Age-Related Differences in Judgments of Inappropriate Behavior are Related to Humor Style Preferences

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Abstract

Identifying social gaffes is important for maintaining relationships. Older adults are less able than young to discriminate between socially appropriate and inappropriate behavior in video clips. One open question is how these social appropriateness ratings relate to potential age differences in the perception of what is actually funny or not. In the present study, young, middle-aged, and older adults were equally able to discriminate between appropriate and inappropriate social behavior in a diverse set of clips relevant to both age groups. However, young and middle-aged adults rated the gaffe clips as funnier than control clips and young adults smiled more during the inappropriate clips than the control clips. Older adults did not show this pattern, suggesting that they did not find the inappropriate clips funny. Additionally, young adults endorsed a more aggressive humor style than middle-aged and older adults and aggressive humor style endorsement mediated age differences in social appropriateness ratings. Results are discussed in terms of possible mechanisms such as cohort differences in humor and developmental prioritization of certain humor styles, as well as the importance of investigating age differences in both abilities and preferences.

Keywords

age differences; humor; social gaffe; faux pas; social cognition

A social gaffe or faux pas is when someone says something that the listener does not want to hear (Baron-Cohen, O'Riordan, Stone, Jones, & Plaisted, 1999). Accidentally alluding to an upcoming surprise party in earshot of the guest of honor is a social gaffe (Stone, Baron-Cohen, & Knight, 1998). Recognizing social gaffes requires both cognitive and emotional resources (Stone et al., 1998). To understand that a social gaffe has occurred in the case of a person accidentally insulting someone, one must realize that the speaker did not know they

should not say what they said and that the person hearing it is hurt or offended. For example, in a scene from the situation-comedy *The Office*, the main character scoffs when an overweight colleague wants to be a cheerleader.

Social gaffes can damage relationships, so it is important for an individual to realize when he or she has committed a social gaffe in order to make amends (Halberstadt, Ruffman, Murray, Taumoepeau, & Ryan, 2011). A recent study found the older adults were less able than young adults to discriminate socially appropriate from inappropriate behavior depicted in clips from the British situation comedy, *The Office* (Halberstadt et al., 2011). This finding has serious implications for the social well-being of older adults: a lack of the ability to detect a social gaffe could be detrimental for social relationships. Importantly, the study also found that age differences in an emotion recognition task (i.e., accurately identifying facial expressions of emotion as anger, fear, joy, etc.), accounted for age differences in appropriateness ratings for the behavior of characters committing social gaffes (Halberstadt et al., 2011). Thus, an age-related reduction in an *ability* – the ability to recognize facial expressions of emotion – accounted for much of the age-related differences in the ratings of social gaffes. Older adults have also performed worse than young adults at understanding *faux pas* in written scenarios (Wang & Su, 2006). However, MacPherson and colleagues (MacPherson, Phillips, & Della Sala, 2002) examined young, middle-aged, and older adult performance on a written *faux pas* task and found age equivalence. These discrepant findings could be due to differences across studies in the *faux pas* tasks.

Age deficits in the detection of social gaffes are consistent with research showing age deficits in similar "mentalizing" tasks, where it is necessary to take the perspective of another. For example, older adults typically perform worse than young adults on tasks of theory of mind (TOM; Henry, Phillips, Ruffman, & Bailey, 2013), or the understanding that others' mental states are different from one's own (Stone, Baron-Cohen, & Knight, 1998). TOM relies upon executive functioning such as updating, shifting, and inhibiting information (Aboulafia-Brakha, Christe, Martory, & Annoni, 2011). Age-related deficits are typical in these types of executive functioning tasks (Hasher, Zacks, & May, 1999; Rakoczy, Harder-Kasten, & Sturm, 2012; von Hippel, 2007), suggesting that older adults may be vulnerable to errors in TOM tasks due to reduced executive functioning abilities. Clearly, theory of mind is a required component process for understanding that a social gaffe has occurred. As reviewed thus far, the evidence points toward age-related reductions in abilities that are important for understanding that a social gaffe has occurred. From a cognitive aging perspective, there is ample evidence that older adults may have a reduced *ability* to understand social gaffes, when compared to younger adults.

In the present study, we attempt to broaden this picture by taking a social cognitive perspective. Social cognition researchers test whether adding context and considering beliefs and motivation also contributes to age differences in performance or judgments. For example, a recent study found that when motivation is experimentally increased by manipulating the relationship between the participant and the experimenter, age differences in faux pas recognition in written scenarios are eliminated (Zhang, Fung, Stanley, & Isaacowitz, 2013). In this case, older adults were able to perform as well as young adults if they were sufficiently motivated. In context-rich situations older adults may be able to

compensate for decline in cognitive resources by relying on greater social expertise (Hess, 2006), or may be more motivated to use scarce cognitive resources because they prioritize socioemotional goals (Carstensen, 2006). Given the important implications of age differences in social gaffe detection, and some of the mixed findings in the literature, it is important to replicate the results of previous work in this area. We aimed to replicate and extend the work by Halberstadt and colleagues (2011) to explore whether age-related differences in humor preferences also relate to judgments of social appropriateness for characters committing social gaffes in situation-comedies.

The type of humor most prevalent in social gaffes depicted in situation-comedies is *aggressive humor*, or humor at the expense of others (Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003). If there are age differences in the appreciation of aggressive humor, then those age differences may influence how individuals of different age groups respond to social gaffe humor. In the present study, we were interested in the extent to which age differences in the *appreciation* of humor relate to judgments about social gaffes. Judgments of social acceptability of inappropriate behavior may be multiply determined: one constituent part is the comprehension that a social gaffe has occurred and another constituent part is that the humor intended by the inappropriate behavior is appreciated. Being able to detect a social gaffe is necessary but not sufficient for appreciation.

The degree to which an individual is offended by the humor actually determines whether ratings of social acceptability (i.e., social gaffe detection) and funniness are related. Past work has shown that for individuals who are not offended by the joke material, there is not a correlation between funniness ratings and social acceptability ratings. However, for individuals who *are* offended by the material, there is a significant relationship between funniness and social acceptability (Goel & Dolan, 2007). Thus, if older adults are more likely than young adults to be offended by aggressive humor portrayed in situation-comedies, then older adults' judgments of social acceptability would be tied to funniness ratings; but young adults' judgments of social acceptability would not. Indeed, research from the broader social cognition literature suggests that when a person's beliefs are violated, it can influence their judgments. Age differences in beliefs have also been shown to influence judgments. For example, in one study, age differences in blame attributions for the character responsible for a negative relationship outcome (i.e., a break up) partially depended upon the type of beliefs individuals held about appropriate behavior in social situations (Blanchard-Fields, Hertzog, & Horhota, 2012). Older adults were more likely than their younger counterparts to blame the character who violated their more traditional beliefs (e.g., one should not live together before marriage).

Thus, the question becomes, what contributes to humor comprehension and appreciation and do these factors differ with age? Studies on age differences in humor suggest that age-related declines in cognition contribute to reduced humor comprehension (Mak & Carpenter, 2007), and that appreciation may depend upon having the necessary cognitive resources to comprehend the joke (Schaier & Cicirelli, 1976). Furthermore, in comparison to young and middle-aged adults, older adults select fewer correct punch lines for jokes (Uekermann, Channon, & Daum, 2006). This highlights the importance of cognitive resources for humor comprehension. However, even if comprehension is achieved, an under-researched question

is whether there are age differences in the types of humor that are appreciated. Older adults report that having a sense of humor is an important part of successful aging (Bowling & Dieppe, 2005). Individuals may adapt their humor style preferences to match their life stage. Consistent with this possibility, in an older adult sample, expressing and appreciating humor was related to positive social connections and adaptive coping with age-related losses (Damianakis & Marziali, 2011). Older adults in this study described using and enjoying affiliative, self-enhancing, self-defeating, and authentic humor styles, but did not tend to mention humor styles that could be characterized as aggressive. Another study found that on a self-report humor style questionnaire, adolescents scored higher than a young to middle-aged group on affiliative humor (use of humor that is affirming to the self and others) and aggressive humor (a hostile use of humor such as putting others down; Martin et al., 2003). The present study will be the first to examine whether this trend continues into older adulthood, with increasing age being associated with lower endorsements of aggressive humor styles.

In addition to examining the influence of individual differences in humor style preferences, in the present study we attempted to broaden the paradigm further to include a diverse set of video clips depicting social gaffes. Consistent with a social cognitive perspective, we chose video clips from television shows that appeal to young, middle-aged, and older adults by choosing television series from the 1980s (*Mr. Bean, Golden Girls*) and the 2000s (*Curb Your Enthusiasm, The Office*). Young and middle-aged adults might enjoy the humor created in the 2000s, while older adults might find the humor from the 1980s more appealing. Research on impression formation and social attribution suggests that increasing the relevance of the character often reduces age differences in social judgments, purportedly because individuals are more motivated to exert precious cognitive resources when tasks are relevant to their current stage in life (Blanchard-Fields & Beatty, 2005; Hess, Rosenberg, & Waters, 2001).

It is clear from the differences between comedies from the 1980s and comedies from the 2000s that age differences in humor appreciation for comedy shows could be due to cohort differences. Popular styles of humor change across time, which means that today's older adults may not enjoy the same humor styles that are popular for today's young adults. By including a broad range of comedy clips across two decades, we hope to capture age-relevant humor for all three cohorts. A cohort explanation for different humor preferences of young, middle-aged, and older adults is consistent with the argument that age differences in social gaffe comprehension are influenced not solely by abilities, but by contextual factors as well.

It is also important to consider whether age differences in understanding social gaffes are rooted in social perception differences and are functionally adaptive or maladaptive, or whether they reflect age differences in preferences. One challenge of researching complex social interactions as seen in a video clip is that there is no objective "right answer" when assessing ratings of appropriate behavior (e.g., is the behavior 10% appropriate or 20% appropriate?). Studies on cognitive aging often contrast older adult performance against the "gold standard" of young adult performance, using objective measures such as number of words recalled. However, in order to fully understand age differences in social gaffe

detection, where the outcome variables are subjective (i.e., rating behavior on a social appropriateness scale of 0–100%), a social cognition approach might be additionally useful. One important cornerstone of a social cognition approach is that social competence cannot be measured against a single standard; rather social competence is defined as the individual's ability to function within their current environment (Blanchard-Fields & Hess, 1999). Following this line of thinking, in the present study we use three age groups as comparison conditions to examine age differences in judgments and explore possible person-level differences that might help explain such age differences.

The Present Study

The aim of the present study was to investigate whether humor style preferences may be another reason that age differences emerge in judgments of inappropriate behavior (in addition to emotion recognition and cognitive abilities). Rather than assessing whether the judgments are correct or incorrect, we consider that humor style and judgments of appropriate behavior may be adaptive for each life stage. We pilot-tested a broad set of social gaffe comedy video clips with young and older adults to ensure that the diverse humor appealed to the different age groups but still clearly depicted inappropriate and appropriate behavior to young and older adults. We also investigated age-related differences in humor style preferences with four converging methods. First, self-report funniness ratings were collected for each clip. Second, the number of smiles during clip viewing coded from video recordings. Third, for an online objective measure of emotional response, we obtained facial electromyography (EMG) activity for the Zygomaticus major (smile) muscle *during* clip presentations. And fourth, participants completed an individual difference measure of humor styles. Finally, in order to better understand the locus of age effects, we included a middle-aged group in addition to young and older adults in the present study.

Pilot Study

To identify television clips depicting inappropriate and appropriate social behavior, we conducted a pilot study with two different groups of young and older adults. In total, 24 young adults (18–30 years) and 11 older adults (60–80 years) watched and rated 24 clips (12 inappropriate and 12 control), presented in one of four counterbalanced orders, that we selected based on: 1) a clear depiction of inappropriate or appropriate social behavior by one of the main characters, and 2) characters and situations relevant to a wide age range of adults. After viewing each clip, participants rated the appropriateness of the behavior of the main character on a scale ranging from *0 = not at all socially appropriate* to *100% = entirely socially appropriate*. Average ratings for the 24 clips are presented in Table 1. Seven inappropriate clips were rated separately by the young and older adult groups as less than 37% socially appropriate and roughly equal by both young and older adult raters. These seven clips were selected as the inappropriate clips for the main study (*Mr. Bean Bus Stop, Golden Girls Pearl, The Office Michael Rude to Phyllis, Golden Girls Condom, Mr. Bean Checking In, Curb Your Enthusiasm (CYE) Tip Coordination, and CYE Stolen Ticket*). See Appendix A for descriptions of clips. Conversely, seven control clips were rated greater than 50% socially appropriate by the young and older adults groups, with roughly equivalent ratings, and were selected as control clips in the main study (*Mr. Bean Haircut, Golden*

Girls Goodbye, Mike & Molly Hallway, Golden Girls Dishes, Mr. Bean Morning, CYE Country Club, and *CYE Smoke Detector*). The duration of clips ranged from approximately 30 seconds to 3.5 minutes.

Another group of nine participants (3 male, 6 female; ages 20–38 years) rated the 14 selected clips on the four styles of humor. After reading the definition and examples of each humor style (affiliative, self-enhancing, aggressive, self-defeating) participants rated each of the 14 clips (presented in a random counterbalanced order) on the degree to which the intended humor was consistent with the four humor styles on a Likert-type scale from *1 (not at all this type of humor)* to *7 (very much this type of humor)*. As can be seen in Table 2, the inappropriate clips were rated higher on aggressive and self-defeating humor styles, while the control clips were rated higher on affiliative and self-enhancing humor styles.

Main Study Hypotheses

We had four hypotheses. First, because we broadened the set of clips used we did not expect an age group by clip type interaction for the social appropriateness ratings. That is, we did not expect older adults to differ from young or middle-aged adults at differentiating between the appropriate and inappropriate clips. Second, we expected young and middle-aged adults, but not older adults, to find the inappropriate clips funnier than the control clips, as exhibited by a) funniness ratings, b) number of smiles, and c) Zygomaticus major (smile) muscle activity (i.e., social gaffe appreciation). Third, consistent with reported humor styles in an older adult sample (Damianakis & Marziali, 2011) and age-related decreases in preferences for aggressive humor styles (Martin et al., 2003), we expected older adults would report more affiliative, self-enhancing, and self-defeating humor styles and less aggressive humor styles than young and middle-aged adults on the Humor Styles Questionnaire (Martin et al., 2003). Fourth, we expected social appropriateness ratings to be associated with individual differences in humor style.

Although little work has examined middle-aged adults' social judgments, we expected that where age differences emerged, middle-aged adults would be more similar to young adults in social appropriateness ratings, funniness ratings, EMG activity, and humor style preferences because the aspects of humor that may be adaptive for older adults seem unique to the late adulthood stage where humor can help individuals cope with the losses that accompany old age.

Method

Participants

Thirty young adults (17–21 years; 70% female), 22 middle-aged adults (35–56 years; 36% female), and 29 older adults (64–84 years; 66% female) participated in this study[1]. Young adults were undergraduate students recruited from an introductory psychology course. Middle-aged adults and community-dwelling older adults were recruited from advertisements and a life-long learning class. Participants received either course credit or a monetary stipend. The sample was primarily White (79%) or Black (13%). Older adults were screened for dementia with the Mini-Mental State Exam (Folstein, Folstein, &

McHugh, 1975); all scores were greater than 26 (*M* = 29.29, *SD* = .85). Sample characteristics for demographic, cognitive, and affective variables are displayed in Table 3.

Procedure and Measures

Behavior Ratings—The 14 clips were presented in one of four orders counterbalanced across participants. Prior to each clip, participants saw a picture of the main character and were informed that they would be rating the behavior of the main character. Following each clip, participants rated the social appropriateness of the main character's behavior (*0 = not at all socially appropriate; 100% = entirely socially appropriate*) and the funniness of the clip (*0 = not at all funny; 100% = extremely funny*).

Think Aloud Protocol—After rating each clip, young and older adult participants were asked to describe what had happened and were probed with two questions: *What did the main character do and say? How did other people respond to the main character's behavior?* Responses were recorded with a video camera and later transcribed. Two independent coders blind to participant age and gender coded the transcripts. A data-driven approach was used to establish the coding scheme based on typical responses. The coding scheme for each clip can be found in Appendix B. Coders first coded for specific content in each of the thought-listing transcriptions and then used those codes to form two general impressions: whether the participant understood the clip (*0 = no, 1 = yes*) and whether the participant mentioned the behavior was inappropriate (*0 = no, 1 = yes*). We then computed the proportion of clips that a participant 1) mentioned was inappropriate, and, 2) understood, (out of seven) separately for the two clip types. Sixty-nine percent of the thought-listing data was coded by both coders independently. Inter-rater agreement was over 85% on these clips. When the two coders disagreed, they resolved discrepancies by arguing viewpoints and watching the videos again together, yielding a final agreed-upon code for each clip.

Smiles—Young and older adult participants' faces were recorded with a video camera while they were watching the clips. Two independent coders, blind to clip type, coded 89 percent of the videos for the number of smiles, with inter-rater reliability greater than 85%. To be coded as a smile, there had to be an upturn of the corners of the lips plus a wrinkling of the crow's feet at the corners of the eyes, or a pushing up of the cheeks (i.e., *a Duchenne smile*). Discrepancies were resolved by arguing viewpoints until a final decision was reached for each category. Number of smiles was categorized into five bins: 1 = 0 smiles, 2 = 1–3 smiles, 3 = 4–6 smiles, 4 = 7–10 smiles, 5 = 11–15 smiles. The remaining 11% of the videos were coded by a single coder.

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[1]Some of the measures were missing data, reducing the participant sample size for some analyses. First, thought-listing and smile data were not collected for middle-aged adults, so analyses on these measures is a comparison of young versus older adults. For the thought-listing data, 3 young adults and 2 older adults were missing videos due to technical failure, leaving 27 young adults and 27 older adults with thought-listing data. Videos of facial expressions were missing for 4 young adults and 5 older adults due to technical failure or experimenter error. This left 26 young adults and 24 older adults with videos to code for smiles. EMG data for 2 young adults and 1 older adult were missing due to technical failure, leaving 28 young adults and 28 older adults for analysis. Six middle-aged participants' EMG data was excluded because they were extreme outliers (i.e., more than four standard deviations from the mean); this left 16 middle-aged adults for the EMG analysis. Five young adults, 7 middle-aged adults, and 2 older adults were missing data for the HSQ, leaving 25 young adults, 15 middle-aged adults, and 27 older adults for analysis on the HSQ.

Facial Electromyography—We used facial electromyography (EMG; using guidelines by Fridlund & Cacioppo, 1986) to measure participants' smile muscle activity – even activity that was not overtly visible – during clip viewing. Given that pleasant stimuli elicit greater EMG activity over Zygomaticus major (i.e., cheek muscle; Larsen, Norris, & Cacioppo, 2003), we measured activity of the Zygomaticus major muscle. The skin was cleaned with isopropyl alcohol and pre-gelled silver/silver chloride disposable electrodes were placed in a bipolar configuration over the left Zygomaticus major muscle according to standardized placement guidelines (Fridlund & Cacioppo, 1986). Two channels of a MEDAC System/3 with NeuGraph 4.6 software (Neurodyne Medical Corp., Cambridge, MA) sampled at 500 Hz. This system allowed us to synchronize EMG recording with the onset and offset markers from the clips, yielding an average EMG value for each of the 14 clips. The EMG signal was band-pass filtered (25 to 425Hz) and RMS processed (common mode rejection ratio 150db at the 60-Hz notch filter to remove line frequency noise); the sensitivity range was 0.01 to 1000 microvolts.

To measure baseline Zygomaticus major muscle activity, participants watched a neutral video of a screen saver depicting colored lines on a black background for five minutes (Rottenberg, Ray, & Gross, 2007). The last two minutes were used to calculate the mean baseline activity. Baseline EMG was only collected once, at the beginning of the session. Clip types (control vs. inappropriate) were presented in a random order (not in blocks). In order to make comparisons between different age groups, we computed Z-scores for our EMG measure by subtracting the mean baseline activity and normalizing it using the baseline standard deviation (van Boxtel, 2010). This method of normalizing the data has been used when comparing different age groups on physiological measures (Shiota & Levenson, 2009). Average Zygomaticus major activity was computed for the seven inappropriate clips and the seven control clips.

Humor Style—Individual differences in humor style were assessed with the 32-item Humor Styles Questionnaire (Martin et al., 2003). Participants indicated the degree to which each statement described their humor style on a seven point Likert-type scale (*1 = totally disagree; 7 = totally agree*). The scale measures four dimensions of humor: affiliative humor, self-enhancing humor, aggressive humor, and self-defeating humor. Affiliative humor is the tendency to share humor with others (reported $\alpha = .80$; this sample $\alpha = .73$; sample item is *I enjoy making people laugh*). Self-enhancing humor is using humor to cheer oneself up (reported $\alpha = .81$; this sample $\alpha = .52$; sample item is *Even when I'm by myself, I'm often amused by the absurdities of life*). Aggressive humor is using humor to disparage others (reported $\alpha = .77$; this sample $\alpha = .69$; sample item is *Even if something is really funny to me, I will not laugh or joke about it if someone will be offended* – reverse-scored). And self-defeating humor is humor at one's own expense (reported $\alpha = .80$; this sample $\alpha = .79$; *I often go overboard in putting myself down when I am making jokes or trying to be funny*). Reverse-keyed items were reverse-scored and then the eight scores for each subscale were summed.

Results

There was no effect of presentation order for any of the dependent variables, so this factor was excluded from further analysis[2].

Social Gaffe Comprehension: Social Appropriateness

Social appropriateness ratings by age group are depicted in Figure 1. In order to determine whether there were age differences in social appropriateness ratings, a 3 (Age Group: young, middle-aged, old) x 2 (Clip Type: Inappropriate, Control) mixed-model ANOVA was conducted with Clip Type as a within-subjects factor. The main effect of Age Group was significant, $F(2, 78) = 10.80$, $p < .001$, $\eta_p^2 = .22$. Follow-up comparisons revealed that both young adults ($M = 49.99$, $SE = 1.84$) and middle-aged adults ($M = 46.07$, $SE = 2.15$) rated clips *more* socially appropriate than older adults ($M = 37.98$, $SE = 1.87$), ps < .05. There was also a main effect of Clip Type in the expected direction, with control clips ($M = 70.52$, $SE = 1.47$) rated as more appropriate than inappropriate clips ($M = 18.84$, $SE = 1.54$), $F(1, 78) = 675.90$, $p < .001$, $\eta_p^2 = .90$. The Age Group x Clip Type interaction was not significant, $F(2, 78) = .52$, $p = .60$, $\eta_p^2 = .01$.

Results from the thought-listing data revealed that young ($M = 79.90\%$, $SE = 3.17$) and older adults ($M = 84.13\%$, $SE = 2.68\%$) were equally likely to mention that the inappropriate clips were inappropriate, $t(52) = 1.02$, $p = .31$. There were also no age differences in the propensity to mention inappropriateness for the control clips (young: $M = 19.05\%$, $SE = 2.64\%$; old: $M = 18.52\%$, $SE = 2.62$; $t(52) = .14$, $p = .89$). There were, however, age differences in how well participants understood the inappropriate clips, $t(52) = 3.30$, $p = .002$, $d = .90$, with young adults' transcripts ($M = 97.88\%$, $SE = .10$) suggesting a greater understanding of the inappropriate clips than older adults' ($M = 89.42\%$, $SE = 2.36$; see Appendix B for examples). For the control clips, there were no age differences in understanding ($t(52) = 1.67$, $p = .10$; Young: $M = 96.30\%$, $SE = 1.45$; Old: $M = 91.53\%$, $SE = 2.44$).

Social Gaffe Appreciation: Funniness

Funniness ratings by age group are depicted in Figure 2. In order to determine whether there were age differences in funniness ratings, we conducted a 3 (Age Group) x 2 (Clip Type) mixed model ANOVA. The main effect of Age Group was significant, $F(2, 78) = 7.92$, $p = .001$, $\eta_p^2 = .17$. Follow-up comparison revealed that young adults ($M = 46.72$, $SE = 2.66$) and middle-aged adults ($M = 52.58$, $SE = 3.11$) rated the clips as funnier than older adults ($M = 36.67$, $SE = 2.71$). There was also a main effect of Clip Type, with inappropriate clips ($M = 53.95$, $SE = 1.89$) rated as funnier than control clips ($M = 36.70$, $SE = 1.71$), $F(1, 78) = 127.20$, $p < .001$, $\eta_p^2 = .62$. However, these main effects were qualified by a significant Age Group x Clip Type interaction, $F(2, 78) = 14.65$, $p < .001$, $\eta_p^2 = .27$. Follow-up ANOVAs separately by clip type revealed that there were no age differences in the funniness ratings for the control clips, $F(2, 78) = 1.94$, $p = .15$, $\eta_p^2 = .05$, but young adults ($M = 58.67$, $SE =$

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[2]All analyses were originally conducted with sex as a factor, but no effects were found. Thus, it was excluded from further consideration.

3.08) and middle-aged adults ($M = 63.51$, $SE = 3.60$) rated the inappropriate clips as significantly funnier than older adults ($M = 39.67$, $SE = 3.13$), $F(2, 78) = 15.02$, $p < .001$, $\eta_p^2 = .28$.

The smile count data were submitted to a 2 (Age Group) x 2 (Clip Type) mixed-model ANOVA. None of the effects or interactions reached significance. Although the interaction failed to reach significance, because we hypothesized *a priori* that young adults would smile more than older adults during the inappropriate clips, we conducted planned comparisons to test for this difference. Results from planned comparisons of the coding of smiles was consistent with the funniness ratings, with young adults ($M = .89$, $SD = .52$) smiling more during the inappropriate clips than older adults ($M = .63$, $SD = .33$), $t(42.78) = 2.14$, $p = .038$, $d = .60$.

To determine whether there were age differences in EMG activity over Zygomaticus major, we conducted a 3 (Age Group) x 2 (Clip Type) mixed-model ANOVA. The main effect of Age Group was significant, $F(2, 69) = 12.37$, $p < .001$, $\eta_p^2 = .26$, with middle-aged adults ($M = 13.55$, $SE = 1.63$) exhibiting greater Zygomaticus major activity than young adults ($M = 3.48$, $SE = 1.23$) and older adults ($M = 6.12$, $SE = 1.23$), $ps < .05$. As expected, smile muscle activity was greater during inappropriate clip viewing ($M = 8.11$, $SE = .80$) than control clip viewing ($M = 7.32$, $SE = .82$), $F(1, 69) = 5.70$, $p = .020$, $\eta_p^2 = .08$ (see Figure 3). The Age Group x Clip Type interaction was not significant.

Humor Styles

To determine whether there were age differences in the four subscales of the Humor Styles Questionnaire, we conducted a multivariate analysis of variance (MANOVA). We observed a multivariate significance for Age Group (Wilk's $\lambda = .48$, $F(8, 122) = 6.71$, $p < .001$, $\eta_p^2 = .31$. All four scales exhibited age differences. Middle-aged adults ($M = 47.27$, $SE = 1.73$) endorsed affiliative humor to a greater extent than older adults ($M = 40.27$, $SE = 1.73$), $F(2, 64) = 5.50$, $p = .006$, $\eta_p^2 = .15$. Middle-aged adults ($M = 40.87$, $SE = 1.55$) were more likely than young adults ($M = 34.76$, $SE = 1.20$) to endorse self-enhancing humor styles, $F(2, 64) = 5.00$, $p = .01$, $\eta_p^2 = .14$. Young adults ($M = 29.44$, $SE = 1.430$) were more likely than middle-aged ($M = 20.27$, $SE = 1.68$) and older adults ($M = 21.00$, $SE = 1.25$) to endorse aggressive humor styles, $F(2, 64) = 14.12$, $p < .001$, $\eta_p^2 = .31$. And young adults ($M = 30.40$, $SE = 1.70$) endorsed self-defeating humor styles more than older adults ($M = 22.70$, $SE = 1.764$), $F(2, 64) = 5.43$, $p = .007$, $\eta_p^2 = .15$.

Associations with Appropriateness Ratings—We conducted Pearson product-moment correlations separately by age group for social appropriateness ratings, funniness ratings, and humor styles (see Table 4). Consistent with our hypothesis, greater aggressive humor styles were associated with higher ratings of appropriateness for inappropriate clips, for middle-aged ($r = .59$, $p < .05$) and older adults ($r = .57$, $p < .001$) but not young adults ($r = .29$, $p = .16$).

To determine whether age-related differences in social appropriateness ratings can be accounted for by individual differences in humor style, we input the centered age group variable and the centered aggressive humor style scores as predictors of social

appropriateness ratings for the inappropriate clips. Increasing age was significantly related to lower ratings of social appropriateness for inappropriate clips, β = -.37, p < .001. Increasing age was related to lower endorsement of the aggressive humor style on the HSQ, β = -.46, p < .001. When age and aggressive humor style were both added as predictors of social appropriateness ratings of inappropriate clips, greater endorsement of aggressive humor styles was significantly related to greater ratings of appropriateness for the inappropriate clips, β = .47, p < .001, and age group was no longer a significant predictor, β = −.13, p = .29. The Sobel test confirmed mediation, z = −2.93, p = .003 (see Figure 4). Based on the squared semipartial correlation, aggressive humor style accounted for 18% of the age-related variance in appropriateness ratings of inappropriate clips.

We also tested whether funniness ratings for inappropriate clips, thought-listing data for understanding of inappropriate clips, or short-term memory span using the digit symbol task could account for age-related differences in appropriateness ratings for inappropriate clips. None of these measures significantly mediated the relationship. Furthermore, when thought-listing data for understanding of the inappropriate clips was added to the mediated regression model with age group, aggressive humor styles, and proportion inappropriate clips understood as predictors (centered) and social appropriateness ratings for the inappropriate clips as the dependent variable, only aggressive humor style was a significant predictor, β = .43, p = .005. This suggests that aggressive humor styles still accounts for the age-related variance in social appropriateness ratings for inappropriate clips, while a lack of understanding, β = -.01, p = .925, or theory of mind, cannot account for such age differences.

Discussion

This study built on previous findings that emotion recognition abilities impair social gaffe discrimination in later adulthood by extending the picture to include a diverse set of clips that appeal to various age groups, including a middle-aged sample, and testing whether age differences in humor style preferences account for age differences in judgments of inappropriate behavior. In this study, we replicated the Halberstadt and colleagues' (2011) finding that there are age differences in social appropriateness ratings; but in the present study older adults rated both clip types as less appropriate than young adults. We found that the age differences in the social appropriateness ratings for the inappropriate clips were mediated by age differences in preferences for an aggressive humor style. Consistent with our expectations, the funniness ratings highlighted age differences, with young and middle-aged adults exhibiting a greater difference between the two clip types than older adults. Additionally, young adults smiled more during the inappropriate clips than older adults, relative to the control clips. Young adults were more likely to endorse aggressive and self-defeating humor styles than older adults, and aggressive humor style was positively related to rating inappropriate clips as more appropriate. Overall, we found that older adults were less likely to endorse an aggressive humor style and did not find the inappropriate clips as funny as young and middle-aged adults. These findings suggest that older adults may be less likely to enjoy humor at the expense of others.

We interpret these findings from a social cognitive perspective. In addition to understanding the abilities – or lack thereof – that are required to understand that a social gaffe has occurred, these results suggest that it is also important to think about the context of age differences in social acceptability judgments. Interestingly, the degree to which inappropriate clips were rated as inappropriate was related to how much an individual enjoys aggressive humor, suggesting that, consistent with past work (Goel & Dolan, 2007), humor style preferences can shape judgments about social acceptability. It appears that older adults appreciate different humor styles (e.g., self-enhancing) than young and middle-aged adults (e.g., aggressive). Interestingly, the largest age difference in funniness ratings was for the clip from *The Office*, which was most consistent with an aggressive humor style. The types of humor an individual finds appealing may be adaptive for his or her life stage. Older adults report experiencing the types of humor (e.g., affiliative) in their daily lives that are adaptive for coping with the losses that accompany aging (Damianakis & Marziali, 2011).

The strengths of this work include broadening the stimuli types and thus broadening the types of perception studied, and the multi-method approach (e.g., self-report ratings, facial EMG, thought-listing, video of smiles). Most of these measures converged on the same story: young, middle-aged, and older adults were able to detect social gaffes in this diverse set of clips but older adults find inappropriate social behavior less funny than young and middle-aged adults. Furthermore, it is encouraging that the funniness ratings were consistent with the smiles data, supporting the idea that age differences in humor processing styles occur online and are not simply an artifact of differential memory or self-report biases by age group. Only the EMG data did not show this pattern of age differences. Interestingly, consistent with past findings that older adults may have reduced comprehension of social gaffes, our thought-listing task revealed reduced understanding among older adults only of the inappropriate clips (but not the control clips). Clearly, it is important to study both the ways in which older adults are limited in their ability to comprehend social gaffes and the ways in which age-related differences in preferences may influence social judgments.

This study had several limitations. First, we collected the data for the middle-aged adults at a different time and did not collect smile data or thought-listing for this group. Future work should test middle-aged adults on these measures as well, to provide a more comprehensive picture of how individuals in middle adulthood make social judgments about inappropriate behavior. Second, we did not remove extraneous EMG artifacts by viewing the EMG recording for each participant. This may have limited the reliability of these data and could explain why the EMG data were not entirely consistent with the smiles coding data. However, it could also be that the EMG was picking up on facial activity that could not be observed in the videos of facial expressions. Third, this study was also limited by a cross-sectional design. All studies on age differences in humor processing to date have used cross-sectional/correlational designs, which leaves open the question of whether age differences are due to cohort effects or something developmental (Greengross, 2013). We cannot rule out the possibility that age differences in humor appreciation are due to cohort effects. The construct of humor is something that does change across generations. For example, humor is related to the disposition of openness to experience and there may be generational differences in openness. Indeed, past work has found that age differences in humor

appreciation are strongly related to age differences in conservatism (Ruch, McGhee, & Hehl, 1990). Future work should investigate humor processing styles in a longitudinal sample. It would also be interesting to investigate whether personality factors (e.g., openness to experience (e.g., McCrae & Costa, 2003) relate to humor style preferences. A fourth limitation is that we performed a mediation analysis using cross-sectional data. This type of analysis cannot make conclusions about developmental mechanisms or causal effect (Lindenberger, von Oertzen, Ghisletta, & Hertzog, 2011). However, the pattern of relationships between age, humor style, and ratings of social behavior are still interesting.

Conclusion

This study suggests that judgments about the appropriateness of social behavior are influenced by how much the humor aligns with one's humor style preferences. Older adults are less likely than young and middle-aged adults to enjoy the type of humor that is featured in situation comedies: aggressive humor. This study shows that age differences in humor styles are related to age differences in social judgments. One clear implication of this work for the study of social perception and aging is that it is important to understand both what older adults can perceive (ability) versus how they evaluate it and what they prefer.

Acknowledgments

References

Aboulafia-Brakha T, Christe B, Martory MD, Annoni JM. Theory of mind tasks and executive functions: A systematic review of group studies in neurology. Journal of Neuropsychology. 2011; 5:39–55. [PubMed: 21366886]

Blanchard-Fields F, Beatty C. Age differences in blame attributions: The role of relationship outcome ambiguity and personal identification. Journal of Gerontology: Psychological Sciences. 2005; 60B: 19–26.

Blanchard-Fields, F.; Hess, TM. The social cognitive perspective and the study of aging. In: Hess, TM.; Blanchard-Fields, F., editors. Social cognition and aging. San Diego, CA, US: Academic Press; 1999. p. 1-14.

Bolger N, Schilling EA. Personality and the problems of everyday life: The role of neuroticism in exposure and reactivity to daily stressors. Journal of Personality. 1991; 59:355–386. [PubMed: 1960637]

Bowling A, Dieppe P. What is successful ageing and who should define it? BMJ. 2005; 331:1548–1551. [PubMed: 16373748]

Carstensen LL. The influence of a sense of time on human development. Science. 2006; 312:1913–1915. [PubMed: 16809530]

Damianakis T, Marziali E. Community-dwelling older adults' contextual experiencing of humour. Ageing & Society. 2011; 31:110–124.

Folstein MF, Folstein SE, McHugh PR. Mini-mental state: A practical method for grading the cognitive states of patients for the clinician. Journal of Psychiatric Research. 1975; 12:189–198. [PubMed: 1202204]

Fridlund AJ, Cacioppo JT. Guidelines for human eletromyogrphic research. Psychophysiology. 1986; 23:567–580. [PubMed: 3809364]

Goel V, Dolan RJ. Social regulation of affective experience of humor. Journal of Cognitive Neuroscience. 2007; 19:1574–1580. [PubMed: 17714017]

Greengross G. Humor and aging—A mini-review. Gerontology. 2013; 59:448–453. [PubMed: 23689078]

Halberstadt J, Ruffman T, Murray J, Taumoepeau M, Ryan M. Emotion perception explains age-related differences in the perception of social gaffes. Psychology and Aging. 2011; 26:133–136. [PubMed: 21280951]

Hasher, L.; Zacks, RT.; May, CP. Inhibitory control, circadian arousal, and age. In: Gopher, AKD., editor. Attention and Performance XVII: Cognitive Regulation of Performance: Interaction of Theory and Application. Cambridge, MA, US: The MIT Press; 1999. p. 653-675.

Henry JD, Phillips LH, Ruffman T, Bailey PE. A meta-analytic review of age differences in theory of mind. Psychology and Aging. 2013; 28:826–839. [PubMed: 23276217]

Hess TM. Adaptive aspects of social cognitive functioning in adulthood: Age-realted goal and knowledge influences. Social Cognition. 2006; 24:279–309.

Hess TM, Rosenberg DC, Waters SJ. Motivation and representational processes in adulthood: The effects of social accountability and information relevance. Psychology and Aging. 2001; 16:629–642. [PubMed: 11766917]

Larsen JT, Norris CJ, Cacioppo JT. Effects of positive and negative affect on electromyographic activity over zygomaticus major and corrugator supercilii. Psychophysiology. 2003; 40:776–785. [PubMed: 14696731]

Lindenberger U, von Oertzen T, Ghisletta P, Hertzog C. Cross-sectional age variance extraction: What's change got to do with it? Psychology and Aging. 2011; 26:34–47. [PubMed: 21417539]

MacPherson SE, Phillips LH, Della Sala S. Age, executive function, and social decision making: A dorsolateral prefrontal theory of cognitive aging. Psychology and Aging. 2002; 17:598–609. [PubMed: 12507357]

Mak W, Carpenter BD. Humor comprehension in older adults. Journal of the International Neuropsychological Society. 2007; 13:606–614. [PubMed: 17521496]

Martin RA, Puhlik-Doris P, Larsen G, Gray J, Weir K. Individual differences in uses of humor and their relation to psychological well-being: Development of the Humor Styles Questionnaire. Journal of Research in Personality. 2003; 37:48–75.

McCrae, Robert R.; Costa, Paul T, Jr.. Personality in adulthood: A five-factor theory perspective. 2nd ed.. New York, NY US: Guilford Press; 2003.

Radloff LS. The CES-D Scale: A self-report depression scale for research in the general population. Applied Psychological Measurement. 1977; 1:385–401.

Rakoczy H, Harder-Kasten A, Sturm L. The decline of theory of mind in old age is (partly) mediated by developmental changes in domain-general abilities. British Journal of Psychology. 2012; 103:58–72. [PubMed: 22229774]

Rottenberg, J.; Ray, RD.; Gross, JJ. Emotion elicitation using films. In: Coan, JA.; Allen, JJB., editors. The handbook of emotion elicitation and assessment. London: Oxford University Press; 2007. p. 9-28.

Ruch, Willibald; McGhee, PE.; Hehl, F. Age differences in the enjoyment of incongruity-resolution and nonsense humor during adulthood. Psychology and Aging. 1990; 5:348–355. [PubMed: 2242239]

Schaier, Aron H.; Cicirelli, Victor G. Age differences in humor comprehension and appreciation in old age. Journal of Gerontology. 1976; 31:577–582. [PubMed: 950452]

Scheier MF, Carver CS. Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. Health Psychology. 1985; 4:219–247. [PubMed: 4029106]

Shiota MN, Levenson RW. Effects of aging on experimentally instructed detached reappraisal, positive reappraisal, and emotional behavior suppression. Psychology and Aging. 2009; 24:890–900. [PubMed: 20025404]

Stone VE, Baron-Cohen S, Knight RT. Frontal Lobe Contributions to Theory of Mind. Journal of Cognitive Neuroscience. 1998; 10:640–656. [PubMed: 9802997]

Uekermann J, Channon S, Daum I. Humor processing, mentalizing, and executive function in normal aging. Journal of the International Neuropsychological Society. 2006; 12:184–191. [PubMed: 16573852]

van Boxtel A. Filters for optimal smoothing of acoustic and electric blink reflex emg responses to determine blink response magnitude. Biological Psychology. 2010; 85:299–305. [PubMed: 20688130]

von Hippel W. Aging, executive functioning, and social control. Current Directions in Psychological Science. 2007; 16:240–244.

Wang Y, Su Y. Theory of mind in old adults: The performance on Happé's stories and faux pas stories. Psychologia: An International Journal of Psychology in the Orient. 2006; 49:228–237.

Wechsler, D. Manual for the Wechsler Adult Intelligence Scale - Revised. New York: Psychological Corp; 1981.

Zachary, R. Shipley Institute of Living Scale, Revised Manual. Los Angeles: Western Psychological Services; 1986.

Zhang X, Fung HH, Stanley JT, Isaacowitz DM. Perspective taking in older age revisited: A motivational perspective. Developmental Psychology. 2013; 49:1848–1858. [PubMed: 23276131]

Appendix A: Description of Clips

Name of Clip	Description	Duration
Inappropriate Clips		
Mr. Bean Bus Stop	Mr. Bean wants to be first in line for the bus, but there is a blind man in his way. He plays tricks on this man to try to get him to move so that he can be first in line.	1 min 53 sec
Mr. Bean Checking In	Mr. Bean checks into a hotel. He tries to beat a man who checked in at the same time as him to his room, and presses all of the elevator buttons. His behaviors could accurately be described as childish, immature, or unnecessary.	2 min 48 sec
The Office Michael Rude to Phyllis	Michael makes an insulting comment toward one of his coworkers, Phyllis. He does not want her cheerleading. He tries to cover up his rude comment, but it is clear Phyllis is offended.	28 sec
CYE Stolen Ticket	Larry is at the airport and cannot find his ticket. First, he tries to cut in line to talk to the airport staff member. Then, he accuses a random man of stealing his ticket, only to have the man show him that the name on the ticket was his own and that it was a bereavement ticket.	2 min 22 sec
CYE Tip Coordination	Larry wants to find out how much of a tip his friend gave at their previous lunch. He asks the waiter several probing questions to try to get him to answer, even though the waiter tells him that he is uncomfortable with the situation.	2 min 59 sec
Golden Girls Condom	The girls are in a store and decide to buy condoms. They try to do so discreetly, but the store keeper makes an announcement over the speaker system asking for a price check. The girls look very uncomfortable and embarrassed by the store keeper's actions.	1 min 31 sec
Golden Girls Pearls	Dorothy asks for help in deciding which necklace to wear. In an effort to prove to each other their fashion sense, Blanche and Rose debate which one she should wear. This leads to both of them making insulting comments to Dorothy about her appearance.	1 min 36 sec
Control Clips		
Mr. Bean Haircut	Mr. Bean walks into a hair salon to get a haircut and begins looking at pictures of haircuts on the wall to decide which one he should get.	55 sec

Name of Clip	Description	Duration
Mr. Bean Morning	Mr. Bean gets up in the morning and goes about his morning routine of waking up and shaving. while he is a little quirky as always and elicits a few laughs from the stage crowd, he does not do anything socially inappropriate in this scene.	1 min 5 sec
Mike & Molly Hallway	Molly has a discussion with her boyfriend outside of his apartment. They discuss their relationship and how they both felt it might be moving too fast. It is a serious talk about their relationship, but nothing dramatic or negative occurs.	1 min 24 sec
CYE Country Club	Larry and his girlfriend attend an interview for membership to a country club. They say things that they believe will impress the interviewers and they appear to be trying very hard to be on their best behavior.	1 min 43 sec
CYE Smoke Detector	The smoke detector goes off while Larry is in bed. He gets up to check on the source of the noise.	1 min 22 sec
Golden Girls Dishes	The girls talk about how their dishwasher is broken. Blanche complains about washing dishes by hand and the others point out that in previous times that was the only way to clean dishes.	1 min 15 sec
Golden Girls Goodbye	Dorothy is moving out and leaving her friends. They have a tearful conversation and hug goodbye.	3 min 38 sec

Note. CYE = Curb Your Enthusiasm.

Appendix B: Thought Listing Coding Scheme: Coding for Understanding of Clips

Clip	Code	Description	Example
Inappropriate Clips			
Mr. Bean Bus Stop	Blind	A "yes" in this category mentions that there is a blind man in the scene that Mr. Bean is interacting with.	*There was this blind guy and …*
	First in line/take someone's spot/cut	A "yes" in this category mentions that the blind man is first in line and Mr. Bean is playing tricks on him to take his spot.	*The blind guy was first in line and Mr. Bean was trying to take his spot …*
	Not let on the bus	A "yes" in this category mentions that at the end of the clip Mr. Bean does not get let on the bus.	*The driver didn't let Mr. Bean on the bus at the end.*
Mr. Bean Checking In	Check-in	A "yes" in this category mentions Mr. Bean was ringing the bell and acting silly or immature while checking in to the hotel. This can include the incident with moving his car,	*Mr. Bean was acting like a little kid and kept ringing the bell.*

| Clip	Code	Description	Example
		forgetting he was British, leaving his bag, or trying to cover his paper like he was taking a test.	
	Hotel	A "yes" in this category mentions Mr. Bean was in a hotel.	*Mr. Bean was in the hotel and …*
	Racing/Beat the other character	A "yes" in this category mentions Mr. Bean was trying to race the other character even though he was not amused by Mr. Bean's antics.	*Mr. Bean kept trying to get the other guy to race him and kept stopping his elevator.*
The Office Michael Rude to Phyllis	Mean/Rude/Insulting	A "yes" in this category mentions that the main character, Michael, did or said something to insult Phyllis. This especially includes if the participant mentions that Michael said "yuck".	*Michael was very rude when he said "yuck" to the thought of…*
	Taking back insult/trying to be nice	A "yes in this category mentions that Michael tries to be nice. This includes offering Phyllis to be either an alternate or on the team.	*Michael told the lady she could be on the team after…*
	Not accepting of excuse/resolution	A "yes" in this category mentions that the other two characters did not believe or accept Michael's attempt at recovering from his insult to Phyllis.	*The others stared at him and were still mad about the insult he made.*
CYE Stolen Ticket	Stole plane ticket	A "yes" in this category mentions that Larry and Cheryl believe their plane tickets were stolen.	*The couple thinks somebody took their plane tickets…*
	Accuse/confront	A "yes" in this category mentions that Larry accuses a man of stealing his ticket.	*Larry accuses a man of stealing his tickets from his office.*
	Mistaken/wrong	A "yes" in this category mentions that Larry was wrong about the man stealing his tickets.	*The guy shows Larry the ticket and his name wasn't on it*
CYE Tip Coordination	Waiter uncomfortable	A "yes" in this category mentions Larry was making the waiter uncomfortable.	*Larry was harassing the waiter and…*
	Friend's tip amount	A "yes" in this category mentions that Larry was trying to find out what his friend left for a tip the day before.	*Larry was harassing the waiter to find out his friend's tip from the day before…*
	Upset/Angry	A "yes" in this category mentions that Larry was angry	*Larry was upset when he found*

Clip	Code	Description	Example
		when he found out what the tip amount was.	*out how much his friend left for a tip…*
Golden Girls Condom	Condoms	A "yes" in this category mentions that the ladies were buying condoms or an embarrassing item.	*The three ladies wanted to buy the condoms discreetly but…*
	Announcement/ Loudspeaker/ Microphone	A "yes" in this category mentions the store clerk announces on the loudspeaker that the ladies are buying condoms.	*The guy behind the counter asked for a price check for the condoms on the loudspeaker*
Golden Girls Pearls	Rude/Critical/Offensive	A "yes" in this category mentions that Blanche was being rude to Rose or they were both being rude to Dorothy.	*First Blanche was being mean to Rose and they both of them turned on Dorothy.*
	Physical Appearance/Body	A "yes" in this category mentions that Rose and Blanche were insulting Dorothy's physical appearance in an attempt to prove they had fashion sense.	*They were talking about her turkey neck and flat tire because …*
	Fashion	A "yes" in this category mentions either Blanche running for Fashion show chair or that both Rose and Blanche were asked for fashion advice.	*Blanche said that Rose could not run for Fashion Chair because …*
Control Clips			
Mr. Bean Haircut	Barbershop/Hair salon	A "yes" in this category mentions Mr. Bean was at a barber shop. This tests the participant's general understanding of the scene.	*Mr. Bean walked into a barber shop and …*
	Haircut	A "yes" in this category mentions that Mr. Bean is looking at pictures of different hairstyles. This includes the barber asking Mr. Bean if he has decided on a hairstyle yet.	*Mr. Bean was looking at different hairstyles and the barber asked him if he was ready.*
	Quiet	A "yes" in this category mentions Mr. Bean was being quiet in the barber shop.	*Mr. Bean was really quiet when he walked…*
	Awkward noises	A "yes" in this category mentions Mr. Bean answered the barber's question with strange noises.	*Mr. Bean answered the barber with some weird noises.*
Mr. Bean Morning	Waking up	A "yes" in this category mentions Mr. Bean is waking up	*Mr. Bean got up in the morning and …*

| Clip	Code	Description	Example
		and getting out of bed. This tests the participant's general understanding of the scene.	
	Disoriented/running into walls	A "yes" in this category mentions Mr. Bean is disoriented, and runs into the wall after he wakes up.	*Mr. Bean runs into the wall and you can tell he is not really awake.*
	Morning routine/stretches	A "yes" in this category mentions Mr. Bean is doing his morning routine. This includes opening the curtain, putting on his slippers, and shaving.	*Mr. Bean opened the curtain and started shaving.*
Mike & Molly Hallway	Boyfriend	A "yes" in this category mentions that Molly came to see her boyfriend, Mike.	*The girl came to talk to her boyfriend…*
	School	A "yes" in this category mentions that Mike showed up at Molly's school to try and surprise her.	*The guy showed up to her school and he was embarrassed but she …*
	Relationship	A "yes" in this category mentions the couple was talking about their relationship. This includes they wanted to "take things slow".	*They were talking about how their relationship may have been going too fast and they should take it slow.*
CYE Country Club	Lying/Fake/Doubtful	A "yes" in this category mentions that Larry and Cheryl are both trying to impress/lie to the interviewers.	*Larry and his wife were both making up stories about how they met.*
	Country Club	A "yes" in this category mentions that Larry and Cheryl were at a country club.	*he couple was at a country club and …*
	Interviewed/Accepted	A "yes" in this category mentions Larry and Cheryl are being interviewed by two members of the country club about how they met and their interests.	*The two guys behind the desk were asking the couple about what they do for fun and how they met.*
CYE Smoke Detector	Smoke alarm	A "yes" in this category mentions that a smoke alarm went off in the house and Larry and Cheryl were looking for it.	*A smoke alarm went off and the two people were looking for it…*
	Sleeping/in bed	A "yes" in this category mentions that Larry and Cheryl woke up to the smoke alarm while lying in bed.	*The couple was sleeping when …*
Golden Girls Dishes	Dishwasher broken/fix	A "yes" in this category mentions the dishwasher is broken.	*The dishwasher was broken in the house and …*

Clip	Code	Description	Example
	Doing dishes by hand	A "yes" in this category mentions that the characters were talking about doing the dishes by hand.	*Dorothy said when they were younger they had to do all the dishes by hand…*
	Happy memories	A "yes" in this category mentions that Rose was talking about happy memories she had while doing dishes. This category also mentions that Sophia was getting frustrated with Rose always being happy.	*Rose was talking about being happy all the time…*
Golden Girls Goodbye	Living together/ long friendship	A "yes" in this category mentions the ladies lived together for an extended period of time.	*They all lived together for seven years and now one of them is leaving for good…*
	Goodbye/leaving	A "yes" in this category mentions an extended goodbye. This also includes that Dorothy is leaving.	*They were all saying a big goodbye to each other and appreciated their friendship.*
	Sad/Upset	A "yes" in this category mentions the emotion or sadness regarding Dorothy leaving. This can include reminiscing about their happy memories.	*They were all crying when she left and …*
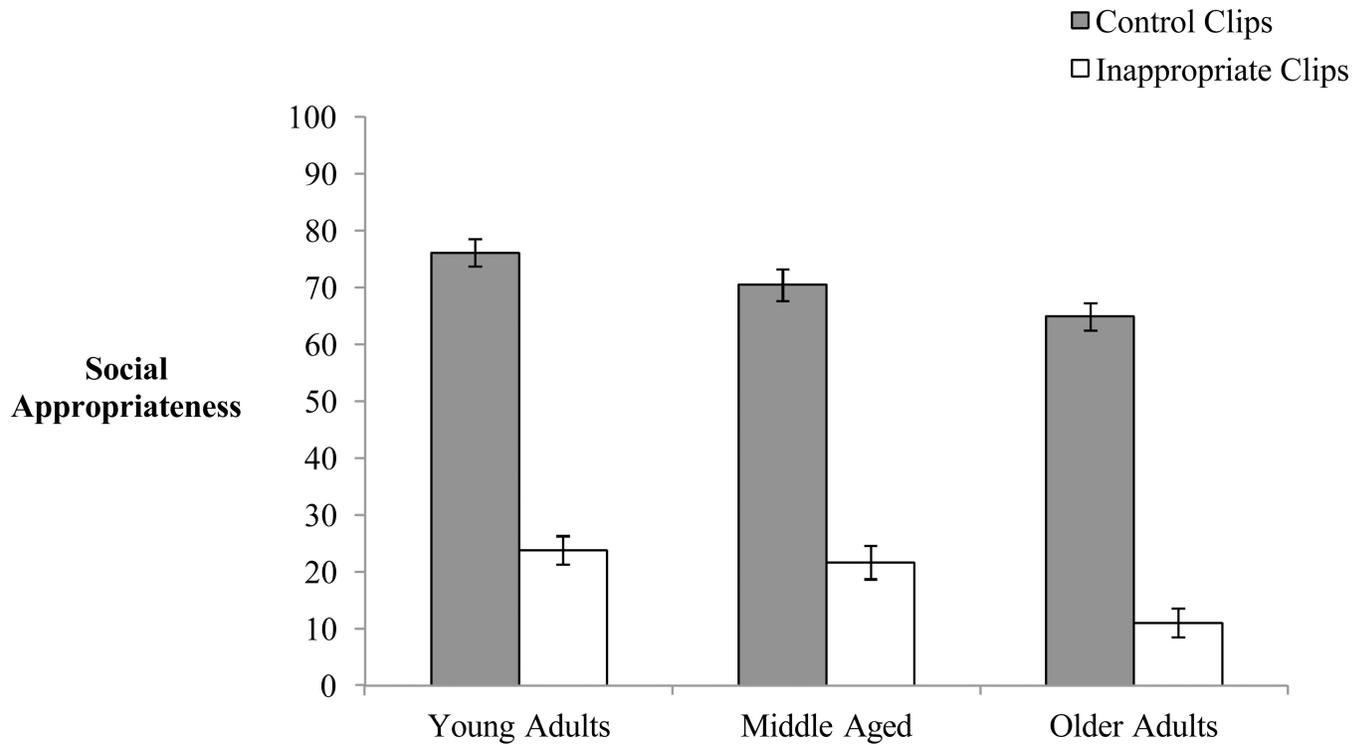
Figure 1.
Average social appropriateness ratings for control and inappropriate clips by age group (*0 = not at all socially appropriate; 100 = entirely socially appropriate*). Bars are standard errors of the mean.
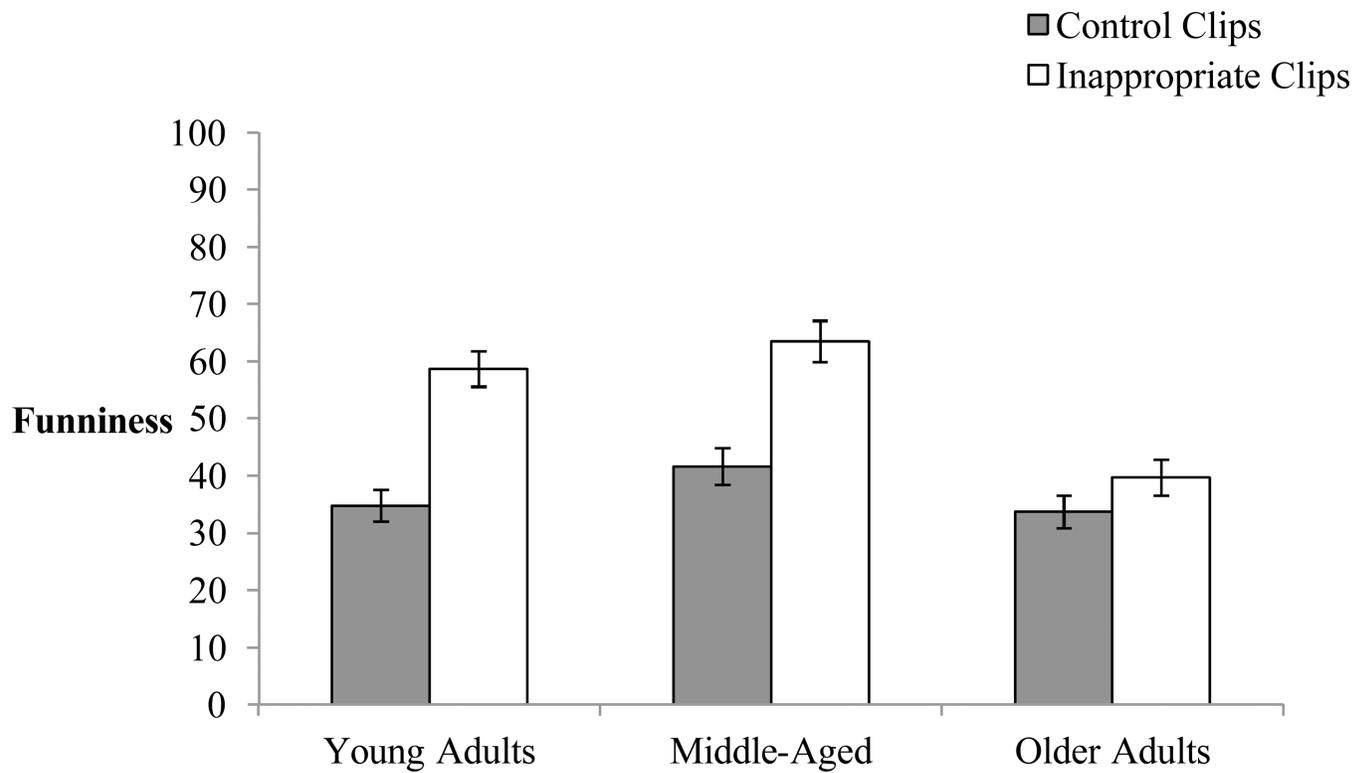
Figure 2.
Average funniness ratings for control and inappropriate clips by age group (*0 = not at all funny; 100 = extremely funny*). Bars are standard errors of the mean.
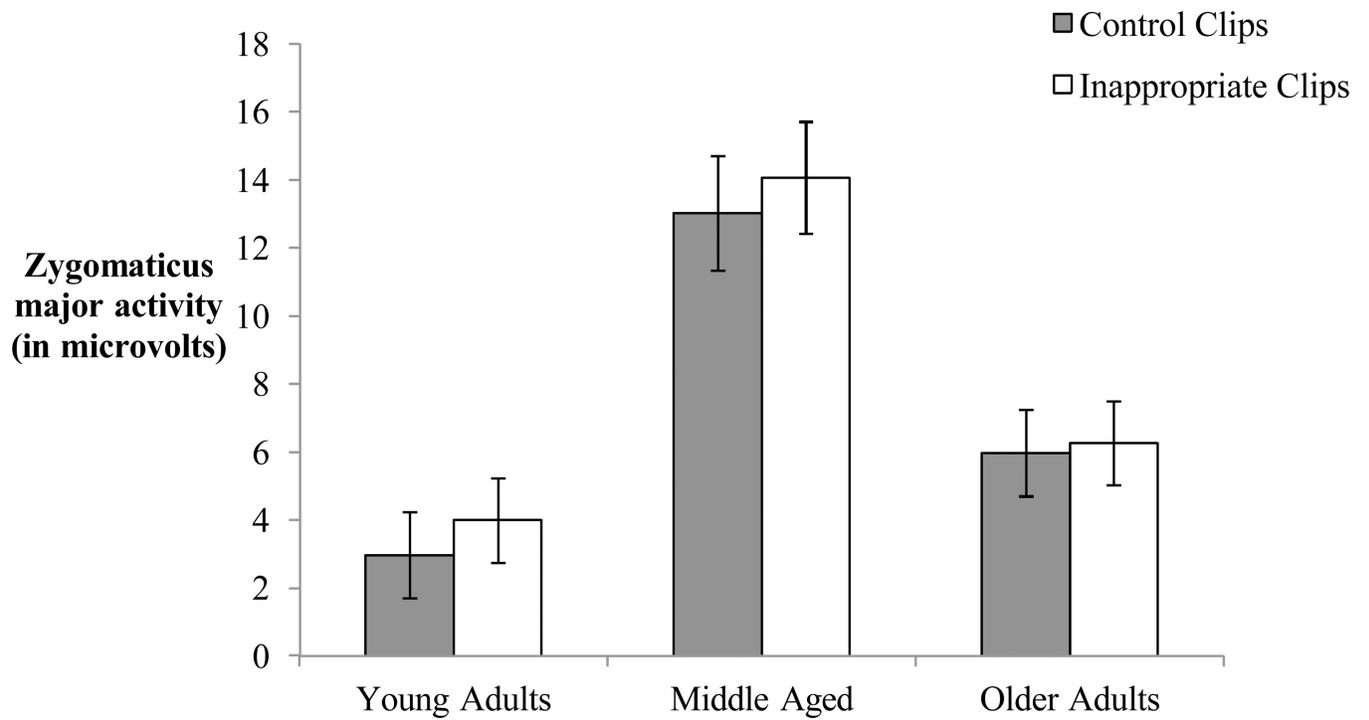
Figure 3.
Average Zygomaticus major activity during inappropriate and control clips by age group.
Bars are standard errors of the mean.
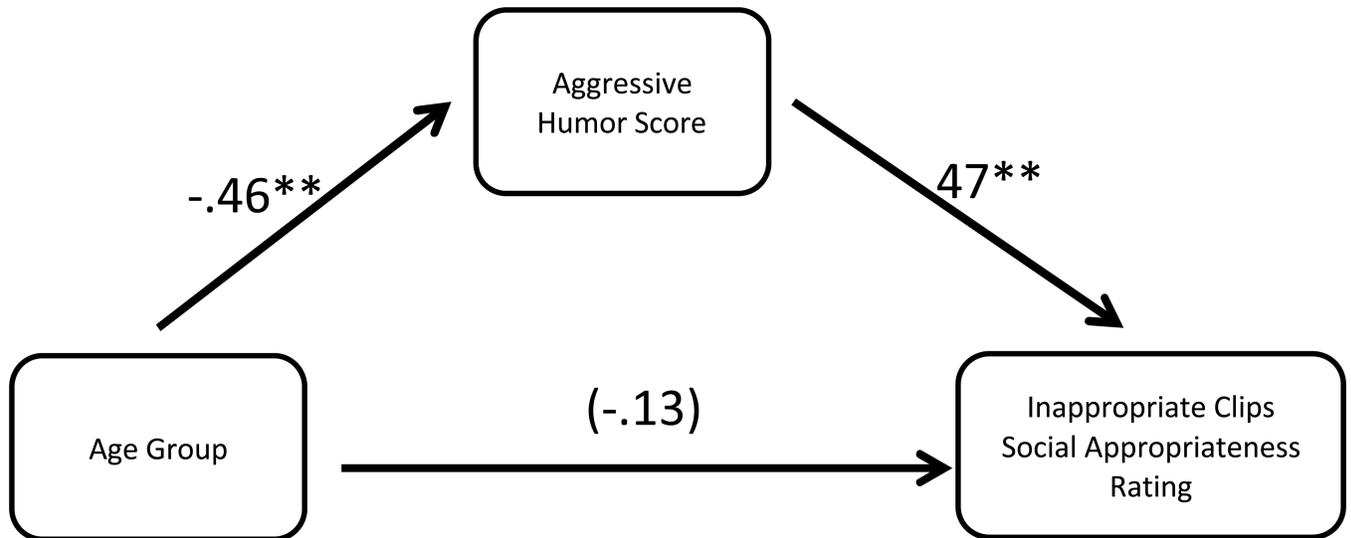
Figure 4.
Regression model depicting aggressive humor scores mediating the relationship between age group and social appropriateness ratings of inappropriate clips. Values presented are standardized regression weights; **$p < .001$.

Table 1

Pilot Data: Social Appropriateness Ratings

	Inappropriate Clips			Control Clips	
	YA Mean (SD)	OA Mean (SD)		YA Mean (SD)	OA Mean (SD)
Clips Selected					
Mr. Bean Bus Stop[a]	5.71 (7.32)	9.17 (4.92)	Goodbye[a]	93.57 (9.45)	90.83 (9.17)
Golden Girls Pearls[b]	20.00 (17.41)	28.00 (20.80)	Molly Hallway[a]	92.14 (6.36)	79.17 (14.97)
Michael Rude to Phyllis[b]	16.18 (17.10)	12.00 (21.39)	Golden Girl Dishes[a]	64.29 (20.90)	59.17 (12.01)
Golden Girls Condom[b]	36.76 (30.05)	20.00 (13.69)	Mr. Bean Haircut[a]	70.00 (36.17)	55.83 (26.91)
Mr. Bean Checking In[a]	7.86 (6.99)	12.50 (9.87)	Mr. Bean Morning[a]	55.71 (31.94)	50.00 (31.62)
Tip Coordination[b]	29.12 (16.61)	20.00 (26.22)	Country Club[b]	62.14 (22.70)	68.33 (18.35)
Stolen Ticket[b]	16.76 (15.90)	18.00 (21.39)	Smoke Detector[a]	94.29 (4.50)	71.67 (16.63)
Clips Not Selected					
Dance Scene[a]	67.14 (29.98)	75.83 (31.53)	Mr. Bean Pool[a]	34.29 (22.81)	52.50 (35.46)
Mike & Molly Hat[a]	47.86 (30.26)	27.50 (24.03)	Mouse[a]	57.14 (30.53)	52.50 (26.03)
Larry Talks to Himself[b]	32.06 (21.00)	42.00 (16.81)	The Office Jim[a]	60.00 (22.91)	37.50 (24.03)
Golden Girls Cupcakes[b]	52.06 (25.44)	56.00 (14.75)	Mr. Bean Exam[a]	32.14 (24.81)	36.67 (26.58)
Michael Bashes Dwight[b]	23.53 (19.02)	6.00 (8.22)	Investigation[a]	65.00 (30.41)	37.50 (26.41)

Note. Two different groups of participants were pilot tested:

[a] 7 young adults and 6 older adults;

[b] 17 young adults and 5 older adults.

Table 2

Means and Standard Deviations of Humor Style Ratings for Inappropriate and Control Clips

	Affiliative	Self-Enhancing	Aggressive	Self-Defeating
Inappropriate Clips				
Mr. Bean Bus Stop	1.89 (1.97)	1.89 (1.69)	4.56 (2.19)	4.22 (2.28)
Golden Girls Pearls	1.89 (1.05)	1.89 (0.93)	6.11 (1.69)	1.89 (1.45)
Michael Rude to Phyllis	1.56 (1.01)	1.56 (0.73)	5.67 (1.50)	1.11 (0.33)
Golden Girls Condom	3.00 (2.00)	1.89 (0.93)	5.56 (1.94)	1.22 (0.44)
Mr. Bean Checking In	2.44 (2.30)	3.56 (2.46)	3.89 (2.15)	3.56 (2.35)
Tip Coordination	2.33 (1.58)	2.78 (1.79)	4.67 (2.00)	3.56 (2.01)
Stolen Ticket	1.33 (1.00)	1.56 (1.13)	4.56 (2.19)	2.44 (2.13)
Control Clips				
Goodbye	4.44 (1.94)	4.33 (2.50)	1.00 (0.00)	1.22 (0.67)
Molly Hallway	4.44 (2.19)	1.67 (1.00)	1.11 (0.33)	2.11 (1.97)
Golden Girl Dishes	4.38 (1.77)	3.63 (2.26)	2.63 (1.77)	2.00 (1.77)
Mr. Bean Haircut	2.56 (2.01)	2.33 (2.18)	1.00 (0.00)	3.78 (2.22)
Mr. Bean Morning	2.22 (1.86)	3.44 (2.13)	1.00 (0.00)	4.56 (2.24)
Country Club	5.56 (1.24)	3.67 (2.24)	2.44 (2.13)	2.44 (1.51)
Smoke Detector	2.78 (2.39)	1.78 (1.56)	1.00 (0.00)	2.89 (1.62)

Table 3

Means, (SDs), and ANOVAs for Age Differences in Demographic, Cognitive, and Affective Variables

Variable	YA	MA	OA	F	df (effect, error)	p	η_p^2	Sig Diff
Demographic								
Health	3.68 (.90)	3.82 (.80)	3.78 (.97)	.15	(2, 71)	.861	.95	ns
Education	12.64 (.64)	14.18 (2.30)	16.19 (2.35)	22.03	(2, 71)	.000	.38	YA < MA < OA
Cognitive								
Digit Forward	8.10 (.92)	---	7.86 (1.18)	.77	(1, 56)	.384	.01	ns
Digit Backward	6.27 (1.28)	---	5.75 (1.55)	1.91	(1, 56)	.172	.03	ns
Vocabulary	13.43 (1.55)	---	15.25 (2.98)	8.67	(1, 56)	.005	.13	YA < OA
Affective								
Depressive Symptoms	15.12 (7.09)	9.05 (9.24)	6.59 (6.50)	8.54	(2, 71)	.000	.19	YA > MA, OA
LOT Total	4.44 (5.45)	6.27 (5.95)	6.56 (4.21)	1.23	(2, 71)	.298	.03	ns
Neuroticism	15.68 (2.46)	13.68 (2.88)	13.11 (2.19)	7.38	(2, 71)	.001	.17	YA > MA, OA

Note. YA = young adults, MA = middle-aged adults, OA = older adults. Sig Diff = significant differences indicated by follow-up pairwise comparisons. Demographic variables include self-reported health (1 = poor, 5 = excellent) and years of formal education. Cognitive measures included two short term memory span tasks: digit forward and digit backward (Wechsler, 1981), higher numbers indicate a greater span; and crystallized intelligence was measured with the multiple choice Shipley Vocabulary Test (Zachary, 1986; maximum score = 20). The frequency of depressive symptoms was assessed with the Center for Epidemiologic Studies Depression Scale (CESD; Radloff, 1977). Dispositional optimism was assessed with the Life Orientation Test (LOT; Scheier & Carver, 1985); higher scores indicate greater optimism. The N-Questionnaire (Bolger & Schilling, 1991) assessed neuroticism; higher numbers indicate greater neuroticism.

Table 4

Intercorrelations Among Appropriateness Ratings, Funniness Ratings, and Humor Styles by Age Group

	1	2	3	4	5	6	7	8
Young Adults (N = 25–30)								
1 Appropriateness Inappropriate Clips	1.00							
2 Appropriateness Control Clips	.37*	1.00						
3 Funniness Inappropriate Clips	.42*	.15	1.00					
4 Funniness Control Clips	.40*	-.03	.65**	1.00				
5 Affiliative Humor	-.14	.25	.20	.39	1.00			
6 Self-Enhancing Humor	.11	.32	-.02	.29	.45*	1.00		
7 Aggressive Humor	.29	.06	.25	.02	-.11	.14	1.00	
8 Self-Defeating Humor	.24	.10	.24	.08	.07	.11	.05	1.00
Middle Aged Adults (N = 15–22)								
1 Appropriateness Inappropriate Clips	1.00							
2 Appropriateness Control Clips	.13	1.00						
3 Funniness Inappropriate Clips	.16	.26	1.00					
4 Funniness Control Clips	-.15	.07	.73**	1.00				
5 Affiliative Humor	-.22	.15	.39	.46	1.00			
6 Self-Enhancing Humor	.36	.10	.26	.25	.07	1.00		
7 Aggressive Humor	.59*	.17	-.02	-.20	-.12	.47	1.00	
8 Self-Defeating Humor	.19	-.26	.18	.43	.05	.48	.58*	1.00
Older Adults (N = 27–29)								
1 Appropriateness Inappropriate Clips	1.00							
2 Appropriateness Control Clips	-.06	1.00						
3 Funniness Inappropriate Clips	.38*	.31	1.00					
4 Funniness Control Clips	.47**	.05	.57**	1.00				
5 Affiliative Humor	-.17	.06	-.10	-.10	1.00			

	1	2	3	4	5	6	7	8
6 Self-Enhancing Humor	.07	-.17	-.18	-.03	.21	1.00		
7 Aggressive Humor	.57**	-.01	.27	.40*	-.07	.03	1.00	
8 Self-Defeating Humor	.43*	.03	.28	.27	.08	.14	.62**	1.00

*
Correlation significant at the p < .05 level.

**
Correlation significant at the p < .001 level.