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Perceived ageism: A systematic review of existing measures and appraisal of their psychometric quality

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ABSTRACT

This study is the first to provide a systematic overview and taxonomy of measures assessing perceived ageism. A systematic review according to PRISMA was conducted with the aim of descriptively presenting the body of existing perceived ageism measures. Of 14,135 identified articles, 95 were included. Our taxonomy sorted perceived ageism instruments according to forms of ageism (personal experience versus others' experience); age group; context; global/situational; bene-/malevolent. Thirty-four multi-item measures were identified. The majority assessed global, malevolent forms of personally perceived experiences of ageism among older age groups in everyday life. Sufficient indicators of psychometric merit were only reported for few measures, including *Nordic Age Discrimination Scale* and *Perceived Ageism Questionnaire*. Despite the number of existing perceived ageism measures, only a few reported sufficient information on psychometric properties. This indicates the possibility of inaccurate prevalence estimates. Future research is needed to validate and diversify the body of perceived ageism measures.

Perceived ageism is a prevalent phenomenon associated with negative consequences for mental and physical health (Jackson et al., 2019; Maurya et al., 2022; Rippon et al., 2014). This systematic review provides an overview of measures assessing perceived ageism.

What is perceived ageism?

Ageism refers to the broader concept of age stereotypes (how we think), prejudice (how we feel) and discrimination (how we act) toward individuals due to their age (Ayalon & Tesch-Römer, 2018; Butler, 1969; WHO, 2021). When ageism occurs, it typically involves aspects from at least two of those three dimensions. For example, individuals could hold stereotype and prejudice toward a certain age group, but that may never lead to the manifestation of actual discriminatory behavior.

It is possible that even though a person may *objectively* be exposed to any facet of ageism, they do not *subjectively* perceive it as such, and vice versa. This perception *'depends on respondent's recognition, acknowledgement, and willingness to report the discriminatory event'* (Ayalon & Bramajo, 2023, p. 2). Therefore, perceived ageism is a specific facet of ageism, referring to ageism as a subjective, individual perception (Ayalon & Bramajo, 2023; Rothermund et al., 2021). Specifically, perceived ageism refers to the subjective perception of oneself – or others – being looked at in a negative way or treated unfairly based on belonging to any age group. According to this definition, perceived ageism can be directed not only against older people, but also against younger people (de la Fuente-Núñez et al., 2021). Nonetheless, perceived ageism is often used as a proxy of objective ageism because of its

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ease of use and because there are no agreed-upon objective criteria to determine exposure to ageism (Ayalon, 2018). It should also be noted that the term perceived ageism (Brinkhof et al., 2022) is often used interchangeably with perceived age discrimination. In the present paper, we use the term perceived ageism, as most manifestations of ageism include several interconnected dimensions of ageism (stereotypes, prejudice, discriminatory behavior).

Perceived ageism can take on benevolent and malevolent forms (Cary et al., 2017; Cuddy et al., 2005). While both forms reinforce negative age stereotype and can lead to negative outcomes for the older individual, there is a difference in their manifestation (Cary et al., 2017). Specifically, malevolent ageism typically entails hostile tendencies such as ignorance, devaluation, exclusion and neglect. Benevolent ageism instead characterized by warmth and condescension (Chasteen et al., 2023) and typically manifests in taking autonomy and responsibility away from an older individual by over-zealously offering help (even though s/he is perfectly capable of handling them), or in being overly generous and glorifying. Benevolent ageism may be well intended but is still potentially harmful by perpetuating paternalistic and infantilizing behavior toward older individuals.

In the following two paragraphs, we will give a brief overview of the small body of empirical evidence on the prevalence, correlates and consequences of perceived ageism. It should be noted that the findings described below must be interpreted cautiously and in light of the results of this systematic review which indicate that for some of the currently used measures further validation efforts may be needed.

Prevalence of perceived ageism

Based on the available evidence, ageism is one of the most prevalent forms of prejudice (e.g., Abrams et al., 2011; Maurya et al., 2022; Rippon et al., 2014). For example, data from the Health and Retirement Survey (HRS, USA) revealed that 30% of participants aged 50+ reported age as the most common reason for experiencing perceived discrimination in their day-to-day life (Luo et al., 2011). Data from the *English Longitudinal Study of Ageing* (ELSA, UK) implies that about a third (33.3%) of the participants aged 52+ experienced ageism (Rippon et al., 2014), with the percentage rising among participants aged 65 and over (36.8%). Results from the fourth wave of the *European Social Survey* (ESS, 2008–2009), which contains an ageism module assessing personally perceived exposure to ageism, show that more than one in three Europeans aged 65 and older, and more than half of participants aged 15–25 have experienced ageism, and that perceived ageism is reported more frequently than discrimination based on gender or ethnicity (Abrams et al., 2011).

According to findings from a recent survey representative of the German general population, which included individuals aged 16 to 96, the likelihood of perceived ageism decreases from young adulthood to middle age (Kessler & Warner, 2022; Ludwig et al., 2024). Among the very old individuals (aged 75 and above), this likelihood was slightly increased, although the experience of unfair treatment among those aged 75 and older was still significantly less pronounced than among young adults. As of now, only limited data is available from non-Western countries, but the data that exists suggests that perceived ageism exists across different cultural contexts. For example, an evaluation of the first wave of the *Longitudinal Study of Ageing in India* (LASI) revealed that 10.3% of older adults deemed age as the primary reason for being discriminated against (Maurya et al., 2022).

A longitudinal survey based on a female sample shows that perceived ageism is relatively high in young adulthood (20s), drops with middle age (30s) and then reaches a peak from the age of 50 onwards (Gee et al., 2007). This underlines that perceived ageism is not as frequent among middle aged individuals as it is among the very young and the very old (e.g., Bratt et al., 2018).

Correlates and consequences of perceived ageism

Overall, the evidence regarding the sociodemographic correlates of perceived ageism is inconsistent. Regarding gender, there is evidence of a higher level of perceived ageism in both women (e.g., Maurya

et al., 2022; van den Heuvel & van Saantvoort, 2011) and men (e.g., Jackson et al., 2019; Rippon et al., 2014). However, the findings of a cross-sectional study show that in a British sample, gender differences decreased over the life-span and are no longer significant after the age of 70 (Rippon et al., 2014). Regarding education, the majority of evidence, which is derived from studies evaluating large panel surveys like the *Health and Retirement Survey* (HRS) and *English Longitudinal Survey of Ageing* (ELSA), suggests higher perceived ageism among those with higher levels of education (Rippon et al., 2014, 2015). A study evaluating the associations between perceived ageism and level of education based on the *European Social Survey* (ESS) found perceived ageism to be lower among highly educated individuals (van den Heuvel & van Saantvoort, 2011), suggesting that differing cultural contexts impact the relationship between perceived ageism and education. Higher levels of perceived ageism are also associated with low socioeconomic status (Jackson et al., 2019; Maurya et al., 2022; Rippon et al., 2014, 2015). This is supported by evidence discovering perceived ageism to be less common in people with a high household income when operationalized via the frequency of experienced ageist events (van den Heuvel & van Saantvoort, 2011). Perceived ageism may impact an individuals' physical and mental health (e.g., Jackson et al., 2019), but also their opportunities regarding career and education (e.g., Watermann et al., 2023). Longitudinal evidence from a study including individuals in middle and late adulthood (aged 40–93) suggests that perceived ageism is associated with reduced subjective well-being, especially in middle aged adults on the threshold to entering older adulthood (Avidor et al., 2017). Additionally, lowered well-being was found to be associated with perceived ageism in a cross-sectional survey including individuals aged 25–74 (Vogt Yuan, 2007). A meta-analysis found perceived (age) discrimination to be associated with somatic health outcomes such as elevated blood pressure, increased heart rate and cortisol secretion (Pascoe & Smart Richman, 2009). This is supported by longitudinal findings pointing at an association of perceived ageism with subjective health, stroke, diabetes, incidental coronary heart disease and depressive symptoms in adults aged 50 and over (Jackson et al., 2019).

When it comes to work contexts, perceived ageism has been shown to be associated with reduced job satisfaction and job withdrawal among individuals aged 45 years and older (Griffin et al., 2016), while also affecting future opportunities for career development of adults in late mid-life ($M = 51.04$, Watermann et al., 2023).

The present study

This study is the first to provide a systematic overview of existing measures assessing individual perceptions of ageism (perceived ageism). Specifically, we aim at identifying all available perceived ageism measures and systematizing them along a taxonomy, thus highlighting research gaps and identifying where future measures may be needed. Additionally, we will review the information provided on the measures' psychometric properties. By doing so, we aim to aid researchers in choosing instruments suitable for their respective research questions.

Note that two previous systematic reviews have investigated two interrelated, yet distinct concepts: The previous systematic review by Klusmann et al. (2020) has focused on measures assessing views on aging, i.e., individuals' conceptions about older people, old age, and aging in general (age stereotypes) as well as conceptions of their own age and aging (self-perceptions of aging). The other previous systematic review (Ayalon et al., 2019) assessed measures assessing individuals' own stereotypes, prejudice and discriminatory tendencies directed against older people. Other work systematically evaluated the psychometric properties of existing measures assessing perceived ageism with a focus on work contexts (Peng et al., 2022). A comprehensive overview of existing perceived ageism measures has not yet been created.

When reviewing the literature, perceived ageism is often assessed via measures that present age as one out of several dimensions which participants may attribute discrimination to (e.g., Everyday Discrimination Scale, EDS, by Williams et al., 1997). This minimizes the risk of participants retrospectively shifting their perception of whether they were a victim of ageist

discrimination and makes the measure more intersectional, yet less specific. However, regarding the assessment of perceived ageism, measures such as the EDS factually only contain one item assessing perceived ageism and may therefore not be able to comprehensively assess the construct. Other attributions, for example, gender, height, weight, or sexual orientation are also provided, which may suggest that the mechanisms behind perceiving racist, ageist or sexist discrimination can be equated. Whether that is actually the case remains unclear, while evidence additionally hints at the EDS not reliably delivering comparable results across different demographics and at existing measurement invariance across domains (e.g., Bastos & Harnois, 2020). This underlines the significance of compiling an overview of existing perceived ageism measures to facilitate deliberately and informedly choosing measures for future research.

Method

The systematic review followed the PRISMA *(Preferred Reporting Items for Systematic Reviews and Meta-Analyses)* guidelines for reporting systematic reviews (Page et al., 2021). To perform a comprehensive search and to minimize publication bias, both peer-reviewed and gray literature were included. The systematic search was performed across the following databases: PubMed, EBSCO (*APA PsyArticles, CINAHL, PsycInfo, SocIndex, Psychology & Behavioral Sciences, PSYNDEX, Ageline, MEDLINE*), OATD & OpenGrey.

Following a narrative approach, our review operationalizes perceived ageism as a facet of ageism characterized by differing expressions in several dimensions (e.g., context of occurrence). Therefore, data extraction and analysis are based on a taxonomy developed to capture those dimensions. As we aim at compiling an overview of perceived ageism measures and their psychometric merit, we excluded single item measures from our review as an evaluation of their psychometric properties is not possible.[1]

Search strategy

Preliminary search terms were identified based on a literature search and then discussed among three of the authors (VL, EMK, LW). Afterwards, they were tested on the EBSCO databases mentioned above. After a final adjustment, the following search terms were specified for the systematic literature search: *ageism, perceived ageism, experiences of ageism, experienced ageism, age discrimination, age-related discrimination, perceived age discrimination, perceived age stereotype, age stereotyping, age prejudice, assessment, instrument, questionnaire, measure, psychometric.*

The full search algorithm is presented in Supplementary Table A1.

Inclusion criteria

To be eligible for inclusion, the identified records were required to:

- use, develop or validate a measure assessing personal experiences of ageism or perceptions of others (groups of other people) being the target of ageism
- be quantitative empirical studies
- be available in English or German

Exclusion criteria

- meta-analyses and reviews
- studies focused on children
- single item measures

We did not restrict the year of publication.

Data extraction & systematization

The data extraction sheet is available in Supplementary Table A.4. Information was systematically organized with regard to the categories below; furthermore, the psychometric properties were extracted for each measure. Additionally, we assessed the country of study conduction as a proxy for cultural and social differences that might be reflected within the identified measures. To ensure that all relevant information was extracted, two independent raters (VL and a psychologist not part of the author team) were involved. The independent psychologist was trained and informed about the rating criteria by the first author. Inter-rater reliability on the categorization of measures was calculated and overall satisfying, with Cohen's Kappa ranging between .71 and 1.00. Whenever Cohen's Kappa was below .8, the categorization was discussed until a consensus was reached.

Personal experiences vs. other people's experiences

A differentiation was made between measures assessing an individual's personal experiences of ageism and measures assessing individual perceptions of other people or groups being exposed to ageism. It was also noted when measures were 'hybrids' assessing perceived ageism directed against the self in some items and perceived ageism directed against others in other items.

Target age group

Measures were sorted based on the age group they were used in. To standardize the distinction between age groups for the purpose of data extraction and analysis, we followed an age-group categorization by the American Psychological Association (2023): accordingly, we differentiated between perceived ageism measures intended for *young adults* (approx.18-35), *middle aged adults* (approx. 35–65) and *old adults* (65+).

Context of occurrence

As previous research demonstrates, perceived ageism occurs across diverse contexts such as work, within the health-care sector and in situations of everyday life (e.g., de la Fuente-Núñez et al., 2021; Rothermund et al., 2021). We therefore decided to adopt these categories for the purpose of data extraction and analysis.

Global versus situational

Measures of perceived ageism were organized with respect to whether they captured the frequency of perceived ageism incidents at a global level (i.e., how often individuals report PA) or queried participants about experiencing perceived ageism in specific situations (i.e., 'I believe older people are last on the list when it comes to receiving medical care,' Barnett & Marsden, 2019).

Benevolent vs. malevolent

We noted whether measures assessed benevolent (i.e., being paternalistic, infantilizing) or malevolent forms (i.e., being openly ignorant, exclusionary or hostile) of perceived ageism.

In addition, *the psychometric properties* reported in the identified publications were extracted for each measure. Data extraction was based on a construct validation approach, adapted from an implementation by Pangallo et al. (2015). In accordance with their approach, we extracted whether information was provided regarding theory formulation, internal consistency, reliability, replicability and validity. For a full overview of the criteria see Supplementary Table A2.

Results

The systematic literature search was conducted in waves. The first wave was performed from December 3rd to December 23, 2021, and identified 14,135 articles across all databases (see Figure 1). After the removal of duplicates using a function of the software *Zotero* and the exclusion of thematically irrelevant articles, 7,556 articles were included in a preliminary screening of title and abstract. 168 articles remained and their full texts were retrieved. Via backwards search and screening of the articles' references, 10 further records were identified. An update to the search was performed between August 10th and August 15, 2023, leading to the inclusion of 9 additional publications. Inclusion criteria were strictly applied and documented, resulting in 95 articles remaining for data extraction and synthesis (see supplementary Tables A3-A4.1).

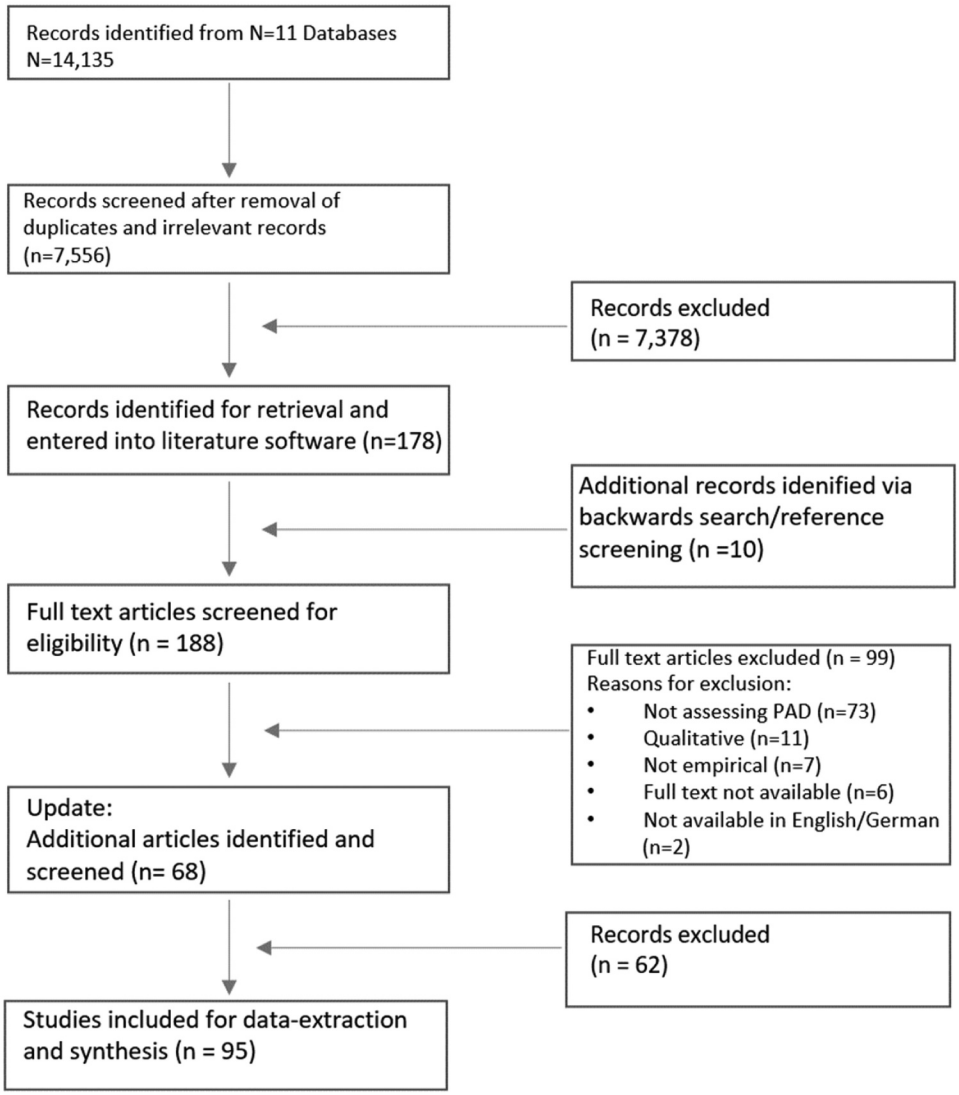

Figure 1. Flow chart of study selection.

General information on identified perceived ageism measures

Within the 95 included publications,[2] 34 psychometric multi-item measures were identified.

Nearly all measures assessed individually perceived ageism. Almost all measures (91.2%) included participants aged 50 years and over. Out of the included studies, 3 (8,8%) were conducted in non-Western regions (e.g., India, Maurya et al., 2022). Measures mostly focused on perceptions of malevolent age-discrimination. Perceived ageism measures most frequently assessed nonspecific everyday situations (i.e., daily social interactions and chores 50.0%), followed by work contexts (44.2%) and healthcare settings (8.2%), while one measure covered both work and everyday situations. Below, the identified measures will be presented and then discussed along the data extraction categories (i.e., personal experience versus others' experience), target age group, context of occurrence, global vs. situational, malevolent vs. benevolent, psychometric information).

Measures

The systematic review identified 34 perceived ageism measures. An overview of all identified measures and their characteristics is presented in Table 1. Information on their characteristics is presented below.

Personal experiences vs. other people's experiences

The majority of measures ($n = 25$, 73.5%) assessed subjective personal experiences with perceived ageism. Two of the measures (5.8%) solely assessed perceived ageism related to other people. We found that 17.6% ($n = 6$) were 'hybrid' measures (including ageism against self and others).

Target age group

Almost half of the measures ($n = 15$, 44.1%) assessed perceived ageism in samples solely consisting of older adults, while only one measure (2.9%) assessed perceived ageism among middle aged adults only. None of the measures focused on assessing perceived ageism among younger adults. The other measures were used among diverse age groups, consisting of either middle-aged and older adults ($n = 9$; 26.4%), young, middle-aged and older adults ($n = 6$; 17.6%), younger and older adults ($n = 2$; 5.8%) or young and middle-aged individuals ($n = 1$; 2.9%).

Context of occurrence

A majority of measures ($n = 16$, 47.1%) assessed perceived ageism in nonspecific contexts of everyday life, while 14 measures (41.2%) were focused on work contexts. Three measures (8.8%) assessed perceived ageism in health care-contexts.

Global vs. situational

At 19 (55.8%), more than half of the identified measures assessed situational perceived ageism. For example, an instrument to assess situational 'experiences with age discrimination in health-care settings' by Shin et al. (2019) provides the statement '*I have not received enough cancer treatment due to my age*' in one of its items, asking to answer in a binary (yes/no) format. Global approaches were mostly utilized by large panel survey modules for example via items from the *English Longitudinal Study of Ageing*, ELSA (e.g., Rippon et al., 2015), the *European Social Survey*, ESS (e.g., Ayalon, 2018; Vauclair et al., 2016) or the *Health and Retirement Survey*, HRS (e.g., Giasson et al., 2017). The 4th wave of the ESS included an ageism module, covering, among others, multiple dimensions of the construct such as stereotype content, perceived threat or intergenerational contact. Perceived ageism was assessed in the dimension 'Personal Experience of Age Discrimination.' Participants are asked to indicate how often they perceived being discriminated against at all in the past year, and which

Table 1. Taxonomy of multi-item measures to assess perceived ageism.

Nr.	Measure	Nr. Of Publications	References	Age-Group	Context	Global vs. Situational	Benevolent vs. Malignant	Reported Information on Instrument Development/Psychometric Information
1	Age Based Rejection Sensitivity Questionnaire (RSQ-Age)	2	Kang and Chasteen (2009); Marquet et al. (2019)	Older Adults	Everyday	Situational	Malignant	15-item RSQ-Age strong internal reliability (α = .91). High item – total correlations (>.44). High 1-year test – retest reliability (r(72) = .74, $p < .01$). Construct validity: positive correlations with awareness of ageism, self-consciousness, RSQ-personal, age-based stigma consciousness, negative correlation with self-esteem, no correlation with Modern Sexism Scale Factor analysis: PCA, one component retained (scree test), eigenvalue of 6.45, accounting for 43% of total variance
2	Age Discrimination Climate Scale	1	Kunze et al. (2011) Bayl-Smith and Griffin (2014), Griffin et al. (2016)	Middle Aged & Older Adults	Work	Situational	Malignant	Kunze et al. (2011): CFA revealed one-dimensional structure, sufficient model fit properties (x2 = 11.638, df = 5; CFI = 0.99, TLI = 0.99, RMSEA = 0.10). Results for intra-class correlation coefficients indicate support for the aggregation of the age discrimination scale on the company level (ICC = 0.09, ICC = 0.76 $p < .001$, ADM(J) = 1.05). Internal consistency estimates 0.98 Bayl-Smith and Griffin (2014), p. 4 items adapted from Perceived Age Discrimination Climate PCA with varimax rotation: all items loaded onto 1 factor, accounting for 71.3% of variance α = .92 Griffin et al. (2016): two samples, Coefficient alpha in Sample 1 were .89, .91, and .93 at Times 1, 2, and 3, respectively and in Sample 2 were .73, .81, and .82.

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Table 1. (Continued).

Nr.	Measure	Nr. Of Publications	References	Age-Group	Context	Global vs. Situational	Benevolent vs. Malignant	Reported Information on Instrument Development/Psychometric Information
3	Age_ISM Germany	1	Kessler and Warner (2022)	Young, Middle Aged & Older Adults	Everyday	Situational	Malignant	Adapted from The Ageism Survey (E. Palmore, 2001), European Social Survey (2008*), DEAS (German Ageing Survey, Klaus et al., 2019*)
4	Attitudes Towards Older Adults	1	Kluge and Krings (2008)	Young, Middle Aged & Older Adults	Work	Situational	Malignant	4 items, on institutional PAD, α = .64
5	English Longitudinal Study of Ageing (ELSA)	3	Rippon et al. (2014); Rippon et al. (2015); Jackson et al. (2019)	Middle Aged & Older Adults	Everyday	Global	Malignant	Questions from ELSA Wave 5 (2011-11), first wave to include PAD measures
6	European Social Survey (ESS)	9	Alvarez-Galvez (2016); Ayalon (2014); Ayalon (2018); Bratt et al. (2018); Hnilica (2011); Trusinová (2014); Vauclair et al. (2015); Vauclair et al. (2016); Jung and Kim (2023)	Young, Middle Aged &Older Adults	Everyday	Global	Malignant	Rotating ageism module in ESS wave 4 (2008), Source Questionnaire, listing ageism items (E1 – E55, E35, E38 & E39 for PAD)
7	Everyday Discrimination Scale	6	Giasson et al. (2017); White Hughto and Reisner (2018); Phibbs and Hooker (2018), Hooker et al. (2019); Carden et al. (2021); Dark et al. (2023)	Older Adults	Everyday	Global	Malignant	Giasson et al. (2017): EDS as used in Health and Retirement Survey (HRS) 6 items, α = 0.82. White Hughto and Reisner (2018), p. 11 item EDS, α = 0.94 Phibbs and Hooker (2018): EDS as used in HRS Hooker et al. (2019): EDS as used in HRS, 6 items Carden et al. (2021): none reported Dark et al. (2023), p. 9 item EDS
8	Experiences of Age Discrimination in Health-Care	1	Ayalon and Cohn-Schwartz (2021)	Older Adults	Healthcare	Situational	Malignant	Kuder-Richardson, a reliability coefficient for dichotomous scale variables, was 0.93 for this scale
9	Experiences of Discrimination (EOD, translated to Korean)	1	Chun et al. (2015)	Older Adults	Everyday	Global	Malignant	None reported
10	Experiences with Age Discrimination in Health-Care Settings	1	Shin et al. (2019)	Older Adults	Healthcare	Situational	Malignant	Patient attitudes α = .84 Caregiver attitudes α = .50 Patient experience α = .82

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Table 1. (Continued).

Nr.	Measure	Nr. Of Publications	References	Age-Group	Context	Global vs. Situational	Benevolent vs. Malignant	Reported Information on Instrument Development/Psychometric Information
11	Finish Quality of Work Life Survey (FQWLS)	1	Viitasalo and Nätti (2015)	Middle Aged & Older Adults	Work	Global	Malignant	2 item measure
12	Health and Retirement Study (HRS)	11	Ayalon (2018); Giasson et al. (2017); Han and Richardson (2015); Harada et al. (2019); Rippon et al. (2015); Sutin et al. (2016); Phibbs and Hooker (2018); Kim et al. (2019) Ayalon and Cohn-Schwartz (2021); Ayalon and Cohn-Schwartz (2021); Choi et al. (2020)	Middle Aged & Older Adults	Everyday	Global	Malignant	Includes items from Everyday Discrimination Scale Kim et al. (2019): α = .82, cited after Smith et al. (2013*).
13	Helsinki Ageing Study	1	Knuutila et al. (2021)	Older Adults	Everyday	Global	Malignant	2 item measure, None reported
14	Longitudinal Ageing Study in India (LASI)	1	Maurya et al. (2022)	Older Adults	Everyday	Global	Malignant	LASI Wave 1, none reported
15	Midlife in the United States (MIDUS)	3	Stokes and Moorman (2020); Sutin et al. (2016); Vogt Yuan (2007)	Middle Aged & Older Adults	Everyday	Global	Malignant	Sutin et al. (2016) Perceived Everyday Experiences With Discrimination Scale (Williams et al., 1997) Stokes & Moorman (2019): 9 items from Williams et al. (1997) scale No other information reported
16	Modified Version of the Workplace Prejudice/ Discrimination Inventory	1	Reeves (2013)	Older Adults	Work	Global	Malignant	15 item measure loading on a single factor, explaining 53.6% of variance (according to James et al., 1994*), alpha = .94 (according to Raggins & Cornwell, 2001*) Discrimination score used was the sum of 16 items, on a 7-point scale, with positively worded items reverse-coded, and a strong reliability (α = .95)
17	National Study of the Changing Workforce	1	Minnotte (2012)	Young, Middle Aged & Older Adults	Work	Global	Malignant	None reported

(*Continued*)

Table 1. (Continued).

Nr.	Measure	Nr. Of Publications	References	Age-Group	Context	Global vs. Situational	Benevolent vs. Malignant	Reported Information on Instrument Development/Psychometric Information
18	Nordic Age Discrimination Scale (NADS)	2	Furunes and Mykletun (2010); Carral and Alcover (2019)	Middle Aged & Older Adults	Work	Situational	Malignant	6 items, integrated part of the QPS-Nordic Survey Construct Validity: convergent and discriminant validity tested extensively Criterion Validity: tested by correlating NADS with two single items measuring perceived age inequalities in the work place Factor Structure: all 6 items loading on one factor ($r = 0.57$-0.87), CFA run for each subscale yielded single factor solutions (Eigenvalue >1) Internal Consistency: Cronbach's alpha for the NADS ranged between 0.82 and 0.87
19	Occurrences of discrimination in the workplace	1	Stypinska and Turek (2017)	Middle Aged & Older Adults	Work	Situational	Malignant	13 items, no further information reported
20	QPS Nordic	1	Vuori et al. (2019)	Middle Aged & Older Adults	Work	Situational	Malignant	4 items from QPS-Nordic, 2 items modified from scale by Bayl-Smith and Griffin (2014), no further information reported
21	'Questionnaire for the study of the phenomenon of the age-based discrimination in the healthcare system among the older people'	1	Dobrowolska et al. (2019)	Older Adults	Healthcare	Situational	Malignant	36 questions, open ended Authors state that '*data regarding validity and reliability were ascertained from the author; moreover, after having obtained her consent to the use of the questionnaires, they were piloted by involving five seniors and five nursing/medical students without any translation and cultural adaptation because the original version was in Polish. The questionnaires were understandable and straightforward*'

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Table 1. (Continued).

Nr.	Measure	Nr. Of Publications	References	Age-Group	Context	Global vs. Situational	Benevolent vs. Malignant	Reported Information on Instrument Development/Psychometric Information
22	Perceived Age Discrimination Scale	1	Banas (2007)	Older Adults	Everyday	Global + Situational	Malignant	PCA, oblimin rotation, leading to a two factor solution (general PAD and institutional PAD subscales) Final scale consisting of 25 items for the entire scale, Cronbach's alpha was equal to 0.901, for the general subscale it was also 0.901, and for the institutional subscale 0.771
23	Perceived Age Discrimination Measure	1	Garstka et al. (2004)	Young & Old Adults	Everyday	Global	Malignant	4 items validated for younger and older adults (young adult α = .68; older adult α = .77)
24	Perceived Age Discrimination Measure	1	Garstka et al. (2005)	Young & Old Adults	Everyday	Global	Malignant	2 items, adapted from 'successful measures of racial and gender discrimination'
25	Perceived Age Discrimination Measure	1	Kwesiga (2006)	Young& Middle Aged Adults	Work	Situational	Malignant	Adaptation of scale measuring perceived ethnicity based discrimination, 'ethnicity' was replaced by age, 10 item measure, Cronbach's alpha for the scales reliability in this study was .91
26	Perceived Age Discrimination Measure	1	Rabl and Del Carmen Triana (2013); Rabl and Kühlmann (2009), Rabl (2010)	Middle Aged & Older Adults	Work	Situational	Malignant	Rabl and Del Carmen Triana (2013): A scale of six items (α = 0.76) selected from Hassell and Perrewe´ (1995*), Garstka et al. (2004), and Kluge (2006*) Rabl & Kühlmann (200): α = 0.79
27	Perceived Age Discrimination Measure	1	Sabik (2015)	Older Adults	Everyday	Situational	Malignant	5 questions used to assess perceptions of age discrimination were adapted from measures of racial and gender discrimination and assessed attitudes about the treatment of older individuals (Branscombe et al., 1999*; Schmitt et al., 2002*), reliability at α = .75.
28	Perceived Age Discrimination Measure	1	Triana et al. (2017)	Middle Aged Adults	Work	Situational	Malignant	2 item measure, α = .93.

(*Continued*)

Table 1. (Continued).

Nr.	Measure	Nr. Of Publications	References	Age-Group	Context	Global vs. Situational	Benevolent vs. Malignant	Reported Information on Instrument Development/Psychometric Information
29	Perceived Age Discrimination Measure	1	Zaniboni (2015)	Young, Middle Aged & Older Adults,	Work	Situational	Malignant	Cognitive and affective domains of PAD assessed via a total of 4 items, coefficient alpha for the items was .87
30	Perceived Ageism Questionnaire (PAQ-8)	1	Brinkhof et al. (2022)	Older Adults	Everyday	Situational	Malignant + Benevolent	Two-dimensional structure, identified via EFA, replicated in a different sample using CFA. Subscales: positive and negative ageism Cronbach's alpha = .63 for the final scale Subscales:.75 for the negative- and .81 for the positive subscale. Convergent and discriminant validity evaluated by analyzing the relationship of the *PAQ-8* and its subscales with constructs like quality of life, loneliness, depression, anxiety and age
31	Perceived Discrimination (Negative Social Stereotypes)	1	Fernandez-Ballesteros et al. (2017)	Older Adults	Work, Everyday	Global	Malignant	3 items
32	Redman & Snape's Age Discrimination Scale	3	Snape and Redman (2003) Redman and Snape (2006); Fasbender and Gerpott (2021)	Middle Aged & Older Adults	Work	Situational	Malignant	Snape and Redman (2003): Cronbach's alpha was .69 Redman and Snape (2006): alpha greater than .7 Fasbender & Gerpot: (in combination with one other single item) α = .84
33	The Ageism Survey	7	E. Palmore (2001); E. B. Palmore (2004); David and Knight (2008); Halpin et al. (2017); Lyons et al. (2018): Giannouli et al. (2019); Heywood et al. (2019)	Older Adults	Everyday	Situational	Malignant	E. Palmore (2001):Factor analysis → one factor solution with Eigenvalue of 4.74, Cronbach's Alpha = .81 E. B. Palmore (2004): not reported David and Knight (2008): Cronbach's alpha between .89 & .77 Halpin et al. (2017): Cronbach's alpha at pre- and posttest: .84 and .78 Lyons et al. (2018): a = .83. Giannouli et al. (2019): none reported Heywood et al. (2019): a = .85.

(*Continued*)

Table 1. (Continued).

Nr.	Measure	Nr. Of Publications	References	Age-Group	Context	Global vs. Situational	Benevolent vs. Malignant	Reported Information on Instrument Development/Psychometric Information
34	Workplace Age Discrimination Scale (WADS)	3	Marchiondo et al. (2016); Marchiondo et al. (2019); Prazeres and Passos (2021)	Young, Middle Aged & Older Adults	Work	Situational	Malignant	Marchiondo et al. (2016): Factor analysis, internal consistency and convergent/discriminant validity reported for validation study among older and younger adults, 26 items, $\alpha = .97$, corrected item-total correlations were high ($r > .50$), yet inter-item correlations variable(.33 to .75) Marchiondo et al. (2019): Strong correlations across waves (ranging from .46 to .55), CFA revealed highly significant and strong correlation between the discrimination facets (.93, $p < .001$). Prazeres and Passos (2021): satisfying internal validity and reliability

characteristic they attribute the discrimination to (e.g., age, sex, race or ethnic background). Following up, participants are presented with questions such as *'(. . .) how often, if at all, in the past year have you felt that someone showed you a lack of respect because of your age?*' In total, the module contains four items to assess perceived ageism. For a detailed description of the measures see Supplementary Text 1.

Benevolent vs. malevolent

None of the identified measures assesses benevolent forms of perceived ageism. The PAQ-8 (Brinkhof et al., 2022) contains a subscale assessing what the authors refer to as 'positive stereotype' consisting of 3 items (e.g., *'How often in the past year have you had the feeling that people assume that you are wise and sensible because of your age?')*. All other measures focused on malevolent forms of perceived ageism or negative stereotype.

Psychometric properties

Extensive information on measurement development and psychometric properties were provided for the *PAQ-8* (Brinkhof et al., 2022). Item generation was based on a review of literature and preexisting scales, as well as piloted among a sample of 55–84-year-old adults. The measure possesses a two-dimensional structure which was identified via Exploratory Factor Analysis (EFA) and replicated in a different sample using Confirmatory Factor Analysis (CFA). Both the complete measure, as well as its' subscales (positive and negative experiences of ageism) possess adequate internal consistency with Cronbach's alpha at .63 for the final scale. The subscales of the *PAQ-8* possess higher internal consistency at .75 for the negative- and .81 for the positive subscale. Convergent and discriminant validity was evaluated by analyzing the relationship of the *PAQ-8* and its subscales with constructs like quality of life, loneliness, depression, anxiety and age.

Sufficient information was also provided for the NADS (Furunes & Mykletun, 2010). The NADS is an integrated part of the *Nordic Questionnaire for Monitoring the Age Diverse Workforce* (Lindström et al., 2008). Initial scale development, which was based on a prior literature review, revealed a one-dimensional structure of the 6-item measure via CFA. Internal consistency, criterion, construct validity and reliability were investigated and reported, leading to satisfying results (Cronbach's alpha ranging between .82 and .87). Factor structure, validity and internal consistency were confirmed by a Spanish translation and validation of the *NADS* (Alcover et al., 2022). Similarly, development and psychometric properties of the *WADS* (Marchiondo et al., 2016), which is validated for younger and older workers, are described in detail, including a deductive item generation process using qualitative surveys. The revealed unidimensional factor structure for the 9-item measure was confirmed using CFA. Additionally, convergent, discriminant and criterion-related validity were assessed with satisfactory results. Internal consistency was reported at $\alpha = .91$ and replicated by later studies (e.g., Marchiondo et al., 2019, $\alpha = .93$).

Fewer information was reported on the *Ageism Survey* (E. Palmore, 2001), which was used in 7 of the identified publications. The original publication reports that the items were generated based on a literature review, professional discussions and older adults' experiences. Factor analysis was performed, revealing a one factor solution with an eigenvalue of 4.74 and good internal consistency at $\alpha = .81$. The high internal consistency was replicated by other studies utilizing the *Ageism Survey*. Information on convergent or discriminant validity, as well as a replication of the factor structure was not reported. Similarly, the *Everyday Discrimination Scale* (Williams et al., 1997) was frequently used to assess PA, despite being a measure of everyday discriminatory experiences and not specifically PA. It is also part of large-panel survey questionnaires such as the Health and Retirement Survey. Cronbach's alpha was reported in some publications (e.g., Giasson et al., 2017).

Other measures for which information on factor structure and internal consistency was reported were the *Age Discrimination Climate Scale* (Kunze et al., 2011), the *Modified Version of the Workplace Prejudice/Discrimination Inventory* (Reeves, 2013), the *Perceived Age Discrimination Scale* (Banas,

2007) and the *RSQ-AGE* (Kang & Chasteen, 2009). The remaining measures did either only report on internal consistency or did not provide information on the measures' psychometric properties.

Discussion

To improve and elaborate our scientific understanding of perceived ageism, reliable and valid assessment is necessary. The review identified 95 publications in which perceived ageism was assessed. A majority of measures was developed within Western contexts, indicating a need for thorough intercultural validations. We identified 34 multi-item measures that are currently being used to assess perceived ageism. The majority of perceived ageism measures assesses personal experiences of ageism (i.e., personal experience). Two measures (the NADS by Furunes & Mykletun, 2010 and the Perceived Discrimination measure by; Fernandez-Ballesteros et al., 2017) focus on perceptions of others (e.g., older workers) being the target of ageism. We identified six 'hybrid measures,' assessing both ageism as directed against the respondents themselves or others: a scale from the *Helsinki Ageing Study* as used by Knuutila et al. (2021); a modified version of the *Workplace Prejudice/Discrimination Inventory* (Reeves, 2013); the measure used by Dobrowolska et al. (2019), and the *Perceived Age Discrimination Measures* used by Sabik (2015) and Zaniboni (2015).

Extraction of psychometric information suggests that for some multi-item measures, information on reliability and validity is not available, indicating possible risk of bias.

Recently developed measures like the *PAQ-8* (Brinkhof et al., 2022), the *WADS* (Marchiondo et al., 2016) and *NADS* (Furunes & Mykletun, 2010), which all assess personal experiences of ageism, are estimated to hold a low risk of bias due to reported thorough efforts to ensure validity and reliability. Due to their novelty, further validations, possibly across different social and cultural contexts, would add greatly to the body of existing instruments.

Both the *Ageism Survey* and the *Everyday Discrimination Scale* are measures assessing personal experiences of ageism and are frequently used in current research. Yet, there is relatively little information provided on their psychometric properties or validation efforts. For future research a reevaluation may be advisable to assure that the measures adequately assess the desired facet of ageism.

The *Ageism Survey* is intended to elicit the recall of past discriminatory events. All items end with 'due to age' and may therefore tend to lead to distorted reports of perceived ageism: if the participants did not consider age being a relevant factor in, for example, not being treated well by waiting staff or not receiving a promotion, the wording of the items may influence participants' recollection of events, leading to a misrepresentation of their actual perceptions. Even though it essentially measures experiences and frequencies of perceived ageism, its aims include measuring the prevalence of ageism (E. Palmore, 2001), indicating that it may not be fit to assess perceived ageism as a facet of ageism.

The *Everyday Discrimination Scale* was developed and validated on a sample of people of African American descent, the construction heavily focused on assessing interracial differences (Williams et al., 1997). While being discriminated against due to age is a possibility every individual may face across their lifespan, racial discrimination is heavily and unproportionally perpetuated against African Americans. Equating racial and ageist discrimination and assessing them via the same measure may lead to reduced validity of the results and an increased risk of bias in assessment.

The vast majority of measures assessed perceived ageism among older adults and individuals in late mid-life. We did not identify any measure assessing perceived ageism exclusively among younger adults, revealing a large research gap, especially considering that young people frequently report perceived ageism and its negative consequences (Abrams et al., 2011; Gee et al., 2007).

Measures were generally conceptualized for work or everyday contexts, while those specifically addressing health-care contexts were rare. While perceived ageism itself is associated with adverse health outcomes (Chang et al., 2020), it may also pose a barrier to health-care utilization (e.g., Rivenbark & Ichou, 2020). The possible consequences of perceived ageism for mental- and physical

health and treatment-seeking behavior underline the importance of establishing a reliable measure of perceived ageism in medical contexts. One possibility of implementing this may be via patient reported experience measures (PREM; Kingsley & Patel, 2017). Implementing the assessment of perceived ageism as a facet of quality control might be an economic and feasible approach to cover the research gap in healthcare contexts.

A distinction between malevolent and benevolent perceived ageism is rarely made. While both could lead to harmful outcomes for the receiver, identifying possible differences in the antecedents and differences in perception of benevolent and malevolent ageism is necessary to grasp existing nuances of perceived ageism. Similarly, the majority of identified measures assesses perceived ageism as experienced by an individual, whereas measures assessing individual perceptions of other people being exposed to ageism remain rare.

Lastly, an important research gap that has not yet been pointed to in this review is the intersection between perceived ageism and objective ageism, for example by assessing the number of formal complaints issued in accordance with anti-discrimination laws and policies. Anti-discriminatory acts have been implemented globally to prevent and target ageism (Harcourt et al., 2010). The approach of using the number of formal complaints within an institution as a proxy for perceived ageism does not appear in the results. Still, this approach has been utilized in former research (e.g., Berger, 2009; Weiss & Maurer, 2004) and thus opens up the field to assessing perceived ageism in formal or legal contexts.

Strengths and limitations

To the best of our knowledge, this systematic review is the first to provide an overview of existing perceived ageism measures. We performed a detailed search of multiple data bases, followed by data extraction/synthesis and, based on a categorization performed independently by two raters, organized the identified measures on a taxonomy. This provides a comprehensive overview of how perceived ageism has been assessed in the past and simultaneously reveals existing research gaps.

Despite best efforts to conduct a comprehensive literature search, it is possible that publications and relevant measures were missed, possibly also because we only included research that was published in either English or German. Additionally, the criteria chosen for data extraction and analyses, even though based and adapted on a literature search and theoretical considerations, might not be exhaustive.

Implications for future research

The results of our review suggest that even though perceived ageism is assessed in a number of ways, the current body of measures is not exhaustive. Research gaps exist for the assessment of perceived ageism among younger age groups, for health-care and non-Western contexts. Re-evaluation of existing measures and the development of new ones is necessary to effectively address the potentially adverse consequences of perceived ageism.

Notes

1. Due to practical constraints such as survey length or respondent burden, the use of certain single items may sometimes be useful (Fisher et al., 2016). Supplementary Table A5 'Identified Single Items' presents the 15 single perceived ageism measures that we identified using the search strategy below without the exclusion criterion 'single item measures' (see this link).
2. Complete references for all identified publications are available in the supplementary tables.

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No potential conflict of interest was reported by the author(s).

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