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UNDERGRADUATE ATTITUDES TOWARD THE ELDERLY: THE ROLE OF KNOWLEDGE, CONTACT AND AGING ANXIETY

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Knowledge, anxiety, and attitudes about the elderly were assessed in 113 university students using the Facts on Aging Quiz, the Anxiety about Aging Scale, and the Fraboni Scale on Ageism. No significant differences in knowledge or anxiety based on age or gender were found in the sample. Female participants in the sample were found to be significantly less ageist than males on average, and this difference was maintained controlling for the levels of the other variables. Previous studies have not consistently found a correlation between either knowledge or contact with the elderly and ageism. This study uses multiple regression and path analysis to investigate the relationship between knowledge, anxiety, ageism, and contact with the elderly. The study finds that knowledge and contact with the elderly do affect ageism, but indirectly, mediated through their effect on anxiety.

In 1975, Butler used the term ageism to refer to "a process of systematic stereotyping of and discrimination against people because they are old" (p. 12). More than 35 years after he coined the term,

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Butler (2005) still considers ageism to be deeply embedded in our society. As the proportion of older adults continues to increase in both the population and the labor force, it becomes increasingly important to understand the determinants of attitudes towards the elderly so that it may be possible to promote more positive attitudes in young adults.

The Aging Semantic Differential (ASD) (Rosencratz & McNevin, 1969) has been used extensively as a measure of ageist attitudes. Research has produced inconsistent results, with some studies (Angiullo, Whitbourne, & Powers, 1996) finding that undergraduates hold negative attitudes toward the elderly; however, others (O'Hanlon & Brookover, 2002; Harris & Dollinger, 2001) find more positive attitudes. After reviewing the literature, Funderburk, Damon-Rodriguez, Storms, and Solomon (2006) concluded ''that university undergraduates hold neutral attitudes toward older adults'' (p. 448).

Fraboni, Saltstone, and Hughes (1990) have argued that the ASD is limited in that it only measures the cognitive components of ageism. In order to assess more completely the concept of ageism, the Fraboni Scale of Ageism (FSA) (Fraboni et al.) was developed. The FSA comprises items designed to assess both the affective as well as the cognitive component of ageist attitudes. Research using the FSA finds that university students (Kalavar, 2001; Rupp, Vondanovich, & Crede, 2005), as well as a community based sample of adults of all ages (Stuart-Hamilton & Mahoney, 2003), hold negative attitudes about the elderly. Compared to women, men are consistently found to have more ageist attitudes (Fraboni et al.; Kalavar; Rupp et al., 2005).

Caspi (1984) has suggested that direct contact between younger and older persons could cause younger people to develop more positive attitudes toward the elderly. However, several studies (Angiullo et al., 1996; Carmel, Cwikel, & Galinsky, 1992) have found that the amount and frequency of direct contact with the elderly was not associated with the development of more positive attitudes toward the elderly. Knox, Gekoski, and Johnson (1986) propose that the failure to find a positive relationship between contact with, and attitudes toward, the elderly is due to the fact that most research focuses on simply measuring the amount of contact and fails to take into account the quality of the contact a young person has with older people. Research (Knox et al., 1986; Schwartz & Simmons, 2001) that takes into account self-reported quality of contact with the elderly finds that attitudes toward older people are predicted by the quality of, and not by the frequency of, contact.

The most commonly used measure of knowledge of aging, the Facts on Aging Quiz, exists in both true/false (FAQ1) (Palmore, 1977), (FAQ2) (Palmore, 1981) and multiple choice formats (Harris & Changas, 1994; Harris, Changas, & Palmore, 1996). Studies using the FAQ to measure knowledge of aging among a variety of participant groups have consistently found that knowledge of aging is surprisingly poor with most participants performing around pure chance (Palmore, 1998).

Many studies have investigated the relationship between demographic variables and knowledge of aging. Palmore (1998) reviewed over 150 studies and concluded that the level of knowledge of aging is not predicted by demographic variables such as gender, occupation, or contact with older adults but is related to the level of education. Palmore and others (Beall, Baumhover, Simpson, & Pieroni, 1991; Damron-Rodriguez, Funderburk, Lee, & Solomon, 2004; Hughes & Heycox, 2006) found no significant relationship between the age of the participant and the level of knowledge of aging while some researchers (Cummings, Kropf, & DeWeaver, 2000; Harris & Dollinger, 2001) reported a significant positive relationship between the age of the participant and knowledge of aging.

Research investigating the relationship between knowledge of aging and attitudes toward the elderly in university undergraduates has produced inconsistent results. O'Hanlon, Camp, and Osofsky (1982) found a small but statistically significant negative relationship between scores on the FAQ and the ASD while others (Cottle & Glover, 2007; Harris & Dollinger, 2001) found no statistically significant correlation between the FAQ and the ASD. In contrast, a number of studies (Edwards & Aldous, 1996; Funderburk et al., 2006; Palmore, 1998; Reed, Beall, & Baumhover, 1992) reported that better knowledge of aging was predictive of more positive attitudes toward the elderly.

Unlike other characteristics that may result in discrimination (e.g., race and gender) aging is a biological process that is common to everyone and results in a change in social classification from being young to being old (McConatha, Schnell, Volkwein, Riley, & Leach, 2003). Lasher and Faulkender (1993) define anxiety about aging as "combined concern and anticipation of losses centered around the aging process" (p. 247). They argue that aging anxiety is conceptually different from other types of anxiety (e.g., state-trait anxiety or death anxiety) and, in part, overlaps with the concepts of psychological well being and attitudes about aging. Using the Aging Anxiety Scale (AAS) (Lasher & Faulkender, 1993; Harris and Dollinger 2001) found a similar level of aging anxiety in university undergraduates

as was found by Lasher and Faulkender in a sample whose age range covered the life span.

It has been suggested that self concept in women is more closely related to their physical attractiveness and youthful appearance and that aging will be associated with higher levels of anxiety in women than men (McConatha et al., 1999, 2003). In their original study, Lasher and Faulkender (1993) found that men had higher levels of anxiety about aging than women while Harris and Dollinger (2001) reported the opposite finding with women having higher levels of aging anxiety. Clearly the impact of gender on aging anxiety may be moderated by other influences and additional research is warranted.

The level of knowledge of aging an individual has may be associated with the level of anxiety about aging they experience. Aging anxiety is negatively correlated with knowledge of aging as measured by the Palmore FAQ (Cummings et al., 2000; Harris & Dollinger, 2001) but not when knowledge was assessed with an alternative measure, the Knowledge of Aging and Elderly Quiz (Kline, Scialfia, Stier, & Babbitt, 1990).

There are few studies that directly assess the relationship between aging anxiety and attitudes toward the elderly. Harris and Dollinger (2001) found that university students with high levels of anxiety about aging (higher AAS scores) not only held more negative attitudes toward the average 70-year-old, but they rated themselves at 70 more negatively than did students who had lower AAS scores.

The purpose of the present study is to investigate the relationship between attitudes about aging and aging anxiety. The specific focus of the study is on the role anxiety about aging plays as a mediator between experience—in the form of factual knowledge and contact with the elderly—and ageism.

METHOD

Participants

A total of 113 students (81 women, 29 men, 3 gender not indicated), enrolled in undergraduate courses at a Canadian university served as participants. Participants were recruited either by announcements in various arts and science classes or via the online psychology subject pool. Psychology students enrolled in participating courses received bonus grades for their participation. Participants ranged from 17 to 49 years in age, with half the participants being under the age of 20.

Most participants reported ethnicity as White (77.9%). Other ethnicities reported were Asian (9.7%), native (3.5%) and other (8.8%). Relationship status for the majority of the sample was single (85.8%).

Materials

The questionnaire package completed by the participants comprised a demographics questionnaire, a questionnaire on their contact with older persons, a measure of ageist attitudes (Fabroni Scale on Ageism), a measure of anxiety about aging (Aging Anxiety Scale), and a measure of knowledge of aging (Palmore's Facts on Aging Quiz). The instruments were administered in a fixed order and took approximately 30 minutes to complete. Participants completed the questionnaire package individually or in small groups (three or fewer) depending on the availability of participants. Anonymity of the data was assured because participants were asked not to attach their names to the questionnaire package.

The Fabroni Scale on Ageism (FSA) developed by Fraboni et al. (1990) and revised by Rupp et al. (2005) was used to measure ageism. Participants were asked to indicate on a 4-point Likert scale how strongly they agreed or disagreed with each of 29 statements (1 = strongly disagree to 4 = strongly agree), resulting in scores ranging from 29–116 with higher scores indicating more ageism (some questions were reverse scored). Fraboni et al. report an alpha coefficient of .86 for the FSA, indicating high internal consistency for the scale.

Knowledge of aging was measured using the Palmore Facts on Aging Quiz 1 (FAQ1) in the multiple choice format (Harris et al., 1996). The quiz comprises 25 multiple choice questions designed to assess the participants' factual knowledge about aging and older persons, with one point being given for each correct answer. The multiple choice format was chosen over the original true/false version of the FAQ1 because it has been found to yield less measurement error for participants of average or above knowledge (Harris et al., 1996).

The Aging Anxiety Scale (Lasher & Faulkender, 1993) requires the participants to indicate on a 5-point Likert scale the extent to which they agree or disagree with 20 statements that assess their overall anxiety about aging. Lasher and Faulkender found high internal consistency in the scale with a Cronbach alpha of .82. Construct validity was established by demonstrating that the AAS scores are negatively correlated with the amount of contact, self efficacy, and

knowledge of aging and positively correlated with the quality of contact with the elderly (Lasher & Faulkender, 1993).

RESULTS

Description of the Variables

Seven variables were used in the analysis, five exogenous variables and two endogenous variables. Two of the exogenous variables were demographic: Age and Gender.

Gender is a binary variable coded 0 for males and 1 for females. Age is a continuous variable measuring the participant's age in years. The other three exogenous variables used were Knowledge, which was measured as the total number of correct responses on the FAQ; WorkContact, a binary variable coded 1 if participant interacted several times a day at work with elderly people, and 0 otherwise; and HomeContact, a binary variable coded 1 if participant resided with one or more elderly family members, and 0 otherwise. The two endogenous variables employed in the model were Anxiety (the participant's score on the AAS) and Ageism (the participant's score on the FSA).

The level of knowledge of aging in the sample was relatively low. The participants in the study had an average correct score on Palmore's FAQ of 47.68%, which is indicative of poor knowledge of aging. The mean score on the AAS in this sample (50.16) is similar to the levels found in other studies of university undergraduates (Lasher & Faulkender, 1993; Harris & Dollinger, 2001). Participants in the study had a mean score on the FSA of 74.71, which was significantly greater than the ''neutral'' score of 72.5 ($p = .003$), and it is indicative of negative attitudes towards the elderly.

Approximately one-third of the participants experienced a great deal of contact with elderly persons (defined in the survey instrument as persons over age 65), either because they reside with one or more elderly family members (10.6%) or they interact several times a day with elderly persons at work (15.0%), or both (8.0%).

Method of Analysis

Five observations were dropped from the sample because of missing observations on one or more of the variables being used in the study, leaving a sample size of 108. Prior to specifying the structural model, bivariate analysis was used to identify pair-wise relationships between

all the variables used in the study. Then, a two-equation system of structural equations, one for each of the two endogenous variables, was modeled and tested. Results from the bivariate analysis were used to identify potential exogenous explanatory variables in each equation. An unrestricted nonrecursive model was specified and standard nested hypothesis tests were performed to determine which explanatory variables would be dropped from the equations.

Descriptive and Bivariate Analyses

Table 1 presents the sample Pearson correlations between all variables used in the study. Ageism is negatively correlated with Age and Knowledge, while Anxiety is positively correlated with Ageism and negatively correlated with Knowledge. In other words, older participants tended to be less ageist, participants who were more knowledgeable tended to be less anxious and less ageist, and participants who were less anxious about aging tended to be less ageist.

For each of the two endogenous variables, Ageism and Anxiety, standard *t*-tests for equality of means across categories were performed, with Gender, WorkContact, and HomeContact as the categorical variables. The only significant difference found was between males and females for Ageism. In the sample, women scored noticeably lower (Cohen's *d* of 0.67) on the Fraboni scale than did men (that is, exhibited less ageist attitudes). This effect in the data was significantly different from zero ($p = .002$).

This study also found evidence that contact with the elderly may have an influence on the level of aging anxiety. Anxiety was lower in the sample for participants who had daily contact at work, and it was higher for participants who had daily contact at home. In both cases, the effect size was in the medium range with a Cohen's *d* of 0.35 (WorkContact) and 0.32 (HomeContact), but neither were significantly different from 0 at the .10 level ($p = .18$ and $p = .10$

Table 1. Sample pearson correlations

	Age	Knowledge	Anxiety	Ageism
Age	–	.173	−.079	−.198*
Knowledge		–	−.388***	−.190***
Anxiety			–	.511***
Ageism				–

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

respectively). In terms of raw scores, participants who resided with one or more elderly relatives scored, on average, 3.689 points higher on the Anxiety scale, while participants who interacted with elderly persons several times a day at work scored, on average, 3.964 points lower on the same scale.

A number of studies (see Kite, Stockdale, Whitley, & Johnson, 2005 for a meta-analytic review) have found that the relationship between age and attitudes towards aging may be nonlinear. To determine whether a nonlinear relationship existed in this sample, Ageism was regressed on Age, using linear, quadratic, and logarithmic functional forms. All three forms fit the data approximately equally well; however, the logarithmic form was chosen over the linear form on the basis of a slightly better fit.

Specification Testing and Path Analysis

The bivariate analysis identified Gender, Age, Knowledge, and Anxiety as potential explanatory variables for Ageism, and HomeContact, WorkContact, Ageism, and Knowledge as potential explanatory variables for Anxiety. However the significant correlations between Anxiety, Ageism, and Knowledge are consistent with more than one causal model. One possible model is that anxiety about aging mediates between individuals' experience of the elderly, and their attitudes towards aging, as suggested by Lasher & Faulkender (1993). In that case, Anxiety would be a causal determinant of Ageism, but Knowledge would only affect Ageism indirectly through its effect on Anxiety. The second possible model is one in which individuals' knowledge of aging directly affects their attitudes towards aging, independently of the indirect effect on anxiety. In that case both Knowledge and Anxiety would be a causal determinant of Ageism. The bivariate analysis is also consistent with a nonrecursive, or "feedback-loop" model in which anxiety about aging, caused by lack of knowledge of aging or other factors, causes people to hold more ageist attitudes. And at the same time, having more ageist attitudes may simultaneously cause people to be more anxious about their own future aging.

In order to test the various models against the data, a full unrestricted model was estimated, and the restrictions implied by the models were tested against it. The full unrestricted model is given by the following two equations.

$$Ageism = \beta_0 + \beta_1 Anxiety + \beta_2 Gender + \beta_3 \ln(Age) + \beta_4 + u_1 \quad (1)$$

$$Anxiety = \gamma_0 + \gamma_1 Knowledge + \gamma_2 WorkContact + \gamma_3 HomeContact$$
$$+ \gamma_4 Ageism + u_2 \tag{2}$$

The model was estimated with full information maximum likelihood (FIML) estimators using the sem package in R (Fox, 2006). β_4 and γ_4 were found to be individually and jointly insignificantly different from zero at the $\alpha = .10$ level. Consequently, Knowledge was dropped from equation (1) and Ageism was dropped from equation (2). The coefficients on HomeContact and WorkContact were individually significantly different from zero at the $\alpha = .10$ level, and they were also significantly different from each other ($p = 0.025$). Consequently, they were retained in equation (2).

A path analysis was performed on the final recursive model using FIML estimation in order to decompose total effects in the model into direct and indirect effects. The results are presented in Table 2.

Anxiety had a significant direct positive effect on Ageism with a standardized path coefficient of .417. Knowledge had a significant negative effect on Anxiety (standardized path coefficient $= -0.368$) and, thus, an indirect negative effect on Ageism (standardized path coefficient $= -0.153$).

For any given level of the other exogenous variables, women scored on average 4.31 points lower than men on the Ageism scale. This is only slightly lower than the uncontrolled difference between men's and women's scores (4.97). For any given level of the other exogenous variables, participants who resided with one or more elderly relatives scored, on average, 3.69 points higher on the Anxiety scale, and (indirectly) 1.21 points higher on the Ageism scale than participants who did not reside with any elderly relatives. Participants who interacted with elderly persons several times a day at work scored, on average, 3.96 points lower on the Anxiety scale, and (indirectly) 1.30 points lower on the Ageism scale than participants who did not interact so intensively with elderly persons at work.

The natural log of Age has a significant direct negative effect on Ageism, however the effect is relatively small. The expected Ageism score of participants at age 33 is only 3.52 points lower than the expected Ageism score of participants at age 20.

DISCUSSION AND CONCLUSIONS

This study provides evidence about the potential value of improving knowledge of aging as a way of reducing negative attitudes toward

Table 2.   Path analysis coefficients

Parameter	Path	Unstandardized coefficients (*t*-statistics)	Standardized coefficients
Direct path effects			
β_1	*Anxiety → Ageism*	0.327** (2.23)	.417
β_2	*Gender → Ageism*	−4.308*** (− 3.20)	−.253
β_3	*ln(Age) → Ageism*	−7.035** (− 2.19)	−.174
γ_1	*Knowledge → Anxiety*	−1.453*** (− 4.20)	−.368
γ_2	*WorkContact → Anxiety*	−3.963* (− 1.92)	−.174
γ_3	*HomeContact → Anxiety*	3.691* (1.67)	.151
Indirect path effects			
$\gamma_1\beta_1$	*Knowledge → Ageism*	−0.475	−.153
$\gamma_2\beta_1$	*WorkContact → Ageism*	−1.300	−.073
$\gamma_3\beta_1$	*HomeContact → Ageism*	1.210	.063
	Model chi-square (4)	0.571	
	SRMR	.0134	
	GFI	.9985	
	AGFI	.9894	
	NFI	.9934	

*p < .10.
**p < .05.
***p < .01.

the elderly. The evidence in this study is consistent with previous research findings that university students tend to hold negative attitudes about the elderly and that, compared to women, men are consistently found to have more ageist attitudes (Fraboni et al., 1990; Kalavar, 2001; Rupp et al., 2005). Previous studies using a variety of participant groups have consistently found that knowledge of aging is quite poor (Palmore, 1998). The evidence in this study is consistent with these findings.

However, previous research on the relationship between ageism and knowledge, and particularly on the question of whether having more knowledge of aging has any relationship to the level of ageist attitudes held, is mixed (Cottle & Glover, 2007; Edwards & Aldous, 1996; Funderburk et al., 2006; Harris & Dollinger, 2001; O'Hanlon et al., 1982; Palmore, 1998; Reed et al., 1992). In this sample of university students it was found that having more factual knowledge

of aging did reduce the level of ageist attitudes held, but indirectly, through the mediating effect of anxiety. Participants who were more knowledgeable about aging tended to be less anxious, and this reduction in anxiety about aging directly reduced ageist attitudes. However, controlling for the level of anxiety, knowledge of aging itself had no significant effect on the level of ageist attitudes. This suggests that, in attempting to develop programs to reduce ageist attitudes, the key variables may be those that reduce anxiety about aging.

This study finds, as do some others (Cummings et al., 2000; Harris & Dollinger, 2001) that knowledge of aging is associated with anxiety about aging. However more research needs to be done to determine what type of knowledge of aging most affects the level of anxiety. Research is also needed to learn what types of programs to improve knowledge would be most effective in reducing aging anxiety and, thus, in reducing negative attitudes towards the elderly.

Another variable that may be important in designing policies to reduce anxiety about aging is contact with elderly people. The results of this study are consistent with the hypothesis that the type of contact—and not merely the quantity of contact—may be important. In particular, this study finds that participants who resided with one or more elderly relatives had higher levels of anxiety about aging than did participants who did not. Conversely, participants who interacted with elderly persons several times a day at work had lower levels of anxiety about aging. In order to understand the characteristics of contact that promote lower levels of anxiety about aging and, indirectly, more positive attitudes toward the elderly, the qualitative differences in the interactions that occur between younger and older people in different venues need to be investigated. It has been suggested by some researchers (Wittig & Grant-Thompson, 1998) that the characteristics of contact with the elderly that may be important include whether the interactions are voluntary, involve cooperation, have potential for forming friendships, are stereotype disconfirming, and/or are between individuals of equal status. It is likely that there are significant differences in these characteristics between contact with elderly relatives at home and contact with the elderly in the workplace.

Within the category of discrimination based on group membership, ageism is unique in that it represents prejudice and discrimination by members of one group against members of a second group that they, themselves, will one day join. One of the clearest results of this study is the conclusion that anxiety about aging mediates between experience—in the form of knowledge of aging and

contact—and negative attitudes towards the elderly. This evidence is consistent with the hypothesis that young adults who are anxious about their own future aging impute, contemporaneously, to the elderly the negative stereotypes that they fear will describe their future selves. This suggests that more research on the determinants of people's anxiety towards their future aging may provide insight into the types of policies that would be most effective in reducing negative attitudes towards the elderly.

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