Sentence Completion to Assess Children’s Views About Aging

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Purpose: Sentence completion exercises require students to give open-ended responses to prompts. The first purpose of this article is to describe the method of sentence completion to assess middle-school children’s attitudes and beliefs about aging. The second purpose is to describe the patterns of characteristics that children associate with aging. Design and Methods: Two middle schools in San Antonio, TX agreed to have their students participate in the sentence completion exercises at the beginning of the 1998–1999 school year. Teachers asked students to write responses to the following prompts: “Old is . . .,” “You know you are old when . . .,” “You know your parents are old when . . .,” “When I am old, I . . .,” and “Old people . . .” We coded the responses for their characteristics and whether they were positive, negative, or neutral. Results: Of the 2,476 students, 1,874 (75.6%) wrote responses to at least one prompt. Overall, we collected 3,700 responses and coded 9,438 characteristics (2.6 characteristics per response). The most common characteristics of aging were having wrinkles (21.1%), having gray hair or being bald (20.0%), and being less active (17.5%). Students had a much more positive view of their future (55.4%) compared with their view of aging elicited by the other prompts (range of 4.9–25.7% positive responses). Students infrequently associated old age with specific conditions; only 4.6% mentioned diseases, 6.0% mentioned being ill or taking medications, and 5.7% mentioned sensory problems. Implications: Middle-school students view their futures much more positively than the changes they observe in their parents and other elders. Students infrequently identified specific diseases or impairments as responsible for the changes they observe with aging. These observed responses provide a starting point for educators to develop and deliver gerontologically based materials that teach about healthful habits to maintain independence across a life span.

Key Words: Middle school, Education, Sentence completion, Health promotion

In previous studies assessing children’s views on aging, methods varied substantially, from interpre-
tation of drawn images (Lichtenstein et al., 2001) to completion of closed-ended questionnaires (Aday, Aday, Arnold, & Bendix, 1996; Aday, Sims, McDuffie, & Evans, 1996; Rich, Myrick, & Campbell, 1983). Here we are interested only in aspects of children’s writing as a reflection of their knowledge and beliefs. By assessing the starting points for children in an open-ended way, gerontologists (e.g., educators, sociologists, social psychologists, and physicians) can use these perceptions to develop programs to better educate children about aging and changes over time.

Use of Sentence Completion in Other Settings

In educational settings, studies using sentence completion do not always refer to K–12 students or aging, but they are of interest to the current study because they demonstrate the broad applicability of the technique and different means of assessment. For example, sentence completion exercises have been used as an expressive activity for minority students with learning disabilities (Katims & Zapata, 1988). Sentence completion has also been used to assess the views of students in Grades 8–12 of the World War II Holocaust (McDaniel & Thompson, 1989), college students’ attitudes about success and gender (Whiteside, 1978), and student proficiency in foreign languages (Boykin, 1991).

Previous Studies Assessing Attitudes About Aging With Open-Ended Responses

With respect to attitudes about aging, Golde and Kogan (1959) used open-ended statements to test the hypothesis that attitudes toward older individuals differ qualitatively from those concerning “people in general.” The participants were 100 undergraduates (50 men and 50 women) aged 17–23 years who were selected from Brandeis University. The study demonstrated that “dependency may well be the major criterion for the stigma of old age.” Commenting nearly four decades later, Hilt (1997) suggested that the Kogan Scale (1961) should be revised because it reflects the way society viewed elderly people more than 35 years ago. It remains to be shown whether these attitudes have changed.

Couper, Sheehan, and Thomas (1991) reported on the impact of a 1-day, 5-hr intergenerational workshop for elementary and high school students. Three different adapted versions of widely used instruments of attitudes toward older adults were used, including the Golde and Kogan (1959) sentence completion scale consisting of six items (e.g., “When I am with an old person I feel . . . ”). A 3-point scale was used for coding, with 0 representing a negative response, 1 a neutral response, and 2 a positive response. Criteria for how the responses were classified are not provided. The sentence completion activity reflected students’ personal perceptions of older people in social situations. A range of 85–97% interrater agreement between two raters was reported. Results of the sentence completion activity demonstrated that elementary school students reported significantly more positive personal responses to older persons than high school students. The overall results of the study relate to the complexity of efforts to improve younger persons’ attitudes toward old people. Although intergenerational workshops proved effective in improving the acceptability of older adults in social situations, “it did not affect students’ generalized stereotypical notions of old people” (Couper, Sheehan, & Thomas, 1991, p. 50).

The complex trait generation task described by Hummert, Garstka, Shaner, and Strahm (1994) looked at stereotypes of elderly persons held by college students, middle-aged adults, and older adults. Simply expressed, older adults describe more complex representations of aging than do middle-aged and younger adults, and middle-aged adults describe more complex representations of aging than young adults. Only positive and negative traits were coded and some traits were common across all three age groups in each category. On the positive side, the common traits were grouped as “golden ager,” “perfect grandparent,” and “John Wayne conservative.” On the negative side, the common traits were “severely impaired,” “despondent,” “shrew-curmudgeon,” and “reclusive.”

Palumbo and Slotterback (1996) described the attitudes of 60 college freshmen revealed in a survey using open-ended questions relating to older adults and grandparents. The authors hypothesized that the open-ended questions about positive aspects of aging (e.g., “what are the best things about being old?”) would lead to the same type of response as open-ended questions about the negative aspects of aging (e.g., “what are the worst things about being old?”). The 189 responses generated about what is best focused primarily on personality, emotional, or relational items such as getting more respect and watching people grow. For the worst category, 193 responses focused on physical descriptors such as not being able to do much, and being weak or ill. A relationship existed between the age given to describe “when you are old” and the number of worst things reported; the older the age, the higher the number of worst responses.

Newman, Faux, and Larimer (1997) used the Children’s Views on Aging instrument developed in 1985. The participants were 71 fourth- and fifth-grade students in a program that brought older adults into their classroom once a week as resource persons. A pretest was administered before the weekly volunteers arrived. The posttest was administered after the volunteers had been a presence for several months. One of the questionnaire’s four sections used sentence completion responses to measure the students’ attitudes toward changes.
related to aging, and another section then asked if they judged their responses to be “a good thing to happen,” “a bad thing to happen,” or “neither good nor bad.” When asked how they could tell when an individual is growing old, 80% of the children listed physical characteristics such as wrinkles and graying hair; 5% identified loss of hearing, sight, and memory; and 15% of the responses related to observable physical disabilities and decreased activity. When asked if the changes were good, bad, or neither good nor bad, 20% of the children said they were good, 30% said they were bad, and 50% said they were neither good nor bad. In response to the question “How can you tell when someone is old?” many children focused on functional aspects such as decreased activity or physical characteristics such as change in hair appearance.

Thus, prior work includes a mix of study designs and samples that partially characterize children’s views about aging at different stages in their lives. The research suggests that intergenerational activities can improve children's views on aging. These studies, however, have neither demonstrated the potential full range of responses obtained from children nor contrasted the views of children about their own futures, compared with aging in others. Therefore, a second purpose of this article is to describe the patterns of characteristics that children associate with aging. The data presented in this article are from the baseline data collected from two middle schools at the beginning of the 1998–1999 school year. This data collection was part of a larger project to evaluate the Positively Aging teaching materials (Lichtenstein et al., 1999, 2001). The sentence completion responses were obtained before any of the Positively Aging teaching materials were used in the classrooms.

**Methods**

**Setting**

Northside Independent School District (NISD) is the sixth largest school district (out of 1,110) in Texas. NISD serves more than 61,000 students in 350 square miles of Northwest San Antonio and surrounding Bexar County. All 12 NISD middle schools were potentially eligible for inclusion in the study. During the pilot phase of the research, the middle-school principals were surveyed about the schools and their willingness to participate in the project.

**Pilot Testing.**—Anson Jones Middle School (AJMS) serves the near West Side of San Antonio and was used to pilot test the sentence completion methods. In the 1997–1998 school year, enrollment included 1,255 students (81.8% Hispanic American, 12.2% European American, 5.5% African American, and 0.6% other). Grade-specific enrollment was 460 (36.7%) students in sixth, 472 (37.6%) in seventh, and 338 (26.9%) in eighth grade. Among all students, 18.9% were in Special Education Programs and 80.6% were eligible for free and reduced lunch fees (a marker for low-income families).

**Selection and Description of the Schools.**—Two schools, Pat Neff Middle School (PNMS) and Katherine Stinson Middle School (KMSG), agreed to participate in the study to evaluate the Positively Aging teaching materials and complete the sentence completion activities. The characteristics of the two schools are compared in Table 1. PNMS had proportionately more Mexican American and economically disadvantaged students than KSMS. In addition, the mobility rates (the proportion of students who enter or leave the school after the school year has started) were greater in PNMS.

**Human Subjects.**—This study was approved by the University of Texas Health Science Center Institutional Review Board. The study came under the “exempt” category of the regulations for research involving human subjects because it was conducted in established educational settings and was testing the effectiveness of teaching materials. All students at both middle schools took home a flyer describing the study at the beginning of the school year. Ten families (5 at the intervention school and 5 at the control school) decided not to participate. These 10 children did not have their sentence completion responses included in the data collection and analyses.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>KSMS</th>
<th>PNMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total no. of students</td>
<td>1,395</td>
<td>1,081</td>
</tr>
<tr>
<td>Gender (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>50.6</td>
<td>50.2</td>
</tr>
<tr>
<td>Girls</td>
<td>49.4</td>
<td>49.8</td>
</tr>
<tr>
<td>Ethnic group (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexican American</td>
<td>29.1</td>
<td>63.4</td>
</tr>
<tr>
<td>European American</td>
<td>63.5</td>
<td>28.5</td>
</tr>
<tr>
<td>African American</td>
<td>4.0</td>
<td>5.3</td>
</tr>
<tr>
<td>Other</td>
<td>3.4</td>
<td>2.8</td>
</tr>
<tr>
<td>Mobility rates (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economically disadvantaged (%)</td>
<td>15.3</td>
<td>52.6</td>
</tr>
<tr>
<td>Student-to-teacher ratio</td>
<td>16:1</td>
<td>14:1</td>
</tr>
</tbody>
</table>

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*aThis is the total number of students enrolled at the beginning of the school year.

*bThese are defined as the number of students who withdraw or enroll after the school year has started, divided by the total number of students enrolled during the entire school year. It is a measure of the movement of students in and out of the student body during the school year.

*cThis is defined as being eligible for federally subsidized lunch programs at the school.
Sentence Completion

Teachers were encouraged to use sentence completion as part of a “daily oral language” activity. Seven prompts were initially created:

1. “Old is . . .”
2. “You know you are old when . . .”
3. “You know your parents are old when . . .”
4. “When I am old, I . . .”
5. “Most old people . . .”
6. “Most old people can’t . . .”
7. “Old people always act . . .”

Most teachers placed the prompt on the board and asked the students to write their responses. Students were encouraged to write openly and honestly and not to worry about spelling or grammar. Students were told that expressing their feelings was most important. Based on pilot data collected at AJMS, Prompts 6 and 7 cued students to produce more negative and stereotypical responses. The inclusion of the contraction “can’t” in Prompt 6 especially implied loss with old age. The word “always” in Prompt 7 led to more negative stereotypes inferred by students. Subsequently, Prompts 6 and 7 were discarded and Prompt 5 was modified from “Most old people . . .” to “Old people . . .”

Coding Students’ Responses

With the use of the responses from 138 students at AJMS during the pilot phase of the study, an initial content analysis was done of the oral script responses to determine the characteristics that students associated with each prompt (Miller & Crabtree, 1992). A response was defined as the written record provided by a single student to a single prompt. A characteristic was defined as the features listed within the response. For example, the response to the prompt “Old is . . .” may be “age over 50, wrinkles, and gray hair.” This response lists three characteristics.

We developed a coding sheet listing the primary characteristics identified in the content analysis and instructions for abstraction of the characteristics from each response. The initial categories were broad and inclusive, including physical characteristics, health problems, activity levels, and personality. A coding sheet was filled out for each response. If a child responded to more than one prompt, a separate coding sheet was completed for each prompt.

For interrater variability to be minimized, all coding was done in a group process by four of the authors (C. Blalock, L. Pruski, C. Marshall, and M. Lichtenstein). For characteristics that were ambiguous by our coding instructions, consensus was reached as to how to categorize them. Verbatim responses were abstracted when the student response clearly did not fit an a priori category.

After the characteristics were coded, each response was rated as positive, negative, or neutral (examples are given in Table 2). Neutral responses were defined as purely descriptive with no values attached to them (e.g., a specified age). Positive responses were defined as those associated with independence and social interaction (e.g., kindness). Negative responses were defined as those associated with dependence and isolation (e.g., trouble walking). Some student responses included both positive and negative characteristics. When this occurred, the overall response was coded as positive, negative, or neutral based on the relative balance of characteristics—for example, if there were equal numbers of positive and negative characteristics, the response was coded as neutral.

Table 2. Examples of Positive, Neutral, and Negative Responses to Prompts

<table>
<thead>
<tr>
<th>Category</th>
<th>Prompt</th>
<th>Verbatim Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive responses</td>
<td>Old is . . .</td>
<td>“Wise, beautiful, brilliant, smart and funny.”</td>
</tr>
<tr>
<td></td>
<td>Old is . . .</td>
<td>“Getting wiser. Putting pieces of your life together and making sense of it. Old is going through life with your soul mate. Old is nice, kind, quiet, and peaceful. Old is great, sweet, and cool!”</td>
</tr>
<tr>
<td></td>
<td>Old is . . .</td>
<td>“Wise, caring, trusting, and truthful.”</td>
</tr>
<tr>
<td>Neutral responses</td>
<td>Old is . . .</td>
<td>“Being 50 or older.”</td>
</tr>
<tr>
<td></td>
<td>Old is . . .</td>
<td>“When you become sixty and have gray hair.”</td>
</tr>
<tr>
<td></td>
<td>Old is . . .</td>
<td>“When you have gray hair and dentures.”</td>
</tr>
<tr>
<td>Negative responses</td>
<td>Old is . . .</td>
<td>“Something no one wants to be.”</td>
</tr>
<tr>
<td></td>
<td>Old is . . .</td>
<td>“Bad and dumb.”</td>
</tr>
</tbody>
</table>
|                | You know you are old when . . | “Your belly button comes out and your hair gets gray and scary. It’s when you can’t remember anything and your ears always ring, when your veins look like a road map and you have to use a cane.”
repeatability was only assessed for those characteristics mentioned on at least 5% of responses on one occasion. The interval was 2 weeks between responses; no activities from the Positively Aging teaching materials were used in the classroom during this time. Using kappa statistics and polychoric correlation for this ordinal outcome measure, we compared the drawings from Time 1 and Time 2 (Cohen, 1968; Drasgow, 1986; Fleiss, 1975).

There were substantial variations in how teachers used the prompts in their classrooms. Given the differences in the number of responses obtained from students and the number of characteristics recorded within a response, we simply use descriptive statistics to demonstrate the patterns observed in this middle-school sample.

Results

Test–Retest Repeatability

The test–retest repeatability for characteristics with \( \geq 5\% \) prevalence from the students at AJMS at either occasion is summarized in Table 3. The responses from the 87 AJMS students were not repeatable from Time 1 to Time 2. Children who note a particular characteristic at Time 1 will write a different characteristic at Time 2. The prevalence of each characteristic may increase, decrease, or remain the same, depending on how the students chose to respond.

Response Rates

The overall baseline response rate for the sentence completion activity during the 1998–1999 school year was 76%; it was 70% at KSMS (970/1,395) and 84% at PNMS (904/1,081). Response rates were calculated on the basis of the number of students enrolled in the school at the time of the data collection. When stratified by grade, response rates were similar in sixth grade (72% at KSMS, 75% at PNMS) and eighth grade (86% at KSMS, 88% at PNMS). In seventh grade, response rates were lower at KSMS (50%) than they were at PNMS (86%).

A student was considered to have responded if he or she wrote a response to at least one prompt. For the two schools combined, 611 students (33%) wrote responses to one prompt, 972 (52%) wrote responses to two prompts, 138 (77%) wrote responses to three prompts, 34 (27%) wrote responses to four prompts, and 119 (6%) wrote responses to all five prompts. A total of 3,700 responses were obtained from 1,874 children participating in the sentence completion activity at the beginning of the school year.

The overall baseline distributions for the positive, neutral, or negative attitudes for all five prompts were similar for both schools. Of KSMS and PNMS

### Table 3. Test–Retest Repeatability of Oral Scripting Prompts

<table>
<thead>
<tr>
<th>Prompt</th>
<th>Response Category</th>
<th>( n )</th>
<th>Time 1</th>
<th>Time 2</th>
<th>( \kappa ) (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old is ...</td>
<td>Nonhuman reference</td>
<td>84</td>
<td>23.8</td>
<td>8.3</td>
<td>0.20 (−0.3, 0.42)</td>
</tr>
<tr>
<td>Wrinkles</td>
<td></td>
<td>84</td>
<td>23.8</td>
<td>32.1</td>
<td>0.15 (−0.07, 0.37)</td>
</tr>
<tr>
<td>Gray hair</td>
<td></td>
<td>84</td>
<td>16.7</td>
<td>9.5</td>
<td>0.17 (−0.09, 0.43)</td>
</tr>
<tr>
<td>Trouble walking</td>
<td></td>
<td>84</td>
<td>17.9</td>
<td>9.5</td>
<td>0.26 (−0.01, 0.52)</td>
</tr>
<tr>
<td>Weak</td>
<td></td>
<td>84</td>
<td>19.1</td>
<td>14.3</td>
<td>0.32 (0.06, 0.58)</td>
</tr>
<tr>
<td>Passage of time</td>
<td></td>
<td>84</td>
<td>15.5</td>
<td>35.7</td>
<td>0.08 (−0.11, 0.27)</td>
</tr>
<tr>
<td>Overall rating: negative</td>
<td></td>
<td>84</td>
<td>46.4</td>
<td>29.8</td>
<td>0.08 (−0.10, 0.26)</td>
</tr>
<tr>
<td>When I am old 1 ...</td>
<td>Wrinkles</td>
<td>87</td>
<td>6.9</td>
<td>5.8</td>
<td>0.13 (−0.19, 0.45)</td>
</tr>
<tr>
<td>Exercise</td>
<td></td>
<td>87</td>
<td>6.9</td>
<td>5.8</td>
<td>0.13 (−0.19, 0.45)</td>
</tr>
<tr>
<td>Other activities</td>
<td></td>
<td>87</td>
<td>19.5</td>
<td>3.5</td>
<td>0.04 (−0.13, 0.22)</td>
</tr>
<tr>
<td>Overall rating: negative</td>
<td></td>
<td>87</td>
<td>17.2</td>
<td>25.3</td>
<td>0.30 (0.13, 0.47)</td>
</tr>
</tbody>
</table>

Notes: 93 children responded to Time 1 and Time 2, but only 84 responded to “Old is ...” and 87 responded to “When I am old 1 ....” CI = Confidence interval.
students, 21% and 20% wrote positive responses, respectively. The corresponding percentages for negative responses were 33% and 36%, respectively. Because the patterns of response were similar at both schools, we chose to present the results of our qualitative analysis as pooled data, recognizing that there may be differences for individual characteristic responses between the schools.

**Characteristics Described by Middle-School Students**

Specific characteristics were coded for each of the 3,700 responses. The number of characteristics per prompt ranged from 1 to 15. The average number of characteristics listed per prompt was 2.8 for “Old is . . . ,” 2.7 for “You know you’re old when . . . ,” 1.7 for “You know your parents are old when . . . ,” 2.9 for “When I am old, I . . . ,” and 1.9 for “Old people . . . .” Overall, 9,438 characteristics were coded from the 3,700 responses (average 2.6 characteristics per response).

A detailed listing of the number, percentage, and pattern of characteristics, stratified by prompt, is given in the Appendix. On the basis of our content analysis, we grouped the responses into categories of nonhuman references, age, physical features, appearance, character traits, cognitive traits, health problems and diseases, physical aids, activity status, residence, recreational activities, specific people, life milestones, and value judgments (see the Appendix). A nonhuman reference usually referred to the changes over time in an object, such as a rusting car.

The content of the responses indicated what middle-school children do and do not associate with aging. The most commonly listed characteristics included physical features, such as having wrinkles (21.1% of responses) and gray hair or being bald (24.0% of responses). Another common response dealt with being less active (17.5% of responses). Here, an illustrative response is “Old people . . . cannot walk as fast as they used to,” indicating a decrease in activity.

There were substantial differences between the response patterns to the individual prompts. When asked to respond to the phrase “when I am old, I . . . ,” students tended to have a much more positive outlook regarding their future (55.4% responded positively and only 16.7% responded negatively). In contrast, for the other four prompts (“Old is . . . ,” “You know you’re old when . . . ,” “You know your parents are old when . . . ,” and “Old people . . . .”), the percentages of negative response ranged from 30.6% to 50.5%. Positive responses for these four prompts ranged from 4.9% to 25.7%.

Therefore, there is a contrast between what middle-school students associate with aging and the overall vision they have for their own future. Characteristics most often mentioned by middle-school children for when they themselves are old include being healthy (13.4%), being active or more active than now (13.1%), and being engaged in activities (isolated activities 11.1%, physical activities 12.3%, and social activities 18.1%). A number of children envision themselves as being grandparents (17.2%), having a house or acquiring possessions (13.3%), and having a positive state of mind (11.3%)

Middle-school students infrequently associated old age with specific diseases or health problems. Specific diseases were listed in only 4.6% of responses (named conditions included arthritis, osteoporosis, diabetes, cancer, heart problems, blood pressure problems, and back pain). Being ill or needing to take medication were characteristics mentioned in an additional 6.0% of responses. Sensory problems (most often difficulty with hearing or vision) were listed in 5.7% of responses. So, although these middle-school students described physical changes with old age, they did not often attribute them in an open-ended way with specific age-associated diseases.

**Discussion**

The baseline sentence completion evaluation demonstrates two key points. First, students at both schools view their futures much more positively than the changes they observe in their parents or other elders. Second, students at both schools infrequently identify specific diseases or conditions as being associated with aging. This lack of knowledge about disease and aging provides a unique opportunity to teach children about age-associated illnesses. This knowledge can then empower them to adopt healthy habits to attain the vigorous futures they envision for themselves.

The children’s responses indicate that their view of aging and older people focuses on physical characteristics (wrinkles and gray hair) and changes in the ability to do physical tasks (trouble walking). These findings are similar to those observed by prior investigators (Newman et al., 1997). In this cross-sectional study, there is little indication that middle-school students associate age-related diseases with these characteristics. Further, although children note these characteristics as markers of old age, they seldom respond that these markers will be present when they are older. These attitudes indicate a starting point for health promotion and life science education. Teaching children about age-associated diseases and changes has the potential for promoting healthier behaviors across the life span.

This study indicates the compromises made when an investigator is collecting evaluation material in classroom settings. The open-ended sentence completion activity has the advantage of helping the investigator obtain responses with a minimum of bias. Further, these activities may help children start to think about aging in general. The open-ended
response format provides a broad range of characteristics that is not restricted by the teacher, the investigator, or a questionnaire. The weaknesses of the open-ended responses are that they are short and generally lack depth—the students may not be thinking carefully about the task. The responses are also difficult to code at times as a result of legibility, grammar, spelling, and other ambiguities. Our group, using written guidelines, chose to code these responses as a team to minimize effects of interobserver variability.

From our pilot study, we know that lack of repeatability between occasions makes it harder to assess changes within the children as they learn about aging. It is not surprising that young adolescents, given a task to respond to a prompt, may write different characteristics at different times. This lack of repeatability may indicate that children’s views of aging are not fixed at this point in time. We found the same low levels of repeatability when we evaluated children’s drawings of elders (Lichtenstein et al., 2001); however, there was no systematic drift between occasions between assessments 2 weeks apart. Further, an intervention with the Positively Aging teaching materials was associated with a move toward more positive views of elders, in spite of the low repeatability. A single cross-sectional assessment, such as reported here, provides a starting point in the classroom for the delivery of gerontologically based content. It gives the teacher a feel for where the class is in their knowledge and beliefs, prior to starting classroom activities, and it can provide opportunities to adapt lesson plans and activities accordingly.

The responses were pooled from the two schools because the baseline distribution for the positive–neutral–negative classification was similar, in spite of differences in the proportions of Mexican and European American children enrolled in both schools. We chose not to stratify the data further to look for other differences (e.g., ethnic group or gender) for two primary reasons. The first reason for restricting the analysis is that we had no a priori hypotheses regarding gender, ethnic group, or other variable differences in the types of responses received from the students. The second reason to restrict the analysis is that there were five prompts, administered in varying ways by teachers, which resulted in the coding of 64 characteristics in eight categories by our team. As we can see from the Appendix, there are 320 cells in the table (not including the subtotals and positive–neutral–negative categories). Testing differential response patterns for characteristics simply is not feasible in areas where there are insufficient data. Making multiple comparisons also may increase the risk that statistically significant findings will occur by chance alone. Our intent is that these qualitative data are used to generate specific hypotheses that can be tested in future studies in other settings.

Our earlier work with children’s drawings did not demonstrate ethnic group differences between Mexican and European American children in how they viewed elders (Lichtenstein et al., 2001). In the literature review conducted for this article, we were unable to identify other publications that explored children’s open-ended responses to prompts regarding aging. Specifically, we could not identify any studies with other ethnic groups or publications that directly compared responses between ethnic groups to sentence completion activities. The data presented here provide a distribution of likely responses from a large sample of middle-school children. Other investigators may choose one or two of these prompts (e.g., “Old is . . .” and “When I am old I . . .”) and ascertain the response patterns in different ethnic groups and settings, focusing on the most common or likely characteristics. Stating hypotheses ahead of time, investigators may then directly test whether meaningful differences in children’s views of aging exist.

In spite of these limitations, our study provides insights into middle-school children’s responses to prompts regarding aging. Health and science educators can use these response patterns to begin the process of inquiry-based learning about aging and health promotion. For example, a teacher obtaining these responses in class may ask, “What are the underlying reasons for the changes you observe in elders?,” “Why do you envision a healthier future for yourself than you do for your parents or older people?,” or “If you see a vigorous future for yourself, what can you do to maintain your health and independence across the life span?” These questions can then launch the class into activities investigating biology and health promotion.

The importance of health promotion within the realm of school health was emphasized by the Centers for Disease Control in 1988 with the creation of the Division of Adolescent and School Health. This division’s mission (Kolbe, 1993) identifies major health problems and risks among young people, monitors the prevalence of these health events over time, implements national programs to prevent the problem, and evaluates the programs. Kolbe (1993) stated that, “given the nature of health and education problems today, education about health is as important as education about science and mathematics” (p. 549).

Health promotion at any age is both desirable and possible, but the adolescent period offers special opportunities for those who work with this age group. Many of the conditions associated with adult morbidity and mortality can begin during these years, along with the behaviors that encourage their development. Millstein, Peterson, and Nightingale (1993) pointed out that “the developmentally based sense of curiosity and interest among adolescents offers an opportunity for health promotion that should not be wasted. Adolescents are extraordinarily
receptive to information about themselves and their bodies and anxious to become more autonomous in their decision making” (p. 7). These same authors stated that their research has shown that few formal adolescent health programs have been formally and thoroughly evaluated.

Even in 2002 there were only a handful of studies concerning health promotion with K–12 students that were carefully conducted and evaluated. Searches both in school health and public health journals yielded three studies that included control groups to evaluate effectiveness and permitted both to elementary and middle-school students. These studies include the Healthy Adventure (Dinger, Ogletree, & Johnson, 2000), which evaluated a general health education program for third graders at the Hult Health Education Center; the 5-a-Day Power Plus Study (Perry et al., 1998), a randomized community trial to promote higher consumption of fruits and vegetables by elementary school children; and the Mariner Project (Valois & Hoyle, 2000), which evaluated the extent to which a coordinated school health program for elementary and middle-school students could be put in place and functioning within a 2- to 3-year period.

All three of these studies were able to show some benefit in relationship to their outcome of interest. Key factors associated with effectiveness in these studies included (a) the availability of curricular materials targeted at the content area, (b) the availability of special study staff or a team to assist the school teachers in delivering the curricular content in the classroom, (c) administrative support and “buy in” from the school principal, and (d) the presence of a program “champion” on the school faculty who serves as a liaison and facilitator.

The components of success in other school health-promotion activities can be readily adopted by investigators interested in infusing gerontologic content and healthy aging into public school curricula. The sentence completion activities described in this article give teachers a starting point to assess their students’ knowledge and beliefs about aging. With this starting point in hand, teachers may then begin the inquiry-based process of instruction about the scientific and biologic basis for changes over time. Intergenerational classroom activities that promote interactions with healthy independent elders may cause children to reflect on the possibilities for their own future (McGuire, 1986, 1994). These insights and gains in knowledge can translate into healthier habits and lifestyles that increase the chances of a maintained vigor across the life span.

References


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Decision Editor: Lawrence G. Branch, PhD
### Appendix: Pattern of Characteristics in Response to the Sentence Completion Prompts

<table>
<thead>
<tr>
<th>Response</th>
<th>Old is ...</th>
<th>You know you're old when ...</th>
<th>You know your parents are old when ...</th>
<th>When I am old, I ...</th>
<th>Old people ...</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 970)</td>
<td>(n = 1,196)</td>
<td>(n = 305)</td>
<td>(n = 781)</td>
<td>(n = 448)</td>
<td>(n = 3,700)</td>
</tr>
<tr>
<td>Nonhuman</td>
<td>134</td>
<td>12.1</td>
<td>4</td>
<td>0.3</td>
<td>138</td>
<td>3.6</td>
</tr>
</tbody>
</table>

### Age

- <40 years old 9 (0.9) 9 (0.8) 1 (0.3) 4 (0.5) 23 (0.6)
- >40 years old 26 (2.7) 24 (2.0) 4 (1.3) 1 (0.1) 2 (0.4) 57 (1.5)
- >50 years old 72 (7.4) 47 (3.9) 3 (1.0) 2 (0.3) 7 (1.6) 131 (3.5)
- >60 years old 130 (13.4) 60 (5.1) 7 (2.3) 16 (2.0) 4 (0.9) 217 (5.9)

### Physical features

- Wrinkles 260 (26.8) 378 (31.6) 27 (8.8) 82 (10.5) 35 (7.8) 782 (21.1)
- Hunched–Shrunken 25 (2.6) 24 (2.0) 2 (0.7) 4 (0.5) 9 (2.0) 64 (1.7)
- Bald 36 (3.7) 91 (7.6) 8 (2.6) 15 (1.9) 150 (4.1)
- Gray or dyed hair 187 (19.3) 393 (32.7) 73 (23.9) 64 (8.2) 23 (5.1) 740 (20.0)
- Missing or rotten teeth or denture 36 (3.7) 85 (7.1) 2 (0.7) 20 (2.6) 15 (3.4) 158 (4.3)

### Appearance

- Pretty, clean or cool clothes 2 (0.2) 1 (0.1) 38 (4.9) 5 (1.1) 46 (1.2)
- Ugly, dirty or old fashioned 25 (2.6) 43 (3.6) 10 (3.3) 17 (2.2) 38 (8.5) 133 (3.6)

### Character Traits

- Happy or fun 18 (1.9) 3 (0.3) 63 (8.1) 15 (3.4)
- Kind 32 (3.3) 7 (0.6) 1 (0.3) 32 (4.1) 77 (17.2) 149 (4.0)
- Sad, lonely or sensitive 11 (1.1) 9 (0.8) 2 (0.7) 3 (0.4) 3 (0.7) 28 (0.8)
- Grumpy, mad or yells 42 (4.3) 36 (3.0) 27 (8.9) 16 (2.1) 67 (15.0) 188 (5.1)
- Boring or quiet 19 (2.0) 7 (0.6) 8 (2.6) 10 (1.3) 11 (2.5) 55 (1.5)
- Spoil you 2 (0.2) 3 (0.3) 2 (0.7) 4 (0.5) 9 (2.0) 27 (0.7)
- Stubborn or strict 5 (0.5) 4 (0.3) 5 (1.6) 2 (0.3) 8 (1.8) 24 (0.7)

### Cognitive

- Wise 121 (12.5) 28 (2.3) 3 (1.0) 23 (2.9) 51 (11.4) 226 (6.1)
- Reminiscent 42 (4.3) 33 (2.8) 12 (3.9) 22 (2.8) 22 (4.9) 131 (3.5)
- Forgetful, crazy or demented 65 (6.7) 108 (9.0) 44 (14.4) 14 (1.8) 23 (5.1) 254 (6.9)

### Health problems or diseases

- Healthy 8 (0.8) 4 (0.3) 105 (13.4) 2 (0.5) 119 (3.2)
- Diseases or takes medicine 67 (6.9) 105 (8.8) 10 (3.3) 27 (3.5) 13 (2.9) 222 (6.0)
- Specific diseasesa 46 (4.7) 102 (8.5) 5 (1.6) 13 (1.7) 4 (0.9) 170 (4.6)
- Sensory problemsb 57 (5.9) 110 (9.2) 14 (4.6) 14 (1.8) 14 (3.1) 209 (5.7)
- Eating or incontinence problem 14 (1.4) 36 (3.0) 2 (0.7) 10 (1.3) 4 (0.9) 66 (1.8)
- Weak 126 (13.0) 167 (14.0) 23 (7.5) 24 (3.1) 25 (5.6) 365 (9.9)
- Trouble walking 72 (7.4) 117 (9.8) 11 (3.6) 27 (3.5) 32 (7.1) 259 (7.0)
- Trouble talking 14 (1.4) 19 (1.6) 2 (0.3) 1 (0.2) 36 (1.0)
- Other health problem 27 (2.8) 56 (4.7) 4 (1.3) 14 (1.8) 7 (1.6) 108 (2.9)

### Physical aids

- Wheelchair or cane 32 (3.3) 60 (5.0) 5 (1.6) 26 (3.3) 8 (1.8) 131 (3.5)
- Eyeglasses, hearing aids, or prosthetics 14 (1.4) 26 (2.2) 3 (1.0) 8 (1.0) 4 (0.9) 55 (1.5)

### Activity status

- Active or more active 8 (0.8) 1 (0.1) 1 (0.3) 102 (13.1) 4 (0.9) 116 (3.1)
- Not active or less active 166 (17.1) 259 (21.7) 54 (17.7) 109 (14.0) 61 (13.6) 649 (17.5)
- Want to be taken care of 47 (4.7) 30 (3.4) 19 (6.2) 34 (4.4) 14 (3.1) 155 (4.2)
- No change 2 (0.2) 7 (0.6) 16 (2.1) 1 (0.2) 19 (0.5)
- Retired or not employed 25 (2.6) 29 (2.4) 6 (2.0) 64 (8.2) 5 (1.1) 129 (3.5)

*(Table continues on next page)*
Old is...
\( n = 970 \)

<table>
<thead>
<tr>
<th>Response</th>
<th>( n )</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed or take care of self</td>
<td>8</td>
<td>0.8</td>
</tr>
<tr>
<td>Subtotal</td>
<td>256</td>
<td>51.8</td>
</tr>
</tbody>
</table>

You know you're old when...
\( n = 1,196 \)

<table>
<thead>
<tr>
<th>Response</th>
<th>( n )</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>You know your parents are old when...</td>
<td>2</td>
<td>0.7</td>
</tr>
<tr>
<td>Subtotal</td>
<td>82</td>
<td>26.9</td>
</tr>
</tbody>
</table>

When I am old, I...
\( n = 781 \)

<table>
<thead>
<tr>
<th>Response</th>
<th>( n )</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old people...</td>
<td>6</td>
<td>0.7</td>
</tr>
<tr>
<td>Subtotal</td>
<td>90</td>
<td>20.0</td>
</tr>
</tbody>
</table>

Total
\( n = 3,700 \)

<table>
<thead>
<tr>
<th>Response</th>
<th>( n )</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1153</td>
<td>31.2</td>
</tr>
</tbody>
</table>

| Notes: | The pattern of characteristics combined both Neff and Stinson Middle Schools at baseline collection, for 1998. The percentages were calculated as the total characteristic responses divided by the total number of students completing each prompt. |  |
| Specific diseases include arthritis, back pain, osteoporosis, diabetes, cancer, heart problems, and blood pressure problems. |  |
| Sensory problems include olfactory, tactile, vision, and hearing problems. |  |
| Isolated activities include watching TV, reading, sewing, playing games, cooking, driving, shopping, gardening, and doing housework. |  |
| Physical activities include walking, fishing, and engaging in physical exercise. |  |
| Social activities include going out, dancing, traveling, engaging in religious activities, volunteering, and babysitting. |  |