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Kroon, A.C.; van Selm, M.; ter Hoeven, C.L.; Vliegenthart, R.

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ORIGINAL ARTICLE

## Poles Apart: The Processing and Consequences of Mixed Media Stereotypes of Older Workers

Anne C. Kroon, Martine van Selm, Claartje L. ter Hoeven, & Rens Vliegenthart

Amsterdam School of Communication Research, University of Amsterdam, 1001NG, Amsterdam, The Netherlands

*This study uses the Stereotype Content Model to examine how mixed-media stereotypes about older workers affect the implicit activation and application of competence and warmth stereotypes among employees. By means of a 2×2 experiment, we show that a newspaper article portraying older workers in a stereotypical manner (i.e., high rather than low in warmth, low rather than high in competence) inhibits and evokes negative employability perceptions, resulting in a net negative effect on intentions to hire an older worker. Findings indicate that mixed-media portrayals have stronger effects on implicit stereotype activation compared to stereotype application. We propose a tailored media-based stereotype reduction strategy, whereby the negative component of older workers' stereotypes is replaced by stereotype-disconfirming information.*

**Keywords:** Stereotype Content Model, Stereotype Activation and Application, Mixed Stereotypes, Warmth and Competence, Older Workers, Employability.

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As a nearly inescapable feature of everyday life, mass media can modify or strengthen stereotypes by depicting social groups in a biased manner, and consequently color our judgments (e.g., Ramasubramanian, 2011). Cumulating evidence suggests that already a single exposure to negative media stereotypes can activate prejudiced responses (Burgess, Dill, Stermer, Burgess, & Brown, 2011; Ramasubramanian, 2011). The focus of previous research has been on the consequences of one-dimensionally negative media stereotypes. Yet, mass media stereotypes of social groups are not

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Corresponding author: Anne Kroon; e-mail: A.C.Kroon@uva.nl

[Correction added on 8/30/2016, after first online publication: Author Claartje L. ter Hoeven was incorrectly listed as Claartje ter Hoeven.]

exclusively negative. Content analyses of news and entertainment media have shown that mass media's portrayals of social groups are often mixed, comprising both positive and negative stereotypical evaluations (Burgess et al., 2011; Lepianka, 2015; Schemer, 2012). Because mixed-media stereotypes promote simplified generalizations that are inconsistent with reality they represent a source of error to judge certain social groups accurately and equally.

Media portrayals of older workers offer a particularly interesting case to study consequences of mixed-media stereotypes. Being perceived as both warm (e.g., loyal, trustworthy) and incompetent (e.g., unproductive, inflexible), stereotypes of older employees can be characterized as truly mixed (Krings, Sczesny, & Kluge, 2011; Posthuma & Campion, 2009). Consistent with the content of these stereotypes, recent content analyses have shown that news media portray older employees as warm and incompetent (Kroon, Van Selm, Ter Hoeven & Vliegenthart, in press). These mixed-media portrayals may contribute to salient stereotypes about older workers, which are thought to underlie age discrimination on the labor market (Van Selm & Van der Heijden, 2014). Older workers are generally perceived as less employable and have considerable lower re-employment chances (OECD, 2006). Understanding the consequences of mixed-media stereotypes of older workers is important in the light of an aging population, as ageist beliefs may harm a growing group of individuals, and prevent organizations from appreciating older workers' human capital, herewith jeopardizing their future competitive advantage.

It remains, however, unclear *whether* and *how* mixed-media stereotypes in the media about older workers contribute to unequal employment opportunities. In an employment setting, one would expect that both stereotype dimensions may lead to conflicting outcomes: Although older workers may be perceived as unemployable based on low competence perceptions (e.g., not efficient), they are seen as employable based on high-warmth stereotypes (e.g., amicable colleagues, Cuddy, Glick, & Beninger, 2011). These findings point to opposing pathways that may explain the process through which mixed-media stereotypes evoke or inhibit accurate employability perceptions (Krings et al., 2011).

This study addresses the missing link between media portrayals and perceptions of social groups in the significant context of workforce aging, yet, the mechanisms studied can potentially be generalized to other social groups that receive mixed stereotypes. The paper's key contribution lies in developing and testing a conceptual model of how mixed-media stereotypes shape discriminatory responses, by investigating *why* these effects occur. This conceptual model is grounded in the distinction between stereotype activation and application (Gilbert & Hixon, 1991; Kunda & Sinclair, 1999; Kunda & Spencer, 2003). Previous studies have mainly focused on the extent to which media can activate stereotypes (i.e., how stereotypes become cognitively accessible), without investigating whether such media-induced stereotypes are subsequently applied (i.e., used when making a judgment or decision in a subsequent situation, Kunda & Spencer, 2003; see for an exception Ramasubramanian, 2011). We extend previous work in two ways. First, we use the model to demonstrate how

exposure to mixed-media content elicits both positive and negative implicit stereotypical evaluations. Second, the model shows how these contradictory responses in turn evoke and inhibit discriminatory outcomes, resulting in a net negative effect on intentions to hire an older worker. These findings clarify which domains of media stereotype content should be targeted to diminish the discriminatory responses toward older workers, as well as other social groups that receive mixed stereotypes.

### **The stereotype content model and the stereotype activation: Application framework**

Convincingly captured by the Stereotype Content Model (SCM), the mixed nature of stereotype content has received widespread recognition. According to the SCM, group stereotypes result from two underlying dimensions: warmth (e.g., sincere, warm, good-natured, benevolent) and competence (e.g., capable, efficient, competent, intelligent). The evaluation of social groups as relatively high or low on warmth and competence provides a schemata that sorts our social worlds, and helps us to make judgments and decisions without spending too much cognitive efforts (Cuddy *et al.*, 2011). Notably, competence and warmth judgments can predict meaningful life outcomes, such as who we decide to promote or hire (Cuddy *et al.*, 2011). Although some social groups are appraised as unambivalently positive (i.e., high on both dimensions), or negative (i.e., low on both dimensions), the SCM posits that most social groups receive mixed stereotypes (i.e., relatively high on one dimension, relatively low on one dimension).

This is especially the case for older workers. In comparison to younger workers, older workers are generally seen as less competent, that is, less productive, efficient, trainable, adaptive to change, and capable of working with new technology. At the same time, people believe that as workers age, they become warmer, that is, more trustworthy, reliable, committed and loyal (Krings *et al.*, 2011; Posthuma & Campion, 2009; Van Dalen, Henkens, & Schippers, 2010). These stereotypes are largely inconsistent with empirical evidence of older workers' characteristics and competences (Ng & Feldman, 2008).

### **Stereotype-activation hypothesis: Media-activation of implicit warmth and competence stereotypes**

Stereotypical associations in memory can become activated in a subsequent situation by chronic factors and situational, peripheral cues (Kunda & Spencer, 2003), for instance from mass media. This "activation-effect" is also referred to as priming or accessibility effects (Ramasubramanian & Oliver, 2007). To assess whether exposure to biased news content may activate warmth and competence stereotypes, this study relies on *implicit* stereotype measures. Such measures tap into the strength of automatic associations between a social group (e.g., older employees) and certain attributes or characteristics (e.g., warmth or competence, Carlsson & Björklund, 2010; Gawronski & Bodenhausen, 2006). The ease of one concept to activate the other indicates the strength of the automatic association (Gawronski & Bodenhausen, 2006). The strength of these cognitive associations is often measured with latency-response

measures, such as the implicit association test (IAT, Greenwald, Nosek, & Banaji, 2003), which we also use.

Previous research has emphasized the importance of using implicit measures, because explicit measures are susceptible to social desirability bias and a lack of introspection (Arendt, 2013). It therefore comes as no surprise that media effects of biased content may remain hidden when relying solely on explicit measures (e.g., Burgess et al., 2011). So far, only a handful of studies investigated the impact of mass-mediated content on implicit stereotypes (e.g., Arendt, 2013; Burgess et al., 2011). These studies demonstrate that implicit stereotypes can become activated even after a single exposure to stereotypical media content, and with potential greater ease than explicit stereotypes. In fact, there is a low threshold for biased newspaper articles to activate implicit stereotypes: Relatively low doses of biased media exposure are sufficient to reach a significant difference on implicit outcomes (Arendt, 2013). Importantly, as a subconscious process, implicit stereotypes are, at least partly, beyond the direct control of individuals (Devine, 1989). Irrespective of whether individuals' belief stereotypes are accurate, they can become activated on an implicit level (Arendt, 2013).

Although the focus of previous research has been on the media-activation of one-dimensional (good vs. bad) implicit stereotypes, there is evidence suggesting that divergent domains of stereotype content can also become activated by mediated stereotypical cues. Studies have shown that warmth and competence stereotypes operate on an implicit level (e.g., Carlsson & Björklund, 2010), and, importantly, that these divergent domains of stereotype content can become activated after exposure to stereotype-confirming or disconfirming images of mixed stereotyped targets (De Lemus, Spears, Bukowski, Moya, & Lupiáñez, 2013).

Building on these findings, we anticipate that mixed-media stereotypes can activate diverging evaluations on the warmth and competence dimension. To be precise, we expect that news articles portraying older workers in a stereotype-confirming manner, that is, as high in warmth and low in competence, instead of news articles that describe older workers in a stereotype-disconfirming manner, that is, as low in warmth and high in competence, will activate positive warmth stereotypes and negative competence stereotypes. Hence, we hypothesize:

**H1<sub>a</sub>:** Exposure to low-competence (vs. high-competence) media stereotypes will negatively affect implicit competence stereotypes.

**H1<sub>b</sub>:** Exposure to high-warmth (vs. low-warmth) media stereotypes will positively affect implicit-warmth stereotypes.

### **Stereotype-application hypotheses: effects on employability perceptions and intentions to hire an older worker**

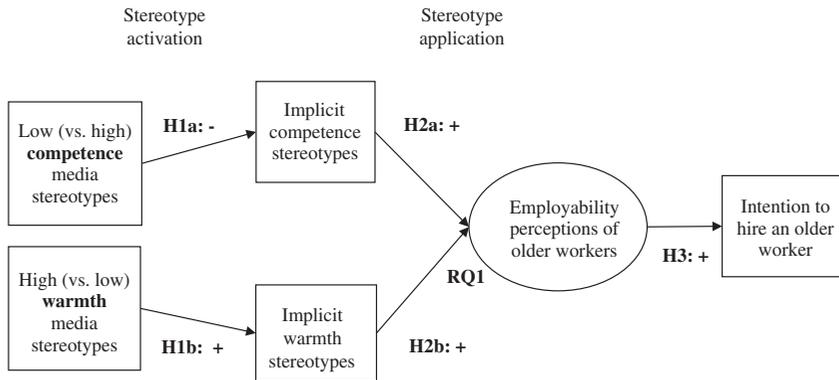
We now turn to the question whether activated warmth and competence stereotypes will be applied when respondents are asked to make overt judgments about older workers' employability. Once stereotypes are activated, they have the potential to color judgments and decisions regarding stereotyped individuals (Kunda & Spencer, 2003).

This relates to applicability effects in general media effects research (most notably framing; Scheufele & Tewksbury, 2007). However, automatic activation of stereotypes does not necessarily imply automatic application (Kunda & Spencer, 2003). In fact, once stereotypes are activated receivers have roughly two options. First, they may choose to correct their responses for possible influences of their activated stereotypes, that is, inhibit its application to members of stereotyped groups (Gilbert & Hixon, 1991). Second, individuals may consciously or unconsciously apply their activated stereotypes, and consequently respond in a biased manner (Gawronski & Bodenhausen, 2006; Hansen & Hansen, 1988; Sinclair & Kunda, 1999).

Previous research suggests that stereotypes activated by media content are likely to follow the unconscious route, that is, automatic application. According to Hansen and Hansen (1988), receivers are unlikely to consciously correct media-activated stereotypes, which increases the likelihood that these stereotypes are subsequently applied. Hansen and Hansen acknowledge that such automatic application may be inhibited when individuals recognize the stereotypicality of media content, and therefore question its agreement with reality. However, the scholars contend that this is not likely to happen in response to media exposure, as receivers may not consciously identify media as a source of alteration in their level of stereotype accessibility and consequent judgment distortion (p. 290). They demonstrate this by showing that participants' primed sex role schemas were applied to impressions of interactions between men and women after exposure to stereotypical music videos. In a similar vein, Ramasubramanian (2011) found that exposure to stereotypical African American media characters was sufficient to set in motion a sequence of stereotype activation and application effects on related outcomes, such as attributions for out-group failures and a lack of support for affirmative action policies.

These findings demonstrate stereotype application of media-activated explicit stereotypes. It stands to reason that implicit stereotypes will have comparable, or even stronger application effects. As implicit stereotypes are relatively unconscious in nature, recipients may be unaware of media-activated changes in their level of implicit stereotypes, which in turn increases the likelihood of stereotype application (Hansen & Hansen, 1988).

In the context of this study, we expect that implicitly activated high-warmth and low-competence stereotypes exert opposing application effects on judgments of older workers' employability. First, low-competence stereotypes predict disrespect (Cuddy *et al.*, 2011). Applied to an organizational context, one may therefore expect that low competence leads to exclusion and negative employability perceptions (Krings *et al.*, 2011). Second, and conversely, warmth beliefs lead to sympathy (Krings *et al.*, 2011). Based on warmth stereotypes, one may thus expect inclusion, and positive employability perceptions (Cuddy *et al.*, 2011). Drawing on the above-reviewed literature, we expect that implicit warmth and competence stereotypes will be applied to employability judgments, and thus mediate the relationship between exposure to warmth and competence media stereotypes and employability perceptions. We formulate:



**Figure 1** Conceptual model.

**H2<sub>a</sub>**: The negative effect of exposure to low- (vs. high-) competence media stereotypes on employability perceptions will be mediated by implicit competence stereotypes.

**H2<sub>b</sub>**: The positive effect of exposure to high- (vs. low-) warmth media stereotypes on employability perceptions will be mediated by implicit warmth stereotypes.

Ultimately, we are interested in the net effect of high-warmth and low-competence media stereotypes on employability: Do these mixed stereotypes overall result in a positive (i.e., more favorable employability perceptions) or a negative (i.e., less favorable employability perceptions) effect? As mentioned, previous research did not consider the possibility of competing stereotype effects. Relatedly, however, a growing body of literature on incongruent media information suggests asymmetry in responses to negative and positive information. Work on competitive framing effects has shown that negative frames outweigh the impact of positive frames (Wise & Brewer, 2010). Similarly, negatively valenced information has been shown to exert stronger influences than positive information (e.g., Soroka, 2006). Due to a lack of research, it is unclear whether this logic also applies to the domain of mixed-media stereotypes. We formulate the following research question:

**RQ1**: What is the net effect of low-competence (vs. high-competence) and high-warmth (vs. low-warmth) media stereotypes on employability perceptions?

Finally, we consider the influence of employability perceptions on hiring decisions of older employees. Employability perceptions directly relate to workers' labor market value. Judgments about a person's employability are therefore crucial in predicting career success (e.g., Van der Heijde & Van der Heijden, 2006). Based on this, we anticipate that older workers' perceived employability is predictive of the intention to hire an older worker. We hypothesize:

**H3**: Employability perceptions of older workers positively predict intentions to hire an older worker.

Figure 1 summarizes our expectations.

## Method

### Sample

As media stereotypes of older workers are likely being most influential within organizational contexts — where decisions are made on a daily basis about whom to hire, collaborate with, promote, or fire — a sample of employees was recruited from a research panel provided by a Dutch research company ( $N = 308$ ). Only respondents above 18 years of age, and those who indicated that they worked at least 5 hours per week were selected to participate in the experiment. To make sure participants paid attention and read the instructions in the survey carefully, they were exposed to an attention check question, which was failed by 59 respondents, making the final sample 249. Participants were between 21 and 65 years of age ( $M = 45.64$ ,  $SD = 10.45$ ). Males represent 55.8% of the sample. 73.5% of the participants indicated that they worked 30 hours or more per week. Totally 41.4% of the participants worked in a private-sector organization, 48.6% in a public-sector organization, and 10.0% in a public-private partnership organization. More than a quarter (26.5%) of the participants indicated that they hold a managerial position. Most participants (60.6%) indicated that they work with older workers (i.e., older than 45 years of age) on a daily basis.

### Procedure

Participants were told that they would participate in a general study on effects of news articles, and received no incentives to participate.<sup>1</sup> Participants could access the experiment through clicking on a link that was made available in an e-mail that they received. After participants had declared that they had been informed in a clear manner about the nature and method of the research, they were exposed to one of the four manipulated newspaper articles. They could take as much time as they wanted to read the material. Subsequently, participants answered the manipulation check questions and completed two response-latency tasks to measure their implicit warmth and competence stereotypes. Then, participants responded to items measuring employability perceptions and intentions to hire an older worker. Several demographic measures concluded the experiment.

### Experimental design

An online experiment was conducted, based on a 2 (*level of warmth stereotypes* [low-warmth vs. high-warmth])  $\times$  2 (*level of competence stereotypes* [low-competence vs. high-competence]) factorial design.<sup>2</sup> Four different versions of a news article were designed for the purpose of this study. All news articles addressed the same topic, namely job-seeking behaviors of older job applicants. This is a common topic in news articles about older workers in Dutch newspapers (Kroon, Van Selm, Ter Hoeven & Vliegenthart, 2015). Characteristics of original news articles about older workers in Dutch newspapers were combined and manipulated, with the aim to make the texts comparable and externally valid. The headline and introductory paragraph, addressing online and offline job-seeking advice of older job applicants, were made identical in all the conditions. Participants were randomly assigned to one of the four

experimental conditions. For a complete overview of the stimulus material, please consult Appendix S1, Supporting Information.

### **Independent variables**

#### *Low- (vs. high-) competence media stereotypes*

The level of competence media stereotypes concerned individual mastery capacities of older employees, namely productivity, efficiency, flexibility, skillfulness, and ability (Cuddy et al., 2011; Van Dalen et al., 2010). In the *low-competence media stereotype condition*, these characteristics were framed negatively, such as: “Generally, the productivity of workers declines with age,” and “[...] older workers are not motivated to learn new skills and they are not capable of working with the latest technologies.” In the *high-competence media stereotype condition*, these characteristics were framed positively, such as: “Generally, the productivity of workers increases with age” and “[...] , older workers are eager to learn and well informed about the latest technologies.”

#### *High- (vs. low-) warmth media stereotypes*

The level of warmth media stereotypes concerned the social capacities of older workers, namely friendly, sincere, collegial, honest, and trustworthy (Cuddy et al., 2011; Van Dalen et al., 2010). In the *high-warmth media stereotype condition*, these characteristics were framed positively, such as “They [older workers] are often involved with colleagues’ work situation and personal life” and “Older workers are generally perceived as honest and truthful by employers.” In the *low-warmth media stereotype condition*, these characteristics were framed negatively in the news article, such as: “They [older workers] are generally not involved with colleagues’ work situation and personal life” and “Older workers are generally perceived as dishonest and untruthful by employers.”

### **Manipulation check**

Respondents were asked to indicate to which extent older workers were portrayed as respectively competent and warm in the news article they had just read, on a 7-point scale (1 = completely disagree, 7 = completely agree). Participants in the high-competence condition rated older workers as significantly more competent ( $M = 4.00$ ,  $SD = .86$ ) than participants in the low-competence condition ( $M = 2.31$ ,  $SD = 1.10$ ),  $F(1, 247) = 182.46$ ,  $p < .001$ . Participants in the high-warmth condition rated older workers as significantly warmer ( $M = 4.00$ ,  $SD = .64$ ) than participants in the low-warmth condition ( $M = 1.48$ ,  $SD = .81$ ),  $F(1, 247) = 733.45$ ,  $p < .001$ . These results confirm the effectiveness of the manipulations.

### **Mediators and dependent variables**

#### *Implicit competence and warmth stereotypes*

Implicit stereotypes were measured with two separate Brief Implicit Association Tests (BIATs) (Sriram & Greenwald, 2009). Because the BIAT is less taxing for participants

compared to the IAT, and its validity and predictive value has been proved in experimental research (Yang, Shi, Luo, Shi, & Cai, 2014), it offers a convenient method to measure multiple implicit stereotypes in one experimental design. The BIATs were composed of two combined-task blocks, with two target categories (younger and older workers) and two attribute categories (competent and incompetent *or* warm and cold). In each block, one of the target categories becomes focal (i.e., a block with younger worker as focal category is followed by a block with older worker as focal category, or vice versa). In addition, the positive attribute category remained focal in both combining tasks (competent/warm), while the negative attribute category remains non-focal in both combining tasks (incompetent/cold). During the task, words and pictures automatically appeared that did or did not match the target or attribute category presented on the screen. Participants were asked to classify these words and pictures into superordinate categories.<sup>3</sup>

Regarding the target categories, the same visual stimuli were used in both the competence and warmth BIAT. Using a database representative of age groups across the lifespan (Minear & Park, 2004), pictures of neutral faces were selected of young (two males, two females, age-range: 19–23 years) and old (two males, two females, age range: 61–65 years) adults. The following verbal stimuli were used for the attribute categories in the Competence BIAT: Competent (Competent, Productivity, Skillful, Able, and Efficient); Incompetent (Incompetent, Unproductive, Unskilled, Unable, and Ineffective). The following verbal stimuli were used for the attribute categories in the Warmth BIAT: Warm (Warm, Nice, Friendly, Sincere, and Honest); Cold (Cold, Not nice, Unfriendly, Insincere, and Dishonest). Participants were instructed to “Press the Key L if the word or picture matched one of the two categories presented on the screen,” and “Press Key A for anything else.” Per block, 31 trials were completed. Because the results of the first trials might have been influenced by participants’ unfamiliarity with this type of measure, the first three trials of each block served as a try out and were thus not analyzed. The order in which the Competence and Warmth BIAT appeared was randomized across participants. Additionally, per BIAT, the order in which the categories younger worker and older worker were made focal was ordinarily counterbalanced. BIAT scores were calculated using the algorithm suggested by Greenwald *et al.* (2003), resulting in two separate *D*-scores for implicit warmth and competence stereotypes. Scores above zero indicate that the older worker–competence/warmth association is stronger than the younger worker–competence/warmth association.

#### *Employability perceptions of older workers*

The extent to which participants believe older workers are employable was measured with a shortened version of the competence-based and multidimensional employability measurement scale adapted from Van der Heijde and Van der Heijden (2006).<sup>4</sup> Specifically, individuals were asked to honestly indicate the degree to which they agreed with 16 questions measuring four<sup>5</sup> subdimensions on a 6-point scale (1 = not at all, 6 = to a considerable degree). A second-order CFA was constructed

by assigning the items to the four sub-dimensions (Occupational Expertise, Anticipation and Optimization, Personal Flexibility, and Corporate Sense), which in turn were assigned to the single second-order factor Employability Perceptions of Older Workers. All items loaded on one of the subdimensions, with factor loadings above 0.66. The model was improved by adding a few covariances among measurement errors within factors, as suggested by the modification indices. One between-factors error term was added.<sup>6</sup> The scales are unidimensional at the second-order level. The final CFA-model fits the data well:  $\chi^2(95) = 103.83$ ,  $p = .25$ ; comparative fit index (CFI) = .99; standardized root mean square residual (SRMR) = .04; Tucker Lewis index (TLI) = .99; root mean square error approximation (RMSEA) = .019, 90% confidence interval (CI) = 0.00–0.04.

Occupational Expertise included five items that focused on issues of work-related knowledge and competence of older workers. Higher scores indicated more perceived occupational expertise of older workers ( $M = 4.45$ ,  $SD = .50$ ,  $\alpha = .84$ , example item: "I have confidence in older workers' capacities"). Four items measured Anticipation and Optimization, which addressed perceptions of the extent to which older workers proactively adapt to future changes that might influence the work context. Higher scores indicate higher perceived Anticipation and Optimization ( $M = 3.40$ ,  $SD = .68$ ,  $\alpha = .86$ , example item: "Older workers are focused on continuously developing themselves"). Five items measured Personal Flexibility, which addressed the extent to which older workers passively adapt to changes in their work environment. Higher scores indicate higher perceived Personal Flexibility of older workers ( $M = 3.43$ ,  $SD = .66$ ,  $\alpha = .92$ , example item: "Older employees easily adapt to changes in their workplace"). Finally, Corporate Sense was measured with two items focusing on the extent that older workers accept collective responsibilities and share knowledge and experience. Higher scores indicate higher perceived corporate sense of older workers ( $M = 4.20$ ,  $SD = .78$ ,  $\alpha = .68$ , example item: "Older workers support business processes within their organization."). The four subdimensions formed a reliable scale ( $M = 3.88$ ,  $SD = .53$ ,  $\alpha = .79$ ).

#### *Intention to hire an older worker*

Intention to hire an older worker was measured with the use of a simulation and decision task. Participants were asked to imagine they were the employer of a travel agency looking for a new travel agent. Additionally, participants were told that two letters of application had arrived. To decide whom to hire, participants were asked to carefully read two short biographies of the job applicants. One applicant was born in 1987 (28 years of age), while the other was born in 1960 (55 years of age). Except for age, the two applicants had the same profiles: They were both male and had a comparable educational background and work experience. Several precautions were taken to assure that no other factor than the age of the job applicant influenced participants' responses. First, the year of birth of the job applicants was randomly reversed between the biographies, so that half of the participants read the biography in which job applicant A was old and applicant B was young, whereas the other half of the participants

read the biography in which job applicant A was young and B was old. Second, a pretest confirmed that when the applicant's age was excluded from the biographies, exposure led to a nonsignificant difference in hiring intention.<sup>7</sup> Last, as evidenced in previous research, travel agent is an age-neutral job category, perceived suitable for both younger and older employees (Finkelstein, Burke, & Raju, 1995). After reading their biographies, participants' hiring intention was measured with the following single item: "What is the chance that you would hire [older job applicants name]?" on a 7-point scale (1 = very unlikely, 7 = very likely). Higher scores indicated higher intention to hire the older worker ( $M = 4.49$ ,  $SD = 1.31$ ).

### Analysis

We start with a review of descriptive statistics and preliminary analyses. Final analyses are done through structural equation modeling (SEM), using AMOS v.21 software with Maximum Likelihood estimation, which allows us to test the hypothesized relations between media competence and warmth stereotypes, implicit competence and warmth stereotypes, employability perceptions and hiring intentions. Our hypotheses were tested in a Structural Regression model predicting intentions to hire an older worker, as the outcome of employability perceptions and implicit warmth and competence stereotypes. In this model, the error term of the stereotype measures was allowed to covary, reflecting the assumption that the two stereotype dimensions may have causes in common which are not explicitly modeled (Kline, 2011, p. 115).

## Results

### Descriptive results

Tables 1 and 2 display the descriptive results of the dependent variables. Mean scores (measured in milliseconds) of the implicit competence ( $M_{D\text{Score}} = 0.00$ ,  $SD = 0.53$ ) and warmth stereotypes ( $M_{D\text{Score}} = -0.078$ ,  $SD = 0.55$ ) are relatively close to zero. This indicates that across conditions, participants associated younger and older workers with competence and warmth categories in a comparable speed. Across all groups, participants scored slightly above the midpoint of the employability perceptions scale ( $M = 3.88$ ,  $SD = 0.53$ ), indicating that on average, participants believed older workers were reasonably employable. Last, participants were on average relatively positive about hiring an older worker ( $M = 4.49$ ,  $SD = 1.31$ ).

### Preliminary analyses

Before we proceed to the results of the hypothesized model, preliminary two-way multivariate analysis of variance (MANOVA) was performed. MANOVA revealed a marginally significant main effect of the level of competence media stereotypes on the dependent variables:  $F(4, 242) = 2.41$ ,  $p < .05$ , Wilks's  $\lambda = .96$ , partial  $\eta^2 = .04$ . Separate analyses of variance (ANOVAs) revealed a marginally significant effect on implicit competence stereotypes, so that participants who were exposed to high-competence media stereotypes were faster in associating older workers relative

**Table 1** Correlations, Means, and Standard Deviations for the Endogenous Variables

	Implicit Competence Stereotypes	Implicit Warmth Stereotypes	Employability Perceptions of Older Workers	Intention to Hire an Older Worker	<i>M</i>	<i>SD</i>
Implicit competence stereotypes	1				0.001	0.530
Implicit warmth stereotypes	.309**	1			-0.078	0.553
Employability perceptions of older workers	.043	.130*	1		3.880	0.525
Intention to hire an older worker	.033	.074	.247**	1	4.486	1.305

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

to younger workers with competence characteristics ( $M_{D\text{ Score}} = 0.07$ ,  $SD = 0.50$ ), compared to participants who saw low-competence media stereotypes ( $M_{D\text{ Score}} = -0.07$ ,  $SD = .55$ ),  $F(1, 247) = 3.84$ ,  $p = .051$ . In addition, participants who were exposed to high-competence media stereotypes reported more positive employability perceptions about older workers ( $M = 3.95$ ,  $SD = 0.50$ ) compared to those exposed to low-competence media stereotypes ( $M = 3.81$ ,  $SD = 0.54$ ),  $F(1, 247) = 4.606$ ,  $p < .05$ . Also the main effect of level-of-warmth media stereotypes on the dependent variables was significant:  $F(4, 242) = 4.90$ ,  $p < .01$ , Wilks's  $\lambda = .924$ , partial  $\eta^2 = .076$ . Separate univariate ANOVAs revealed a significant effect of warmth media stereotypes on implicit warmth stereotypes: Participants who were exposed to high-warmth media stereotypes were significantly faster in associating older workers relative to younger workers with high-warmth characteristics ( $M_{D\text{ Score}} = 0.08$ ,  $SD = 0.56$ ), compared to participants who saw low-warmth media stereotypes ( $M_{D\text{ Score}} = -0.22$ ,  $SD = 0.52$ ),  $F(1, 247) = 5.59$ ,  $p < .001$ . No other significant interaction effects of the independent variables on the outcome variables were found.

### Hypothesis testing

To test our hypotheses, we now turn to the results of the hypothesized SR model. Our hypothesized model fits the data well:  $\chi^2(174) = 194.78$ ,  $p = .134$ ; CFI = .99; TLI = .98; SRMR = .04; RMSEA = .02, 90% CI = 0.00–0.04, AIC = 308.78<sup>89</sup>.

#### *Stereotype-activation hypothesis*

We expected a negative activation effect of exposure to low- rather than high-competence media stereotypes on implicit competence stereotypes (H1<sub>a</sub>), and a positive activation effect of exposure to high-warmth rather than low-warmth

**Table 2** Mean Differences Between Groups

	High-Warmth Stereotypes		Low-Warmth Stereotypes		<i>F</i> ( <i>df</i> )	High-Competence Stereotypes		Low-Competence Stereotypes		<i>F</i> ( <i>df</i> )
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Implicit competence stereotypes	0.048	0.550	-0.041	0.511	1.751(1,247), ns	0.065	0.504	-0.066	0.551	3.837(1, 247), <i>p</i> = 0.051
Implicit warmth stereotypes	0.081	0.558	-0.220	0.521	5.592(1,247) ***	-0.063	0.518	-0.095	0.590	0.207(1, 247), ns
Employability perceptions of older workers	3.875	0.489	3.884	0.557	0.017(1,247), ns	3.949	0.501	3.807	0.542	4.606(1, 247)*
Intention to hire an older worker	4.470	1.263	4.500	1.345	0.032(1,247), ns	4.417	1.348	4.557	1.260	0.716(1, 247), ns
<i>N</i>	117		132			127		122		

*Note:* ns = not significant. Group differences between high- versus low-warmth stereotypes, and high- versus low- competence stereotypes. Results of separate univariate ANOVAs are reported.  
 \**p* < .05; \*\**p* < .01; \*\*\**p* < .001.

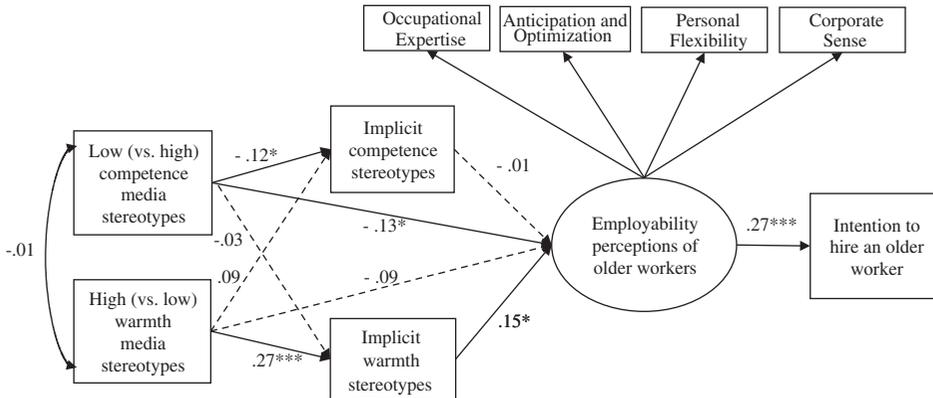
**Table 3** Unstandardized Parameter Estimates of the Structural Equation Model Predicting Intentions to Hire an Older Worker With Implicit Competence and Warmth Stereotypes

Independent Variable	Dependent Variable	<i>B</i>	<i>SE</i>	<i>P</i>
High- (vs. low-) warmth media stereotypes	Implicit-warmth stereotypes	0.301	0.068	.001
High- (vs. low-) warmth media stereotypes	Implicit-competence stereotypes	0.090	0.067	.175
Low- (vs. high-) competence media stereotypes	Implicit-warmth stereotypes	-0.035	0.067	.602
Low- (vs. high-) competence media stereotypes	Implicit-competence stereotypes	-0.132	0.066	.047
Low- (vs. high-) competence media stereotypes	Employability perceptions	-0.176	0.089	.048
High- (vs. low-) warmth media stereotypes	Employability perceptions	-0.120	0.092	.190
Implicit-competence stereotypes	Employability perceptions	-0.017	0.088	.844
Implicit-warmth stereotypes	Employability perceptions	0.175	0.087	.044
Employability perceptions	Intention to hire an older worker	0.535	0.136	.001
Variance accounted for	Implicit-competence stereotypes	$R^2 = .023$		
	Implicit-warmth stereotypes	$R^2 = .075$		
	Employability perceptions	$R^2 = .041$		
	Hiring intentions	$R^2 = .072$		

media stereotypes on implicit-warmth stereotypes ( $H1_b$ ). Table 3 displays the unstandardized parameter estimates of the SR model, and Figure 2 shows the standardized parameter estimates. As expected, we find significant effects of low- (vs. high-) competence and high- (vs. low-) warmth media stereotypes on the implicit stereotype measures, both in the expected direction. The effect of low- rather than high-competence media stereotypes negatively affects implicit competent stereotypes, while high- rather than low-warmth media stereotypes positively affect implicit-warmth stereotypes. We accept  $H1_a$  and  $H1_b$ .

#### *Stereotype-application hypotheses*

This brings us to our application hypotheses. Here, we predicted that the negative effect of exposure to low-competence rather than high-competence media stereotypes on employability perceptions is mediated by implicit-competence stereotypes ( $H2_a$ ). Second, we posed that the positive effect of exposure to high-warmth rather than low-warmth media stereotypes on employability perceptions is mediated by implicit-warmth stereotypes ( $H2_b$ ). Again, we consult Table 3. The results show that implicit-competence stereotypes are not applied to employability perceptions: Shifts in implicit-competence stereotypes do not significantly affect the outcome variable. Hence, the effect of exposure to low-competence rather than high-competence media



**Figure 2** Theoretical model and results. Standardized parameter estimates of structural equation model predicting intentions to hire older employees.

Note: \* $p < .05$ ; \*\*\* $p < .001$ .

stereotypes on employability perceptions is not mediated by implicit-competence stereotypes. We do find a significant, negative effect from exposure to low- rather than high-competence media stereotypes on employability perceptions, indicating that participants exposed to low-competence media stereotypes were less positive about older workers' employability compared to participants exposed to high-competence media stereotypes. We have to reject H2<sub>a</sub>.

Second, we look at the application-effect of implicit warmth stereotypes. The path from implicit-warmth stereotypes to employability perceptions is significant and positive, indicating that more positive implicit-warmth stereotypes lead to more positive employability perceptions of older workers. The indirect (mediated) effect of high- rather than low-warmth media stereotypes on employability via implicit-warmth stereotypes was also significant: The bounds of its 95% bias-corrected 10,000 bootstraps CIs did not negatively exceed zero:  $b = .05$ , 95% CI: 0.00–0.12,  $p = .04$ . We conclude that the level of warmth media stereotypes positively influences employability perceptions via increased levels of implicit-warmth stereotypes, offering support for H2<sub>b</sub>.

In sum, our results indicate both a positive and negative route from mixed-media stereotypes to employability perceptions. Ultimately, we are interested in the net effect of high-warmth and low-competence media stereotypes on employability perceptions (RQ1). To investigate the net effect of these opposing paths, the combined effect of both factors was calculated. The net effect of mixed stereotypes on employability perceptions is negative and very close to significant:  $b = -.23$ ,  $SE = 0.13$ , 95% CI  $[-0.51$  to  $-0.01]$ ,  $p = .06$ . This indicates that the combination of both direct (unmediated) and indirect (mediated) effects of low- (vs. high-) competence and high- (vs. low-) warmth media stereotypes leads to a decrease in perceptions of older workers' employability. That is, when older workers are portrayed as warm and incompetent instead of cold

and competent, the perception of their employability goes down by .23. Hence, the negative effect of low- (vs. high-) competence media stereotypes outweighs the positive effect of high- (vs. low-) warmth media stereotypes.

In a final step, we test whether employability perceptions positively influence the likelihood of hiring an older worker (H3). As anticipated, we find a positive, significant effect of employability perceptions on the intention to hire an older worker. Precisely, when perceptions of older workers' employability go up by 1, intentions to hire an older worker increase with .54. This offers support for H3.<sup>1011</sup>

## Discussion

This study moves beyond extant research by demonstrating how mixed-media stereotypes shape discriminatory responses toward older workers by explaining why these effects occur, through analyzing its underlying mechanisms. We have shown that a news article portraying older workers in a stereotype-confirming manner, that is, as high on warmth and low on competence, evokes and inhibits positive employability perceptions, and, in turn, affects intentions to hire an older worker. High- (vs. low-) warmth media stereotypes positively affected employability perceptions via implicit warmth stereotypes, which in turn increased the intention to hire an older worker. Conversely, low- (vs. high-) competence stereotypes exerted a direct negative effect on employability perceptions, which in turn lowered intentions to hire an older worker. The negative effect of low- (vs. high-) competence stereotypes played out stronger than the positive effect of high- (vs. low-) warmth media stereotypes, resulting in a negative net effect of mixed media on intentions to hire an older worker. Stereotype-confirming mixed-media portrayals of older workers therefore contribute to negative employability judgments and decisions.

The activation hypothesis that exposure to mixed-media stereotypes would activate implicit stereotypes was confirmed. To be precise, we found that high-warmth rather than low-warmth media portrayals positively influence implicit-warmth stereotypes, while low- rather than high-competence media portrayals negatively influence implicit-competence stereotypes. In addition, we found partial support for our application hypotheses. As expected, our results show that implicit-warmth stereotypes were applied to perceptions of older workers' employability, while implicit-competence stereotypes were not applied, but rather inhibited. The finding that activated implicit-competence stereotypes were not applied to employability perceptions of older workers indicates that individuals are capable of, consciously or unconsciously, inhibiting the application of media-activated stereotypes. The capacity of individuals to control the application of implicitly activated stereotypes has also been stressed in previous studies (Gawronski & Bodenhausen, 2006; Gilbert & Hixon, 1991). On a positive note, this shows that the effects of implicitly activated stereotypes on subsequent judgment distortion should not be overestimated. While our results suggest that individuals indeed have little control over the automatic activation of stereotype schemata (Devine, 1989), individuals are, at least in part, in

control of the extent that they allow such automated stereotypes to exert an influence on subsequent judgments.

We did not anticipate finding direct negative effects of exposure to low- (vs. high-) competence media stereotypes on employability perceptions and implicit-competence stereotypes. An explanation for this unanticipated finding can be found in Gawronski and Bodenhausen's model of attitude-change (Gawronski and Bodenhausen, 2006, p. 707). According to these scholars a stimulus can *directly* and *distinctively* influence associative processes, which underlie implicit responses, and propositional reasoning, which underlies explicit attitude formation. This is possible because implicit and explicit responses may undergo different change processes (Gawronski & Bodenhausen, 2006). Thus, even when people inhibit stereotype application, their judgments may still be affected by media exposure. Participants' propositional beliefs about older workers' employability may therefore have been affected in the process of deliberately considering competence information, even if the application of stereotypical generalizations was inhibited. In sum, our results show that a single exposure to a newspaper article with mixed stereotypes of older workers is sufficient to set in motion a sequence of conflicting implicit stereotypes, which in turn lowers employability perceptions and the likelihood to hire an older worker.

It is important to consider that—given the context of an experiment—participants may have been aware of the stereotypicality of the stimulus material. Some reflection on the consequences of such awareness for the results is needed. One may expect that awareness of media stereotypes will diminish the extent to which stereotypes become both activated and applied, as individuals may be better equipped to suppress such effects (see Hansen & Hansen, 1988). However, regardless of whether participants did or did not recognize the stereotypicality of the news articles, they were not able to inhibit automatic responses (see also Arendt, 2013), nor were they able to suppress the application of implicitly activated warmth stereotypes. Participants did, however, succeed in suppressing the application of the negative component of older workers' stereotypes, that is, implicit competence stereotypes. If this was due to awareness of the stereotypicality of the news article, induced by the experimental setting, an application effect *may have* occurred in “real life.” In that scenario the effect of the negative path of older workers' stereotypes might even have played out stronger.

This study has significant theoretical implications. First, typical media stereotyping research has focused on effects of merely negative portrayals—generally considering stereotypes as an umbrella term for all kinds of negatively valenced generalizing portrayals about social groups. Our findings suggest that it is sensible to more carefully consider the domain of media stereotypes (i.e., warmth and competence). Second, by considering the underlying psychological processing of opposing media stereotypes this study adds to the general understanding of effects of stereotypes and media more generally. Our consideration of the implicit processing of competing message characteristics clarifies the relationship between activation and application, and gives insight into the “black box” of media effects. More precisely, we

show that making the distinction between activation and application is a necessary step toward better understanding the relationship between media stereotypes and outcomes, as activation does not automatically imply application.

Third and last, this study investigates the effects of mixed-media stereotypes; yet, our findings have implications for the broader field of communication research. This study is first to demonstrate that a single exposure to an article containing mixed stereotypes is sufficient to activate divergent implicit evaluations on the warmth and competence dimension. This proved to be true in the context of media stereotypes, but may also apply to other message characteristics. For example, researches into competitive framing focusing on effects of frames in competitive environments have yet to take into account implicit measures that tap into divergent evaluations. We have shown that such divergent implicit activation effects may, however, partly underlie explicit responses. By relying solely on one-dimensional measures, one runs the risk of oversimplifying responses to conflicting news content.

Next, we discuss the practical implications of our findings. To diminish or even change stereotypes, previous research has shown that it is useful to portray stereotyped targets in a stereotype-disconfirming manner (Ramasubramanian, 2007, 2011). This study adds to these insights by considering *the domain* of stereotype content that should be targeted. We showed that providing stereotype-disconfirming information on the negatively evaluated dimension is most effective. To effectively rebrand older employees, media-based stereotype reduction strategies should therefore emphasize stereotype-disconfirming information on the competence dimension, by portraying older workers' capacities in a more accurate and truthful way. Such tailoring strategies might not only benefit older workers, but could be equally valuable for other mixed appraised social groups, and suggest a promising (intervention) research avenue with significant practical relevance for a broad range of stereotyped groups.

This study is not without shortcomings. It should be acknowledged that (B)IATs have been criticized in the past. Critics have argued that, in order to simplify the task, subjects may pair categories on the basis of other heuristics than individual beliefs, such as *cultural knowledge* of stereotypes (e.g., Rothermund, Teige-Mocigemba, Gast, & Wentura, 2009). This is particularly likely to happen in the situation that one actually has cultural knowledge about stereotypes, for example, in the obvious case of pro-White societal views in white societies (De Houwer, Teige-Mocigemba, Spruyt, & Moors, 2009). Although we believe it is unlikely that cultural knowledge of older workers' warmth and competence stereotypes affected the results, it is important to acknowledge that other (i.e., nonassociative) influences might have played a role. In addition, participants were exposed to a manipulation check after the treatment. This question could not have affected the directionality of the effects, which were clearly in line with the content of the treatment, but may have interfered with effect sizes. Future studies may benefit from including manipulation checks exclusively in a pretest.

We encourage future research to further unravel the underlying mechanisms of biased responses to mixed-media stereotypes, by incorporating measures that

facilitate or inhibit stereotype application. Such an approach might be combined with a stronger focus on individual differences. Inasmuch as media exposure has no “hypodermic needle” effect on judgments, factors that interact with audience responses, which were beyond the scope of this paper, are important to consider. Additionally, previous research has pointed to “double jeopardy effects” of age stereotypes in women compared to men, as they are more likely to experience ageist attitudes concerning sexuality and appearance (Lincoln & Allen, 2004). It would be interesting to unravel joint effects of gender and age media stereotypes in future studies.

This investigation offers relevant insights into the consequences of mixed-media stereotypes by illustrating its conflicting effects on stereotypical beliefs, and in turn, perceptions and decisions. Mixed stereotypes may be perceived as acceptable and even fit in with journalists standards of “balanced” reporting, making its biased outcomes difficult to recognize (Cuddy *et al.*, 2011). The findings presented here may help editors to reformulate media messages by considering the domains of stereotype content. We believe our conceptual model has merits beyond the specific case of older workers, as mixed stereotypes apply to a large array of social groups. Replacing the negative component of stereotypes by accurate representations may be helpful to diminish or prevent discriminatory outcomes of mixed-media stereotypes.

## Notes

- 1 The ISO-certified panel of I&O Research was used.
- 2 We did not include a control group because we were not primarily interested in comparing effects with news articles *without* stereotypes. In addition, we may consider “cold” and “competent” as baseline categories, as previous research shows that in news coverage these stereotypes are almost never associated with older workers (Kroon *et al.*, in press).
- 3 The inappropriate selection of stimulus material may cause IATs to inadequately measure associations (Greenwald & Sriram, 2010). This limitation was procedurally avoided, as the stimulus material does not rely on either unfamiliar or atypical categories.
- 4 For the purpose of this study, items were adjusted, focusing exclusively on older workers.
- 5 The original scale consists of five subdimensions. We excluded the fifth dimension (i.e., Balance), because items measuring this subdimension focus on personal relations of specific employees, which were difficult translatable to older workers in general.
- 6 The error term was added between the item: “I have ... confidence in the capacities of older workers in my work domain” (Factor 1: Occupational expertise) and “In my organization, older workers participate ... in the formation of a common understanding with regard to values and goals” (Factor 4: Corporate sense).
- 7 Specifically, we pretested the biographies among 67 students in Communication Science and Psychology (25.37% male,  $M_{\text{age}} = 22.17$  [ $SD = 2.06$ ]). Participants were randomly exposed to either the biography of applicant A, or the biography of applicant B, and asked to indicate how likely they were to hire the applicant on a 7-point scale (1 = not likely at all, 7 = very likely). The experimental conditions did not affect respondents’ intention to hire job applicant A ( $M = 5.65$  [ $SD = 1.10$ ]) or job applicant B ( $M = 5.30$  [ $SD = 1.85$ ]),  $F(1, 65) = 1.636$ ,  $p = .205$ .

- 8 In case the model fits the data well, the  $\chi^2$  null hypothesis that the model has perfect fit in the population should not be rejected (Kline, 2011). SRMR values less than 0.10 are considered to represent good fit (Kline, 2011). For the parsimony-adjusted index RMSEA, values that approach zero indicate the best fit. As a rule of thumb, values below .05 are considered to indicate good fit (Browne & Cudeck, 1993). For CFI and TLI values closer to 1 indicating good fit. Here, the cut-off point for acceptable fit is often considered  $\geq .95$  (Hu & Bentler, 1999).
- 9 One may wonder whether participants' age affected the results. We run the model while controlling for effects of age on respectively implicit competence and warmth stereotypes. The adjusted model fits the data (slightly less) well, and results do not change substantially. We find a main effect of age, so that older respondents are faster in associating older workers with both warmth ( $B = .009, p < .01$ ) and competence stereotypes ( $B = .005, p = .097$ ). This indicates that older participants generally have more positive implicit warmth and competence stereotypes of older workers compared to those of younger participants. The interaction between age and treatment did not influence the results significantly. We decided to continue the analysis with the more parsimonious and better fitting model. Previous studies have shown that implicit beliefs about older people remain stable or become more negative across the lifespan (e.g., Jost, Banaji, & Nosek, 2004). Recent research, however, suggests that implicit age stereotypes held by different age groups are *life domain specific*. That is, in the life domains health and family older people have more favorable implicit age stereotypes about the elderly compared to other age groups (Kornadt, Meissner, & Rothermund, 2016). Our findings suggest that, for the life domain work–employment, age has a positive main effect on implicit warmth and competence stereotypes.
- 10 Warmth and competence stereotypes were measured both explicitly and implicitly. Different from our model with implicit stereotype measures, we did not find effects of exposure to media stereotypes on explicit warmth and competence stereotypes (consult Online Appendix B for more detailed information). By comparing the results of our implicit and explicit measures, we can tell that respondents *could* suppress activation on an explicit level while they were not able to do this on an implicit level. This finding by and large corroborates previous research, which documents effects of a single stereotypical exposure on implicit, but not on explicit stereotype measures (cf. Arendt, 2013; Brown, Givens & Monahan, 2009; Burgess et al., 2011).
- 11 The interaction between personal contact with older workers and exposure to media stereotypes did not significantly affect the dependent variables.

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## Supporting Information

Additional supporting information may be found in the online version of this article: Appendix S1. Stimulus material.