EFFECTS OF TARGET AGE AND PARTICIPANT AGE ON ATTITUDE INFERENCES AND THEIR ACCURACY

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Effects of Target Age and Participant Age on Attitude Inferences and Their Accuracy

by

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Abstract

The present research investigated the effects of target and participant age on the inferences made about people's attitudes and the accuracy of these inferences. Two studies were conducted. One study asked people spanning the adult age range to indicate their level of agreement or disagreement with various statements. This measurement provided the comparison for assessing the accuracy of attitude estimations. The other study asked people spanning the adult age range to estimate the attitudes of either a man or a woman in their twenties or early thirties, in their late thirties or forties, or in their fifties or sixties. Participants in both studies were obtained from random samples of the general population. As expected, people's actual attitudes differed according to age. Specifically, the older the person, the less liberal their attitudes. In terms of attitude estimations, participants varied in their expectations of the liberalness of the attitudes of adults of different ages. Younger adults estimated that each successively older age group would be less liberal. Middle-aged adults estimated that middle-aged and older adults would hold similar attitudes, ones that were less liberal than younger adults. Older adults estimated that middle-aged adults would hold the least liberal attitudes and that the oldest adults would hold attitudes that were as liberal as the youngest adults. This pattern of inferences provides some support for age in-group/out-group categorization. There was no consistent evidence that people would be more accurate in estimating the attitudes of people their own age in comparison with people from other age groups, as had been

predicted. Two findings that did suggest an out-group inaccuracy bias, however, were the under-estimations made by older adults of the liberalness of the attitudes of middle-aged adults and the over-estimations made by middle-aged adults of the liberalness of the attitudes of younger adults. People also tended to over- and under-estimate the extent to which women would hold liberal attitudes in comparison with their estimates of men's attitudes. Women were also more accurate overall than men in estimating the attitudes of people in their late thirties or forties.

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Effects of Target Age and Participant Age on Attitude Inferences and Their Accuracy

Age is a salient social category upon which inferences about the characteristics of others are often based. A variety of dimensions, including personality traits, physical characteristics, social relations, emotional characteristics, and cognitive abilities have been examined in studies about inferences based on age. One particular dimension that has not received much attention, however, is attitudes. Understanding attitude inferences is important because of the central role they play in interpersonal relationships (Griffitt, Nelson, & Littlepage, 1972; Schachter, 1951). Understanding attitude inferences based on age, in particular, has implications for intergenerational relationships.

The purpose of the present research is to examine the effects of age on inferences involving attitudes. Specifically, the attitudes attributed to various target age groups by participants of different ages will be investigated.

Perceptions of the Elderly

Much of the interest in inferences based on age stems from concerns about ageism and the perceived widespread negative stereotyping of the elderly. Consequently, a great deal of the literature has focused specifically on perceptions of the elderly (see Crockett & Hummert, 1987; Green, 1981; Kogan, 1979; Lutsky, 1980 for reviews). One of the main findings of the literature investigating perceptions of the elderly is that, contrary to widespread belief, the elderly are seen as possessing positive as well as negative

attributes, although on average they may indeed be seen as possessing more negative than positive attributes (Crockett & Hummert, 1987).

Investigations of perceptions of the elderly have often varied target age to address whether elderly targets are viewed more negatively than younger targets. These studies indicate that, although there may be a tendency for the elderly to be viewed more negatively than younger groups (Crockett & Hummert, 1987; Kite & Johnson, 1988), this is an inconsistent effect moderated by a number of factors (Kite & Johnson, 1998; Slotterback & Saarnio, 1996). Kite and Johnson (1988), in a meta-analytic study, found that older people were evaluated more negatively than younger counterparts when there was no individuating information given about the target, when participants evaluated both younger and older targets, and when the context was not work-related. Moreover, they found that the negative ratings of older people relative to younger people, were smaller when the evaluation was of competency and physical attractiveness as opposed to traits or desirable contact.

Some studies have investigated perceptions of the elderly by varying participant age to examine whether older participants view elderly targets more positively or more negatively than younger participants. These studies have revealed many mixed findings (Lutsky, 1980) and it is likely that, similar to effects of target age, effects of participant age are moderated by various factors, although no systematic analysis of the literature has looked at target age. A recent study by Canetto, Kaminski, and Felicio (1995) illustrates

that participant age effects, like target age effects, can be moderated by a number of factors. Canetto et. al. (1995) had younger and older participants rate either a typical older adult or one who was optimally aging, that is, a 'mentally healthy, mature, and socially competent older' adult. They found that younger participants rated a typical older target as more rigid, as more unattractive, and more passive and dependent than did older participants. Older participants, however, rated a typical older target as more self-centered and as having poorer self-care than did younger participants. Younger participants saw an optimally aging older adult as less depressing, less passive and dependent, less characterized by social decline, less self-centered and less mean than did older participants. In this particular study, both variations in information given about the target and the particular characteristic examined affected ratings of elderly targets. This demonstrates the potential for many factors to affect ratings.

Studies varying only target or participant age are limited, however, in that the potential interaction between target and participant age cannot be examined. To get a fuller understanding of intergenerational perceptions and potential stereotypes, it is important to include both target and participant age.

Effects of Target and Participant Age

The few studies that have varied both target and participant age have found important and informative effects. Kite, Deaux, and Miele (1991) had younger and older men and women generate traits they believed characteristic of either a 35- or 65-year old,

male or female target and had them rate the target on age-stereotypic and gender-stereotypic attribute scales. In the attribute generation task, they found that cross-age descriptions were much more differentiated than cross-gender descriptions. Participant effects were not examined in this particular analysis. In the ratings on the gender-stereotypic scale, both younger and older participants rated a 35-year-old target higher than a 65-year-old target on male physical characteristics and feminine role behaviours. Interactions between target and participant age were found for two components. Younger participants rated a 65-year-old target but not a 35-year-old target significantly lower on male trait and male role behaviours than did older participants. For the ratings on the age-stereotypic scale, Kite et al. (1991) identified seven factors including stimulating personality (e.g., interesting to meet), negative physical (e.g., wrinkled), positive physical (e.g., attractive), dejected (e.g, poor), sociable (active outside the home), negative personality (e.g., rigid) and talkative (talks a lot). They found that older participants gave more positive ratings on the negative physical, positive physical, and negative personality factors than younger participants, irrespective of the target age. They also found that both older and younger participants tended to rate an older target more negatively than a younger target on the negative physical, positive physical, dejected, sociable, and negative personality factors. In terms of interactions between target and participant age, they found older participants rated an older target more favourably than did younger participants on the positive physical and talkative factors. No differences were noted

between the two participant groups in their rating of a younger target for these factors. On the sociableness factor, both younger and older participants saw the younger target more positively than the older target. This difference was more pronounced for younger participants. These results indicate that, where biases exist, there is a tendency to view members of one's own age group more favourably than members of another age group.

Rothbaum (1983) also found some evidence of favouritism toward members of one's own age group versus another age group. Rothbaum (1983) had two groups of participants, one aged 30- to 45-years and the other aged 55- to 70-years, rate whether they thought particular attributes were more characteristic of the 30- to 45-year age group or the 55- to 70-year age group. In their first two studies, they found that participants did not assign more positive or negative characteristics to one group than the other. However, in a third study where participants were asked to rate the admirability of characteristics, that were indicated in the first study as stereotypical of one age group or the other, the older participants gave more positive ratings to the stereotypic elderly characteristics than the younger participants did whereas the younger participants tended to give more positive ratings to the stereotypic youthful characteristics than the older participants. Thus, there was no bias in perceived incidence of characteristics but there was bias in the perceived admirability of those characteristics.

Linville, Fisher, and Salovey (1989) had college students and elderly participants estimate the percentage of either elderly people or college-aged students falling at each

level of a scale for eight bipolar attributes. They found that both age groups had higher average favourability ratings for people of their own age group. They also found that participants created more subtypes for their own age group and that they perceived greater covariation among the features of the other age group.

Linville, Fisher, and Yoon (1996), like Linville et al. (1989), found that participants were both more favourable toward and had more complex representations of their own age group versus another age group. Linville et al. (1996) had college-aged students and an older group of adults create subtypes of either a younger or older target. For each subtype, participants went through a list of characteristics and picked the level of the characteristic that best fit the subtype. Older participants created more favourable older subtypes whereas younger participants created more favourable younger subtypes. Participants also viewed their own age group as more differentiated and variable than the other age group.

Taken together, these studies highlight two major points. First, people have more complex representations about the characteristics of their own age groups than other age groups. This is consistent with the well-demonstrated in-group/out-group effect, known as out-group homogeneity (Ostrom & Sedikides,1992). The out-group homogeneity effect refers to the tendency for people to perceive out-group members as more homogenous than in-group members. Second, people tend to view their own age group more favourably than other age groups, although there are exceptions. This is consistent

with another well-demonstrated in-group/out-group effect, known as in-group favouritism (Mullen, Brown, & Smith, 1992). The in-group favouritism effect refers to the tendency for people to have more favourable views of in-group than of out-group members. The demonstration of these two phenomena characteristic of in-group/out-group categorization suggests that people would make attitude inferences based on whether a target is a member of their age in-group or out-group.

Although studies varying both target age and participant age allow the interaction between the two variables to be examined, they tend to be limited in that they usually examine only two distinct age groups. Most of these studies have looked at younger and older participants' perception of younger and older targets and have neglected to encompass the adult age range, omitting middle-aged individuals altogether. To fully examine inferences based on age it is important to consider how people of several ages perceive and are perceived by people in their own and other age groups.

Trait Inferences Relevant to Attitudes

In addition to the examination of the general effects of target and participant age on attitude inferences, several studies have investigated age differences in trait inferences pertinent to attitudes. One of the most consistent findings in the literature on perceptions of the elderly, is that the elderly are perceived as conservative and set in their ways (Green, 1981). Both younger and older adults view older people as conservative (Bassili & Reil,1981; Signori, Butt, & Kozak, 1982; Braithwaite, 1986), traditional (Bassili &

Reil,1981; Braithwaite, 1986), moral (Bassili & Reil,1981), and generally close-minded (Signori et al., 1982).

When perceptions of older targets were compared to those of younger targets, older and younger targets were also seen as possessing opposing traits. Gardner, MacIntyre, and Lalonde (1995) found that young adults' views of twenty-year olds included irreligious, idealistic, and modern. In contrast, their views of seventy-year olds included religious, realistic, and traditional. Rothbaum (1983) found that modern, flexible, idealistic, and open-minded were viewed as youthful characteristics while severe, old-fashioned, and inflexible were viewed as elderly characteristics. The elderly, however, were viewed as being tolerant, by both younger and older participants.

These types of traits, on which old and young are expected to differ, are associated with attitude dimensions. Hoskins (1994) found that these types of traits were used to describe targets whose attitudes varied along liberal-conservative and traditional-radical dimensions. It is reasonable to expect, then, that similar inferences would also be made about attitudes.

Accuracy

Despite the large body of evidence examining social inferences and stereotyping, little attention has been paid to their accuracy. Understanding accuracy is important for assessing whether inferences reflect stereotypes of age groups or if they reflect reality. Ryan, Park and Judd (1996) point out two problems associated with the accuracy

criterion, that is, the indicator of actual characteristics against which estimates are compared. One is that the accuracy criterion tends to be obtained from a non-probability sample. This poses a problem because a non-probability sample may not represent the whole population. The other problem is that the criterion is typically self-reports. The subjectivity of the self-reports, particularly in estimating attributes such as traits, increases the likelihood of biases. Ryan et al. (1996) note, however, that such biases should be less problematic when the attributes are attitudes since people will likely be more aware of their opinions than of how much of a trait they possess.

Only one previous study, to the researcher's knowledge, has explored the question of the accuracy of attitude inferences based on age. Griffitt et al. (1972) (Study 3) had college-aged students predict the attitudes of either a college student or a 65-year-old person living in the local community, who was of the same gender as the participant, on 12 topics. The accuracy of the estimations was examined by comparing them with actual attitudes obtained in a previous study. There was only one significant difference between college students' estimations of the attitudes of college students and the actual attitudes of college students but five significant differences between college students' estimations of the attitudes of a 65-year-old person and the actual attitudes of older persons. Thus, the students were more accurate in estimating the attitudes of their own age group than the other age group. Unfortunately, this study did not consider the perceptions of older participants.

Actual Attitudes

In examining accuracy, actual attitudes have to be considered as they provide the criterion against which attitude estimations are judged. One consistent finding in research on actual attitudes is that older people are more conservative than younger people (e.g., Campbell & Strate, 1981; Reinnman, Gubich, Hempel, & Richter, 1993; Truett, 1993). Reinnman et al. (1993) examined the relationships among personality variables, attitudes toward political topics, and demographic variables, including age, using a sample of university students and their acquaintances. They found that age was positively related to conservatism even when controlling for all other demographic variables and the personality variables.

Truett (1993) used a much larger sample than Reinnman et al. (1993) in his investigation of age and actual attitudes. Truett (1993) examined the attitudes on 28 social issues of approximately 36,000 respondents in a non-random sample survey of adults. He found a pattern of increasing conservatism with age for both men and women, with a sharp increase in conservatism between the ages of 40 and 50.

Unlike Truett (1993) and Reinnman et al. (1993), Campbell and Strate (1981) used a random population sample in their investigation. They compared the position of older and middle-aged participants on various issues in a national survey. They found that older participants were generally more conservative than middle-aged participants on various issues such as law and order, foreign affairs, race relations, and domestic policy.

They also found that, despite being more conservative, older people were always in general agreement with the middle-aged group. Older people were more liberal than the middle-aged group on some specific issues such as government health care, employment maintenance, income tax rates, and more services as opposed to tax cuts.

Summary of Previous Findings

In summary, previous research has shown that inferences are made about various characteristics based on the age of the target. Much of the literature involving inferences based on age has focussed on perceptions of the elderly, leading to studies that typically varied only target or participant age. These studies demonstrate that perceptions can be affected by a number of factors. However, to obtain a fuller understanding of intergenerational perceptions and age stereotypes, target and participant age need to be varied together. Studies that have varied target and participant age indicate that inferences can be affected by in-group/out-group categorization.

The research on inferences based on age is generally limited in several ways. First, studies typically have examined only two age groups and have failed to consider the whole adult age range for both targets and participants. Second, they mainly have employed convenience samples rather than probability samples, which places limitations on the generalizability of the findings. In addition, convenience samples for different age groups tend to be taken from entirely different settings. Young participants are usually college students and older participants are usually recruited from advertising or local

organizations. Third, the studies do not usually consider whether inferences are accurate.

Present Research

The present research examines attitude inferences, a dimension that is an important factor in interpersonal relationships, but yet has received little attention in perceptions based on age. It avoids some of the limitations typical of previous studies of inferences based on age. Participants span the adult age range and targets are used that cover younger, middle and older groups rather than just two age groups. Participants are all obtained from random probability samples of the local population. In addition to measuring attitude inferences, actual attitudes are also measured, thereby, enabling the accuracy of inferences to be examined.

Two studies were conducted. In the first study, a random sample of adult men and women varying in age were asked to provide their attitudes on various statements. In the second study, another random sample of adult men and women varying in age were asked to estimate attitudes of either a man or woman from a particular age group. Consistent with past research, it was expected that age differences in actual attitudes would be observed. Also consistent with previous research, it was expected that inferences would likely vary with both the age of the target and the age of the participant. In particular, it was expected that, although there may be a pattern of expected higher conservatism with age, inferences would likely be affected by in-group/out-group categorization.

With respect to accuracy, there is evidence to suggest that people would be more accurate in estimating attitudes of their own age group than other age groups. Judd and Park (1993), from their review of the accuracy literature, indicate that there appears to be consistent evidence that in-group stereotypes are more accurate than out-group stereotypes and the age perception literature does indicate that age forms a basis for in-group/out-group categorization. Moreover, Griffitt et al. (1972) found that college students were more accurate in estimating the attitudes of people from their own age group than an older age group.

Response latency was measured in Study 1 as an indicator of attitude strength and in Study 2 as an indicator of stereotype accessibility, and its relationship to age and gender was explored. It has been shown to be a useful indicator of attitude strength, as defined by attitude stability (Bassili, 1996; Grant, Button, & Noseworthy, 1993) and attitude pliability (Bassili, 1996) as well as a useful indicator of stereotype accessibility (Gardner et al.,1995). Thus, although not of central concern in this study, its relationship to both of these potentially important variables warrants its consideration.

STUDY 1

Method

Participants

Sixty men and 99 women participated in the study. Men ranged in age from 18 to 72 and women ranged in age from 19 to 76. The mean age for men and women was 38.3 (SD = 15.5) and 40.9 (SD = 15.8), respectively. Participants' households contained on average 1.1 adult males and 1.2 adult females.

Attitude Statements

Twenty attitude statements, selected to represent different attitudinal issues, were used (see Table 1). Nineteen were selected from those used by Hannah, Button, and Grant (1995) and another was selected from Ross (1997, unpublished data). The item from Ross (1997, unpublished data) was included because it represented an issue believed to be particularly relevant to older people, home care services, and there was no comparable item that could be included from Hannah et al. (1995). The statements selected from Hannah et al. (1995) were ones that were categorized by Hannah et al. (1995) as liberal or conservative and the one from Ross (1997, unpublished data) was judged to be a conservative statement. Nine of the statements were liberally worded (e.g., Marijuana should be legalized) and eleven were conservatively worded (e.g., It is time to close the door to refugees).

Procedure

The investigation was conducted using a computerized telephone survey. Local telephone numbers in St. John's and surrounding areas were generated randomly using a computer program. The program selected one of the valid first three digit exchanges of local telephone numbers and then randomly generated the last four digits. Numbers were sampled in proportion to the size of the exchange population.

For each telephone number called, four possible options could be executed. If the requested participant was contacted and agreed to participate, the interview proceeded. If there was no answer or the line was busy or if the target person existed in the household but was unavailable at the time, the number was placed in the pool again. If the interviewer reached a number that was not in service or non-residential or if the target person did not exist in that particular household, that number was dropped from the pool. If the person refused to participate the refusal was recorded by the program and the number dropped from the pool.

When the interviewer made contact with someone in a household, she explained that she was a graduate student at MUN conducting a random telephone survey and that she would like to speak with either the youngest man, youngest woman, oldest man, or oldest woman in the household, 18 or over. The type of person the interviewer was to request was randomly selected each time a new phone number was generated.

Once a potential participant was reached, the interviewer informed the person that

the purpose of the survey was to find out people's attitudes on certain issues, that participation was voluntary and anonymous, and that participation would not take any more than five minutes. If the person was willing to participate, the interviewer gave the person the following instructions:

> I am going to read you a list of attitude statements one at a time. Please indicate how much you agree or disagree with each statement using a scale of one to seven.
>
> The interviewer then explained the following response scale to the participant:
>
> 1 Strongly disagree
> 2 Moderately disagree
> 3 Slightly disagree
> 4 No opinion or undecided
> 5 Slightly agree
> 6 Moderately agree
> 7 Strongly agree

The attitude statements were read one at a time in random order. After the interviewer finished reading an attitude statement, she hit a key on the computer which started a timer. When the participant gave a response, the interviewer entered it on the computer, which stopped the timer and the interval was recorded. In instances where participants changed their initial responses, a note was made on paper and the value was manually changed in the computer file.

At the end of the interview, the interviewer asked the participant for his or her age. The interviewer also asked the participant how many adult male and adult females 18 and over resided in the household.

Results

Participation Rates

Of the 214 people contacted, 78% agreed to participate. The participation rate of men was 84.2% while the participation rate of women was 74.6%. This difference was not significant, $\chi^2(1) = 2.62$, $p > .05$. The participation rate for the youngest person in the household was 78.8% and for the oldest person in the household, it was 77.4%. This difference was not significant, $\chi^2(1) = .06$, $p > .05$. Eight of the people who had agreed to participate were dropped because they were not able to follow the instructions or ended the interview before it was completed.

Scale Construction

The correlations among the twenty attitude statements are presented in Table 2. Before constructing the scale, statements that were classified a priori as conservative were reversed so that higher scores for all items indicated higher liberalism. A reliability analysis produced a Cronbach's alpha of .59 for the 20 items. As this alpha was somewhat low, a principal component analysis with minimal eigenvalues of 1 and a varimax rotation was conducted to examine the factor structure of the scale. Six factors were extracted, but there was considerable overlap in that many items loaded on several factors. The first factor, which reflected a liberal-conservative factor, accounted for 10.64% of the variance.

A liberalism scale was constructed by including items that had a positive loading

of .25 or greater on the first factor. Eight items met the criteria. All eight items had a correlation of at least .15 with the overall total in the reliability analysis. The item-total correlations for the reliability analysis involving all 20 statements and the component loadings for the principal component analysis involving all 20 statements are presented in Table 3.

The Cronbach's alpha for the eight-item liberalism scale was .64 and all items had moderate correlations with the new total (see Table 4). A scale score was constructed for each individual by averaging the responses to the eight attitude statements. Previous research suggested that younger people would be more liberal than older people. The scale score was indeed negatively correlated with age ($r = -.321$, $p < .01$), indicating that the scale did represent a liberalism construct.

Liberalism

A hierarchical regression analysis was conducted with the liberalism score as the predicted variable. In addition to the linear function of age, the quadratic function of age was also included to test the possibility that the relationship between age and liberalism may not be linear. Gender was also included as well as the interaction between gender and age to determine whether any relationship between age and liberalism was the same for men and women. In total, five vectors representing gender, the linear function of target age, the quadratic function of participant age, the interaction between gender and the linear function of participant age, and the interaction between gender and the

quadratic function of target age were entered, in that order. The error term with all variables entered in the analysis, was used as the error term for all components.

Table 5 presents the change in R^2 after each component was entered. Only the linear function of target age significantly increased R^2 ($\Delta R^2 = .097$), $F(1, 153) = 17.36$, $p < .001$. Participants' liberalism scores decreased linearly with age (see Figure 1) indicating that the older the person, the less they agreed that marijuana should be legalized and the more they agreed that unemployment insurance makes people lazy, that mentally ill people should not be allowed positions of responsibility, that there is too much sex on television, that the breakdown of the family is a serious social problem, that the idea of gay or lesbian marriages seems ridiculous, that women should avoid going out to work when their children are really young, and that Canadians spend too much money on lotteries.

Response Latency

As is typical with latency scores (Fazio, 1990), the latency scores in the present research were skewed due to long response latencies. Latency scores ranged from 1.60 to 33.95 seconds, with the average latency score being 6.75 seconds. Contributing to this skewness were delays in responses due to factors such as the participant asking to have the item repeated or changing a response after it had been entered. These delays were not adjusted. To deal with the skewness created by long latencies, the latencies, recorded by the computer to 2 decimal places, were normalized using a reciprocal transformation. To

avoid dividing by scores close to zero, a constant of 1 was added first and then the reciprocal taken (Fazio, 1990). This transformed the latencies into response speeds with higher scores indicating faster response speeds. An average response speed score was then computed for each individual by averaging the response speeds on the eight attitude statements comprising the liberalism scale.

A regression analysis similar to the one for liberalism scores was conducted. Again, vectors were entered in the order of gender, linear function of target age, quadratic function of participant age, interaction between gender and the linear function of participant age, and interaction between gender and the quadratic function of target age. The change in R^2 is presented in Table 6. Only the linear function of age was significant ($\Delta \underline{R}^2 = .195$), $\underline{F}(1, 153) = 39.20$, $\underline{p} < .001$. Response speed decreased with the age of participants. The younger the person the more quickly they responded (see Figure 2).

STUDY 2

Method

Participants

Participants were 120 men and 120 women. Men ranged in age from 18 to 79 and women ranged in age from 18 to 86. The mean age of men was 39.1 (SD = 15.9) and the mean age of women was 39.8 (SD = 15.1). Participants' households contained on average 1.2 males and 1.2 females.

Procedure

The computerized procedure was similar to that used in study 1. Participants, rather than being asked to give their attitudes as in study 1, were asked to indicate the extent to which they thought a person of a certain age group and gender would agree with the statements. Six targets were created, male and female versions of three age groups: twenties or early thirties, late thirties or forties, and fifties or sixties. Each participant estimated the attitudes of one target only. In total, there were 24 possible conditions crossing participant gender, participant age (youngest or oldest), target gender, and target age (twenties or early thirties, late thirties or forties, or fifties or sixties). The computerized procedure was modified from Study 1 so that the condition did not change with each new phone number but stayed the same until the condition was filled.

The participants were given the following instructions:

I am going to read you a list of attitude statements one at a time. Please

indicate how much you think a man (woman) in their twenties or early thirties (late thirties or forties, fifties or sixties) would agree or disagree with each statement using a scale of 1 to 7.

The interviewer explained the response scale and then, to ensure that the task was clear to participants, the interviewer stated:

Remember, you are not indicating your own attitude but what you think is the attitude of a man (woman) in their twenties or early thirties (late thirties or forties, fifties or sixties).

Results

Participation Rates

Of the 379 people contacted, 65.7% agreed to participate. The participation rate for men was 61.5% while the participation rate for women was 70.4%. This difference was not significant, $\chi^2(1) = 3.31$, $p > .05$. There was also no significant difference between the participation rates in the youngest condition and the oldest condition (65.4% vs. 66%) , $\chi^2(1) = .012$, $p > .05$; between the participation rates in the male target condition and the female target condition (67.2% vs. 64.3%), $\chi^2(1) = .36$, $p > .05$; and among the participation rates in the twenties or early thirties target condition, late thirties or forties target condition and the fifties or sixties target condition (66.7%, 65.1%, and 65.4%, respectively), $\chi^2(2) = .077$, $p > .05$. Nine of the people who had agreed to participate were dropped because they were not able to follow the instructions or had to end the interview before it was completed.

Estimated Liberalism

To analyse participants' responses to targets from their own or other age groups, participants were categorized into one of three age groups, corresponding to the target age groups. Those age 18 to 34 were classified as the youngest age group, those age 35 to 49 were classified as the middle-aged group, and those age 50 and over were classified as the oldest age group. The average ages in the youngest, the middle-aged and the oldest groups were 25.4 (SD = 4.9, N = 101), 41.2 (SD = 4.1, N = 81), and 61.7 (SD = 8.7, N = 58), respectively.

A four-way between-participants analysis of variance with target age, target gender, participant age, and participant gender as the independent variables and the estimated liberalism score as the dependent variable was conducted. The analysis of variance revealed main effects of target age, $F(2, 204) = 11.50$, $p < .001$, and participant age, $F(2, 204) = 3.08$, $p < .05$. In addition, the interaction between target and participant age was very close to significance, $F(4, 204) = 2.39$, $p = .052$. Given the potential importance of this interaction to the questions addressed by the study, further analysis seemed warranted. The relevant cell means and standard deviations for this interaction are presented in Table 7.

The interaction was further analyzed through tests of simple main effects of participant age at each level of target age. Figure 3 shows the mean estimated liberalism scores for each target age group by participant age groups. The three simple effects were

significant (*F*s(2, 204) = 3.22, *p* <.05; 4.95, *p* < .01; and 4.03, *p* < .05 for targets in their twenties or early thirties, late thirties or forties, and fifties or sixties, respectively), indicating that all three target age groups were viewed differently depending on whether a participant was in the youngest, middle-aged, or oldest age group. Targets in their twenties or early thirties were estimated to have more liberal attitudes by both the youngest (mean = 3.96) and middle-aged (mean = 4.06) participants than by the oldest participants (mean = 3.55), *t*s(204) = 1.84 and 2.18, respectively, *p* < .05, but there was no significant difference between the youngest and the middle-aged participants, *t*(204) = -.45, *p* > .05. Likewise, targets in their thirties or early forties were estimated to have more liberal attitudes by the youngest participants (mean = 3.49) and the middle-aged participants (mean = 3.66) than by the oldest participants (mean = 2.84), *t*s(204) = 2.74 and 3.39, respectively, *p* < .01, but there was no significant difference between the youngest and middle-aged participants, *t*(204) = -.81, *p* > .05. The results were somewhat different when targets were in their fifties or sixties. Targets in their fifties or sixties were seen as having more liberal attitudes by the middle-aged participants (mean = 3.39) and by the oldest participants (mean = 3.46) than by the youngest participants (mean = 3.04), *t*s(204) = 1.70 and 1.68, respectively, *p* < .05. There was no significant difference between the middle-aged and oldest participants, *t*(204) = -.27, *p* > .05.

In sum, the youngest and middle-aged participants tended to view targets in their twenties and early thirties and targets in their late thirties or forties as having more liberal

attitudes than did the oldest participants. The middle-aged and oldest participants tended to view targets in their fifties or sixties as having more liberal attitudes than the youngest participants.

The interaction was also analyzed through tests of simple main effects of target age at each level of participant age. Figure 4 presents the mean estimated scores for the target age groups by the participant age groups. All three simple effects were significant ($\underline{F}$s (2, 204) = 10.89, $\underline{p} < .01$; 4.20, $\underline{p} < .05$; and 4.26, $\underline{p} < .05$, for youngest, middle-aged and oldest participant groups, respectively), indicating that estimates made by the youngest, middle-aged and oldest participants all depended on whether it was the youngest, the middle-aged or the oldest target. The youngest participants estimated that targets in their twenties or early thirties (mean = 3.96) would have more liberal attitudes than targets in their late thirties or forties (mean = 3.49) and targets in their fifties or sixties (mean = 3.04), $\underline{t}$s(204) = 2.28, $\underline{p} < .05$ and 4.65, $\underline{p} < .01$, respectively, and that targets in their late thirties or forties would have more liberal attitudes than targets in their fifties or sixties, $\underline{t}(204) = 2.30$, $\underline{p} < .05$. The middle-aged participants also estimated that targets in their twenties or early thirties (mean = 4.06) would have more liberal attitudes than targets in their late thirties or forties (mean = 3.66) and targets in their fifties or sixties (mean = 3.39), $\underline{t}(204) = 1.79$, $\underline{p} < .05$ and 2.95, $\underline{p} < .01$, respectively, but they did not estimate that targets in their late thirties or forties would have more liberal attitudes than targets in their fifties or sixties, $\underline{t}(204) = 1.23$, $\underline{p} > .05$. The oldest participants also

estimated that targets in their twenties or early thirties (mean = 3.55) would have more liberal attitudes than targets in their late thirties or forties (mean = 2.85), $t(204) = 2.80$, $p < .01$, but they did not estimate that targets in their twenties or early thirties (mean = 3.55) would have more liberal attitudes than targets in their fifties or sixties (mean = 3.46), $t(204) = .33$, $p > .05$. Moreover, they estimated that targets in their fifties or sixties would have more liberal attitudes than targets in their late thirties or forties, $t(204) = 2.16$, $p < .05$.

In sum, the youngest participants estimated that each successively older target would hold less liberal attitudes than the previous. The middle-aged participants estimated that the middle-aged target would hold less liberal attitudes than the youngest target, but they estimated that the middle-aged and oldest targets would have similar attitudes. The oldest participants estimated that the middle-aged target would have less liberal attitudes than both the youngest and oldest targets, whom they saw as having similar attitudes.

Accuracy

To examine accuracy, participants from Study 1 were grouped into categories that corresponded to the target categories of Study 2. Men and women between the ages of 18 and 34 were used as the reference for targets in their twenties or early thirties, those between 35 and 49 were used as the reference for targets in their late thirties or forties, and those age 50 and over were used as the reference for targets in their fifties or sixties.

The average ages of the reference groups from study 1 were 24.8 (SD = 4.8), 40.5 (SD = 4.4) and 60.3 (SD = 7.9) for the youngest, middle-aged, and oldest reference groups respectively, comparable to the target age groups.

To determine whether people were generally accurate or inaccurate in their estimations of attitudes, absolute deviation scores were examined. Absolute deviation scores provide an indication of overall inaccuracy, without reference to the direction of the inaccuracy. Deviation scores were computed for each individual using the average liberalism score calculated for actual attitudes in Study 1. Actual liberalism scores were subtracted from estimated liberalism scores and the absolute difference used in the analysis.

A four-way between-participants analysis of variance with target age, target gender, participant age, and participant gender as the independent variables and the absolute deviation score as the dependent variable was conducted. The expected target by participant age interaction was not found, $F(4, 204) = .46$, $p > .05$. People were no more inaccurate in estimating the attitudes of other age groups than their own. Other unexpected effects were found, however. A main effect of target gender indicated that participants were more inaccurate when estimating the attitudes of women (mean = .77) than men (mean = .61), $F(1, 204) = 8.92$, $p < .01$. There was also an interaction between participant gender and target age, $F(2, 204) = 3.08$, $p < .05$ (see Figure 5), which was examined through simple main effect tests for participant gender at each level of target

age. Men were less accurate (x = .86) than women (x = .50) when estimating attitudes of a person in their late thirties or forties, $F(1, 204) = 9.65$, $p < .01$. Men and women did not differ in how accurately they estimated the attitudes of people in their twenties or early thirties and people in their fifties or sixties, $F(1, 204) = .01$ and 1.99, respectively, $p > .05$.

The possibility that there may be age in-group/out-group differences in the direction of inaccuracy, that is, under- and over-estimations of the liberalness of attitudes, was also examined. T-tests were used to compare each participant age group's estimated liberalism scores for each target age group with the actual liberalism scores for those target age groups. Figure 6 presents the actual liberalism score along with the estimates. There were only two significant differences. The oldest participants underestimated the extent to which people in their late thirties or forties would hold liberal attitudes, $t(18) = -4.32$, $p < .001$ and the middle-aged participants overestimated the extent to which people in their twenties or early thirties would hold liberal attitudes, $t(24) = 2.15$, $p < .05$.

Directional inaccuracy was also examined for gender groups. Figure 7 presents the actual liberalism score along with the estimates made by men and women of the attitudes of men and women. No significant differences were found.

Response Latencies

Response latency scores ranged from 1.61 to 29.54 seconds, with the average latency score being 6.97 seconds. As in Study 1, latency scores, recorded by the

computer to 2 decimal places, were transformed into response speed by adding a constant of one and taking the reciprocal of the sum. An average response speed was computed for each individual by averaging the response speed on the eight attitude statements comprising the liberalism scale. A four-way between-participants analysis of variance with target age, target gender, participant age, and participant gender as between-participants independent variables and the response speed as the dependent variable was conducted. There was a significant main effect of participant age, $F(2, 204) = 17.74$, $p < .001$. The youngest participants (mean = .22) were faster than both the middle-aged (mean = .20), $t(204) = 2.45$, $p < .01$, and the oldest participants (mean = .16), $t(204) = 6.18$, $p < .001$, and the middle-aged participants were faster than the oldest participants, $t(204) = 3.76$, $p < .01$. This result, along with the similar one in Study 1, indicates that response speed is generally slower with age.

The three-way interaction between target age, participant gender and participant age, $F(4, 204) = 2.70$, $p < .05$ was also significant. Further analysis indicated a significant two-way interaction between target and participant age for men but not for women, $Fs(4, 204) = 2.69$, $p < .05$ and 2.00, $p > .05$, respectively, and subsequently a significant simple main effect test of target age for men in their fifties or sixties ($F(2, 204) = 43.16$, $p < .05$). Men in their fifties or sixties responded more quickly to the youngest targets (mean = .20) than both the middle-aged (.14) and oldest (mean = .13) targets, $ts(204) = 2.32$ and 2.68, respectively, $p < .01$. There was no significant difference

in their response speed toward the middle-aged and oldest targets, ($t(204) = .33$, $p > .05$.

The four way interaction was also significant, $F(4, 204) = 5.52$, $p < .001$ (see Table 8). Further analysis of this interaction revealed significant three-way interactions between participant age, target age and target gender for both men and women, $Fs(4, 204) = 6.55$, $p < .001$ and 2.94, $p < .05$, respectively, and subsequently significant two-way interactions between target age and target gender within participant age and participant gender for the youngest men, ($F(2, 204) = 5.53$, $p < .01$), the middle-aged men, ($F(2, 204) = 4.69$, $p < .01$), and the youngest women, ($F(2, 204) = 4.98$, $p < .01$). Following this with tests of the simple main effect of target age within the respective levels of the other factors revealed differences in response speeds when estimating the attitudes of women of different ages for young men, $F(2, 204) = 4.66$, $p < .01$, middle-aged men, $F(2, 204) = 4.66$, $p < .01$, and young women, $Fs(2, 204) = 5.89$, $p < .01$. Men in their twenties or early thirties took longer to respond to a female target of the same age group (mean = .16) than to females of the middle-aged (mean = .24) or the oldest (mean = .23) groups, $ts(204) = -2.83$ and -2.42, respectively, $p < .01$. Men in their late thirties or forties also took longer to respond to females of their own age group (mean = .15) than to females of the youngest (mean = .20) or the oldest age group (mean = .25), but only the difference between the middle-aged and oldest was statistically significant, $ts(204) = -3.05$, $p < .01$ and -1.26, $p > .05$, for the difference between middle-aged and oldest and the difference between middle-aged and youngest, respectively. Women in their twenties or early

thirties responded more quickly to women of their own age group (mean = .29) than to women of the middle-aged (mean = .20) or oldest groups (mean = .19), $ts(204) = 2.73$, $p < .01$ and 3.59, $p < .001$, respectively.

Discussion

The purpose of the research reported here was to examine the effects of target and participant age on the inferences that are made about people's attitudes. By looking at inferences involving attitudes, a dimension that has implications for interpersonal relationships but has received little attention, this research adds to the knowledge of inferences based on age.

Actual Attitudes

As predicted, age differences in actual attitudes were found. A linear relationship between age and liberalism demonstrates that the older the person, the less liberal their attitudes. This relationship between age and liberalism is consistent with that found in previous studies, such as those by Campbell & Strate, (1981), Reinnman et al., (1993), and Truett (1993).

Attitude Inferences

Studies involving inferences indicate an expectation of higher conservatism with age (e.g., Gardner et al., 1991; Rothbaum, 1983). There was some evidence of this in the present study. The youngest participants clearly expected that the older the person, the less liberal their attitudes. The middle-aged participants expected that a younger adult would have more liberal attitudes than a middle-aged adult, but they did not expect a middle-aged adult and an older adult to differ. The oldest participants also expected that a younger adult would have more liberal attitudes than a middle-aged adult. However,

the oldest participants thought that older persons would have more liberal attitudes than middle-aged persons. This suggests that older people may be biased since actual attitudes indicated that the oldest age group held the least liberal attitudes.

Based on previous studies (e.g., Kite et al., 1991; Rothbaum, 1983; Linville et al., 1989; Linville et al., 1996), it was predicted that inferences would likely be affected by in-group/out-group categorization. The pattern of results provided some support for this prediction. There was some demonstration of in-group favouritism on the part of the oldest participants, as they saw themselves as possessing attitudes that were as liberal as the youngest adults and more liberal than middle-aged adults when actual attitudes indicated they were the least liberal. Interestingly, the middle-aged people viewed people of their own age and those older as having similar attitudes, suggesting that they may consider people in this broader age range as part of the in-group and younger people as part of the out-group.

Accuracy

Based on previous research (Judd & Park, 1993; Griffitt et al., 1972), it was predicted that people would be more accurate in estimating the attitudes of people their own age than in estimating the attitudes of people of other ages. While this was not consistently the case, there were two errors that indicate an out-group bias. One error was that the oldest participants underestimated the extent to which people in their thirties or forties hold liberal attitudes. This finding implies that older people may view liberalism

as a valued characteristic and, thus, exhibit bias by underestimating the extent to which the age group closest to its own possesses this characteristic. The other error was that middle-aged people overestimated the extent to which the younger adults would hold liberal attitudes. If people are more accurate with respect to their in-group than their out-group, then this would indicate that the middle-aged people consider younger adults as part of the out-group.

In examining accuracy, it was also found that people tended to both under- and over-estimate the extent to which women would hold liberal attitudes more so than they did men's attitudes. This result is not consistent with in-group/out-group categorization. In-group/out-group categorization would imply that people would be more accurate in estimating the attitudes of their own gender than the other gender (Judd & Park, 1993). Grant, Button, Ross, and Hannah (1997) also did not find that men and women were more accurate in estimating the attitudes of their own gender than the other gender. They found that men and women were accurate in estimating women's attitudes but that men and particularly women, were inaccurate in estimating men's attitudes. Grant et al. (1997) examined stereotypic male and stereotypic female attitudes whereas the present study did not examine stereotypic statements of any type and thus, the different findings indicate that the stereotypic nature of the statements may be important.

Another unexpected finding in the analysis of overall accuracy was that men were less accurate than women in estimating the attitudes of people in their late thirties or

forties. One possible explanation of this finding is that women may be more interpersonally sensitive than men, and hence more accurate in estimating the attitudes of middle-aged adults who may not be as stereotyped as younger and older adults.

Response Speed

Response speed was included as a measure because it has been found to be an indicator of both attitude strength and stereotype accessibility. In both studies, response speed decreased with age. This decrease may have masked potentially important effects since no baseline response speed was established. However, response speed effects were still observed, revealing that certain groups took longer to estimate the attitudes of particular target persons. The oldest men were able to make judgements about the attitudes of the youngest adults more quickly than they were able to make judgements about the attitudes of middle-aged or oldest adults. This suggests that the oldest men may have had a more stereotypic representation of the youngest age group than of the older age groups. Men in both the youngest and middle-aged groups took longer to make judgements about the attitudes of a woman from their own age group than of a woman from the other age groups, consistent with in-group/out-group categorization. This suggests that men in these two age groups tended to have a less stereotypic representation of women from their own age group than of women from other age groups. Interestingly, men did not differ in how quickly they estimated the attitudes of men from different age groups. Perhaps, these men responded to other men as part of the in-group

regardless of age, whereas only women of the same age were responded to as part of the in-group. The youngest women made judgements about women from their own age group more quickly than about women from other age groups, supporting an explanation of familiarity with the in-group.

The response speed effects are interesting in that they suggest in-group/out-group categorization. It is important to note, however, that many groups did not vary in their response speed in estimating attitudes of various targets. Overall, no consistent pattern emerged. Moreover, sometimes there were faster responses in estimating attitudes of in-group versus out-group members, supporting an explanation of greater familiarity with the in-group, and sometimes slower responses, supporting an explanation of in-group complexity. A part of this may be conflicting age and gender in-group/out-group categorization. Given the inconsistent effects, the implications of response speed for categorization should be interpreted cautiously.

Summary

The present research found that the older the person, the less liberal their attitudes. The youngest people appear to be more sensitive to this relationship than middle-aged and older people. The youngest people estimated that each successive age group would have less liberal attitudes. The middle-age people estimated that middle-aged adults would be less liberal than the younger but not more liberal than the oldest adults, indicating that they did not view middle-aged and older adults as distinct groups. The

oldest people actually estimated that the oldest adults would be as liberal as the youngest and more so than the middle-aged adults. This indicates that the older people did not consider themselves to be part of the same age group as middle-aged people.

People were generally no more accurate in estimating the attitudes of the in-group than the out-group. There were two errors indicative of out-group bias, however. Middle-aged people overestimated the attitudes of the younger adults and older people underestimated the attitudes of middle-aged adults.

In terms of design, the present research has several strengths. Both target and participant age were varied, enabling in-group/out-group effects to be explored. Participants spanned the adult age range and they made attitude inferences about targets from one of three age groups, thereby covering a broad adult age range. Actual attitudes were measured, providing a criterion for comparing inferences, and thus, allowing for the accuracy of the inferences to be examined. Random population samples were used, enabling participants of different ages to be obtained from the same population. Random samples also have greater generalizability than convenience samples. In addition, obtaining actual attitudes from a random sample provides a more valid accuracy criterion than that provided by obtaining actual attitudes from convenience samples, since random samples are less prone to biases. Participation rates were examined for any potential biases. For both surveys, comparisons of refusal rates indicated that there were no biases due to certain gender and age groups being more likely to participate than their

counterparts. Likewise, for the second survey, where participants were asked to respond to a particular target, there were no participation-rate differences across target conditions. The overall participation rate was lower in Study 2 than in Study 1, indicating that people were somewhat more reluctant to estimate the attitudes of others than to provide their own attitudes. Another potential concern in terms of the representativeness of the samples was that individuals from larger households might have a greater likelihood of being solicited than individuals from smaller households. This, however, did not appear to be the case since average household size was 2.3 and 2.4 persons for the first and second studies, respectively. In sum, the two surveys conducted appear to consist of unbiased samples of the population.

One potential limitation of the present research was that the reliability of the liberalism scale was somewhat low, indicating that the items were not the best measures of liberalism. However, scores on the scale did correlate negatively with age, as would be expected from previous research indicating older people are less liberal than younger people. This indicates that the scale was measuring a liberalism construct. Further research needs to be done to increase the scale's reliability.

Future Research

The present research indicates several possibilities for future research. The studies reported here could be expanded by examining the stereotypic nature of the attitudes. Inferences may differ if the attitudes are considered stereotypic of a particular

age or gender group versus another. Future studies could examine the value placed on liberalism by various age groups to provide further insight into the apparent bias demonstrated by the older people. Other types of attitudes could also be explored in future studies of age-based inferences. Future studies could also examine response speed more systematically to determine if and how it is affected by in-group/out-group categorization. The interesting interactions between age and gender in affecting the speed of attitude estimations are worthy of further exploration.

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Table 1. Attitude statements.

No.	Attitude Statement	Issue	Orientation
1	It is time to close the door to refugees.	refugees	conservative
2	The right to die with dignity is a fundamental human right.	right to die	liberal
3	Employment Insurance encourages people to be lazy.	employment insurance	conservative
4	Mentally ill people should not be allowed positions of responsibility.	mental illness	conservative
5	Religion is mostly superstition.	religion	liberal
6	All senior citizens should pay for their own home care services.	home care services	conservative
7	Most members of Green Peace are just publicity seekers.	green peace	conservative
8	Abortions should not be carried out under any circumstances.	abortion	conservative
9	There is too much sex on television.	sex on television	conservative
10	The denominational school system in Newfoundland should be abandoned.	denominational school system	liberal
11	Marijuana should be legalized.	legalization of marijuana	liberal
12	The breakdown of the family is a serious social problem.	family breakdown	conservative
13	The idea of gay or lesbian marriages seems ridiculous.	gay/lesbian marriages	conservative
14	Bilingualism should be encouraged in all parts of Canada.	bilingualism	liberal

Table 1 continued

No.	Attitude Statement	Issue	Orientation
15	Industries should be forced to reduce toxic waste.	pollution	liberal
16	Condoms should be made available to adolescents.	condoms for adolescents	liberal
17	Women should avoid going out to work when their children are really young.	working mothers	conservative
18	Beauty contests are just harmless fun.	beauty contests	liberal
19	Canadians spend too much money on lotteries.	lotteries	conservative
20	Sexual abusers ought to be given counseling.	sexual abusers	liberal

Table 2. Correlations among the twenty attitude statements.

	1	2	3	4	5
1	1.000	-.019	.172*	.279**	.093
2	-.019	1.000	.123	-.088	.040
3	.172*	.123	1.000	.277**	.111
4	.279**	-.088	.277**	1.000	.104
5	.093	.040	.111	.104	1.0 00
6	.171*	-.117	.245**	.281**	.195*
7	.119	-.126	.125	.095	-.112
8	.211**	-.263**	.092	.214**	-.007
9	.050	.005	.123	.219**	-.065
10	-.138	.094	-.011	-.018	.003
11	.070	.083	-.052	-.033	.163*
12	-.002	.121	.171*	.251**	.011
13	.071	-.124	.197*	.189*	-.051
14	-.193*	.048	-.029	-.131	-.117
15	-.055	.135	.020	-.137	-.089
16	-.069	.151	-.011	-.161*	.205**
17	.118	-.069	.143	.309**	.004
18	.183*	.051	.066	.076	-.032
19	-.051	.076	.182*	.123	-.025
20	-.257**	.016	.026	-.054	.056

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

Note: See Table 1 for attitude statements.

Table 2 continued

	6	7	8	9	10
1	.171*	.119	.211**	.050	-.138
2	-.117	-.126	-.263**	.005	.094
3	.245**	.125	.092	.123	-.011
4	.281**	.095	.214**	.219**	-.018
5	.195*	-.112	-.007	-.065	.003
6	1.0	.154	.209**	-.056	-.054
7	.154	1.0	.025	.187*	.065
8	.209**	.025	1.000	.048	-.115
9	-.056	.187*	.048	1.000	.053
10	-.054	.065	-.115	.053	1.000
11	.062	-.016	-.084	-.230**	.076
12	.089	-.060	.062	.254**	-.013
13	.108	.315**	.151	.236**	-.007
14	-.210**	-.023	.012	.029	.042
15	-.073	.103	-.208**	.182*	.020
16	-.018	-.103	-.026	-.083	.143
17	.046	.092	.286**	.220**	-.043
18	.084	.280**	.094	.038	-.039
19	-.136	-.017	.047	.279**	.074
20	-.046	.028	-.050	-.003	.156

* $p < .05$.

** $p < .01$.

Note: See Table 1 for attitude statements.

Table 2 continued

	11	12	13	14	15
1	.070	-.002	.071	-.193*	-.055
2	.083	.121	-.124	.048	.135
3	-.052	.171*	.197*	-.029	.020
4	-.033	.251**	.189*	-.131	-.137
5	.163*	.011	-.051	-.117	-.089
6	.062	.089	.108	-.210**	-.073
7	-.016	-.060	.315**	-.023	.103
8	-.084	.062	.151	.012	-.208**
9	-.230**	.254**	.236**	.029	.182*
10	.076	-.013	-.007	.042	.020
11	1.000	-.041	-.200*	.060	-.055
12	-.041	1.000	.168*	-.044	.109
13	-.200*	.168*	1.000	-.038	.154
14	.060	-.044	-.038	1.000	.145
15	-.055	.109	.154	.145	1.000
16	.271**	-.046	-.283**	.068	.093
17	-.098	.186*	.239**	.034	-.012
18	-.109	.027	.110	-.035	.128
19	-.179*	.239**	.172*	.043	.062
20	.103	.188*	.092	.171*	.007

* $p < .05$.

** $p < .01$.

Note: See Table 1 for attitude statements.

Table 2 continued

	16	17	18	19	20
1	-.069	.118	.183*	-.051	-.257**
2	.151	-.069	.051	.076	.016
3	-.011	.143	.066	.182*	.026
4	-.161*	.309**	.076	.123	-.054
5	.205**	.004	-.032	-.025	.056
6	-.018	.046	.084	-.136	-.046
7	-.103	.092	.280**	-.017	.028
8	-.026	.286**	.094	.047	-.050
9	-.083	.220**	.038	.279**	-.003
10	.143	-.043	-.039	.074	.156
11	.271**	-.098	-.109	-.179*	.103
12	-.046	.186*	.027	.239**	.188*
13	-.283**	.239**	.110	.172*	.092
14	.068	.034	-.035	.043	.171*
15	.093	-.012	.128	.062	.007
16	1.000	-.080	.066	-.039	.218**
17	-.080	1.000	.162*	.107	.047
18	.066	.162*	1.000	-.068	-.034
19	-.039	.107	-.068	1.000	.055
20	.218**	.047	-.034	.055	1.000

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

Note: See Table 1 for attitude statements.

Table 3. Item-total correlations for the Cronbach's alpha reliability analysis and the component loadings for the principal component analysis with varimax rotation.

Attitude Statements	Item-total Correlations	Component Loading					
		1	2	3	4	5	6
It is time to close the door to refugees.*	.28	.019	.329	-.014	.143	.297	.562
The right to die with dignity is a fundamental human right.	.16	-.294	.086	.333	.595	-.026	-.188
Employment Insurance encourages people to be lazy.*	.26	.460	.390	-.106	-.056	.312	.043
Mentally ill people should not be allowed positions of responsibility.*	.43	.409	.453	.059	.319	.109	.147
Religion is mostly superstition.	.00	-.071	-.465	.431	-.053	.159	.013
All senior citizens should pay for their own home care services.*	.22	-.016	.675	-.087	.174	.221	-.007
Most members of Green Peace are just publicity seekers.*	.15	-.084	.172	.257	-.004	.712	-.254
Abortions should not be carried out under any circumstances.*	.32	.135	.015	-.019	.758	.091	.197
There is too much sex on television.*	.28	.583	-.072	.314	-.021	.085	-.041

Attitude Statements	Item-total Correlations	Component Loading					
		1	2	3	4	5	6
The denominational school system in Newfoundland should be abandoned.	.10	-.015	-.041	.030	.135	-.027	.578
Marijuana should be legalized.	.22	.254	-.162	.574	.016	.016	.135
The breakdown of the family is a serious social problem.*	.18	.664	.099	-.056	.007	-.038	-.065
The idea of gay or lesbian marriages seems ridiculous.*	.37	.327	.156	.434	.133	.375	-.239
Bilingualism should be encouraged in all parts of Canada.	.15	-.091	.623	.239	-.081	-.182	.156
Industries should be forced to reduce toxic waste.	.05	-.239	.277	-.041	.530	-.304	.009
Condoms should be made available to adolescents.	.34	.027	.131	.724	.048	-.008	.144
Women should avoid going out to work when their children are really young.*	.29	.433	-.095	-.039	.491	.229	.136
Beauty contests are just harmless fun.	-.18	.015	.101	.078	-.027	-.696	-.253
Canadians spend too much money on lotteries.*	.15	.629	-.092	.141	-.046	-.166	-.094
Sexual abusers ought to be given counseling.	.12	-.171	.136	.314	-.140	-.073	.666
% VARIANCE		**10.64**	**8.85**	**8.58**	**8.37**	**8.17**	**7.37**

*Items reversed so higher scores indicate greater liberalism.

Table 4. Eight items comprising liberalism scale and their item-total correlations for the Cronbach's alpha reliability analysis.

Attitude Statements	Item-total Correlations
Employment Insurance encourages people to be lazy.	.30
Mentally ill people should not be allowed positions of responsibility.	.37
There is too much sex on television.	.42
Marijuana should be legalized.	.22
The breakdown of the family is a serious social problem.	.34
The idea of gay or lesbian marriages seems ridiculous.	.38
Women should avoid going out to work when their children are really young.	.35
Canadians spend too much money on lotteries.	.33

Table 5. Regression summary for liberalism score.

Source	R^2	df	Mean R^2	F	p
Gender	0.02	1	0.02	3.58	> .05
Age					
Linear	0.097	1	0.097	17.36	< .001
Quadratic	0.019	1	0.02	3.58	> .05
Gender X Age					
Gender X Age linear	0	1	0	0	> .05
Gender X Age quadratic	0.009	1	0.009	1.61	> .05
Error	0.855	153	0.006		
TOTAL	1	158			

Table 6. Regression summary for response speed.

Source	R^2	df	Mean R^2	F	p
Gender	0.01	1	0.01	2.01	> .05
Age					
Linear	0.195	1	0.195	39.2	< .001
Quadratic	0	1	0	0	> .05
Gender X Age					
Gender X Age linear	0.016	1	0.016	3.22	> .05
Gender X Age quadratic	0.017	1	0.017	3.42	> .05
Error	0.761	153	0.005		
TOTAL	1	158			

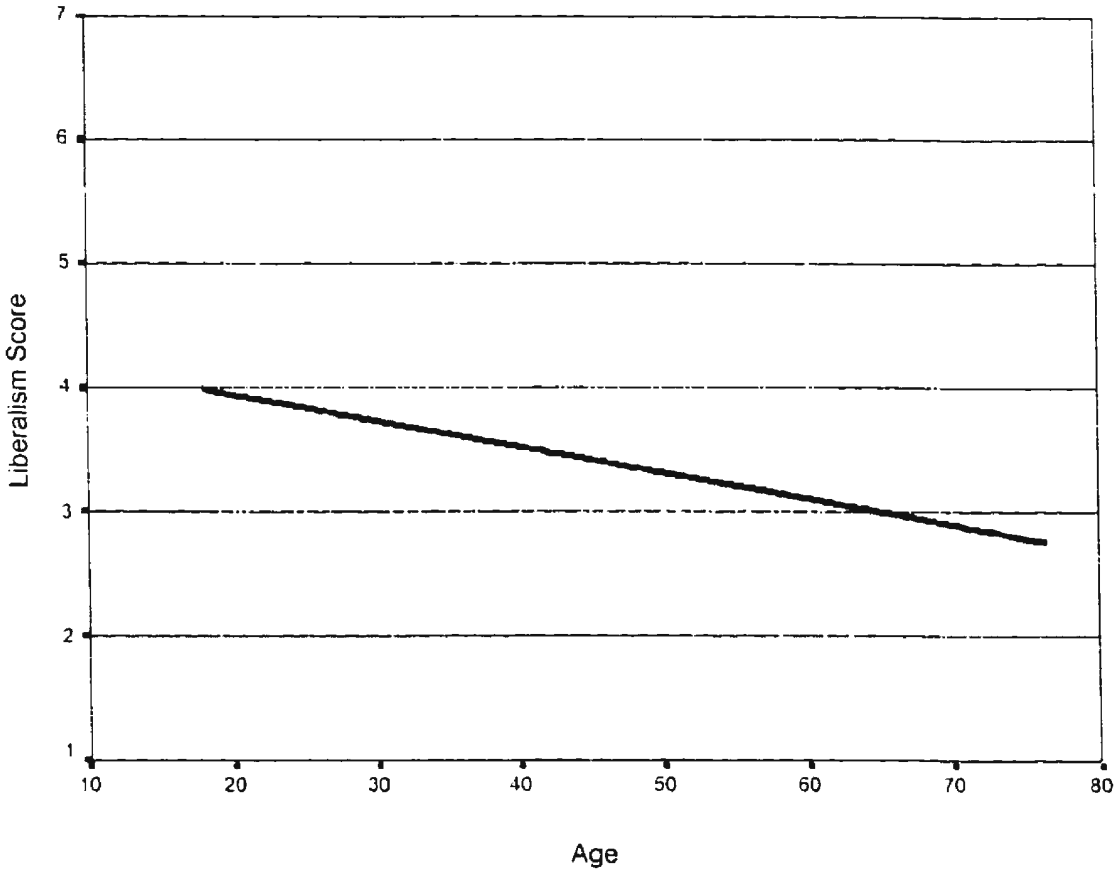
Table 7. Estimated liberalism score cell means and standard deviations for target by participant age.

Participant Age Group		Target Age Group		
		twenties or early thirties	**late thirties or forties**	**fifties or sixties**
Youngest	Mean Standard Deviation	3.96 .73	3.49 .77	3.04 .80
Middle-Aged	Mean Standard Deviation	4.06 .74	3.66 .70	3.39 .99
Oldest	Mean Standard Deviation	3.55 .96	2.85 .89	3.46 .91

Table 8. Response speed means and standard deviations by target gender, target age, participant gender, and participant age.

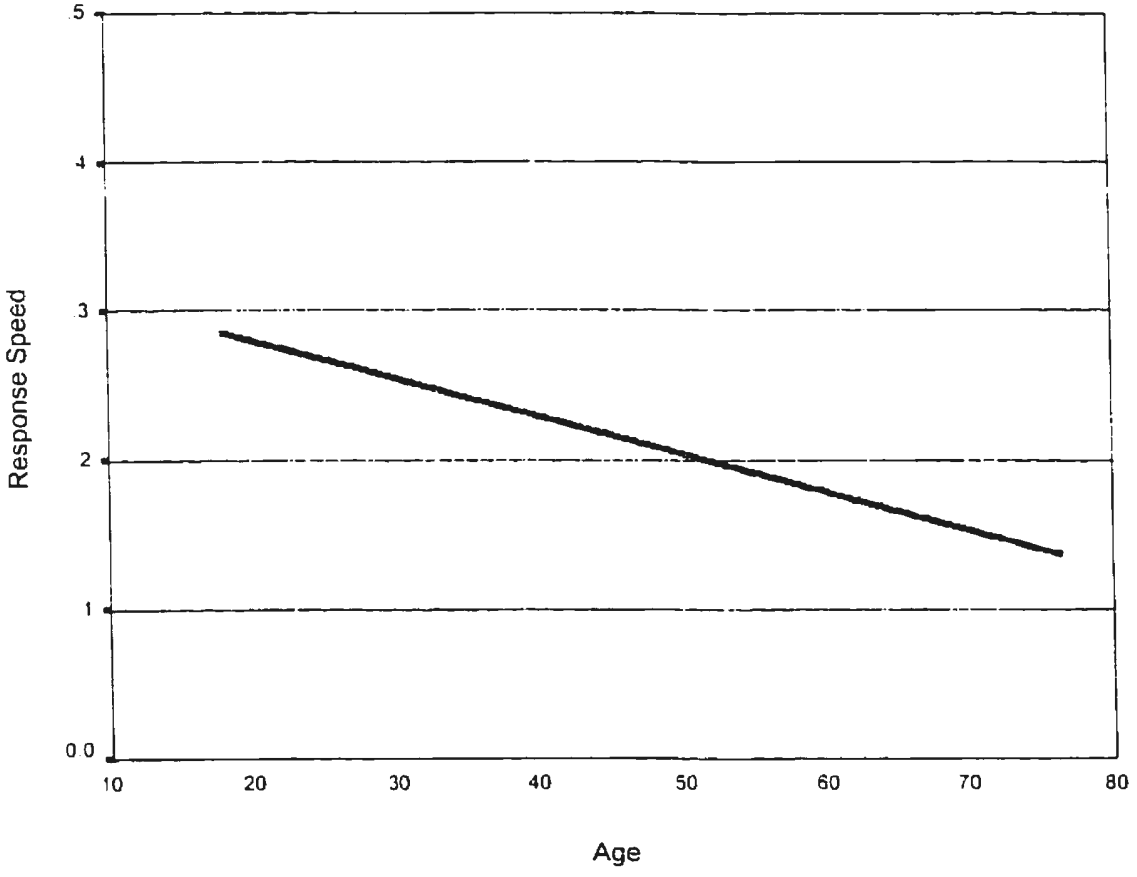
Participant			Target					
			Males			Females		
			20s or early 30s	late 30s or 40s	50s or 60s	20s or early 30s	late 30s or 40s	50s or 60s
Males	**Youngest**	Mean	.24	.19	.24	.16	.24	.23
		Std. Dev.	.08	.04	.05	.05	.05	.05
	Middle-Aged	Mean	.21	.24	.20	.20	.15	.25
		Std. Dev.	.06	.06	.04	.10	.07	.07
	Oldest	Mean	.17	.16	.16	.22	.10	.11
		Std. Dev.	.06	.11	.02	.07	.04	.06
Females	**Youngest**	Mean	.21	.24	.21	.29	.20	.19
		Std. Dev.	.04	.06	.05	.08	.06	.07
	Middle-Aged	Mean	.19	.16	.22	.20	.17	.16
		Std. Dev.	.05	.06	.05	.07	.06	.05
	Oldest	Mean	.14	.13	.17	.17	.13	.20
		Std. Dev.	.08	.06	.03	.03	.03	.17

Figure 1. Linear relationship between age and liberalism.



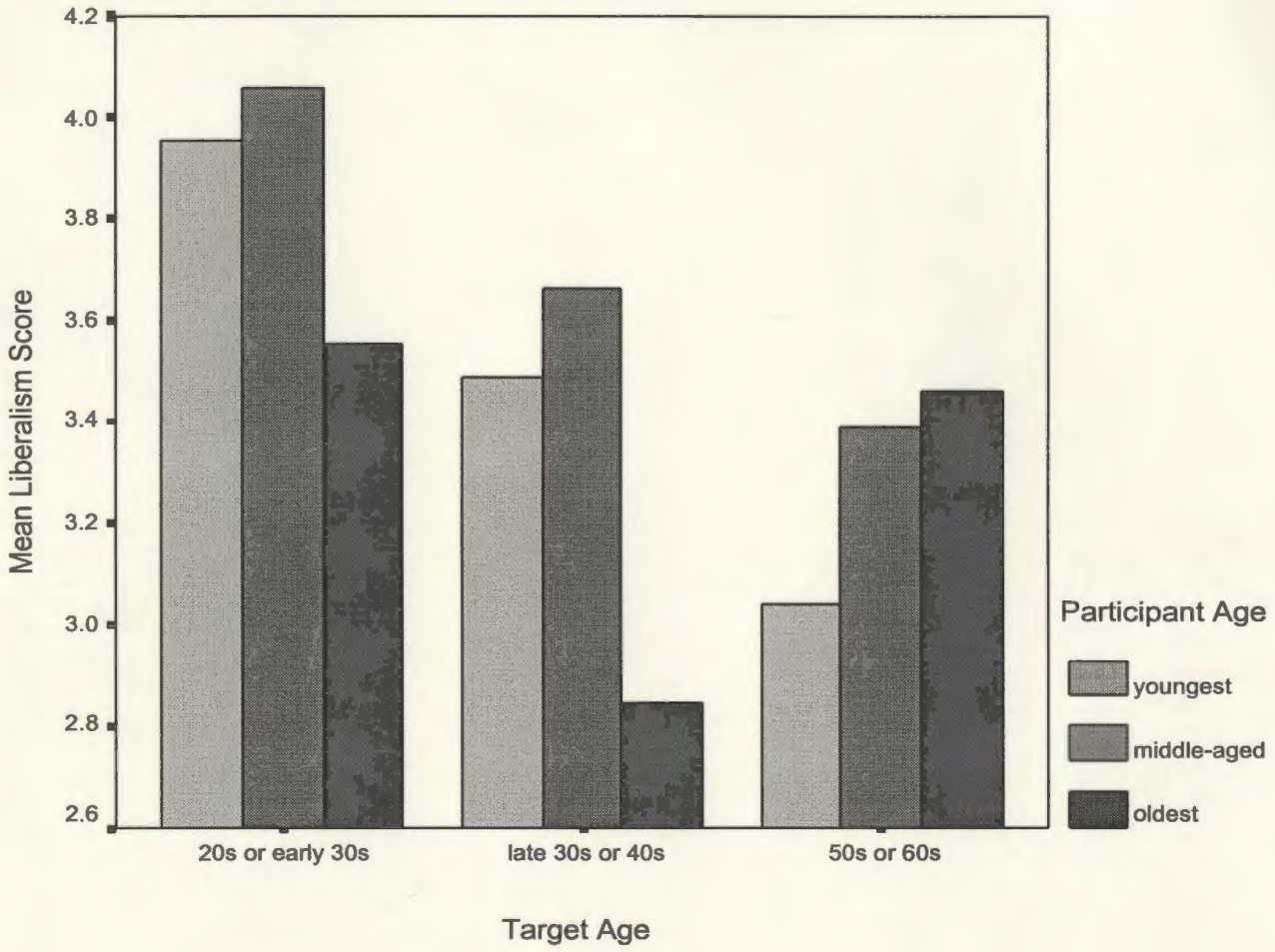
Note: Higher scores indicate higher liberalism.

Figure 2. Linear relationship between response speed and age.



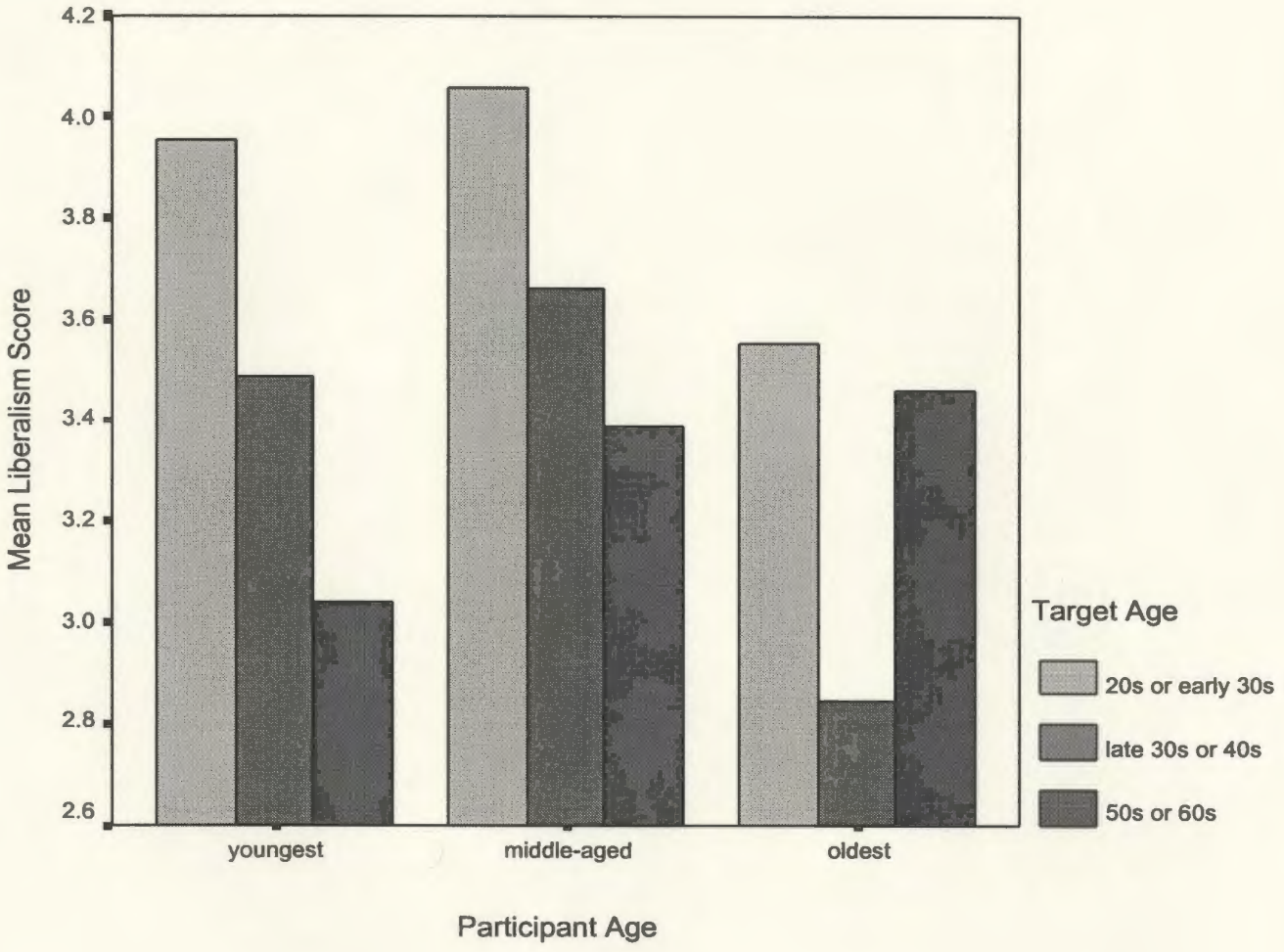
Note: Higher numbers indicate faster speed.

Figure 3. Mean estimated liberalism score for participant age groups at each level of target age.



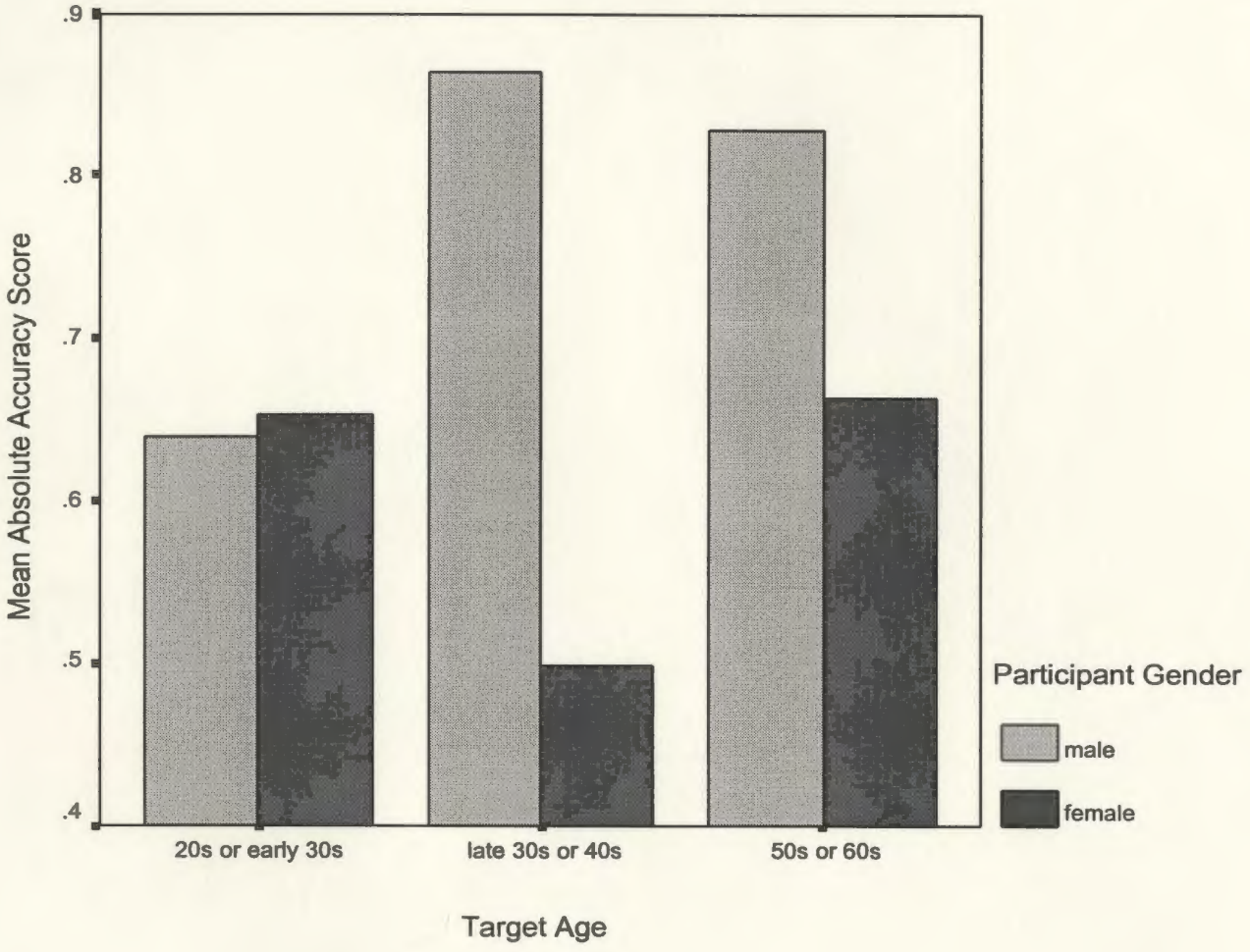
Note: Higher scores indicate higher liberalism.

Figure 4. Mean estimated liberalism score for target age groups at each level of participant age.



Note: Higher scores indicate higher liberalism.

Figure 5. Mean absolute accuracy score for participant gender at each level of target age.



Note: Higher scores indicate greater inaccuracy.

Figure 6. Mean actual attitudes and estimated attitudes for target age by participant age.

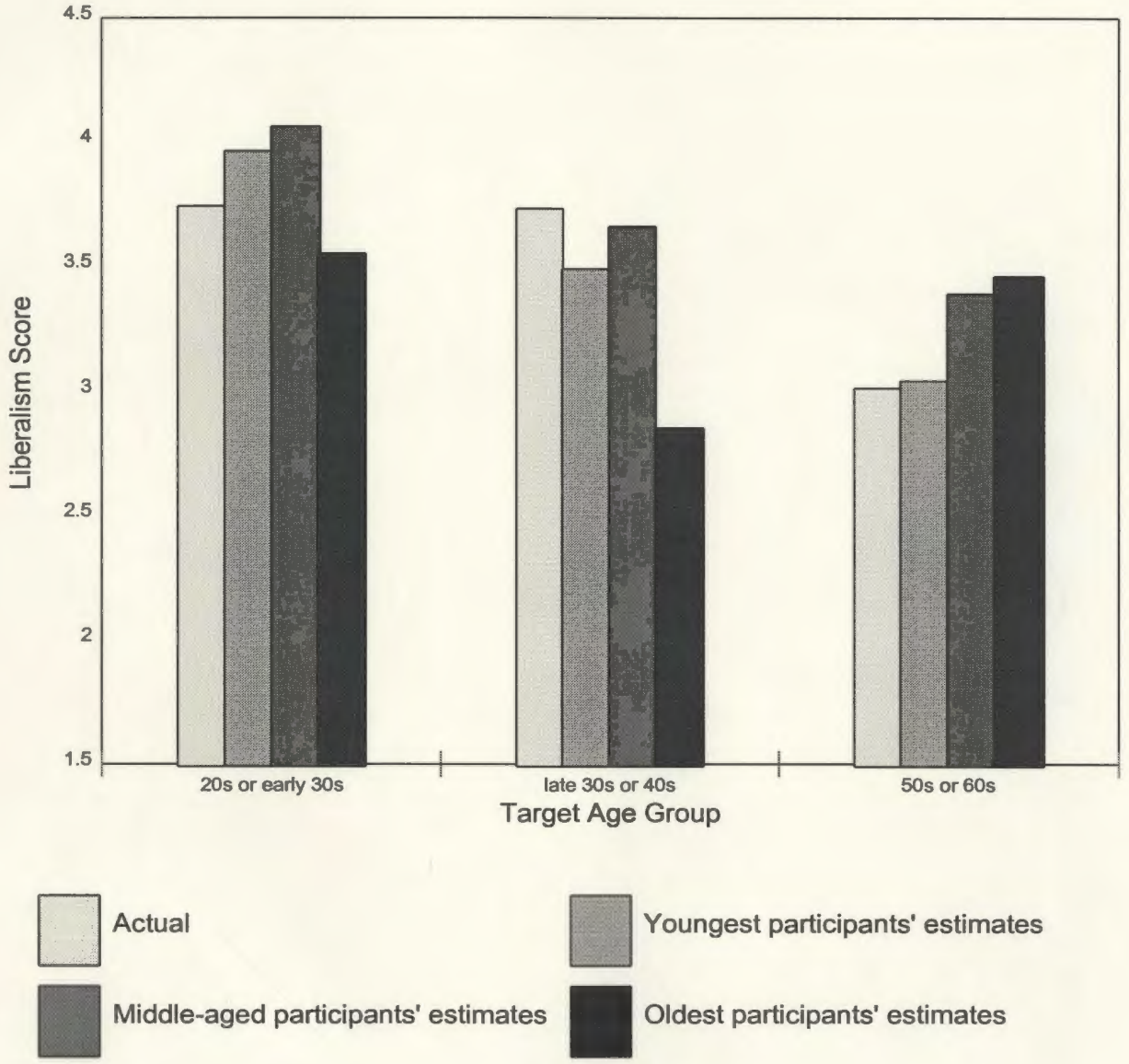


Figure 7. Mean actual attitudes and estimated attitudes for target gender by participant gender.