as using verbal play to support the social interaction itself during a structured task. Here, we employ an interactional sociolinguistic approach to investigate the impact of motivational changes associated with healthy aging on communication by examining the use of verbal play, a discourse resource with strong emotional salience and implications for the pursuit of social connectedness, in the communicative interactions of younger and older adults with their familiar communication partners.

The current study

The current study examines the use of verbal play in the interactions of ten younger and ten older adults and their familiar communication partners as they complete a collaborative referencing task. The goal of this study is to systematically document and characterize both the extent and types of verbal play in the communicative interactions of healthy older and younger adults using existing coding procedures (Duff *et al.*, 2009; Hengst, 2006; Shune and Duff, 2012) to identify interactional forms, resources, and functions of playful episodes. While previous work has shown disruptions in older adults in the collaborative referencing paradigm (e.g., Filer and Scukanec, 1995; Hupet *et al.*, 1993), we found that social and collaborative discourse with a *familiar* communication partner along with the use of only a partial barrier (i.e., so participants are able to see gestures, facial expressions, etc.) actually facilitated new learning, reducing the adverse effects of age on memory and learning in healthy aging (Derksen *et al.*, 2014), amnesia (Duff *et al.*, 2006), and in individuals with mild Alzheimer's disease (Duff *et al.*, 2013).

This paradigm, including interactions with a familiar communication partner during both an imposed learning task (i.e., an imposed expansive goal) and between-task 'free time' (i.e., a time where no goal is specified) provides an appropriate setting in which to further investigate potential changes in the use of verbal play, an interactional resource strategy, as a function of changes in motivation. Based on the differences previously observed between both neurogenic and healthy populations of different age cohorts, we predict age-related differences in the complexity (i.e., resources and interactional forms) and function of verbal play episodes produced. However, we expect these differences to only occur in between task trials. Specifically, the task trials present with clear constraints on discourse related to a specified knowledge-seeking goal (collaborative referencing with least effort) – a goal that has been found to similarly motivate both younger adults and older adults as observed in our previous analysis of learning during this task. Therefore, during task trials, we predict that the episodes for both the younger and older adults will be focused more around the task itself (e.g., referencing the cards of the task) and that a similar number of episodes will be produced. On the other hand, in between task trials no clear constraints are placed on discourse. Therefore, in between the trials, we predict that the use of verbal play will be

reflective of a shift in motivation from knowledge-seeking goals to emotion-seeking goals with age. We predict that in between task trials, older adults will demonstrate increased quantity and quality (e.g., increased complexity) of their verbal play episodes. While younger adults will be focused more on task completion, resulting in a decreased quantity of episodes in between trials and thus allowing for a more rapid return to the task itself, older adults will be focused more on structuring the current social situation to be emotionally meaningful, resulting in a greater number of more complex episodes (i.e., increased number of resources and contiguous turns) that emphasize collaboration and social relationships (e.g., teasing).

Method

Participants and dataset

Analysis was performed on interactional data obtained as ten younger pairs (younger individuals and their familiar communication partners) and ten older pairs (older individuals and their familiar communication partners) completed a collaborative referencing task. All participants were community dwelling and neurologically and psychiatrically healthy per self-report. The younger target participants ranged in age from 27 to 49 ($M = 37.9$ years; $SD = 8.9$) and the older target participants ranged in age from 70 to 88 ($M = 79.9$ years; $SD = 6.6$). Age, as expected, differed significantly between groups ($t(18) = -11.96$; $p < 0.0001$). However, there were no significant group differences for years of education ($t(18) = 0.76$; $p = 0.460$). Sex (five younger female target participants; six older female target participants) and handedness (eight younger right-handed target participants; nine older right-handed participants) were closely balanced between groups.

All participants selected a familiar communication partner with whom they would complete the collaborative referencing task. For the younger participants, the partners included five spouses, four friends, and one sibling. For the older participants, the partners included six spouses, three friends, and one sibling. As expected, the familiar partners for both groups of participants differed in age (35.7 years versus 74.7 years), however they were similar in sex (seven females versus six females) and education (15.1 years versus 15.6 years) for the younger and older partners, respectively.

The collaborative referencing task was designed to be completed on a total of 24 trials across two days, with six trials conducted in each of two separate sessions on each day. In our study using the collaborative referencing task with individuals with AD (Duff *et al.*, 2013) we had to decrease the number of sessions to two (or 12 trials) due to participant fatigue. To be consistent with our previous analysis of verbal play in those sessions, we are only reporting data from the first two sessions of the task (i.e., the 12 trials from the first day of testing). There was a minimum of 30 minutes between each session. During each trial, a board containing 12 numbered spaces and a set of 12 Chinese tangram playing cards were placed in front of each person. Participant pairs sat facing each other across a low barrier that allowed them to see each other's facial expressions and gestures while blocking their board and cards from view by one another. In each participant pair, one person was identified as the director and the other as the matcher. The director began each trial with his/her cards on their board (in a unique, predetermined order for each trial) and was

instructed to communicate to the matcher how to fill the numbered spaces so that at the end of each trial the two boards were identical. The initial participants recruited into the study ('target participants') were assigned the role of directors and their familiar communication partners were the matchers. Participants were instructed to treat the task as a game and to have fun, but no specific attempt was made to encourage or elicit verbal play. While the researcher left the room during task trials, she interacted freely with participants between trials while checking accuracy of card placements and setting up for the next trial. The researcher was always a woman and varied in age from early 20s to mid-30s.

More than 19 hours of videotaped data were available for analysis (8.0 hours younger pairs versus 11.5 hours older pairs). Discourse was transcribed and analyzed across the entire session (i.e., interactions before, during, and after task trials) and for all participants (the director, the matcher, and the researcher when present in between trials). Transcription was completed using a three-stage process (Duff *et al.*, 2008). During the first stage, audio portions of the sessions, including all utterances, audible sounds, and pause times, were transcribed with inaudible and unintelligible utterances marked accordingly. During the second stage, the original transcriber watched the video portion of the interactions, adding gestures and making any corrections needed to the audio content of the transcript. During the final stage, a consensus transcriber and the original transcriber watched the video together and generated a final version of the transcript that reflected corrections and additions made according to discussion and consensus of the two transcribers. Overall, the interactions of the older pairs (including those with the researcher present between trials) contained more total words across the 12 trials, with participants producing 101,199 total words (61,213 during task trials and 39,986 in between trials) as compared to 59,160 words for the younger pair interactions (31,395 during task trials and 27,765 in between trials), consistent with the differences in length of the available videotaped data between the two groups.

Data analysis

Identifying episodes—We coded and analyzed verbal play throughout the 40 sessions (two sessions for each of 20 pairs) through repeated viewings of the videotapes along with use of the transcripts to document identified episodes. Coding procedures were replicated from Shune and Duff (2012). All coding was performed by a team of five research assistants and the two authors using a three-phase consensus coding procedure. First, drawing on broad descriptions and definitions of verbal play (e.g., Crystal, 1998; Hengst, 2006; Shune and Duff, 2012) all instances of laughter, telling funny stories or jokes, playing with sounds or making puns, overt teasing of others or self-deprecating humor, use of marked or playful voice or registers, singing or song-like intonations, and use of sound effects were identified. During this first phase, a primary coder identified all such instances, marked the beginning and ending boundaries of each verbal play episode in the transcripts, and characterized the resources, functions, and interactional forms of each episode (see below). During the second phase, a secondary coder reviewed the videotapes and transcripts, noting agreements and disagreements with the episodes identified during the first phase of coding and marking any additional episodes not previously identified by the primary coder.

During the final coding phase, episode identifications and resource and function coding were finalized by the primary and secondary coders along with a consensus coder (M. Duff or S. Shune). While all instances of laughter were captured in the first two phases, previously identified episodes of laughter only (i.e., without any playful verbalizations or language) were excluded during the final coding phase. Episode boundaries were also clarified during this phase to distinguish between extended single episodes of verbal play consisting of one or multiple utterances connected by the same theme and separate playful episodes, including series of unrelated episodes and exchanges on the same theme that were temporally disconnected (e.g., across trials or sessions).

Characterizing resources, functions and interactional form—Procedures for coding resources, functions, and interactional form were adapted from Hengst (2006) and have been described previously (Duff *et al.*, 2009; Shune and Duff, 2012). We coded three types of resources: verbal, prosodic, and gestural. *Verbal resources* included linguistic resources, such as playing with the sounds and meanings of words (e.g., *the guy with the whooptie jig on his back*) as well as playful names or nicknames (e.g., *the urinator*; *couch potato*), and expressions (e.g., *holy cow*; *Yahtzee!*). *Prosodic resources* included sound effects, humming, and singing (e.g., [sing-songy] *I would wi:n*) as well as marked shifts in voicing and exaggerated prosody (e.g., [‘Hulk’ voice] *A new land speed record*). *Gestural resources* included gestures that meaningfully contributed to the playful episodes (e.g., skeptical *raised eyebrows*, *high fives* for celebration). Episodes could have multiple resources coded.

We then categorized each playful episode as having one of four communicative functions: joking/storytelling, teasing, referencing, and other. *Joking/storytelling* captured jokes as well as funny stories with narrative structure of everyday events (e.g., *She's being instructed to learn to tell Grandpa when he says bad words you can't say those things [laughs] ... so she's practicing*). *Teasing* included playful episodes directed towards or at the expense of others, such as competitive teasing, scolding, sarcasm (e.g., *I think they had about enough of you for one night*), as well as episodes directed towards oneself, such as bragging or self-deprecating comments and complaints (e.g., *Let's see how bad we did [laughs]*). *Referencing* included playing with the sounds, words, and meanings of the labels used to identify the target cards of the task (e.g., *Pacman*; *Jackie Gleason*). *Other* documented playful episodes not captured by any of the above categories.

We also coded three production forms in order to examine the interactional form of the playful episodes: *simple*, *simple+*, and *extended*. *Simple episodes* were short, spanning from one to three contiguous turns in the form of either a single-utterance episode, or an episode consisting of a playful utterance and one to two responses. *Simple+ episodes* contained multiple (i.e., more than three) contiguous turns, although they did not contain more than three turns that significantly and meaningfully contributed additional content to the verbal play episode (e.g., contained turns involving only a laugh or an expression of agreement/disagreement). *Extended episodes* consisted of multiple (i.e., more than three) thematically related and contiguous utterances. These episodes frequently included participants telling funny stories and extended playful conversational exchanges, such as exaggerated arguments and banter.

Coding reliability—The two initial coding passes resulted in 85% agreement between the two coders. Coding differences were primarily attributable to episode boundaries (e.g., single versus multiple episodes) and the addition of new episodes coded in the second pass. Disagreements between the first and second coding passes were resolved through discussion and consensus. Point-by-point inter-rater and intra-rater reliability were obtained on the final coding pass for approximately 24% of the data (three trials and following between-trial talk, randomly selected per pair) for the three verbal play resources and the four verbal play functions. Intra-rater and inter-rater reliability was 86.3% and 85.3% for resource and 89.7% and 86.9% for function coding, respectively.

Results

Frequency of verbal play

A total of 1,893 verbal play episodes were coded, with each of the participant pairs (including the researcher who was present only in between task trials) contributing between 38 and 184 episodes (see Figure 1). Overall, there was no significant difference in the number of episodes produced in the younger pair sessions ($M = 86.1$; $SD = 49.2$) compared to the older pair sessions ($M = 103.2$; $SD = 36.5$; $t(18) = -0.882$, $p = 0.389$). Recall that the older pairs produced twice as many words as the younger pairs. When we examine the number of verbal play episodes per 1,000 words, we still see comparable verbal play use in younger ($M = 14.2$; $SD = 6.1$) and older pairs ($M = 10.6$; $SD = 4.0$) and no significant statistical difference ($t(18) = 1.684$, $p = 0.109$).

However, when examining the frequency of verbal play episodes that occurred during the task trials and in between the task trials separately, differences emerged. Younger adults produced significantly more episodes per 1,000 words during the task ($M = 17.9$; $SD = 10.1$) as compared to older adults ($M = 9.1$; $SD = 6.3$; $t(18) = 2.330$, $p = 0.032$). Conversely, the older adults were involved in significantly more episodes per 1,000 words in between task trials ($M = 13.7$; $SD = 2.8$) as compared to younger adults ($M = 10.8$; $SD = 3.8$; $t(18) = 1.899$, $p = 0.037$).

Resources, functions, and interactional forms of verbal play

While the researcher did initiate verbal play episodes in between trials, as can be seen in Figure 1, in order to best capture differences in verbal play usage as related to age, only those episodes initiated by the participants themselves were further analyzed with respect to characterizing the resources, function, and interactional forms employed.

Characterizing verbal play during task trials—Episodes of verbal play produced by the younger pairs during task trials were predominately initiated by the director, that is, the participant primarily directing the task trials (80.7% director initiated versus 19.3% matcher initiated). Conversely, the older pairs demonstrated a more balanced level of participation in the initiation of these episodes (60.6% director initiated versus 39.4% matcher initiated). Significant differences were noted in these contributions between the two groups of participants ($t(18) = 5.112$, $p < 0.0001$).

All participant pairs utilized a full range of verbal, prosodic and gestural resources during the production of verbal play during task trials. Both groups relied on the use of single resources more than multiple resources (67.9% and 61.3% for single resources for younger and older adults, respectively). Additionally, while all participant pairs utilized verbal play for nearly the entire range of functions coded (i.e., no joking/storytelling was present during the task trials), as expected, the predominant resource used during task trials for both groups was referencing: referencing 79.4% ($SD = 11.1$) and 68.5% ($SD = 15.9$); teasing 13.8% ($SD = 10.2$) and 18.7% ($SD = 8.7$); and other 6.9% ($SD = 4.7$) and 12.8% ($SD = 12.4$), for younger and older pair sessions, respectively. While no statistically significant group differences emerged in the relative distribution of playful episodes for each function ($p = 0.092, 0.256$, and 0.177 for referencing, teasing, and other, respectively), younger adults did produce a greater number of referencing episodes per 1,000 words (14.09 episodes) as compared to older adults (6.81 episodes; $t(18) = 2.315, p = 0.033$). The majority of all verbal play episodes in both groups of participants were coded as simple, extending across only one to three turns (93.6% and 91.6% for the younger and older pair sessions, respectively). Younger pairs and older pairs were also equally likely to engage in verbal play episodes that extended beyond three contiguous turns (1.5% and 5.0% younger adults and 1.6% and 6.8% older adults for simple+ and extended, respectively).

Characterizing verbal play between task trials—While group differences emerged with regards to who initiated the verbal play episodes during the task trials, all participant pairs demonstrated equal levels of participation in the initiation of these episodes in between task trials (younger adults 48.5% and 51.5%; older adults 51.0% and 49.0% for director initiated and matcher initiated, respectively). There was no statistical difference between the two groups with regards to these respective contributions ($t(18) = 0.223, p = 0.826$).

All participant pairs utilized a full range of verbal, prosodic and gestural resources during the production of verbal play in between task trials. Unlike during the task itself, in between trials both groups relied on the use of multiple resources more than single resources (66.8% and 81.8% for multiple resources for younger and older adults, respectively). Older pairs, however, produced a significantly higher percentage of episodes with multiple resources as compared to younger pairs ($t(18) = -1.76, p = 0.048$), whereas younger pairs produced a higher percentage of episodes with single resources as compared to older pairs ($t(18) = 1.76, p = 0.048$). Further, paired t -tests revealed that while older pairs showed a significant increase in the quantity of episodes produced utilizing multiple resources in between task trials as compared to during ($t(9) = -5.447, p = 0.0004$), younger pairs did not show a similar pattern ($t(9) = -0.051, p = 0.961$).

All participant pairs utilized verbal play for the entire range of functions coded (i.e., referencing, teasing, joking/storytelling, and other), with a similar distribution of functions noted across the two groups: referencing 3.1% ($SD = 3.8$) and 0.5% ($SD = 1.1$); teasing 69.4% ($SD = 11.4$) and 75.0% ($SD = 5.3$); joking/storytelling 3.5% ($SD = 4.2$) and 7.4% ($SD = 5.3$); and other 24.0% ($SD = 9.1$) and 17.1% ($SD = 6.2$), for younger and older pair sessions, respectively. While no statistically significant group differences emerged in the relative distribution of playful episodes for each function ($p = 0.056, 0.174, 0.083$ and 0.062 for referencing, teasing, joking/storytelling, and other, respectively), older adults did

produce a greater number of joking/storytelling episodes per 1,000 words (0.715 episodes) as compared to younger adults (0.308 episodes; $t(18) = -2.128, p = 0.047$).

Further, both groups of participants were more likely to engage in verbal play episodes that extended beyond three contiguous turns as compared to during the task trials ($t(9) = -4.475, p = 0.002$ and $t(9) = -5.479, p = 0.0004$ comparing between trials to during for younger adults and older adults, respectively). Examination of the proportion of episodes produced by the younger and older pairs coded as each of the three durations revealed a trend for the older adults to utilize a greater percentage of temporally longer episodes of verbal play, as was predicted (66.3%, 7.7%, and 26.0% younger pairs and 55.2%, 13.2%, and 31.6% older pairs for simple, simple+, and extended, respectively). However, these group differences were not statistically significant ($p = 0.060, 0.052$ and 0.152 for simple, simple+, and extended, respectively). Older pairs did, however, produce more episodes that extended beyond three contiguous turns per 1,000 words (4.68 episodes) as compared to younger adults (3.05 episodes; $t(18) = -1.739, p = 0.049$).

Discussion

We examined the spontaneous use of verbal play in the communicative interactions of healthy younger and older adults and their familiar communication partners as they completed a collaborative referencing task. All participants initiated and contributed to verbal play episodes and we did not find any age-related differences in the overall quantity of verbal play between the younger and older pairs. As predicted, we did find task-related differences in the function and quality of these episodes that were similar for the two groups. During task trials, when the motivation for successful task completion was high, both older and younger participants engaged in shorter, less complex verbal play episodes for the purpose of referencing cards. Conversely, in between task trials both groups utilized multiple resources and relied more heavily on teasing to support their communicative interactions and emphasize the social nature of discourse. Despite these similar patterns in use of verbal play across task conditions, however, we found clear age-related differences in the timing and quality of these episodes. While older participants engaged in more complex, extended, and reciprocal episodes that supported the social nature of communicative interactions, particularly in between task trials, younger participants were more likely to engage in verbal play episodes during the task for the purpose of successful task completion. Further, while older adults demonstrated a significant increase in their use of multiple resources in between the task as compared to during the task, increasing the richness of their communication in addition to the length of time of these interactions, younger adults did not show a similar pattern. These findings support the differences observed in our previous work with neurogenic patients, suggesting the presence of age-related differences in the deployment of verbal play during interactional discourse. Furthermore, given the similarities in verbal play use between the participants with and without amnesia in our previous work (mean age = 49; Duff *et al.*, 2009) and the significantly younger young participants in the current study (mean age = 38), the age related differences we observe in verbal play in the older participants (mean age = 80) likely begin to appear in the sixth and seventh decades of life.

Of interest, when examining the communicative interactions overall, older adults also demonstrated an increased quantity of words as compared to the younger adults. No limit was placed on the length of talking during any component of the task and the researcher did not stop ongoing conversation. Thus, the participants themselves drove any differences observed. The findings that older adults utilized an increased quantity of words during unconstrained social interaction, or in between task trials, may be reflective of the motivational shifts proposed by the socioemotional selectivity theory (Carstensen, 1992, 1995; Carstensen *et al.*, 2003). It is plausible to suggest that the older adults desired to extend or prolong the more social components of the task, highlighting a desire for an increased realization of emotional goals. The findings that in between the task trials the older adults in the current study produced a higher relative number of verbal play episodes, produced episodes that were more complex and extended, and spent a greater amount of time in general engaged in these interactions are consistent with the hypothesis that older adults find such interactions to be emotionally gratifying and thus tend to seek them out and further emphasize them.

As proposed by the theory, the perception of mortality, one consequence of chronological age, can lead to decreased relevance being placed on concerns for the future and heightened awareness being given to current feeling-states, prompting older adults to structure their social worlds to optimize emotionally meaningful experiences (Carstensen, 1992, 1995; Carstensen *et al.*, 2003). Thus, the reduction in size of social networks among older adults as previously described can be viewed as a 'selective pruning process', whereby older adults are reducing their most peripheral social partners in favor of increased social connectedness with those most emotionally meaningful partners. Not only then is meaningful social engagement important for the cognitive and physical benefits it can provide throughout the aging process, but also, according to the theory, it is precisely the experience that older adults are highly motivated to seek out. All participants in the current study selected the partner that they interacted with during the collaborative referencing task. It is likely that, particularly among the older adults, the partner selection reflected some measure of emotional meaningfulness rather than merely convenience. Therefore, the finding of increased time spent in an interaction with a meaningful partner, and an increased quantity of socially related verbal play use (e.g., teasing) and richness during such an interaction is certainly consistent with the argument that older adults seek to optimize emotionally meaningful experiences, thereby heightening current feeling-states.

The idea that changes in socioemotional goals are motivating observed age-related differences during communicative interactions has previously been proposed as an alternative, or addition, to these differences being caused by cognitive decline. For example, the Pragmatic Change hypothesis suggests that younger and older adults hold different communicative goals for their speech, with older adults being more interested in personal narrative, reminiscence, and establishing identity, emphasizing the social context of an interaction (e.g., Boden and Bielby, 1983; 1986; Giles and Coupland, 1991). Such a hypothesis was found to be consistent with age-related changes in the production and perception of off-topic speech, suggesting that older adults produce more off-topic speech during autobiographical storytelling due to a shifts in their communicative goals toward

emphasizing the significance of life experiences rather than due to an impaired cognitive inhibition process (James *et al.*, 1998). In examining storytelling more generally, purposeful adoption of a particular style that stems from a socioemotional goal may also similarly explain the observed age-related differences. While younger adults have been found to focus on the sequence of events (e.g., situating events using absolute time references, producing a greater proportion of itinerary topics) during collaborative descriptions of vacations, older adults have been found to focus more on the descriptions (e.g., situating events relative to other events in the story, producing more descriptions of place and people; Gould and Dixon, 1993). Although the storytelling style observed in older adults may be attributable to a reduction in cognitive demands, such as a reduction in the necessity to recall absolute details, this style may alternatively, or additionally, be related to the desire to optimize emotionally meaningful experiences through the enhancement of their collaborative narratives. Thus, the findings of the current study may indeed offer further support for lifespan differences, particularly during socially interactive language activities, being socioemotionally motivated.

Despite these differences, however, these findings also provide clear evidence that verbal play is a robust interactional discourse resource that is utilized across the lifespan. Those aspects of human cognition that remain stable or improve as a function of age are of clear importance to better understanding the aging process. For example, while many measures of fluid intelligence are typically found to decrease with age, cognitive abilities based more on knowledge and experience, such as vocabulary, have been shown to increase substantially with age (Verhaeghen, 2003). Further, consistent with the notion that wisdom comes with age and more life and social experiences, older adults demonstrate improvements in social reasoning, utilizing higher-order reasoning schemes, and are more effective at solving everyday problems, appropriately adapting strategies to match context, as compared to younger adults (Blanchard-Fields *et al.*, 2007; Grossmann *et al.*, 2010). We view the findings here, of age-related differences in both the quality and function of verbal play, not as a deficit for older adults, but rather as a variation in discourse practice associated with age.

The current study also highlights the importance of examining cognitive ability (or deficits) in the context of meaningful activities. The cognitive declines associated with healthy aging, including declines in linguistic functioning, are frequently assessed in isolation from the activities of daily life in which they are routinely embedded (i.e., performance on experimental tasks or standardized tests to assess language rather than in conversation). In the context of a collaborative, interactionally situated task, our older pairs successfully deployed verbal play. In fact, the older adults frequently utilized verbal play to facilitate social interaction – arguably one of the most important goals of discourse, which requires the combination of various cognitive components. Thus, although we did not formally assess the cognitive and linguistic abilities of the older participants, we were able to characterize aspects of their *meaningful* use of language and cognition. Further, disassociation between linguistic and communicative abilities is apparent in both individuals with aphasia (i.e., impaired linguistic functioning in the presence of relatively preserved communication abilities) and traumatic brain injury (i.e., impaired communicative abilities in the presence of

intact linguistic functioning; e.g., Heilman *et al.*, 1971; Holland, 1982). These findings point to the value of designing studies that focus on social interaction and the interactional aspects of communication and language use in meaningful activities, or the motivation for the use of different resources and strategies during an interaction.

Indeed, social interaction, along with humor and laughter, has positive effects on the aging process, offering a physical and psychosocial buffer from the negative changes that occur in the lives of the elderly, when health may be most vulnerable (e.g., Adams and McGuire, 1986; Bassuk *et al.*, 1999; Christensen *et al.*, 1996; Cogan *et al.*, 1987; Hertzog *et al.*, 2008; Krause, 1997; Liang *et al.*, 1999; Michael *et al.*, 1999; Solomon, 1996; Tennant, 1990; Tse *et al.*, 2010). Given these physical and psychosocial benefits of meaningful social interaction and engagement, the use of humor in therapy has become a topic of interest. The targeted use of humor in therapy has been suggested and implemented not only for the elderly, but also for a wide variety of patient populations with chronic and terminal diseases including those with cancer, diabetes, and mental illness (e.g., Hayashi *et al.*, 2007; Johnson, 2002; Pasquali, 1990). Looking at communication and discourse more broadly, while we know they are key elements of social interaction and engagement, we know remarkably little about how communication and language use might positively contribute to these benefits. Yet, understanding the factors that influence language, communication, and social interaction will yield the most important long-term benefits for the elderly and may lead to strategies to support successful communication. We suspect the use of verbal play may be a critical ingredient and warrants further study in the literature on humor and interactional-based interventions.

We are currently experiencing a dramatic aging of our population as older Americans are living longer and are healthier than ever before (e.g., MacNeil, 2001). Across many disciplines, there are increased efforts in studying both healthy and disordered aging. Much of the aging literature, however, is focused on the 'phenomena of decline' and deficit (Salthouse, 1991). The findings presented here suggest that verbal play is a *preserved* interactional discourse resource in healthy older adults. We view the observed differences in verbal play between the younger and older participants as a communication difference, or variation in discourse practice associated with age, rather than a deficit. While more work is needed to replicate and extend this finding, such work is important in documenting changes in communication and discourse practices associated with healthy aging and in characterizing the role communication and discourse practices may play in meaningful social interaction.

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Biography

Samantha Shune received her PhD in Speech and Hearing Science from the University of Iowa. Her current position is as assistant professor of Communication Disorders and Sciences at the University of Oregon. Her research interests include the impact of age on the

communicative and physiologic components of the mealtime process and how these components support successful social interaction. Recent publications: Shune, S. and Duff, M. C. (2012) Verbal play as an interactional discourse resource in early stage Alzheimer's disease. *Aphasiology*, 26 (6): 811–825. Shune, S. and Moon, J. B. (2012) Neuromuscular electrical stimulation in dysphagia management: Clinician use and perceived barriers. *Contemporary Issues in Communication Science and Disorders*, 39: 54–67.

Melissa C. Duff received her PhD in Speech and Hearing Science from the University of Illinois. Her current position is as assistant professor of Communication Sciences and Disorders, Neurology, and the Neuroscience Training Program at the University of Iowa, and as the director of the Iowa Traumatic Brain Injury Registry. Her research primarily addresses the cognitive and neural systems that support language use and processing in social interaction. Recent publications: Duff, M. C., Gallegos, D., Cohen, N. J. and Tranel, D. (2013) Learning in Alzheimer's disease is facilitated by social interaction and common ground. *Journal of Comparative Neurology*, 521 (18): 4356–4369. Duff, M. C. and Brown-Schmidt, S. (2012). The hippocampus and the flexible use and processing of language. *Frontiers in Human Neuroscience*, <http://dx.doi.org/10.3389/fnhum.2012.00069>.

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Figure 1.
Total number of verbal play episodes by group and participant-initiator