

Evaluating Coworkers: Effects of Coworkers' Age and Willingness to Adapt to Technology in the Workplace

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Abstract

Age stereotypes are common in the workplace and can include the belief that older adults are unable or unwilling to effectively adapt to changing workplace technology (Ryan, Szechman, & Bodkin, 1992). Using an experimental design, the current study examined young adults' perceptions of younger and older coworkers who were either willing or unwilling to learn and adapt to new technology in the workplace. Participants read a scenario about a 25- or 75-year-old coworker who was willing or unwilling to adapt to a new workplace technological system. Participants then reported their perceptions of the coworker's personality characteristics and coworker's workplace performance. For coworkers described as *unwilling* to adapt to technology, the younger coworker's personality characteristics and workplace performance were perceived more negatively than the older coworker. For coworkers described as *willing* to adapt to technology, the personality characteristics and workplace performance of the younger and older coworkers were perceived equally as favorably. Results suggest individuals hold more negative attitudes toward younger workers, not older workers, who are *unwilling* to adapt to technology. Young adults' expectations that their age-relevant colleagues will learn and adapt to new technological advances provide novel directions for future research.

Keywords: Age Stereotypes, Older Employees, Technology, Workplace

1. Introduction

To what degree do you believe there is truth to the saying, "You can't teach an old dog new tricks?" Age appears to be one factor influencing how individuals respond to technology, and although older individuals are willing and able to learn and adapt to technology, previous research suggests that many people believe that older adults "cannot learn new (technological) tricks." The negative beliefs about older adults' willingness to adapt to, and learn about, technology is concerning because the work force is projected to continue aging. Toossi, with the U.S. Bureau of Labor Statistics, predicts the average annual growth rate of the cohort 55-years and older to be 1.8 percent by 2024, which is "more than 3 times the rate of growth of the overall labor force."¹ With large technological advances having occurred over the past few decades, perceptions of older adults as unable or unwilling to adapt to technological changes may affect older adults' opportunities in the workplace. Because age discrimination has increased "as new technologies [are] introduced and the workforce [is] made more diverse,"² examining young adults' attitudes toward older adult workers, with regard to workplace technology, is important and is the focus of the current study.

Ageist attitudes are detrimental to workplace environments, and researchers have examined the degree to which young adults possess biased attitudes toward older employees and whether these attitudes are malleable. For example, Malinen and Johnston³ investigated college students' implicit attitudes towards older workers. Using the Implicit Association Test (IAT), individuals were asked to quickly pair "good" and "bad" words with either "younger worker" or "older worker." Quicker associations of "bad" words with "older worker" suggest a negative implicit attitude toward older employees. Half of participants, those in the experimental condition, were then instructed to engage in a

mental imagery intervention, in which they identified three older workers whom they valued and explained why they valued these workers. Malinen and Johnston revealed that young adults possessed negative implicit attitudes towards older workers, and the mental imagery exercise was ineffective in reducing these negative attitudes. In a follow-up study, Malinen and Johnston revealed that explicit (i.e., self-reported) attitudes toward older workers were positive, despite the presence of negative implicit attitudes. Interestingly, in the follow-up study, the mental imagery intervention only helped to enhance explicit positive attitudes, but not to decrease implicit negative attitudes, toward the older coworkers. These results suggest that young adults' negative attitudes toward older coworkers are deeply embedded and are difficult to change.

Negative attitudes toward older workers are also observed when employers evaluate prospective employees. According to social role theory, when an individual's skills do not stereotypically correlate with a specific job, that individual has a higher chance of being discriminated against in a hiring situation.⁴ In the first of three studies, Abrams et al.⁵ assessed the presence of age discrimination in hiring situations by examining the stereotypical skills and characteristics associated with younger and older people. Abrams et al. hypothesized that when a skill is perceived to reflect the traits and qualities of older adults, the candidate with that skill will be viewed less favorably than if the skill is perceived to reflect the traits and qualities of younger adults. The researchers asked 40 participants, ranging in age from 21 to 62 years, to rate whether they would hire "candidate A" or "candidate B" who possessed skills stereotypical of either older workers (i.e., carefulness, settling arguments, dealing with people politely) or younger workers (i.e., learning new skills, using new computer technology [e.g., Smartphones], and being open to new ideas/experiences). Based on only the stereotypical skills of candidates, Abrams et al. found that participants were significantly more likely to hire the younger candidate (80%) than the older candidate (15%), with some participants (5%) indicating they were unsure on who to hire.

The stereotypical skills associated with older workers were also examined by Rosen and Jerdee.⁶ Of particular interest in Rosen and Jerdee's study was the investigation of stereotypes about older adults' disinterest in technological change. Rosen and Jerdee asked 142 undergraduate business students, most between the ages of 21 and 29 years old, to imagine that they were managers evaluating employees. Participants read 6 scenarios describing different managerial issues (i.e., employee's "resistance to change," "disinterest in technological change," and "untrainability") concerning either a "younger" or "older" employee. Rosen and Jerdee found that participants perceived older employees as more resistant to change, less interested in learning about new technological advancements, and less trainable (i.e., less likely to use a positive communication strategy to fix a work-related problem). Participants also viewed approving a request for an older employee to learn new technology less favorably than approving the request for a younger employee. The most alarming result of Rosen and Jerdee's study revealed that participants preferred firing an older employee instead of training him or her to operate a new technological system. Young adults' negative attitudes toward older workers appear to be meaningfully affected by workplace technology.

Young adults seem to assume that older adults are resistant to or disinterested in technological change. However, only limited empirical research has examined if young adults' negative attitudes toward older individuals are influenced by the older adults' desire to learn (and whether they fail or succeed in learning) technology. Ryan, Szechtman, and Bodkin⁷ asked 80 undergraduate students to read one of four vignettes. The vignettes described a target person who was 25 or 70 years old, who either successfully passed or failed a computer course after voluntarily registering for the course. Ryan et al. expected that participants would rate the young student as more competent, more typical to enroll in a computer course, and more likely to succeed in the course than the older student. Additionally, Ryan et al. predicted that participants would attribute the younger student's success, but the older student's failure, to stable and internal personality factors. Consistent with prediction, participants rated younger adults as more likely to enroll, and succeed, in the computer course than the older adults, and older adults' failure of the course was attributed to their age rather than to their effort. Ryan et al.'s findings reveal that young adults perceive *age* to be an important factor in individuals' likelihood of learning new technology.

Young adults' perception that age negatively affects individuals' likelihood of learning a new technology has also been examined in real workplaces. Rizzuto⁸ assessed how both younger and older employees react to the transition to a new information technology (IT) program in their workplace. As part of a larger study, Rizzuto examined differences between employees' age and their satisfaction with the new IT program. The study included 286 program agents and directors, classified into two age categories (i.e., 25 and younger and 56 and older). Participants reported their satisfaction with the new IT program on 5 statements using a Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Rizzuto found that the older workers reported greater satisfaction and greater acceptance of the IT implementation than the younger workers. This finding challenges the stereotype that older employees are unwilling to adapt to new technology and suggests that older employees favorably respond to opportunities to learn new technology.

With an increasing number of older adults in the workplace, in addition to major advancements in technology, having an age-friendly workplace is imperative to workplace cohesiveness and productivity. Therefore, the issue of age discrimination within the workplace, especially as it pertains to stereotypes about technology, must continue to be addressed. In order to determine whether young adults' ageist attitudes currently exist within the domain of technology, the present study examined undergraduate students' age biases in the workplace in the context of coworkers' ability (or inability) to adapt to and use technology. It was hypothesized that undergraduate students would perceive the personality characteristics and workplace performance of a 75-year-old coworker less positively than a 25-year-old coworker. Undergraduate students were also expected to report less favorable perceptions of a coworker who was *unwilling*, versus *willing*, to adapt to new technology. Finally, undergraduate students were expected to report the most negative personality characteristics and workplace performance of the 75-year-old coworker who was unwilling to adapt to technology.

2. Methods

2.1 Participants

One hundred and sixty one undergraduate students (113 female, 48 male) from a mid-sized private university in the Midwest participated in this study. The majority of participants were in their first three years of study (78.9%; $M_{\text{age}} = 19.96$, $SD = 1.13$).

2.2 Design

This study reflects a 2 (Coworker's Age: 25, 75) x 2 (Attitude Toward Technology: Willing to Adapt vs. Unwilling to Adapt) between-subjects design on the coworker's perceived personality characteristics and evaluations of the coworker's workplace performance. The independent variables include Coworker's Age and Coworker's Attitude Toward Technology and the dependent variables are perceived Personality Characteristics and evaluations of Workplace Performance.

2.3 Materials

2.3.1 *technology implementation*

Participants were randomly assigned to one of four scenarios written for this study. Participants were asked to imagine that the IT department at their workplace was implementing a new technological software database, and all employees were instructed to transfer their data from the old database to the new database. Within the scenarios, participants learned that a younger (25-year-old) or older (75-year-old) coworker was either accepting of and willing to learn the new technology or was resistant to and unwilling to learn the new technology.

2.3.2 *perceived personality characteristics*

Eight characteristics, several adapted from previous literature⁷, assessed participants' perceptions of the coworker's personality ($\alpha = .91$). Four characteristics were positive (e.g., competent) and four characteristics were negative (e.g., lazy). Participants rated each characteristic using a 7-point Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Negative characteristics were reverse keyed before averaging scores across the eight characteristics; higher average scores reflect more positive perceptions of the coworker's personality characteristics.

2.3.3 *workplace performance*

Six statements, four adapted from previous literature⁹ and two written for the current study, assessed participants' evaluations of the coworker's workplace performance ($\alpha = .68$). Specifically, the statements assessed participants' perceptions of the coworker's effort, ability, and attitude. Participants rated each statement using a 7-point Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Scores across the six statements were averaged, with higher scores reflecting more positive evaluations of the coworker's workplace performance.

2.4 Procedure

University IRB approval was acquired prior to conducting the current study. Data collection occurred in small groups in classrooms on the university's campus. Upon entering the classroom, participants read an informed consent and were then randomly assigned to one of the four Technology Implementation scenarios. Participants were asked to read the scenario carefully and then complete the Perceived Personality Characteristics and Workplace Performance measures. Participants were then asked to respond to two manipulation check questions assessing their knowledge of the independent variables manipulated within the scenario (i.e., coworker's age and willingness to learn the new technology). When these tasks were completed, participants completed a short demographic form inquiring about their gender, age, and year in college, and were thanked and debriefed.

3. Results

Participants who failed a manipulation check item were excluded from the analyses reported below. In sum, data from 17 (approximately 10%) participants were excluded (5 for failure to accurately recall the age of the coworker described and 12 for failure to accurately recall if the coworker was willing or unwilling to learn the new technology).

A series of 2 (Coworker's Age: 25, 75) x 2 (Attitudes Toward Technology: Willing to Adapt vs. Unwilling to Adapt) between-subjects ANOVAs were conducted. Separate ANOVAs were conducted for each dependent variable: Perceived Personality Characteristics and Workplace Performance. As seen in Table 1, significant main effects emerged for Attitudes Toward Technology on Perceived Personality Characteristics and Workplace Performance [$F(1, 141) = 433.03, p < .001, \eta_p^2 = .75, F(1, 141) = 213.93, p < .001, \eta_p^2 = .60$, respectively], revealing that coworkers who were willing to learn the new technology were perceived to possess more positive personality characteristics and attributed more positive workplace performance than the coworkers who were unwilling to adapt to technology. Also seen in Table 1, significant main effects emerged for Coworker's Age on Perceived Personality Characteristics and Workplace Performance [$F(1, 141) = 45.58, p < .001, \eta_p^2 = .24, F(1, 141) = 31.23, p < .001, \eta_p^2 = .18$, respectively]. Contrary to prediction, the 75-year-old coworkers were perceived to possess more positive personality characteristics and were attributed more positive workplace performance than the 25-year-old coworkers.

Table 1. Means (and Standard Deviations) for the Main Effects of Attitudes Toward Technology and Coworker's age on Perceived Personality Characteristics and Workplace Performance

	Perceived Personality Characteristics	Workplace Performance
Attitudes Toward Technology		
Willing to Learn	5.24 (.58)	4.83 (.50)
Unwilling to Learn	3.38 (.74)	3.54 (.69)
Coworker's Age		
25-year-old	3.98 (1.28)	3.91 (.99)
75-year-old	4.64 (.89)	4.44 (.68)

The main effects were qualified by significant Coworker's Age x Attitude Toward Technology interactions. As seen in Figure 1, simple effects test revealed no difference in the perceived personality characteristics [$F(1, 141) = 24.17, p < .001, \eta_p^2 = .15$] of the 25-year-old and 75-year-old coworker when they were *willing to learn* the new technology; however, when the coworkers were *unwilling to learn* the new technology, the 75-year-old coworker was perceived to possess *more* positive personality characteristics than the 25-year-old coworker.

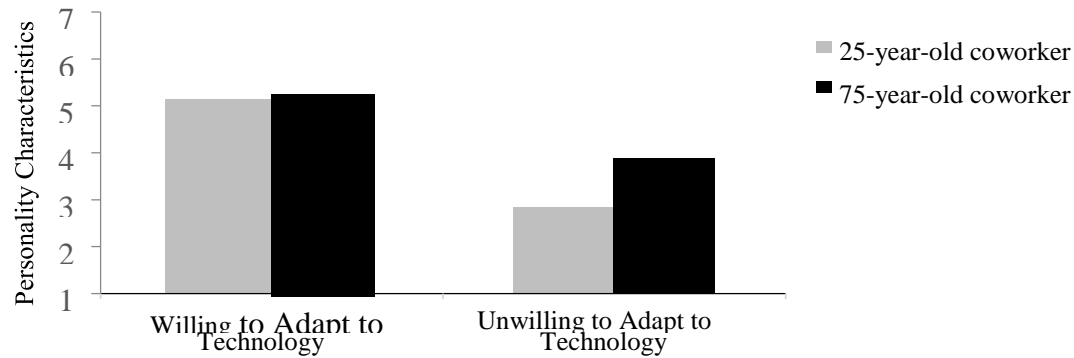


Figure 1. Simple effects of the significant interaction between Coworker's Age and Attitude Toward Technology on Perceived Personality Characteristics.

There was no difference in the perceived personality characteristics of the 25-year-old and 75-year-old coworker when they were *willing to learn* the new technology; however, when the coworkers were *unwilling to learn* the new technology, the 75-year-old coworker was perceived to possess *more* positive personality characteristics than the 25-year-old coworker.

Finally, as seen in Figure 2, simple effects test of the significant interaction between Coworker's Age and Attitude Toward Technology on Workplace Performance [$F(1, 141) = 12.25, p = .001, \eta_p^2 = .08$] revealed no difference in the workplace performance of the 25-year-old and 75-year-old coworker when they were *willing to learn* the new technology; however, when the coworkers were *unwilling to learn* the new technology, the 75-year-old coworker was attributed more positive workplace performance than the 25-year-old coworker.

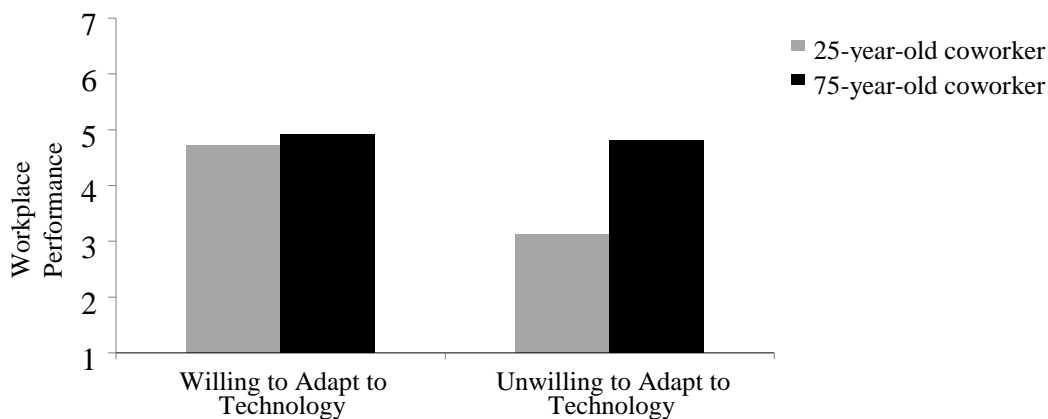


Figure 2. Simple effects of the significant interaction between Coworker's Age and Attitude Toward Technology on Workplace Performance.

There was no difference in the workplace performance of the 25-year-old and 75-year-old coworker when they were *willing to learn* the new technology; however, when the coworkers were *unwilling to learn* the new technology, the 75-year-old coworker was attributed more positive workplace performance than the 25-year-old coworker.

4. Discussion

Extending previous research on young adults' ageist attitudes, the current study assessed college students' evaluations of a coworker depending on the coworker's age (i.e., 25 or 75 years old) and attitude toward technology (i.e., willing or unwilling to adapt). Consistent with prediction, coworkers who were willing to adapt to technology were assigned more positive personality characteristics and workplace performance evaluations than coworkers who were unwilling to adapt to technology. It makes sense that individuals who are open to learning new things in the workplace are perceived favorably, because technology usage is essential in modern work environments.¹⁰ Contrary to prediction, the 75-year-old coworkers were perceived as having more positive personality characteristics and better workplace performance than the 25-year-old coworkers, and this finding was especially pronounced when they were *unwilling* to learn and adapt to technology in the workplace. Although this finding is inconsistent with expectations, it is possible that an older, 75-year-old, coworker's unwillingness to learn technology was perceived as rather typical for their age group. This typical and stereotype-consistent behavior by the 75-year-old coworker may have contributed to relatively "accepting" or tolerant attitudes toward the older worker. Similarly, participants may have been reasonably impressed that a coworker approximately 10 years past the typical retirement age (i.e., 65 years old) was still working and, therefore, perceived this coworker to possess positive personality characteristics and workplace performance. In contrast, the more positive attitudes toward the older coworker who was *unwilling* to learn new technology and, therefore, the more negative attitudes toward the young coworker may have emerged because of participants' sincere disappointment (and even frustration) with the younger coworker who "should" be able and willing to learn new forms of technology. Since they have been raised in a generation with ubiquitous technological advances, the younger coworker's unwillingness may have led to negative attitudes. Finally, the participants in the current study may have viewed younger employees as relatively new to the workforce and, consequently, their *unwillingness* to learn new technology as insubordination to a company's reasonable technological request. When coworkers were *willing* to adapt to technology, there were no significant differences in the perceived personality characteristics or workplace performance of the coworker.

Overall, the results of the current study suggest that the current sample of college students did not possess ageist attitudes towards older workers, at least within the realm of workplace technology adaptation. It is possible that younger adults have become more accepting (or tolerant) of the prospect that older workers are willing and able to adapt to technology in the workplace; however, additional research in more naturalistic settings is needed to confirm this conclusion.

4.1 Limitations and future directions

Despite the strengths of the current study, there are limitations to consider. One limitation includes that the context (i.e., technology adaptation) may have systematically varied along with coworker's age, from the participants' perspective. The rapid development of professional technology over the past five decades has revolutionized the way that we think about and use technology today. Today, in a generation that has grown up in the midst of so many technological advances, younger adults are typically expected to know how to use and adapt to technology. In contrast, individuals who grew up in previous generations are not expected to know how to use or adapt to technology. Future research should continue to examine domains in which younger and older adults may or may not be expected to perform well. Such research conducted in naturalistic settings would be especially beneficial.

A second limitation of the current study may be that the manipulation of the coworker's age (25 years old vs. 75 years old) was too extreme. A 75-year-old coworker may have sparked images of participants' grandparents attempting to use technology, which could reasonably prompt sympathy. Future research should consider how age of a coworker influences emergence of young adults' age biases.

The current study's findings suggest a shift toward more positive perceptions of old adults, at least within the context of technology usage in the workplace. Although more research needs to be conducted on young adults' age biases, awareness of a positive shift in perceptions of older workers may help promote more age- friendly workplace environments.

5. References

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