

Development and Validation of the Workplace Age Discrimination Scale

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Abstract

Purpose Workplace age discrimination research is proliferating, but researchers lack a valid measure with which to capture targets' discriminatory experiences. We developed a measure of perceived workplace age discrimination that assesses overt and covert forms of discrimination and then compared older, middle-aged, and younger workers' experiences.

Design/Methodology In Study 1, we developed the Workplace Age Discrimination Scale (WADS) based on older workers' experiences using a deductive approach, a qualitative study, and two quantitative surveys. In Study 2, we validated the measure among young employees using a qualitative and two quantitative surveys. In Study 3, we tested the WADS among middle-aged workers and tested models of invariance between age groups.

Findings Participants frequently endorsed covert discriminatory experiences, which the WADS reflects. The WADS contains convergent and discriminant validity, high reliability, and a unidimensional structure across age groups. It demonstrates criterion-related validity among older and

younger workers but not middle-aged workers, given their low experiences of age discrimination. Age discrimination frequency follows a U-shaped pattern across age groups.

Implications Researchers can use the WADS to identify long-term outcomes of age discrimination and to further compare workers' discriminatory experiences. Practitioners and policymakers can use the measure to develop interventions to ameliorate workplace age discrimination and inform policymaking.

Originality/Value The WADS is the first validated measure of targets' perspectives of workplace age discrimination. Our results challenge assumptions that only older workers experience age discrimination (younger workers' means were highest) and that age discrimination is usually overt in nature (it is often covert).

Keywords Ageism · Age discrimination · Measurement · Older workers · Middle-aged workers · Young workers · Modern discrimination

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... I wonder whether employers, or whether the public generally realizes that age discrimination is illegal...

Stuart Ishimaru, Chairman, U.S. Equal Employment Opportunity Commission (EEOC 2009)

The opening quote illustrates the degree to which age discrimination is tacitly accepted within U.S. society. This phenomenon is not unique to the U.S. though; reports of age discrimination abound globally (e.g., Balch 2015; Hock 2015; Medhora 2015). The number of workplace age discrimination claims through federal human rights agencies is growing, reflecting the negative climates that a growing number of workers face (e.g., EEOC 2013).

This prevalence may not be surprising, given that ageism is often not considered as offensive or unjust as other highly researched forms of prejudice such as racism and sexism (Deal et al. 2010; Levy and Banaji 2002). Employees hold numerous, pervasive stereotypes about older adults, including beliefs that they are less competent and adaptable than other workers (Cuddy et al. 2005; Posthuma and Campion 2009). Stereotypes such as these ultimately manifest in discriminatory behavior, including lower rates of hiring and promoting older workers (Posthuma et al. 2012). Given estimates that by 2020 one in four U.S. workers will be age 55 or older (Hayutin et al. 2013) and one in three U.K. workers will be over age 50 (Department for Work and Pensions 2013), the prevalence of and tolerance for ageism is concerning, as more workers may become targets.

The ability to adequately study and address age discrimination is hampered by several limitations in the literature. First, coworkers' and supervisors' (i.e., "perpetrators'") negative age stereotypes and discriminatory behavior are well documented, but the literature speaks less to older employees' (i.e., "targets'") experiences of such discrimination. Targets' perspectives are important—often essential—to capture in order to understand the impact of discrimination on targets' productivity and well-being. Second, the literature attends primarily to overt forms of discrimination (e.g., refusal to hire) and often ignores low-intensity, covert discriminatory behaviors (e.g., social exclusion). Consistent with modern discrimination theories, such as interpersonal discrimination (Hebl et al. 2002) and selective incivility (Cortina 2008), manifestations of workplace discrimination are not as explicit as in times past (Marchiondo et al. 2015). Covert discrimination more closely reflects the experiences of many stigmatized groups and occurs more frequently than overt discrimination (Madera and Hebl 2013), warranting its inclusion in age discrimination research. Finally, although emerging scholarship has begun exploring older workers' experiences of discrimination, a validated measure of workplace age discrimination from the target's perspective does not exist. Proxy and convenience items prevent accurate measurement of targets' experiences. Given these limitations, our initial objective was to develop a reliable and valid measure that captures older employees' experiences of workplace age discrimination in its many forms.

Though sparse, increasing literature suggests that younger workers also face discriminatory treatment (e.g., Snape and Redman 2003). Despite their seeming dissimilarities, younger and older workers alike possess less influence and fewer resources than middle-aged workers (North and Fiske 2012). Both groups are subject to more negative stereotypes (Finkelstein et al. 2013), which may

give rise to discriminatory treatment. Further, the nature of age stereotypes (and discrimination) might be changing, with younger workers being judged more negatively than older workers (Bertolino et al. 2012; Finkelstein et al. 2013; Weiss and Maurer 2004). As such, the second objective was to apply our measure of age discrimination to younger workers to capture their experiences.

We contend that ageism operates dynamically across the working lifespan and that vulnerable out-groups include older *and younger* workers, with middle-aged workers constituting the in-group. To test this idea, the third objective was to administer our age discrimination measure to middle-aged workers and test a curvilinear pattern of discrimination across age groups.

Negative Attitudes and Discrimination Toward Older Employees

Workforces worldwide are "graying." Increasing longevity is extending the average work life, as employees are physically able to work longer and prefer to do so for social and psychological benefits (Freedman 2008). Employees also work longer as the financial landscape of retirement evolves in many countries and more employees are financially unprepared for retirement (Munnell and Sass 2008). These forces, among others, are contributing to the growth of the older workforce, underscoring the importance of understanding older workers' experiences.

Ample research has attended to attitudes toward older employees. Stereotypes of older adults in general are ubiquitous, overwhelmingly negative, and resistant to change (Cuddy et al. 2005). Stereotypes of older employees include perceptions that they have lower performance, possess lower potential for training and development, refrain from change (Posthuma and Campion 2009; Rosen and Jerdee 1976), have poorer interpersonal skills (Bal et al. 2011), and are less healthy and trusting of others (Ng and Feldman 2012). Measures designed to capture ageist attitudes toward older adults emerged at least 60 years ago (e.g., the Old People Questionnaire by Tuckman and Lorge 1953) and have undergone numerous iterations since (e.g., the Aging Semantic Differential by Rosencranz and McNevin 1969; the Fraboni Scale of Ageism by Fraboni et al. 1990). Thus, scholars have long recognized the need to validly capture attitudes toward older adults.

Many researchers, too, have devoted attention to employers' and coworkers' discriminatory behavior. For instance, employers assign lower ratings to older adults for hiring (Avolio and Barrett 1987), advancement (Bal et al. 2011), promotion and training (Rosen and Jerdee 1976), and economic worth to organizations (Finkelstein and Burke 1998). They also provide harsher recommendations

following poor performance (Rupp et al. 2006). It is clear that older adults often face unreceptive climates at work.

Significantly less is known about older workers' perceptions of discrimination—perspectives that may drive their job attitudes and success, mental and physical well-being, and retirement plans. The age discrimination literature exists in stark contrast to research on sex- and race-based discrimination in this respect, the latter of which have largely centered on targets' experiences and subsequent well-being. For instance, targets of sexual harassment experience greater job withdrawal and lower psychological and physical health (Fitzgerald et al. 1997). Racial discrimination, too, is associated with adverse physical and mental health (Williams et al. 1997; Williams et al. 2003). Most of these deleterious effects have not been linked to age discrimination or have been done so using invalidated measures. We echo calls by Ruggs et al. (2013) and North and Fiske (2012) for more research on age discrimination. We extend these calls by highlighting the need for greater attention to targets' perspectives, which we address in this paper.

Negative Attitudes and Discrimination Toward Younger Employees

Researchers and policymakers primarily attend to the treatment of older employees (Finkelstein et al. 2013), given their increasing numbers and legal protection in the U.S. However, the prevalence of age discrimination toward older workers may be changing (Weiss and Maurer 2004), as age stereotypes appear to favor them over younger workers (Bertolino et al. 2012; Finkelstein et al. 2013). Expanding the scope of the ageism literature to capture discrimination toward younger employees is important given contentions that we have an “ageist ageism literature” that centers on the experiences of older adults (Rodham 2001).

Although nascent, research on younger employees has clearly demonstrated that they, like older employees, are subject to a host of negative stereotypes. These include assumptions that they are disloyal, inexperienced, unmotivated, immature, irresponsible, and selfish (cf. Finkelstein et al. 2013; Snape and Redman 2003). Younger workers are rated lower than older adults on desirable personality traits, such as conscientiousness, emotional stability, and agreeableness, as well as on performance-related variables, such as organizational citizenship behavior (Bertolino et al. 2012). They are also perceived less favorably than older workers in terms of initiative, stability, and work experience (Gibson et al. 1993). Negative attitudes toward younger people are not new; Baby Boomers and subsequent generations were all targeted with stereotypes of

entitlement and laziness when they were young (Deal et al. 2010). Middle-aged employees are particularly likely to hold these negative stereotypes, assigning significantly more undesirable stereotypic traits to younger workers than positive ones (Finkelstein et al. 2013).

These negative stereotypes lead to discriminatory practices. Younger workers face more denials of promotion, fewer opportunities for training and development, disproportionately lower pay and benefits, restricted freedom and responsibility, and increased vulnerability to layoffs (Duncan and Loretto 2004; Loretto et al. 2000; Snape and Redman 2003). Thus, researchers are uncovering the surprisingly prevalent negative attitudes and treatment of younger workers. These findings broaden the call to capture targets' perceptions of age discrimination by attending to younger employees' perspectives too.

Targets' Perceptions of Workplace Age Discrimination

Although small in number, some studies have attended to employees' personal experiences and outcomes of age discrimination at work. For instance, among workers age 50 and older in the Midlife in the United States II (MIDUS II) dataset, 81 % reported at least one instance of age discrimination in the past year (Chou and Choi 2011). For older targets, age discrimination correlates negatively with variables such as job satisfaction, organizational commitment, life satisfaction, and job involvement, and correlates positively with turnover intentions (Minnotte 2012; Orpen 1995; Redman and Snape 2006). This work has drawn attention to the importance of studying employees' perceptions of age discrimination.

A small related body of work has addressed older workers' perceptions of organizational climates of ageism. For example, Furines and Mykletun (2010) developed a measure of Nordic employees' perceptions of discriminatory age climates with regard to formal aspects of the job (e.g., training, promotion). Kunze et al.'s (2011) measure of macro-level age discrimination aggregates employees' perceptions of discrimination stemming from the organization (e.g., with regard to performance assessment). In contrast to these measures of organizational climate, we sought to capture employees' personal experiences as targets of age discrimination. An individually-focused measure not only sheds light on discrete experiences of ageism, but permits meaningful research on targets' outcomes of age discrimination.

Despite calls for greater research on age discrimination (Ruggs et al. 2013), researchers lack a measure with which they can validly capture employees' experiences of it. Numerous methodological issues exist. First, studies often

contain convenience items, not developed based on theory (a deductive approach) or respondents' experiences (an inductive approach). Many contain single-item measures, which do not capture the breadth of age discrimination (i.e., content adequacy). Second, few measures have undergone validation procedures (for exceptions, see measures of discriminatory age climate by Furines and Mykletun 2010 and Kunze et al. 2011). Third, some measurement intended to capture targets' personal experiences is confounded by the inclusion of items that assess respondents' perceptions of discriminatory climates as well as of coworkers' discriminatory experiences (Arvey and Cavanaugh 1995). For instance, items such as "Young/old adults as a group have been victimized," "The best jobs here are reserved for younger workers," and "[There is a] lower chance of promotion for older workers" capture respondents' beliefs about the discriminatory experiences of age group members as a whole. Combining these items with ones about a respondent's personal experience (e.g., "I have been overlooked here because of my age") makes it difficult to determine whether responses are based on one's personal experience as a target, observations of coworkers as targets, or general rumors of discrimination within a company. This imprecision precludes clear and accurate operationalization of the construct. Fourth, most surveys do not specify a timeframe in which respondents recall discriminatory experiences (e.g., "How frequently in the last year..."). The absence of a timeframe allows some participants to focus on recent experiences and others to draw on experiences from decades past, thereby introducing varying degrees of memory bias and measurement error.

Fifth, some age discrimination items rely on participants to define age discrimination (e.g., "I have experienced age discrimination"). This practice introduces significant measurement error, as participants' definitions of age discrimination may vary widely (Hardy and Ford 2014) or encompass only egregious or commonly discussed events (Fuegen and Biernat 2000). If targets do not comprehend a term in the same way as the researcher, lexical comprehension suffers, undermining the measure's validity (Hardy and Ford 2014). Indeed, targets can report experiencing the same mistreatment behaviors as one another but differentially define them (Fitzgerald and Shullman 1993). To ensure consistency of interpretation and ultimately validity, mistreatment items should concern specific behaviors and avoid the inclusion of perceptual labels such as "age discrimination" (Arvey and Cavanaugh 1995; Fitzgerald and Shullman 1993).

Finally, most age discrimination items address only formal aspects of the job, such as selection, promotion, and training. While important, this lens ignores insidious forms of discrimination that some workers may experience with

greater frequency. According to modern discrimination theories, such as interpersonal discrimination (Hebl et al. 2002) and selective incivility (Cortina 2008), discriminatory treatment has shifted toward more subtle manifestations. Underhanded behaviors, such as social exclusion and gossip, can be defended as non-discriminatory and as such, skirt the radar of legal and organizational policies. For instance, selective incivility theory states that lower-intensity, disrespectful acts serve to marginalize and undermine workers belonging to stigmatized groups, constituting a less explicit, "modern" method of discrimination (Cortina 2008). Although modern discrimination is less overt than formal discrimination, its negative effects are of comparable magnitude (Jones et al. 2013), highlighting the importance of this perspective given that employers may not treat it as seriously as formal discrimination.

Modern discrimination theories have primarily been applied to uncovering the experiences of women and people of color but should be extended to explain workers' experiences based on age (Marchiondo et al. 2015). Older workers might be especially vulnerable to covert discrimination due to stereotypes that older adults generally are warm but less competent (Cuddy et al. 2005). Members of "pitied" groups (those perceived as warm but incompetent) are more likely to experience interpersonal isolation and other covert discrimination (Cuddy et al. 2007). In the U.S., older workers might also experience heightened covert discrimination given that they (but not younger workers) are legally protected from age discrimination. Laws may quell the prevalence of formal discrimination, yet negative stereotypes can continue to manifest through covert discrimination that operates outside legal boundaries. We draw on modern discrimination theories during scale development, ensuring that covert experiences of age discrimination are captured.

Comparing Age Discrimination Between Age Groups

We contend that a validated measure of age discrimination among those most likely to experience it (younger and older workers) is needed. We recognize that middle-aged workers could face age discrimination as well, albeit likely with lower frequencies based on the age stereotype literature. Employees at either end of the age spectrum are most vulnerable to age-based stereotypes and discrimination (Duncan and Loretto 2004; Gee et al. 2007; North and Fiske 2012). Snape and Redman (2003) found that younger workers experience age discrimination with similar if not greater frequency as older workers. This result is consistent with evidence of the changing landscape of age stereotypes in which younger workers are viewed less positively than

older workers (Bertolino et al. 2012; Finkelstein et al. 2013). In contrast, employees hold the most positive (and fewest negative) stereotypes of middle-aged workers (Finkelstein et al. 2013), possibly exposing them to the least age discrimination. Middle-aged workers' privilege in this respect can be explained by their possession of greater status, resources, and wealth than other age groups (Garstka et al. 2004; North and Fiske 2012). Middle-aged workers constitute an "idealized standard against which other age groups are judged" (Finkelstein et al. 2013, p. 21) and are posited to hold the highest social status with regard to age (Garstka et al. 2004). Thus, a U-shaped pattern of age discrimination likely exists, with younger and older workers being prime targets. In Study 3, we administer our age discrimination measure to middle-aged workers and test the following hypothesis:

Hypothesis Age discrimination experiences are curvilinear across age groups, such that younger and older workers experience the highest frequencies and middle-aged workers experience the lowest frequency.

The Present Studies

We conducted three studies based on participant age group (older, younger, middle-aged), each of which contained an iterative series of qualitative and quantitative phases, to create and validate the Workplace Age Discrimination Scale (WADS). Study 1 addressed older workers' experiences of age discrimination. Through four phases, we deductively generated a pool of items, inductively developed items using a qualitative survey, reduced the item list several times, and tested confirmatory factor structure, as well as multiple types of validity. Study 1 also included an experimental design to determine an appropriate timeframe for the measure's stem. In Study 2, we extended the WADS to younger workers. Through three phases, we used inductive item generation and exploratory factor analysis to determine if the items adequately captured younger workers' experiences. We also tested the measure's confirmatory factor structure and validity among this group. In Study 3, we administered the WADS to middle-aged workers and tested confirmatory factor structure and multiple types of validity. We then conducted measurement invariance tests to compare the WADS between the three age groups.

The use of self-report was appropriate—indeed, necessary—given our emphasis on employees' *perceptions* of age discrimination targeted at them. We followed four recommendations for reducing common method bias (Conway and Lance 2010; Podsakoff et al. 2003, 2012), which can strengthen or weaken relationships between

variables (Chan 2009). First, we selected established measures with high reliability and validity. Next, all surveys were anonymous, which reduces pressure to respond in a consistent and socially desirable manner. Third, mistreatment measures were placed later in the survey than non-mistreatment measures so that recollection of mistreatment did not influence responses to other constructs. Finally, scale formats (e.g., scale type, anchor labels, polarity) varied between measures, reducing anchor- and end-point biases.

A Note About Study Samples

We collected samples via crowdsourcing (Amazon Mechanical Turk; MTurk) for several important reasons. First, the diversity of an organization affects employees' reports of discrimination (Avery et al. 2008) and emotional conflict (Pelled 1996). Organizational age distributions, specifically, can influence communication (Zenger and Lawrence 1989) and emotional conflict (Pelled et al. 1999) between employees. As a result, we avoided sampling single organizations due to their unique organizational demographics that could shape participants' experiences of age discrimination. Crowdsourcing addresses these issues by providing samples of workers across hundreds of organizations (and age distributions, industries, etc.), thereby increasing the generalizability of the measure (Aguinis and Lawal 2012). This decision was reinforced by literature demonstrating that organizational samples are vulnerable to similar convenience sampling limitations as crowdsourcing (Landers and Behrend 2015) and that MTurk is a valid and reliable source of data collection (Barger et al. 2011; Buhrmester et al. 2011). Large and diverse samples are also recommended for scale development (Clark and Watson 1995). Finally, organizational leaders are often unwilling to allow researchers to conduct discrimination-related studies within their companies, fearing reputational harm and lawsuits.

Study 1: Older Workers

Phase 1: Deductive Item Generation

Drawing on Hinkin's (1998) deductive approach to item generation, the Phase 1 goals were to define our conceptualization of age discrimination and to generate items by evaluating the literature. First, each author independently defined age discrimination and identified its essential features. The authors discussed their definitions until they agreed on the following operationalization of workplace age discrimination: (a) it is a behavioral manifestation of

prejudice and negative stereotypes; (b) the behaviors are unjust, disrespectful, and/or unfavorable; (c) one or multiple parties (targets, observers, perpetrators) can define the behavior as unjust, disrespectful, or unfavorable (consistent with definitions of other mistreatment constructs, such as workplace incivility; Andersson and Pearson 1999); (d) the behaviors occur in the work context (for pay or volunteer) and may stem from supervisors, coworkers, customers, or any other member of one's work environment; and (e) the behaviors can be overt but, consistent with modern discrimination theories, may also be covert. Although numerous age ranges have been used to define "older employees," we selected age 50 and older, consistent with cutoffs that aging experts have used in nationally representative and federally funded studies (e.g., the Health and Retirement Study). Further, studies of age stereotyping have defined older adults as being over ages 50–52 (e.g., Finkelstein et al. 2013; Fritzsche and Marcus 2013).

Next, each author generated survey items by reviewing the literatures on ageism and workplace discrimination, as well as by drawing on his/her expertise to produce new items. We compared our lists, removing items that were redundant or did not meet the facets of the construct's definition. This approach yielded 55 items.

Phase 2: Inductive Item Generation and Initial Item Reduction

Because limited research was available on age discrimination from targets' perspectives, the next goal was to inductively generate items (Hinkin 1998) by collecting and examining qualitative data from older employees. This approach ensured that items encompassed the breadth of their experiences, particularly with regard to covert age discrimination.

Participants and Procedure

We recruited $N = 96$ U.S. employees age 50 and older (all currently working for pay) from MTurk. We prescreened participants by asking them to select ranges for their age, hours of work per week, and country of employment. At the end of the survey, participants provided their specific ages and work hours per week, providing another eligibility check.¹ The average age was 56.5 years ($SD = 4.5$ years), average organizational tenure was 15 years ($SD = 7.3$ years), 75 % worked 35 or more hours per week, 44.8 % were male, 88.5 % were White, 11.5 % were African American, and 8.3 % were Latino (in all studies in this paper, participants could select more than one race).

¹ This information was assessed at the beginning and end of every survey.

Participants read a definition of age discrimination: "Differential workplace treatment based on age, which impairs fairness of treatment or opportunity." Based on this definition, participants described in as much detail as possible a time they personally experienced age discrimination at work. Fourteen participants left the question blank.

Analytic Method and Results

The authors reviewed each participant's story and discussed whether items from Phase 1 accurately captured it. When they did not, a new item was developed. The authors also drew from participant stories to clarify and expand Phase 1 items. Consistent with modern discrimination theory, many narratives addressed covert forms of discrimination, such as being ignored or excluded and receiving less support or respect than workers of other ages. The revised list contained 67 items.

Adopting an iterative approach, the research team (including four research assistants) met four times to discuss the items, re-evaluate participant stories and items from the literature, and identify opportunities for item consolidation. At the end of this process, the list was pared down to 26 items (see Table 1) using the following criteria: (a) item redundancy: similar items were deleted or combined. If an item captured a broader content domain than another, the broader item was retained; (b) item clarity and complexity: double-barreled or vaguely worded items were edited or deleted. Items were assessed for ease of comprehension across reading levels; and (c) item length: if an item was substantially longer than others, it was edited to the extent possible to minimize participant burden. Although some of the 26 items pertained to overt experiences traditionally associated with age discrimination (e.g., unfairly given lower salary/benefits), many items tapped into covert behaviors not typically discussed in the ageism literature. These items included being treated with less respect, having work requests delayed or ignored, receiving less social support, and being excluded from events—all due to one's age.

Phase 3: Exploratory Factor Analysis and Further Item Reduction

The first goal of Phase 3 was to evaluate targets' frequencies and appraisals of the age discrimination items. Assessing appraisal (i.e., how bothersome) in addition to frequency determined the extent to which participants assessed each item as a stressor, as opposed to an unimportant or irrelevant event (Fitzgerald and Shullman 1993; Lazarus and Folkman 1984). Mistreatment targets can experience certain incidents but find them inconsequential,

Table 1 Principal axis factor for the original 26 WADS items

	Factor	
	1	2
I have been recommended less frequently for promotion due to my age	.922	
I have been passed over for a work role/task due to my age	.839	
My contributions are not valued as much due to my age	.805	
I have unfairly been given lower salary/benefits due to my age	.797	
My supervisor has ignored my strengths due to my age	.783	
I have worried about being laid off due to my age	.761	
I have been given fewer opportunities to express my ideas due to my age	.733	
I have unfairly been evaluated less favorably due to my age	.714	
I receive less social support due to my age	.702	
I have been excluded from/during work events due to my age	.701	
I was not asked to take part in decision-making as often due to my age	.688	
I have been provided with fewer resources due to my age	.655	
I have been treated as though I am less capable due to my age	.640	
I have been excluded from/during social interactions at work due to my age	.627	
I have been treated with less respect due to my age	.588	
I was not encouraged to take advantage of relevant training/education opportunities due to my age	.551	
Someone has delayed or ignored my requests due to my age	.500	
Someone has not provided me with help/information due to my age	.458	
Responsibilities have been taken away from me due to my age	.439	.408
Someone at work has unnecessarily talked slowly or loudly to me due to my age		.766
Someone has insensitively brought up my retiring		.761
I have heard rude or insensitive comments at work about me due to my age		.727
I have heard jokes at work that poke fun at me due to my age		.651
Someone has blamed me for failures or problems due to my age		.556
Someone at work has assumed I have health problems due to my age		.521
At work, someone has spread rumors about me due to my age		.516

Items in the final WADS measure are in bold

in which case the events may have little bearing on targets’ outcomes. Appraisal is increasingly being assessed in mistreatment surveys in order to uncover targets’ perceptions of the nature of events (e.g., sexual harassment: Langhout et al. 2005; workplace incivility: Cortina and Magley 2009).

Additional goals of Phase 3 were to (a) empirically determine a timeframe for the measurement stem, (b) test the preliminary measure’s exploratory factor structure, and (c) further reduce the number of items using guidelines from Stanton et al. (2002), given that the initial item pool was over inclusive (per Clark and Watson 1995).

Participants and Procedure

U.S. workers from MTurk were recruited if they were age 50 or older and working 20 or more hours per week. Three hundred seventy workers took the survey. We removed 25

responses due to unreasonably short completion times, resulting in $N = 345$. Nearly 48 % of participants were male, 85.8 % were White, 6.4 % were African American, and 5.8 % were Latino. The average age was 55.7 ($SD = 4.7$). Participants worked $M = 42.1$ hours per week ($SD = 4.0$) and had $M = 9.7$ years ($SD = 7.0$) of tenure.

Participants rated the frequencies with which they experienced the 26 workplace age discrimination items on a 5-point scale from *never* to *very often*, anchors adopted from the Interpersonal Conflict at Work Scale (Spector and Jex 1998). For each item, participants also answered, “How much does this experience typically bother you?” from 1 (*not at all*) to 5 (*a lot*).

We experimentally manipulated (between-subjects) the timeframe during which participants reported their age discrimination experiences. The stem, “Please indicate how often you have experienced the following AT WORK in the past...” contained one of four timeframes: 6 months,

1, 3, or 5 years. Popular mistreatment measures, such as the Chronic Work Discrimination and Harassment scale (Williams et al. 1997) and Workplace Incivility Scale (WIS; Cortina and Magley 2009; Cortina et al. 2001), contain 1 and 5 year stems, from which we drew. These periods allow for assessment of experiences that may not occur multiple times per year (e.g., discrimination during annual evaluations). Yet, scholars have questioned whether reporting periods such as these are too long, introducing memory bias (Arvey and Cavanaugh 1995). As such, we included a shorter, 6 months stem too. Although the study's experimental design could not assess memory bias, it did uncover the timeframe during which targets' most common and salient discriminatory age experiences occurred, which are likely to pose the greatest threat to targets' performance, retention, and well-being.

We then reduced the number of survey items based on criteria by Stanton et al. (2002) for shortening self-report measures: (1) internal criteria: assess the items' relationships with one another and with the overarching measure; (2) external criteria: examine relationships between the construct of interest and other variables; and (3) judgmental: judge the quality of items (e.g., construct representativeness, clarity, length, redundancy). To evaluate external criteria, we selected two measures of occupational well-being, given their theoretical and empirically demonstrated relationships with workplace discrimination (Jones et al. 2013): job satisfaction ($\alpha = .92$; three items from the Michigan Organizational Assessment Questionnaire; Cammann et al. 1983) and turnover intentions ($\alpha = .80$; two items from Balfour and Wechsler 1996; Porter et al. 1976).

Results

The left side of Table 2 presents the ranges of means and standard deviations across the 26 WADS items (for frequency assessment). Most items captured adequate variance ($SD > 1$). Item means were positively skewed, similar to the majority of mistreatment measures (e.g., Cortina et al. 2001; Spector and Jex 1998; Williams et al. 1997). The measure demonstrated high reliability ($\alpha = .97$), although this could reflect the relatively large number of items (Cortina 1993). Corrected item-total correlations were high ($r > .50$; Stanton et al. 2002), yet inter-item correlations fell across a wide range (.33 to .75), suggesting potential to improve internal consistency through item reduction (Clark and Watson 1995).

Descriptive statistics were similar for appraisals of the WADS. Appraisal items also captured adequate variance, were positively skewed, and demonstrated high reliability ($\alpha = .98$). Corrected item-total correlations were high and

inter-item correlations spanned a similar, large range. At the scale level (i.e., items averaged), the frequency and appraisal versions of the WADS correlated highly ($r = .83$). Given the nearly identical results when assessing frequency and appraisal of the WADS, we retained the frequency measurement in subsequent studies.

To examine the effect of recall length on discrimination frequency, we first drew on data from the Phase 2 qualitative study. Of participants' age discrimination narratives, 26.6 % occurred within the past six months, 49.1 % occurred within the past year, and 74.7 % occurred within the past three years. Although these participants highlighted only one discriminatory experience (likely the most impactful), these results suggest that longer time frames may be necessary to fully capture the discriminatory events that resonate with older workers.

Using Phase 3 data, we then conducted one-way ANOVAs to compare mean frequencies between the four timeframe conditions. At the scale level, frequency did not significantly differ between them, $F(3,336) = .90$, $p = .439$. However, examination of trends between the means (at both scale and item levels) suggested that the 6-month stem led to the lowest reports ($M = 1.57$, $SD = 0.70$), compared to the other three stems ($M = 1.74$, $SD = 0.72$ for 1 year; $M = 1.71$, $SD = 0.77$ for 3 years; $M = 1.71$, $SD = 0.80$ for 5 years). Small practical significance (Cohen's $d = .24$) existed between the 6-month and 1-year stems.

We also examined whether age discrimination frequency differentially related to work-related variables as a function of the recall window. The 1- and 5-year stems most strongly correlated with job satisfaction ($r = -.33$ for both stems, as opposed to $r = -.14$ for the 6-month and 3-year stems) and turnover intentions ($r = .40$ and $.39$, respectively, versus $r = .18$ for 6 months and $r = .11$ for 3 years). Further, the 6-month and 5-year timeframes most strongly related to negative affect ($r = .37$ and $.52$, respectively, compared to $r = .29$ for 1 year and $r = .19$ for 3 years). Together, these analyses demonstrate that the 5-year stem most strongly related to the most variables. However, participants high in negative affect were substantially more likely to endorse age discrimination during this long timeframe, suggesting that this timeframe could also be capturing pessimistic worldviews. The 6-month timeframe did not relate to work-related outcomes and contained the second highest correlation with negative affect. The 1-year timeframe best balanced predicting work-related variables with having a moderate relationship with negative affect. Based on these results, we adopted the 1-year stem in the replication studies. The 1-year stem was short enough to capture meaningful and salient events (likely to affect targets' outcomes), while being long enough to capture discriminatory experiences that cannot

Table 2 Study 1 Phase 3 results for the original and final WADS for older employees

Response Scale	Original 26 items	Final 9 items
Univariate descriptives	$N = 332\text{--}340$	$N = 334\text{--}338$
Scale M	1.68	1.68
Scale SD	0.75	0.78
Item M s	1.40–2.13	1.47–1.80
Item SD s	0.82–1.25	0.82–1.02
Reliability	$N = 305$	$N = 321$
Cronbach's α	.97	.93
Corrected ITCs	.57–.83	.72–.80
Inter-item correlations	.33–.75	.48–.74
Exploratory factor structure	$N = 305$	$N = 321$
Number of factors	2	1
%variance explained by 1st factor	56.7 %	60.8 %
Factor loadings on 1st factor	.44–.92	.71–.84
Item-criterion correlations	$N = 332\text{--}338$	$N = 334\text{--}337$
Job satisfaction	-.03 to -.25	-.13 to -.25
Turnover intentions	.06–.28	.18–.28

Results are based on the 1 year timeframe. Pairwise deletion was used for obtaining sample sizes
ITC item-total correlation

occur with great frequency (e.g., biased annual evaluations).

Next, we adopted principal axis factoring (PAF) with oblique rotation to explore the factor structure of the 26-item WADS (see Table 1). Two factors emerged, explaining 60.0 % of variance. The first factor, containing 19 items, explained the majority of this variance (56.7 %). Several aspects of the results led us to question whether the two factors were meaningfully unique from one another. First, the factors were highly correlated ($r = .78$), suggesting low discriminant validity. Next, the second factor explained only about three percent of variance. Third, the scree plot supported a one factor solution; the scree test has received support as a more accurate method for determining factors, compared to the eigenvalue-greater-than-one test, which has been critiqued for producing incorrect numbers of factors (Floyd and Widaman 1995; Ford et al. 1986). Fourth, the factors did not resemble theoretically meaningful constructs, such as overt versus covert, formal versus informal, or supervisor- versus coworker-instigated manifestations. Rather, the second factor appeared to capture verbal manifestations of discrimination (e.g., “Someone at work has unnecessarily talked slowly or loudly to me due to my age”), while the first factor encompassed a broad range of experiences, from overt to covert and supervisor- to coworker-instigated. In addition, an item in the second factor (“Someone at work has assumed I have health problems due to my age”) was not verbal in nature, and at least one item in the first factor (“I have been given fewer opportunities to express

my ideas due to my age”) pertained to verbal interactions, complicating this delineation between factors. Fifth, Clark and Watson (1995) advocate unidimensionality in scale development. They recommend using the results of EFAs to determine item removal; items that load strongly on the first factor should be given greater consideration for retention. Therefore, we tested a single factor PAF, which explained 56.5 % of variance. Factor loadings were higher, ranging from .58 to .84.²

The descriptive and PAF results for the 26-item WADS were promising, but items with low means and/or low variances may not be as valuable as others, because these experiences are infrequent or largely invariant between employees. Also, highly correlated items may be redundant. Therefore, we used Stanton et al.'s (2002) three criteria for reducing scale length. Items that performed poorly

² We also conducted a PAF within each timeframe. In the 6-month and 1-year timeframes, three and four factors, respectively, with eigenvalues greater than one emerged although many items contained substantial dual loadings. In the 3-year timeframe, four factors emerged, although the last three factors each contained only several items, many of which had dual loadings. In the 5-year timeframe, two factors emerged, but the second factor contained two items, one of which had a relatively high dual loading. Importantly, only one factor emerged in every timeframe based on scree plots, which have been shown to be more accurate tests for determining numbers of factors, compared to eigenvalues (Floyd and Widaman 1995; Ford et al. 1986). Further, most of the final nine WADS items stemmed from the first factors across timeframes (and these final nine items produced one factor). Taken together, these results best support a unidimensional structure. More detailed information about the exploratory factor structures by timeframe can be obtained by contacting the first author.

on multiple indicators of internal criteria (item means, standard deviations, corrected item-total correlations, inter-item correlations, and factor loadings) were deleted. To assess external criteria, we flagged item-criterion correlations that were weaker than the average correlation between all items and each criterion (i.e., job satisfaction, turnover intentions; left side of Table 2). We then evaluated the items based on judgmental criteria, reassessing clarity, redundancy, and representativeness.

Drawing on these criteria, we reduced the number of items to nine. Eight of these items stemmed from the first factor of the first PAF using the original set of items. Univariate descriptives, reliability analyses, exploratory factor structure, and item-criterion correlations were rerun for the nine-item version of the WADS (right side of Table 2). These results were somewhat better than those for the original items. Ranges for inter-item, item-total, and item-criterion correlations were shorter and these correlations were higher. Based on PAF, the nine-item WADS was unidimensional and explained 60.8 % of variance.

Phase 4: Confirmatory Factor Analysis and Tests of Validity

The next goals were to (a) conduct a confirmatory factor analysis (CFA) of the nine-item WADS, and (b) assess the measure's convergent, discriminant, and criterion-related validity.

Participants and Procedure

New U.S. workers from MTurk were recruited if they were age 50 or older and employed 20 or more hours per week. Of 415 respondents, we excluded 13 due to short response times and substantial missing data. The survey also included six items (e.g., "I have never used a computer") to assess insufficient effort responding (IER; Huang et al. 2012, 2015). Participants who answered more than 50 % of the IER items incorrectly were excluded ($n = 12$; 2.9 %), resulting in $N = 390$. Of the final sample, 49 % was male, 86.7 % was White, 7.4 % was African American, and 3.3 % was Latino. The average age was 55.5 ($SD = 4.3$ years), 76 % of respondents worked 35 or more hours per week, and average organizational tenure was 10.4 years ($SD = 7.6$ years).

The survey was nearly identical to the previous phase but included the nine-item WADS with a 1-year timeframe in the stem. In addition to measuring job satisfaction and turnover intentions, we included the Nordic Age Discrimination Scale (NADS; 6 items; Furunes and Mykletun 2010), the WIS (7 items; Cortina et al. 2001), extraversion

(two items from the Ten Item Personality Inventory; Gosling et al. 2003), and negative affect (NA; 10 items from the PANAS; Watson et al. 1988). The NADS and the WIS, measures of age and generic workplace mistreatment, respectively, were used to test convergent validity. To test discriminant validity, we selected a construct that is theoretically irrelevant to the WADS—extraversion—expecting an insignificant relationship. Although some personality traits relate to targets' reports of workplace mistreatment, extraversion is not one (Milam et al. 2009). For criterion validity, we examined whether the WADS contained incremental validity in predicting work-related variables beyond individual differences (i.e., NA) and a related age discrimination measure (i.e., the NADS). We used NA to determine whether reports of age discrimination relate to theoretical outcomes independent of one's disposition. Respondents with higher NA may report greater discrimination or worse well-being, given their tendencies to hold negative attitudes (Judge and Hulin 1993; Levin and Stokes 1989). Further, we determined whether the WADS explains additional variance in respondent well-being beyond the NADS.

Results

Descriptive statistics for and correlations between the variables appear in Table 3. In the CFA, the WADS items were modeled as indicators of a single latent variable. The model fit the data adequately: $\chi^2(27) = 102.29$, $p < .001$, RMSEA = .086, 90 % CI [.068, .103], CFI = .97, SRMR = .026. Consistent with Kline (2010), we considered these goodness of fit statistics holistically, rather than using any single statistic to determine acceptable fit. Completely standardized factor loadings were high, ranging from .73 to .87.

We then examined convergent and discriminant validity. A CFA was conducted that included the WADS, NADS, WIS, and extraversion. The first loading for each factor was set equal to one to identify the model. The error variances for the two extraversion items were initially negative and so were also set equal to one. Model fit was acceptable: $\chi^2(226) = 518.31$, $p < .001$, RMSEA = .058, 90 % CI [.052, .065], CFI = .95, SRMR = .042. Supporting convergent validity, the WADS significantly correlated (based on completely standardized factor correlations) with both the NADS ($\Phi = .66$) and the WIS ($\Phi = .61$), yet these correlations were not so high as to suggest that the WADS captures the same underlying constructs as other mistreatment measures. Supporting discriminant validity, the WADS did not significantly relate to extraversion ($\Phi = -.02$).

Table 3 Study 1 Phase 4 descriptive statistics and zero-order correlations between variables for older employees

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. WADS	1.69	0.80	(.95)						
2. NADS	2.57	1.03	.62**	(.90)					
3. WIS	1.76	0.72	.58**	.46**	(.90)				
4. Negative affect	1.46	0.61	.34**	.16**	.39**	(.95)			
5. Extraversion	2.95	0.98	−0.02	−0.02	−.07	−.17**	(.65)		
6. Job satisfaction	5.29	1.34	−.37**	−.33**	−.42**	−.35**	.21**	(.92)	
7. Turnover intentions	2.96	1.72	.29**	.31**	.38**	.34**	−.20**	−.76**	(.83)

Cronbach’s α coefficients are presented in parentheses on the diagonal. $N = 388\text{--}390$ using pairwise deletion

NADS Nordic Age Discrimination Scale, *WIS* Workplace Incivility Scale

** $p < .01$

Next, we used hierarchical regressions to examine the incremental validity of the WADS beyond NA and the NADS. The WADS explained significant variance in job satisfaction ($\beta = -.31, \Delta R^2 = 1.9\%, p < .01$) after including both NA and the NADS in the first block of the model. The WADS predicted turnover intentions beyond NA and the NADS when they were considered separately (beyond NA: $\beta = .19, \Delta R^2 = 3.3\%, p < .001$; beyond the NADS: $\beta = .16, \Delta R^2 = 1.7\%, p < .01$) but not when they were simultaneously included in the first block of the model ($\beta = .05, \Delta R^2 = 0.2\%, p = .38$).³

Because the WADS shares theoretical and measurement overlap with the other predictor variables in these models (and shared variance is automatically assigned to the first set of variables in incremental validity models), we supplemented the hierarchical regressions with relative weight analysis to better understand the relative importance of each predictor (LeBreton et al. 2007; Tonidandel and LeBreton 2011). We used RWA Web (Tonidandel and LeBreton 2015), specifying bootstrapping with 10,000 replications and a .05 alpha level. Together, the three predictors (NA, NADS, WADS) explained 21.7 % of the variance in job satisfaction. Each predictor explained significant variance, and their relative weights did not significantly differ from one another (RW = .070 for the WADS; RW = .057 for the NADS; RW = .090 for NA). The same predictors explained 18.4 % of the variance in turnover intentions. Unlike the regression analysis, all predictors, including the WADS, explained significant variance in turnover intent. Their relative weights did not significantly differ from one another (RW = .033 for the WADS; RW = .059 for the NADS; RW = .092 for NA). These results demonstrate that the WADS significantly relates to and explains meaningful variance in two popular work-related criterion variables.

³ More detailed information about the hierarchical regressions can be obtained by contacting the first author.

Study 2: Younger Workers

Phase 1: Inductive Item Generation

The first goal of Study 2 was to qualitatively determine whether the WADS adequately captures younger workers’ perspectives. Younger workers’ discriminatory experiences may be more overt in nature than older workers’, given that they are not legally protected in the U.S. Stereotypes of older versus younger adults also differ (Bertolino et al. 2012; Cuddy et al. 2005; Finkelstein et al. 2013) which may drive different manifestations of discrimination.

Participants and Procedure

In this phase, we strove to understand the experiences of all adult employees who are not legally protected from age discrimination in the U.S. (ages 18–39) and so assessed the experiences of all workers under age 40. However, in subsequent phases, we focused specifically on workers 18–30, as this age range has been used to differentiate young from middle-aged workers (Finkelstein et al. 2013).

One hundred six U.S. workers were recruited from MTurk who were ages 18–39 and employed at least 20 hours per week. They were 49 % men, 74.5 % White, 11.3 % African American, 8.5 % Asian, and 4.1 % Latino, and 71.7 % worked 35 hours or more per week. The average age was 28.9 ($SD = 5.4$ years), and average organizational tenure was 4.2 years ($SD = 3.7$). We replicated the qualitative study from Study 1, providing the same definition of age discrimination and asking participants to describe a time they had such an experience at work. Ten participants left the question blank.

Results

Like Study 1, the research team assessed whether the WADS items captured each younger worker’s story of

discrimination. The WADS reflected most experiences well. Like older workers' stories, younger workers often described covert forms of discrimination. However, eight stories suggested one theme unique to younger workers that never emerged among older workers: superiors treating them as inexperienced and naive. For example, a respondent reported, "My supervisor equated my age with inexperience, even though I actually had dealt with more appeals than the other associates..." Thus, the following item was added to the nine-item version of the WADS: "Supervisors treat me as inexperienced due to my age."

Phase 2: Exploratory Factor Analysis and Item Reduction

Next, we (a) tested the descriptive statistics, reliability, and exploratory factor structure of the updated 10-item WADS among younger employees, and (b) compared the nine-item WADS to the 10-item version to determine whether the additional item contributed meaningfully to explaining younger workers' experiences of age discrimination.

Participants and Procedure

Participants aged 18–30 were recruited from MTurk if they worked 20 or more hours per week. Three hundred forty-three participants completed the survey; 49 were removed for completing the survey in an unreasonably short period of time and/or skipping numerous measures. Within the final sample ($N = 294$), 59.9 % of participants were male, 78.9 % were White, 7.5 % were African American, and 7.5 % were Latino. The average age was 25.2 ($SD = 2.7$ years). Participants worked $M = 39.2$ hours per week ($SD = 8.4$) and had been employed in their organizations $M = 2.9$ years ($SD = 2.5$).

The survey contained 10 WADS items, including the item specific to young workers. Respondents rated the frequencies with which they experienced each item from 1 (*never*) to 5 (*very often*). Identical measures as in Study 1 were administered for job satisfaction ($\alpha = .94$) and turnover intentions ($\alpha = .83$).

Results

The same analyses for preliminary measure evaluation were performed as in Study 1. Univariate statistics were similar for the nine- and 10-item WADS (Table 4). Exploratory factor structure, variance explained, and item loadings remained stable regardless of the additional item. Item-criterion correlations were also similar. Given these results, we did not retain the "young-specific" discrimination item because the shorter version performed similarly internally and externally. Parsimony is also preferable.

From a practical standpoint, age-specific items complicate administration and comparative analyses of the measure across age groups. Hence, we recommend using the nine-item WADS for younger employees.

Phase 3: Confirmatory Factor Analysis and Tests of Validity

The goals of this phase were to (a) test the factor structure of the WADS among younger employees, and (b) validate the nine-item WADS among younger employees by assessing convergent and discriminant as well as criterion-related validity.

Participants and Procedure

A new sample of 428 participants age 18–30 who were employed at least 20 hours per week was drawn from MTurk. Nineteen participants were excluded due to unreasonably short response times or substantial missing data. Six IER items were also included, and the six participants who answered more than 50 % of the items incorrectly were excluded (Huang et al. 2012), resulting in a final dataset of $N = 403$. The sample was 60.5 % men, 73 % White, 10.7 % Asian, 10.2 % Latino, and 8.2 % African American. The average age was 25.2 years ($SD = 2.9$), 70 % of participants worked at least 35 hours per week, and average organizational tenure was 2.7 years ($SD = 2.5$).

Similar measures as in Study 1 were administered. The NADS is less applicable to younger workers because its items pertain to climates of discrimination toward "elderly workers," so in this study, we used the NADS (in addition to extraversion) to test discriminant validity. We then included a different mistreatment measure to test convergent and incremental validity: the Interpersonal Conflict at Work Scale (ICAWS; Spector and Jex 1998).

Results

Descriptive statistics and zero-order correlations appear in Table 5. We tested a unidimensional measurement model for the nine-item WADS. Confirmatory factor analysis revealed adequate fit: $\chi^2(27) = 69.31$, $p < .001$, RMSEA = .063, 90 % CI [.045, .082], CFI = .98, SRMR = .024. Completely standardized factor loadings were high, ranging from .69 to .83.

To test convergent and discriminant validity, we conducted a CFA that included the WADS, NADS, extraversion, and ICAWS. The first loading of each factor was set equal to one. The error variances for the two extraversion items were initially negative and so were also set equal to one. Model fit was good: $\chi^2(166) = 354.71$, $p < .001$, RMSEA = .054, 90 % CI [.046, .062], CFI = .95,

Table 4 Study 2 Phase 2 results for the 9- and 10-item WADS for younger employees

Response scale	9-item WADS	10th item only
Univariate descriptives	<i>N</i> = 291–294	<i>N</i> = 291–294
Scale <i>M</i>	1.75	1.78 ^a
Scale <i>SD</i>	0.78	0.79 ^a
Item <i>M</i> (s)	1.56–1.80	2.05
Item <i>SD</i> (s)	0.93–1.15	1.24
Reliability	<i>N</i> = 286	<i>N</i> = 284
Cronbach’s α	.91	.91 ^a
Corrected ITC(s)	.59–.72	.67
Inter-item correlations	.40–.64	.38–.63
Exploratory factor structure	<i>N</i> = 286	<i>N</i> = 284
Number of factors	1	1 ^a
%variance explained by 1st factor	51.9 %	51.6 % ^a
Factor loadings on 1st factor	.62–.76	.70
Item-criterion correlations	<i>N</i> = 291–294	<i>N</i> = 291
Job satisfaction	–.18 to –.30	–.26
Turnover intentions	.16 - .23	.23

Pairwise deletion was used to obtain sample sizes

ITC item-total correlation

^a Scale properties with the 10th item included

Table 5 Study 2 Phase 3 descriptive statistics and zero-order correlations between variables for younger employees

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. WADS	1.92	0.89	(.93)						
2. ICAWS	1.72	0.64	.36**	(.74)					
3. NADS	2.40	.96	.26**	.20**	(.88)				
4. Negative affect	1.69	0.68	.22**	.34**	.11*	(.90)			
5. Extraversion	2.74	0.99	0.02	0.03	–.01	–.15**	(.66)		
6. Job satisfaction	5.01	1.47	–.28**	–.38**	–.14**	–.29**	.14**	(.92)	
7. Turnover intentions	3.79	1.82	.28**	.33**	.15**	.29**	–.09	–.72**	(.82)

Cronbach’s α coefficients are presented in parentheses on the diagonal. *N* = 399–403 using pairwise deletion

ICAWS Interpersonal conflict at work scale, NADS Nordic Age Discrimination Scale

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

SRMR = .043. Supporting convergent validity, the WADS positively related to the ICAWS based on the completely standardized factor correlation ($\Phi = .43$). We also examined the factor correlation between the WADS and extraversion, a theoretically unrelated construct. This correlation was small and non-significant ($\Phi = .05$), supporting discriminant validity. Moreover, we expected the WADS to relate to the NADS more weakly for younger compared to older workers, given its lower relevance to younger workers. Indeed, the correlation was only $\Phi = .31$ (compared to $\Phi = .66$ among older workers), further supporting discriminant validity.

To test criterion-related validity, we examined relationships between the WADS and work-related variables, beyond the influence of NA and other mistreatment experiences (i.e., the ICAWS). Based on hierarchical

regressions, the WADS accounted for incremental variance beyond both NA and the ICAWS in predicting job satisfaction ($\beta = -.16$, $\Delta R^2 = 2.2\%$, $p < .001$) and turnover intentions ($\beta = .16$, $\Delta R^2 = 2.2\%$, $p < .001$). Like Study 1, we supplemented the hierarchical regressions with relative weight analyses using RWA Web and the same specifications. Together, the three predictors (NA, ICAWS, WADS) explained 19.1 % of the variance in job satisfaction and 16.8 % of the variance in turnover intentions. Each predictor explained significant variance in the dependent variables. The relative weight of the WADS did not significantly differ from those of the other predictors.⁴ Overall, these results support the criterion-related validity

⁴ More information about the relative weight analyses can be obtained by contacting the first author.

of the WADS, demonstrating that it explains significant variance in work-related variables beyond the effects of trait affect and other mistreatment measures.

Study 3: Middle-Aged Workers

Phase 1: Confirmatory Factor Analysis and Tests of Validity

The goals of the first phase were to test (a) the factor structure, and (b) the convergent, discriminant, and criterion-related validity of the WADS among middle-aged employees.

Participants and Procedure

A sample of 444 participants aged 31–49 who were employed at least 20 hours per week was drawn from MTurk. Twenty-nine participants were excluded due to unreasonably short response times or substantial missing data. Eight participants who answered more than 50 % of the IER questions incorrectly were excluded (Huang et al. 2012), resulting in $N = 407$. The sample was 53.6 % men, 84.5 % White, 7.1 % African American, 6.4 % Asian, and 3.7 % Latino. The average age was 36.7 years ($SD = 5.5$), 88.7 % of participants worked 35 or more hours per week, and average organizational tenure was 6.6 years ($SD = 4.8$). Measures were identical to Study 2.

Results

Descriptive statistics and zero-order correlations appear in Table 6. We tested a unidimensional measurement model for the WADS, which revealed adequate fit: $\chi^2(27) = 101.43$, $p < .001$, RMSEA = .083, 90 % CI [.066, .101], CFI = .97, SRMR = .029. Completely standardized factor loadings ranged from .66 to .84.

To test convergent and discriminant validity, we conducted a CFA that included the WADS, NADS, ICAWS, and extraversion. The first loading of each factor, as well as the error variances of the extraversion items were set equal to one. Model fit was acceptable: $\chi^2(166) = 403.90$, $p < .001$, RMSEA = .060, 90 % CI [.053, .068], CFI = .94, SRMR = .046. Supporting convergent validity, the WADS significantly correlated with the ICAWS ($\Phi = .38$). Supporting discriminant validity, the WADS had a near-zero correlation with extraversion ($\Phi = -.001$). The factor correlation between the WADS and the NADS ($\Phi = .33$) was also smaller than this correlation within the dataset of older workers ($\Phi = .66$), as predicted.

To test criterion-related validity, we examined relationships between the WADS and two work attitudes, beyond the influence of NA and the ICAWS. Based on hierarchical regressions, the WADS did not account for incremental variance beyond NA and the ICAWS in predicting job satisfaction ($\beta = -.04$, $\Delta R^2 = 0.1$ %, $p = .478$) or turnover intentions ($\beta = .09$, $\Delta R^2 = 0.6$ %, $p = .086$). We used RWA Web with the same specifications as Studies 1 and 2 to supplement these analyses. NA, the ICAWS, and the WADS explained 15 % of the variance in job satisfaction. NA and the ICAWS, but not the WADS, explained significant variance in job satisfaction. These predictors explained 13.9 % of the variance in turnover intentions. All predictors except the WADS explained significant variance in turnover intent. The relative weight of the ICAWS (but not NA) was significantly higher than that of the WADS in predicting both variables.

The criterion-related validity results demonstrate that general workplace mistreatment better explains variance in middle-aged employees' work-related attitudes, compared to the WADS. This finding is not surprising, given our hypothesis (and support below) that middle-aged workers experience lower frequencies of age discrimination. Because middle-aged employees constitute the workplace age "in-group" and are targeted with mostly positive age-related stereotypes (Finkelstein et al. 2013), the WADS does not relate as strongly (or at all) to their occupational variables, compared to mistreatment measures that better resonate with them. Aside from the non-significant tests of criterion-related validity, the WADS contained high reliability and convergent and discriminant validity among middle-aged workers.

Phase 2: Invariance of the WADS Between Age Groups

Having tested the WADS within each age group, we then conducted a series of measurement equivalence tests (per Vandenberg and Lance 2001) to compare the WADS between age groups (Table 7). All tests were based on the "confirmatory" datasets (i.e., Study 1 Phase 4, Study 2 Phase 3, and Study 3 Phase 1). In Model 1 (M1), we imposed the same unidimensional factor structure across groups (setting the first factor loading to one) to test configural invariance. Model fit was acceptable: $\chi^2(81) = 265.87$, $p < .001$, RMSEA = .078, 90 % CI [.067, .088], CFI = .99. Given configural invariance, we proceeded to test metric invariance in M2, fixing factor loadings to be equivalent between groups. M2 fit was acceptable: $\chi^2(97) = 297.86$, $p < .001$, RMSEA = .074,

Table 6 Study 3 descriptive statistics and zero-order correlations between variables for middle-aged employees

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. WADS	1.42	0.61	(.93)					
2. ICAWS	1.62	0.59	.31**	(.78)				
3. Negative affect	1.50	0.64	.33**	.44**	(.92)			
4. Extraversion	2.88	1.11	-.06	-.11*	-.25**	(.81)		
5. Job satisfaction	5.03	1.59	-.17**	-.36**	-.29**	.28**	(.95)	
6. Turnover intentions	3.39	1.87	.21**	.34**	.28**	-.20**	-.80**	(.90)

Cronbach’s α coefficients are presented in parentheses on the diagonal. $N = 406\text{--}407$ using pairwise deletion

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

Table 7 Invariance of the WADS between age groups

Model	df	χ^2	CFI	Δdf	$\Delta \chi^2$	ΔCFI
1. Equivalent factor structures	81	265.87*	.988			
2. Equivalent factor loadings	97	297.86*	.987			
1 versus 2				16	31.99	-.001
3. Equivalent intercepts	115	544.90*	.972			
2 versus 3				18	247.04*	-.015
4. Equivalent factor means	123	956.31*	.947			
2 versus 4				26	658.45*	-.040

CFI comparative fit index

* $p < .001$

90 % CI [.064, .083], CFI = .99. M1 and M2 demonstrated comparable fit: $\Delta \chi^2(16) = 31.99$, $p > .05$; $\Delta CFI = -.001$.⁵ We built on M2 to test scalar invariance, constraining the vector of items’ intercepts to be equal (M3). We did not expect the groups to have invariant item intercepts however, given our hypothesis that middle-aged workers experience significantly lower rates of age discrimination than older and younger workers. In cases of hypothesized group differences, scalar variance does not reflect undesirable biases but rather demonstrates underlying differences between groups (Vandenberg and Lance 2001). Indeed, this model did not fit the data very well: $\chi^2(115) = 544.90$, $p < .001$, RMSEA = .099, 90 % CI [.091, .108], CFI = .97. M3 also had significantly worse model fit than M2: $\Delta \chi^2(18) = 247.04$, $p < .05$; $\Delta CFI = -.015$. All items’ intercepts significantly differed between the groups. We next compared the latent means between age groups. M4 built on M2 by constraining the factor means to be equivalent. Model fit was poor: $\chi^2(123) = 956.31$, $p < .001$, RMSEA = .133, 90 % CI [.126, .141], CFI = .95. M4 fit significantly worse than

M2: $\Delta \chi^2(26) = 658.45$, $p < .05$; $\Delta CFI = -.04$. Thus, the age groups are not invariant in their latent means.

We supplemented these analyses by comparing the latent means between two sets of age groups at a time (younger vs. older; younger vs. middle-aged; middle-aged vs. older). Fit for all three models was poor,⁶ demonstrating that the means significantly differed between each set of age groups. Specifically, younger workers experienced the highest rates of age discrimination, followed by older workers, and then middle-aged workers. Additional analyses revealed that only 22 % of younger workers and 30 % of older workers reported not having experienced any of the WADS items in the past year, but nearly half (48 %) of middle-aged workers reported “never” to all WADS items. We plotted age discrimination frequency across ages (Fig. 1). Taken together, these results support our hypothesis that a U-shaped pattern exists between age groups with regard to frequency of age discrimination.

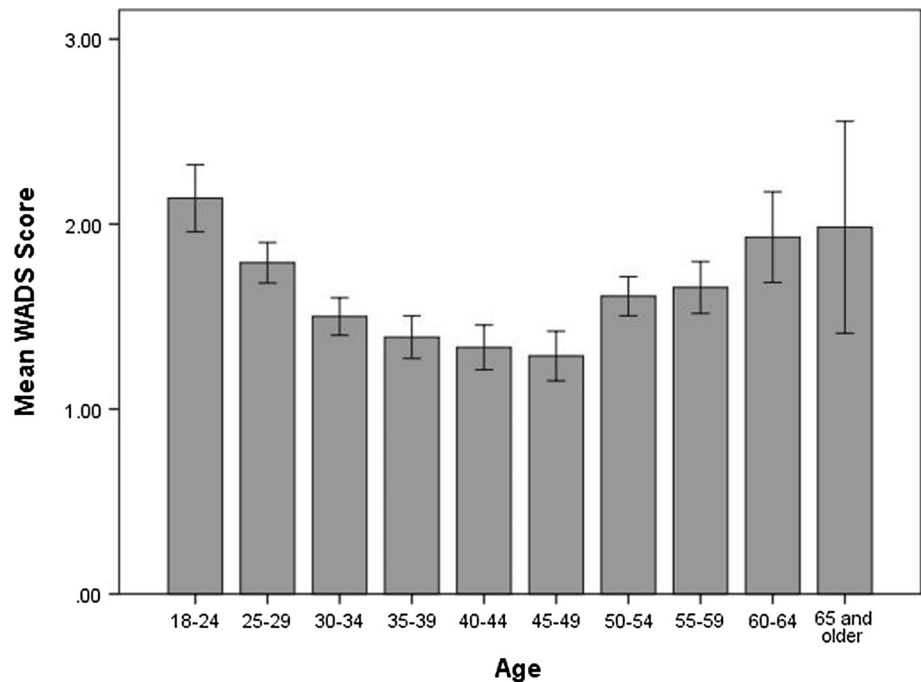
Discussion

The “graying” workforce and the well-documented negative stereotypes of both older and younger workers underscore the need to better understand employees’

⁵ We supplemented all model comparisons with differences in CFI. Invariance hypotheses should typically not be rejected when CFI change values are $-.01$ or less, they should be viewed with caution when values are $-.01$ to $-.02$, and they should be rejected when values are greater than $-.02$ (Vandenberg and Lance 2001).

⁶ Goodness of fit indices can be obtained by contacting the first author.

Fig. 1 Mean of the WADS across age groups. *Error bars* contain 95 % confidence intervals



perspectives of age discrimination. Age discrimination has become a central topic in international conversations, such as the 2015 White House Conference on Aging and the World Health Organization's (WHO) initiatives on global aging. Yet, researchers lack a validated measure with which to capture workers' experiences of age discrimination. Our objective was to develop and validate a measure, the Workplace Age Discrimination Scale, that researchers, practitioners, and policymakers can use to better understand employees' perspectives and outcomes of age discrimination. The present study provides four contributions to the literature.

First, the WADS turns attention to individuals' perceptions of age discrimination. Although measures of age stereotypes and discriminatory age climates exist, no validated measure captures targets' personal experiences of age discrimination, which are essential for conducting future research on targeted employees' organizational, mental, and physical outcomes. This absence of attention to personal experiences of age discrimination differs from literatures on race- and sex-based workplace discrimination that highlight the importance of targets' perspectives in uncovering and addressing organizational mistreatment (e.g., Fitzgerald et al. 1997; Williams et al. 1997, 2003). The WADS is particularly useful in that its items capture workers' experiences across age groups; thus, it is possible to administer one measure to all employees.

Second, the WADS addresses many methodological issues in the ageism literature (e.g., lack of validation, reliance on participants to define "age discrimination,"

absence of a referent time period in instructional stems). We conducted a series of qualitative and quantitative studies, employed numerous analytic approaches, and drew on methodological best practices to develop, refine, and validate the WADS. The measure contains high reliability among older, younger, and middle-aged workers. Exploratory and confirmatory factor analyses revealed a unidimensional structure that explains significant variance in workers' experiences of age discrimination. Further, we used an experimental manipulation to determine that 1 year is an appropriate timeframe for the stem of the WADS, capturing meaningful target experiences.

The paper also challenges two normative assumptions that scholars and policymakers make about age discrimination: (a) that discriminatory behaviors are only overt and explicit and (b) that only older employees are targeted with it. Speaking to the first assumption, overt discriminatory actions based on age do indeed occur, and they certainly fall within our conceptualization and definition of "differential workplace treatment based on age, which impairs fairness of treatment or opportunity." Yet our inductive method of analyzing over two hundred workers' stories revealed that age discrimination is often subtle, elusive, and understated—for older and younger workers alike. Employees described being excluded from work-related and social events, experiencing comments insinuating that their education and training are inadequate (outdated for older workers, insufficient for younger workers), learning about age-related gossip (e.g., when one will "finally" retire), and hearing age-related "jokes." These covert

manifestations highlight the need to apply modern discrimination theories to the ageism literature with greater frequency. As discrimination becomes less socially acceptable and as targets gain greater legal protection, discrimination is less likely to occur in overt forms, instead emerging in insidious ways that skirt legal and public attention. The WADS includes “modern” manifestations of age discrimination, thereby better capturing the breadth of employees’ experiences.

Interestingly, workers—particularly younger workers—often introduced their stories of covert age discrimination by saying, “I haven’t really experienced age discrimination, but...” and then proceeded to describe insidious manifestations of age discrimination. From a methodological standpoint, this reinforces the need to avoid using terms such as “age discrimination” in measurement items. Although some participants were hesitant to define their experiences as age discrimination—likely due to their schemas of age discrimination as high-intensity, overt behaviors that can result in legal proceedings—their stories clearly exemplify age-based mistreatment at work. Developing items that pertain to particular discriminatory behaviors rather than to participants’ definitions of “age discrimination” more accurately captures age discrimination frequency, because the behaviors align with researchers’ construct definitions and contain less conceptual variance between participants (Hardy and Ford 2014). This finding reveals the need for greater research on inter-individual appraisals of and coping strategies for age discrimination. Do employees only label their experiences as “age discrimination” when the events are egregious or pertain to formal aspects of the job? When targets do not explicitly label their experiences as age discrimination, are their appraisals less negative and their well-being less affected? These questions await future research.

In our fourth contribution, we challenge assumptions about who experiences age discrimination. Our findings indicate that older workers are not alone in their reports of mistreatment; younger workers report similar experiences, often at higher frequencies. This substantiates emerging evidence that the nature of ageism might be changing, such that younger employees are denigrated even more often than older employees (Bertolino et al. 2012; Weiss and Maurer 2004). Our hope is that the WADS will spur greater research on younger workers’ experiences of age discrimination. Early onset discrimination could pose important implications for workers’ long-term organizational success, labor force attachment, economic and social participation, self-perception, and health. Meanwhile, middle-aged workers experience significantly less age discrimination, creating a U-shaped pattern of age discrimination across the lifespan. This finding builds on research on age

stereotypes in which the fewest negative stereotypes exist toward middle-aged, compared to younger or older, employees (Finkelstein et al. 2013). It reinforces the notion that middle-aged workers are favored and demonstrates that they can be used as an appropriate comparison (“in-group”) in future research on aging.

Limitations and Future Directions

Although we employed numerous methods (e.g., deductive, qualitative, experimental) to develop and validate the WADS, the quantitative studies were cross-sectional, preventing us from drawing conclusions about causal relationships between age discrimination and theoretical target outcomes (e.g., job satisfaction, turnover intentions). Our intent was to develop a measurement tool that scholars can use to pursue a host of future studies, including those that document longitudinal relationships between perceived age discrimination and target outcomes. The WADS can be used to address numerous other research topics, including target meaning-making of and coping mechanisms for age discrimination.

Another important future direction is the potential for the WADS to spur intersectional and comparative discrimination research with regard to age. The WADS enables scholars to compare targets’ experiences of age discrimination with other discriminatory experiences, addressing questions such as: Do employees cope similarly with different types of discrimination? Do employees’ outcomes differ based on discrimination type? Scholars can also better study discrimination based on intersections of employees’ identities. For instance, how do measures of age-, race-, and sex-based discrimination contribute to predicting the outcomes of older women of color? Questions such as these deserve greater empirical attention as Western societies become increasingly diverse with respect to age, race, and ethnicity.

Results were similar between frequencies and appraisals of the WADS items, leading to our recommendation that scholars use the WADS to measure respondents’ frequencies of age discrimination. However, we used only one item (“How much does this experience typically bother you?”) to assess appraisal of each WADS statement. Respondents’ appraisals might be better captured using a holistic measure of appraisal that follows the WADS (see Cortina and Magley 2009). Although age discrimination is fundamentally negative, employees likely vary in their appraisals of it, as they do for other types of workplace mistreatment (Cortina and Magley 2009; Langhout et al. 2005). Better understanding of targets’ appraisals of age discrimination could spur research on coping mechanisms

and outcomes (Lazarus and Folkman 1984), as well as interventions for reducing the impact of age discrimination.

We used crowdsourcing samples in order to enhance generalizability during measure development, but in future research, the WADS should be administered in specific organizational settings to determine how tacit definitions of older, middle-aged, and younger age groups—and their respective experiences of age discrimination—differ between professions. For instance, employees at technology companies might be considered older (and targeted with more discrimination) when they reach their thirties. Age discrimination may not follow a U-shaped curve in industries such as this that favor youth but rather may develop along an upward linear trajectory. The opposite pattern might exist in industries (e.g., academia) that tend to value older employees with extensive experience. Future research should test the impact of career timetables and job norms on organizational definitions of “young,” “middle,” and “old” and on employees’ subsequent discriminatory experiences.

Practical Implications

Equal opportunity is a virtue of American society. By better understanding age discrimination, practitioners can generate multi-level strategies to reduce age discrimination and minimize its effects. Because we demonstrate that many age discriminatory acts are covert, practitioners could draw on interventions for addressing other types of low-intensity mistreatment. For instance, the Civility, Respect, and Engagement in the Workplace (CREW) program successfully reduces workplace incivility (Osatake et al. 2009). Another strategy is to address perpetrators’ implicit attitudes and stereotypes toward particular age groups. Covert discrimination often stems from subconscious perpetrator attitudes, allowing stereotypes to manifest in discriminatory behavior without perpetrators’ awareness (Dovidio et al. 1997; Gaertner and Dovidio 2005). The Common Ingroup Identity Model (Gaertner and Dovidio 2000) has been used to broaden individuals’ perceptions of ingroup membership, thereby reducing prejudice. Interventions such as these could be tailored to address age discrimination.

The WADS is also a valuable tool for informing social policy. Employment laws in many countries (e.g., the ADEA in the U.S.) only protect individuals from blatant acts of workplace age discrimination in formal domains, such as recruitment and promotion. Yet, respondents in our studies repeatedly indicated that age discrimination is often covert and occurs in informal domains—acts falling outside legislative protection. Thus, although age-based claims of discrimination have swelled in many countries,

the prevalence of age discrimination is likely underestimated given that lower-intensity forms of discrimination are typically not legally covered. King et al. (2011) discussed misalignment between U.S. law and targets’ perspectives of other types of discrimination (e.g., race-based), given that most laws cover only egregious manifestations of discrimination. Should the ADEA and similar laws be expanded to include modern forms of age discrimination? Greater discussion is warranted.

In the U.S., national legislation and organizational policies also fail to protect younger workers, a population that our paper demonstrates is subject to greater age discrimination than older workers. Age discrimination does not start when U.S. workers become legally protected but rather, as our data show, affects individuals as young as 18. This work, in conjunction with research documenting numerous negative stereotypes of younger workers (e.g., Finkelstein et al. 2013), provides support for expanding the ADEA to protect workers under age 40. Without more comprehensive coverage through the ADEA and organizational policies, large segments of society will continue to have little recourse for age discrimination.

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