Implications of Dual Age Identity on Implicit Evaluations of Age

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Abstract

Social hierarchies are inherent to intergroup relationships and behaviours. Previous research has found evidence of social hierarchies in implicit attitudes for groups such as race and religion that show the dual influence of in-group favouritism and social power. The same pattern has not emerged in implicit age attitudes. One reason for this discrepancy is that prior measures of implicit age attitudes only highlighted age groups (e.g., children, young adults) and not generations (e.g., Gen Z, Baby Boomers). To explore whether generational identity may be a more relevant dimension for understanding in-group favouritism in implicit age attitudes, 1403 participants were randomly assigned to complete a measure of implicit age attitudes that categorized people based on their age group or generation. Overall, participants in the age groups condition evaluated younger age groups more positively than older age groups, without distinguishing between the middle-aged and older adult groups. In the generational identity condition, younger participants showed a similar "younger is better" pattern, but older participants' implicit evaluations were more nuanced. Finally, while participants under 23 showed no significant difference in implicit in-group favouritism between conditions, all other age groups showed more in-group favouritism in the generational identity condition. These findings suggest that, for older participants, a stronger identification with one's generation than one's age may be key to understanding when implicit in-group favouritism emerges. More generally, results also show evidence for a framing effect of age that should be accounted for in future research.

Introduction

Social Hierarchies

Social hierarchies are inherent to intergroup relationships and behaviours (Pratto, Sidanius, Stallworth, & Malle, 1994). Compared to members of lower-status groups, individuals belonging to groups of high social status and power benefit from better educational (Sirin, 2005), health (Williams, Yu, Jackson, & Anderson, 1987) and work opportunities (Lin, Ensel, & Vaughn, 1981). Many theories aim to explain the existence and maintenance of social hierarchies. According to social identity theory, individuals are motivated to maintain a positive group identity, resulting in in-group biases (Tajfel & Turner, 1986). This motivation leads people to place their own social group at the top of any group hierarchy, and indeed there is evidence that both high- and low-status groups engage in various strategies to enhance their positive in-group identity (Bettencourt, Dorr, Charlton, & Hume, 2001).

Alternatively, system-justification theory proposes that individuals are motivated to maintain a positive perception of the social and political systems they are a part of (Jost, Banaji, & Nosek, 2004). By seeking to justify the status quo, people can maintain beliefs that the world is just and that the current social hierarchies are legitimate. As a result, individuals are much more likely to internalize social hierarchies and ingrain them into their social memory. This leads to a consensus of social hierarchies by both high- and low-status groups, based on the order of social power, even if one's own social group is not at the top of the hierarchy (Jost et al., 2004). Although these status hierarchies can be rejected explicitly, their structure may be internalized implicitly (i.e., through attitudes or associations that are comparatively automatic (Jost et al., 2004)), and this process may occur among both members of advantaged and disadvantaged groups.

A study by Axt, Ebersole, and Nosek (2014) explored the nature of social hierarchies to see whether they are consistent with both social identity and system justification perspectives. To do so, they measured implicit evaluations for race, religion, and age groups. Implicit cognitions, as opposed to explicit cognitions, are comparatively automatic and less aligned with conscious goals (Nosek, Hawkins, & Frazier, 2011). To measure implicit evaluations, Axt et al. (2014) used the Multicategory Implicit Association Test (MC-IAT), which assesses the strength of implicit associations between a social group and positivity by measuring the reaction time required to pair a specific social group with pleasant versus unpleasant stimuli. For example, during the MC-IAT assessing implicit racial evaluations, participants paired positive and negative words with faces representing East Asian, White, Black, and Hispanic people. Implicit associations towards one racial/ethnic group could then be compared with the associations of the other groups. For instance, during the MC-IAT, there were three blocks in which Hispanics were the target group: for one of the blocks, the other faces shown were Asian; for another block, the faces were Black; and in another block, the contrast faces were White. If a participant consistently and rapidly associated a specific group, such as Hispanics, with pleasant stimuli, results would indicate they hold a stronger positive evaluation towards Hispanic people than towards the other three racial groups represented in the MC-IAT.

In the domains of race and religion, Axt et al. (2014) found evidence consistent with both social identity theory and system-justification theory. Specifically, participants showed greater implicit preferences for their own group, putting that group at the top of the implicit hierarchy (Axt et al., 2014). The rest of the hierarchy followed a sequence determined by social power: White > Asian > Black > Hispanic people for racial groups, and Christianity > Judaism > Hinduism or Buddhism > Islam for religious groups (Axt et al., 2014). For example, Jewish

participants showed the strongest positive implicit associations on average for Judaism, followed by Christianity, Hinduism or Buddhism (which were randomly assigned depending on the version of the task), and then finally Islam.

However, a different pattern emerged with age, where the categories were children, young adults, middle-aged adults, and older adults. Here, the social hierarchy was ordered from the youngest to the oldest groups (children > young adults > middle-aged adults > older adults), results that do not follow the order of social power, and, because children themselves were too young to participate in the study, do not reveal an in-group bias among any participants.

One explanation put forth in Axt et al. (2014) for this difference in patterns of the implicit social hierarchy for age is the lack of a salient age identity. Age as a concept is fluid, meaning that it is easy for individuals to not identify with their actual age group. This fluidity could account for the lack of support of social identity theory (i.e., favouritism for one's group) found in the race and religion tasks but not in age. That is, while it is unlikely for people to identify with a different racial or religious group than their own, age identity comprises more components than one's biological age.

For instance, Kaufman and Elder (2002) looked at the five components of age identity, other than "true" age. In the study, over 600 Midwesterner grandparents (range: 51-92 years old) with teenage grandchildren completed a phone interview as well as a questionnaire. The questionnaire assessed the five different age components: subjective age, other's view of one's age, desired age, desired longevity, and perceived old age (Kaufman & Elder, 2002). Subjective age was assessed through questions such as the age that participants "feel like most of the time", while others' view of one's age was assessed through items on how old others think the participants are (Kaufman & Elder, 2002). Participants were also asked the age they currently

wished to be (desired age), the age they hoped to live to (desired longevity), and the age at which they considered themselves to be old (perceived old age). Results found that as people get older, the gap between their subjective and actual age increases. For instance, for people who were 60 years old, the subjective age was 54, while for people who were 80 years old, it was 70. Biological age may then not be a good indicator of age identification because people strongly rely on their subjective perceptions to determine age identity. As a result, if the person has not sufficiently internalized their group membership, then social identity theory would argue that the identity cannot be considered an aspect of their self-concept (Tajfel & Turner, 1986).

Dual Age Identity

The model of dual age identity proposes an alternative perspective on age identification that differs from the social identity and system justification theories. According to the dual age identity model (Weiss & Lang, 2009), people hold two simultaneous identities related to age: *age identity* (based on one's chronological age) and *generation identity* (defined by one's birth cohort). To illustrate the differences between age and generation identity, Weiss and Lang (2009) conducted a 2 X 3 between-subjects study, which consisted of two identity conditions (age versus generation) and three age groups (young, middle-aged, and old adults). An identification measure was used to evaluate participants' sense of belongingness, with items such as "I identify with people of my (age or generation)", "I feel strong ties with people of my (age or generation)", and "I am different from people of my (age or generation)" (Weiss & Lang, 2009). Among older adults, they found that age identity evoked threatening information to the self because of the negative attributes and stereotypes that are associated with ageing (Weiss & Lang, 2009). Conversely, generational membership evoked a sense of belongingness and continuity among older adults through communal beliefs and shared experiences (Weiss & Lang, 2009).

These differences in emotional reactions resulted in older adults distancing themselves from their age group but not from their generation group. However, this effect was not found in young adults or middle-aged adults as they did not significantly differentiate between either identity membership. According to the dual age identity model, generation membership appears to be more salient to age identification, at least in older adults (Weiss & Lang, 2009). As a result, framing age using generations instead of chronological age could influence in-group attitudes in old adulthood and may explain some of the results found in Axt et al. (2014), where labels on the age-related implicit measure ignored any generational component. It may then be possible for implicit in-group favouritism to emerge in implicit age attitudes, but only when using labels representing generational identity.

It is still unclear whether generation labels would affect in-group evaluations for younger age categories. Indeed, Weiss and Lang (2009) found no differences in age and generation identification for younger groups, which may predict results similar to the original Axt et al. (2014) study among younger participants. However, it also possible that generational identity functions differently today than when Weiss and Lang's study was published in 2009, as even younger people may now identify more with their generational identity due to increasing generational divides between younger and older generations. For instance, the past few years have seen both the emergence of the expression "Ok, boomer", which has been used to represent the discontentment younger generations feel towards the older generations (Spector, 2019), as well as a number of instances of "Gen Zers" mocking "millennial culture" as a way of distinguishing the two generations (Haasch, 2020). It is therefore possible that younger generations are becoming more aware of and tied to their generational identity. If so, differences

in age group versus generational membership may also be found among younger participants completing an MC-IAT that uses generational versus age labels.

To gain more insight into this issue, the current study investigates whether the framing of age, using age groups versus generations, influences implicit age evaluations. In particular, we replicated and extended prior work on the age MC-IAT using two conditions: the original age groups condition and the novel generational identity condition. This design then allows us to directly test the possible effect of age identity on the formation of social hierarchies for age by measuring implicit associations for both conditions and measuring whether participants from all age groups show evidence of in-group favouritism.

Method

Participants

1434 volunteers at Project Implicit completed the study. As in Axt et al., 2014, we excluded participants who had more than 10% of responses faster than 400 ms during critical MC-IAT trials (2.2%), resulting in 1403 eligible participants (62.7% female, 68.8% White, M_{Age} = 35.17, SD_{Age} = 15.62). We pre-registered a minimum of 800 eligible participants to provide statistical power of 80% to detect an overall between-subjects effect of d = .20, but were able to collect additional data due to an increased number of participants in the Project Implicit research pool. No analyses were completed until data collection was finished. See https://osf.io/azvmy/ for the pre-registration file.

Procedure

Each participant completed a demographics questionnaire, an explicit attitude measure, and an MC-IAT using either age groups or generation groups. The demographic questionnaire was completed upon first registering for the research pool, and we only analyzed items

concerning gender, race, ethnicity and age. The attitudinal survey and MC-IAT were presented in a random order. Participants were randomly assigned to either an age groups versus a generational identity condition, which determined the wording used on the MC-IAT and explicit attitude measure.

Explicit attitude questionnaire. Depending on the condition, the explicit attitude items assessed relative preferences towards either four age groups ("children," "young adults," "middle-aged adults," and "old adults") or four generational identity groups ("Generation Z", "Millennials", "Generation X", "Baby Boomers"). The questionnaire had six total items presented in a randomized order, with each item using a 7-point scale to assess relative preferences between each possible pairing of age groups or generations (e.g., 1 = *I strongly prefer middle-aged adults [members of Generation X] to old adults [Baby Boomers] to* 7 = *I strongly prefer old adults [Baby Boomers] to middle-aged adult [members of Generation X]*), with 4 representing a mid-point indicating no preference (Axt, 2018). As in Axt et al. (2014), an aggregate explicit preference score was created for each age or generational group by averaging the three relevant items. For example, the aggregate explicit attitudes score for Generation Z was an average of the three explicit attitudes scores comparing Generation Z with Millennials, Generation X, and Baby Boomers.

MC-IAT. Depending on the condition, the MC-IAT either depicted age or generational groups. Specifically, the youngest group was children or Generation Z (8 to 23 years old), followed by young adults or Millennials (24 to 39 years old), then middle-aged adults or Generation X (40 to 55 years old), and finally older adults or Baby Boomers (those between the age of 56 and 73). To determine age cut-offs, we used age ranges provided by the Pew Research Center (Dimock, 2019). For both conditions, the stimuli were the same as those used in Axt et al.

(2014) and included three male and three female faces, all White and showing a neutral expression (see Table 1).

The MC-IAT contained 14 blocks. For all blocks, participants were asked to categorize the appropriate items as quickly as possible. If an error occurred, a red "X" appeared on the screen and participants needed to correct the error before moving to the next trial. The first block contained 16 practice trials in which participants were asked to press the "I" key when presented with "good" words (Love, Pleasant, Great, and Wonderful), and the "E" key when presented with "other words" (Hate, Unpleasant, Awful, and Terrible). The second block (16 trials) was also practice, which required participants press the "I" key when presented with "good" words as well as for faces belonging to a specific age or generation group, and the "E" key when presented with "any other images or words" (the same negative words from the first block and faces from another age or generation group).

The remaining critical 12 blocks (16 trials each) followed the same structure as the second block. Participants completed one block each where a specific age or generation group was paired with positive words, and one of the other age or generation groups was paired with negative words. For instance, in three of the blocks, participants were asked to press the "I" key for "good" words and for images of children (or members of Generation Z). In one of these three blocks, participants pressed the "E" key for negative words and images of young adults (or Millennials); in another block, they pressed the "E" key for negative words and images of middle-aged adults (or members of Generation X), and in the last of these blocks pressed the "E" key for negative words and images of old adults (or Baby Boomers). Blocks appeared in a constrained randomized order, meaning that each group appeared as a target once every four

blocks. Within each condition, participants were randomly assigned to one of 24 possible block orders.

Six MC-IAT D scores were calculated for each pairwise comparison between each age or generational group, following the guidelines outlined in Nosek et al. (2014). Using the same procedure as in Axt et al. (2014), we then created four aggregate D scores for each age or generational group relative to the other. For example, the aggregate Generation Z MC-IAT D score was the average of the three D scores comparing Generation Z to Millennials, Generation X, and Baby Boomers.

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Results

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Replicating Social Hierarchies in Implicit Evaluation

Within both conditions, we first investigated whether results would replicate the Axt et al. (2014) finding of stronger implicit preferences for younger versus older groups. See Table 2 for descriptive statistics from both conditions. To do so, a series of within-subjects t-tests using aggregate MC-IAT D scores was conducted. Across all participants in the age groups condition, children were evaluated more preferably than young adults, $t(724) = 4.184$, $p < .001$, $d = .155$, and young adults were in turn evaluated more preferably than middle-aged adults, $t(724) = 12.174$, $p < 0.001$, $d = .452$. However, there was no significant difference in aggregate D scores between middle-aged adults and old adults, $t(724) = -0.355$, $p = .723$, $d = -.013$.

Across all participants in the generational identity condition, younger groups (Generation Z and Millennials) were evaluated more preferably than older groups (Generation X and Baby Boomers). In particular, millennials were evaluated more preferably than members of Generation X, $t(677) = 11.173$, $p < 0.001$, $d = .429$. However, there was no significant difference in the

aggregate *D* scores towards Generation Z versus Millennials, $t(677) = -0.912$, $p = .362$, $d = -.035$, and between Generation X versus Baby Boomers, $t(677) = -0.432$, $p = .666$, $d = -.017$.

The same analysis was also conducted separately within each age group (i.e., among participants who were less than 23 years old, between 24 and 39 years old, 40 to 55 years old, and 56 to 73 years old). In the age groups condition, similar to the hierarchy found by Axt et al. (2014), there was an overall preference for younger age groups, as young adults were always evaluated more favourably than middle-aged adults for participants under 56 years old, although they did not consistently show reliable differences between middle-aged adults and old adults. Furthermore, participants aged 23 and under as well as aged 40 to 55 did not differentiate between children and young adults. Participants over the age of 56 also showed a similar pattern, as children were evaluated more favourably than all the other age groups, although they did not show any differences in the evaluations of the other age groups. In other words, while our results did not exactly replicate the findings from Axt et al. (2014), participants generally evaluated younger groups more positively than older groups, although they did not show much of a distinction between the middle-aged and older adult groups. See Table 3 for descriptive statistics, and Table 4 for within-subjects *t*-tests.

In the generational identity condition, the hierarchy from Axt et al. (2014) was replicated by Millennial and Generation X participants, as they held more positive attitudes towards younger groups than the older generation group(s). Generation Z participants showed similar results, with the exception that more positive implicit associations were shown towards Baby Boomers relative to members of Generation X. Finally, participants older than 56 years old did not replicate previous findings as they showed no differences in implicit preferences for any age group. In general, a "younger is better" pattern was found in younger participants, while older

participants showed more nuanced evaluations. For instance, participants older than 56 years old showed a much higher preference for the generational category of Baby Boomers when compared to other groups. See Table 5 for descriptive statistics, and Table 6 for within-subjects t-tests.

Strength of Implicit Evaluations Between Conditions

Next, we investigated whether the age versus generation manipulation impacted the overall implicit preference for each age or generational group (e.g., whether implicit preferences were stronger when a group was defined as children versus members of Generation Z). We first conducted a series of between-subjects t-tests, collapsing across participants' age. For children versus members of Generation Z, there was a reliable difference such that implicit evaluations were more favourable towards the children category than the Generation Z category, $t(1401) = 4.048$, $p < .001$, $d = .216$. However, there was not a significant difference in implicit evaluations of young adults versus Millennials, $t(1402) = -1.305$, $p = .192$, $d = -.070$, of middle-aged adults versus members of Generation X, $t(1402) = -1.443$, $p = .149$, $d = -.077$, or between old adults and Baby Boomers, $t(1401) = -1.432$, $p = .152$, $d = -.076$. See Table 2 for descriptive statistics.

Strength of Implicit Ingroup Evaluations

Finally, we investigated whether the age versus generation group manipulation would impact the degree to which participants exhibited implicit in-group favouritism. To do so, we conducted between-subjects t-tests comparing implicit in-group attitudes across all participants (representing implicit in-group attitudes by using the "child" or "Generation Z" D score for participants younger than 23, the "young adult" or "Millennial" D score for participants between 24 and 39, etc.). This test revealed a reliable but weak overall difference in in-group attitudes, $t(1375) = -2.135$, $p = .033$, $d = -.115$, such that the generational identity condition showed

stronger implicit in-group preferences than the age groups condition. See Table 7 for descriptive statistics.

Next, we ran the same analysis separately for each age category. For participants under the age of 23, there was not a reliable difference in implicit ingroup attitudes between the two conditions, $t(424) = 1.945$, $p = .052$, $d = .189$. However, while not statistically significant, it is important to note that this effect was the only test showing *more* in-group bias in the age groups condition than in the generational identity condition. This finding helps explain why the overall in-group evaluations for all participants, regardless of age, was generally weak *(d = .115)*. When looking at participants over the age of 23, there was a reliable difference in ingroup bias for people aged 24 to 39, $t(463) = -2.141$, $p = .033$, $d = -.199$, 40 to 55, $t(304) = -3.021$, $p = .003$, $d = -.347$, and 56 to 73, $t(173) = -2.956$, $p = .004$, $d = -.453$, with results all showing more in-group preferences in the generational identity than the age groups condition. See Table 8 for descriptive statistics.

Explicit Evaluations

For explicit attitudes, a series of within-subjects *t*-tests using explicit aggregate scores revealed that all participants evaluated the youngest age and generation groups more favourably than the oldest groups. For instance, for the age groups condition, children were evaluated more preferably than young adults, $t(748) = 38.319$, $p < .001$, $d = 1.40$, young adults were in turn evaluated more preferably than middle-aged adults, $t(746) = 51.086$, $p < 0.001$, $d = 1.869$, and so were middle-aged adults as compared to old adults, $t(747) = 59.113$, $p < 0.001$, $d = 2.161$. Furthermore, the age versus generation manipulation did not impact each age or generational group's overall explicit preference. There was no difference in the strength of explicit attitudes towards age categories between the two conditions. In other words, explicit preferences were not

stronger when a group was defined as children versus members of Generation Z. See Table 9 for descriptive statistics.

A series of between subjects *t*-tests were conducted to measure the strength of explicit in-group evaluations. When looking by participant's age, people aged under 23, $t(447) = -6.044$, $p < .001$, $d = -.571$; people aged 24 to 39, $t(474) = -6.282$, $p < .001$, $d = -.577$; people aged 40 to 55, $t(307) = -3.133$, $p = .002$, $d = -.360$; and people aged 56 to 73, $t(184) = -7.007$, $p < .001$, $d = -1.038$, all showed more in-group preferences in the generational identity condition than in the age groups condition. See Table 10 for descriptive statistics.

Discussion

The current study aimed to investigate whether the framing of age, using age groups versus generations, influences implicit age attitudes. In particular, we explored whether the same "younger is better" pattern in implicit age evaluations found in Axt et al. (2014) would also emerge when using generational labels. In the age groups condition, which was a direct replication of the original Axt et al. (2014) work, we found that younger groups were generally evaluated more positively than the older age groups, though without much distinction between middle-aged and old adults. However, in the generational identity condition, we found an overall "younger is better" pattern among younger participants, though results were more nuanced among older participants. These results show that our hierarchies for both age and generation groups do not solely follow predictions from system justification theory, as both forms of implicit evaluations were not based on social power but rather a general preference towards younger groups.

This pattern of "younger is better" aligns with prior work by Chopik and Giasson (2017) comparing explicit attitudes towards young versus old age groups with implicit attitudes towards the same groups. In particular, results showed that old adults exhibited that young adults were

liked least in explicit attitudes but most in implicit attitudes. The authors attribute this preference

for younger groups in older adulthood as arising from a process of age-group dissociation that

happens in older adults. That is, as people reach older age, negative stereotypes about older

adults become incorporated into older adults' self-views, as they are still implicitly holding

negative perceptions of their own age group (Levy, 2009), which leads to older adults distancing

themselves from the old age category and showing more negative implicit attitudes towards their

own group (Chopik & Giasson, 2017; Weiss & Lang, 2012a). In the current study, when using

only age labels, participants over 56 showed more positive implicit evaluations towards children

as opposed to all of the other older age groups, perhaps due to reasons outlined in prior work.

Furthermore, this dissociation is believed to be adaptive only when a meaningful alternative

identity is available, which would be, in the case of age, generation identification (Weiss &

Lang, 2012a; Weiss & Kornadt, 2018).

When using all participants and comparing across conditions, it is noteworthy that there

was no reliable difference in the strength of implicit evaluations for each age range (e.g., "young

adults" versus "Millennials"), except for when comparing evaluations of children versus

Generation Z ($d = .189$), where children were favoured over Generation Z. Though the current

data cannot fully account for this finding, one plausible explanation comes from different

perceptions of the prototypical child versus Gen Zer. To replicate the methods from Axt et al.

(2014), we had to match the four age categories used previously to generation labels, which

resulted in equating Gen Z with "children". However, Generation Z may be construed as

emerging adults or adolescents instead of children as they are primarily perceived as ranging

from high school to university students (Kasasa, 2021). As a result, future research may use more

appropriate age labels, such as emerging adults, as equivalents to Generation Z members.

Age, Generational Identity, and Implicit Ingroup Favouritism

The most compelling aspect of these findings applies to how age versus generational labels impacted in-group favouritism across age groups. Based on previous findings by Weiss and Lang (2009), where only old adults showed preferences in identification with their generation membership while dissociating from their age membership, we anticipated that only older participants (aged between 56 to 73) would show more in-group bias in the generational identity condition ("Baby Boomers") than in the age groups condition ("Old adults"). However, we found that all participants over 23 showed more in-group favouritism towards their generation group than their age group. These results show evidence for social identity theory (Tajfel & Turner, 1986), as participants may have been motivated to maintain a positive evaluation of their own generational group. The presence of stronger in-group favouritism in the generational identity condition is a novel finding as previous studies found no in-group favouritism effect for age (Axt et al., 2014). These results suggest that the way age is presented influences the strength of implicit in-group preferences, and researchers should be careful of the labels used to define age in future studies.

Moreover, our results are consistent with Weiss and Lang (2009) findings of old adults favouring their generation membership. Since age identity in old adults is typically associated with loss and decline, generation identity offers a more positive representation of their self-concept through feelings of meaning and agency (Weiss & Lang, 2012b). As a result, old adults may increase their similarity with people of their generation, while differentiating between themselves and people of their age group as an effort to prohibit negative perceptions of age from becoming self-defining (Weiss & Lang, 2012b).

At the same time, our results extend this prior work by suggesting that even younger people may be developing a strong generational identity. In particular, Weiss and Lang (2009) measured age versus generation membership through an identification measure which was comprised of statements such as "I identify with people of my (age or generation)". They explicitly measured identification for young, middle-aged and old adults and found no variation in young and middle-aged adults' age versus generational identification. This outcome was explained by such groups being too young to have developed a strong association with their birth cohort, which may require a greater degree of shared historical and social events (Mannheim, 1952, as cited in Weiss & Lang 2009). However, in the present results, both young and middle-aged adults showed greater explicit and implicit preferences towards their generation group instead of their age group.

These differing results could potentially be explained by the rise of social media and its contribution to younger groups being more aware of their generation identity. Indeed, the perpetration and viral nature of online jokes dividing generations, such as the "Ok Boomer" trend (Spector, 2019) and the mocking of Millennial culture by members of Generation Z (Haasch, 2020), might accelerate the process through which people build their generation identification. Furthermore, these generational divides might also contribute to people holding more negative perceptions of relevant out-groups, enhancing positive in-group evaluations through dissociations from the out-groups (Tajfel & Turner, 1986); that is, as recent years have brought greater identification with one's generation among younger people, negative perceptions of other generations may have also increased.

As a result, future research should consider if there is a measurable influence of social media on the rise of generational identification in members of younger generations. There may be a link

between social media consumption in younger individuals and their identification with their generation (PrakashYadav & Rai, 2020). In that case, it could imply that the process of generational identification now happens much earlier than believed by previous literature, and this effect could explain in-group preferences towards generation membership consistent with social identity theory. However, if social media consumption is not linked to generation identification and awareness, it would signify that other factors are involved in younger individual's generation membership.

When looking at implicit in-group favouritism by age category, we found that every group, except the participants under 23, showed more in-group preferences in the generational identity than in the age groups condition. Indeed, although participants under 23 showed no difference between either condition, it is important to note that the effect was close to significance in the opposite direction of other participants, instead showing greater preferences for age versus generational labels. One possible explanation for this finding would be that positive evaluations towards the children category override the identification of participants under 23 with Generation Z. Indeed, since we had no participants under 17 years old, it is debatable whether these participants could identify with the images used in the children and the Generation Z category, which represented children aged around ten years old. One of the ways that this issue could be addressed in future research is by having an identification measure, similar to the one used by Weiss and Lang (2009), with statements such as "I identify with people of my (age or generation)". An identification measure could provide a means of seeing if people identify with their age or generation instead of assuming they do. This approach would allow for an individual difference perspective and could more straightforwardly test whether age or generational identification is a key component that predicts differences in implicit in-group favouritism.

Based on the results presented here, an identification measure may reveal that people under 23 do not strongly identify with their generation, perhaps explaining the lack of in-group bias towards the Generation Z category.

Limitations

As previously mentioned, one of the limitations of the current study is that we did not measure children's implicit attitudes. Indeed, our youngest participants were 17 years old. This implies that we could not make inferences about children's evaluations of other age categories and the possible influence that the generational identity condition could have on their in-group preferences. Similarly, using a children category instead of emerging adults might have impacted the identification of participants aged 17 to 23, as they might not identify as children. This categorization might have further impacted our MC-IAT results since the stimuli we used represented images of children aged around ten years old for both the children and the Generation Z categories. In contrast, our participants over 17 might not identify with such images, especially on implicit measures. To address these limitations in future research, it would be informative to have children take part in the study or to keep a similar sample as was used here but replace the "children" category with a more appropriate label, such as emerging adults. Finally, future work on this topic would benefit from the inclusion of an identification measure to see whether participants are indeed identifying with the relevant age and generation categories.

A final limitation is that we did not take into consideration the possible effect of culture on the formation of social hierarchies for age. Indeed, elders are typically held in higher esteem in Asian cultures (Sung, 2001) compared to the Western context used here, which generally holds negative stereotypes about older people. As a result, age attitudes may differ depending on

the cultural context. It is possible that participants from Asian cultures evaluate older adults more positively than participants from more Western cultures, which may be revealed as more positive MC-IAT D scores towards older age groups. However, it is also possible that Asian cultures also show a "younger is better" pattern in implicit evaluations, results that would imply a more general consensus for how various age groups are portrayed or perceived. In this sense, expanding the study here to additional cultures will provide a strong test of the generalizability of these results.

Conclusion

This study is one of the first to measure implicit evaluations of age using age and generation groups. We found that although the change in age paradigm did not highly impact the formation of social hierarchies for age, in-group favouritism emerged only in the generational identity condition, accentuating the importance of identification with one's generation over one's age. Moreover, results revealed that younger generational groups can also display greater in-group favouritism based on generation, inviting additional research into social media's possible role in generational divides leading to identification.

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Tables

Table 1. Age MC-IAT stimuli, both conditions

Age/ Generation group						
Children/ Generation Z						
Young adults/ Millennials						
Middle-aged adults/ Generation X						
Old adults/ Baby Boomers						

Table 2. Descriptive statistics for implicit age attitudes, all participants

	Age Groups Condition			Generational Identity Condition		
	n	*M*	*SD*	*n*	*M*	*SD*
Children/Generation Z	725	0.15	0.28	678	0.09	0.30
Young Adults/Millennials	725	0.08	0.27	678	0.10	0.28
Middle-Aged Adults/Generation X	725	-0.12	0.26	678	-0.10	0.28
Old Adults/Baby Boomers	725	-0.11	0.29	678	-0.09	0.30

Table 3. Descriptive statistics for implicit age attitudes of the age groups condition

	Group evaluated											
	Children			Young Adults			Middle-Aged Adults			Old Adults		
Participant's Age	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
23 and less	219	0.16	0.30	219	0.11	0.28	219	-0.16	0.25	219	-0.11	0.32
24-39	248	0.14	0.28	248	0.09	0.25	248	-0.10	0.28	248	-0.12	0.27
40-55	169	0.13	0.27	169	0.07	0.28	169	-0.09	0.25	169	-0.10	0.31
56-73	73	0.19	0.27	73	0.01	0.27	73	-0.10	0.29	73	-0.11	0.25

Table 4. Paired-samples *t*-tests using aggregate *D* scores by participant's age, age groups condition

	Children – Young Adults			Young Adults - Middle-Aged Adults			Middle-Aged Adults - Old Adults		
Participant's Age	*t*	*p*	*d*	*t*	*p*	*d*	*t*	*p*	*d*
23 and less	0.198	.198	.087	9.327	< 0.001	.630	-1.536	.126	-.104
24-39	1.990	0.048	.126	6.732	< 0.001	.427	0.580	.563	.037
40-55	1.873	.063	144	4.938	< 0.001	.380	0.185	.854	.014
56-73	3.718	< 0.001	.435	1.872	.065	.219	0.155	.877	.018

Table 5. Descriptive statistics for implicit age attitudes of the generational identity condition

	Groups evaluated											
	Generation Z			Millennials			Generation X			Baby Boomers		
Participant's Age	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
23 and less	207	0.10	0.32	207	0.15	0.28	207	-0.16	0.27	207	-0.09	0.32
24-39	217	0.10	0.29	217	0.14	0.28	217	-0.11	0.29	217	-0.13	0.29
40-55	135	0.06	0.29	135	0.05	0.27	135	0.00	0.30	135	-0.11	0.30
56-73	103	0.06	0.28	102	-0.01	0.26	102	-0.06	0.24	102	0.02	0.29

Table 6. Paired-samples *t*-tests using aggregate *D* scores by participant's age, generational

identity condition

	Pairs								
	Generation Z – Millennials			Millennials – Generation X			Generation X – Baby Boomers		
Participant's Age	*t*	*p*	*d*	*t*	*p*	*d*	*t*	*p*	*d*
23 and less	-1.696	.091	-.118	10.017	< 0.001	.696	-2.295	.023	-.160
24-39	-1.301	.195	-.088	7.753	< 0.001	.526	0.650	.516	.044
40-55	0.300	.764	.026	1.250	.214	.107	2.638	.009	.226
56-73	1.598	.113	.157	1.410	.161	.140	-1.960	.053	-.193

Table 7. Descriptive Statistics for in-group implicit attitudes, all participants

	n	*M*	*SD*
Age condition	712	0.04	0.29
Identity Condition	665	0.08	0.31

Table 8. Descriptive Statistics for in-group implicit attitudes, separated by participant age

Participant's Age	Age Groups Condition			Generational Identity Condition		
	n	*M*	*SD*	*n*	*M*	*SD*
23 and less	219	0.16	0.31	207	0.10	0.32
24-39	248	0.09	0.25	217	0.14	0.28
40-55	169	-0.09	0.25	137	0.00	0.30
56-73	73	-0.11	0.26	102	0.02	0.29

Table 9. Descriptive statistics for explicit age attitudes, all participants

	Age Groups Condition			Generational Identity Condition		
	n	*M*	*SD*	*n*	*M*	*SD*
Children/Generation Z	753	4.11	1.14	695	4.06	1.07
Young Adults/Millennials	750	1.52	1.10	699	1.54	0.97
Middle-Aged Adults/Generation X	751	-1.35	0.86	695	-1.27	0.80
Old Adults/Baby Boomers	750	-4.29	0.99	696	-4.36	1.19

Table 10. Descriptive statistics for explicit in-group attitudes, separated by participant age

Participant's Age	Age Groups Condition			Generational Identity Condition		
	n	*M*	*SD*	*n*	*M*	*SD*
23 and less	228	4.02	1.19	221	4.70	1.18
24-39	254	1.46	1.03	222	2.03	0.95
40-55	175	-1.05	0.88	134	-0.75	0.77
56-73	80	-4.22	0.79	106	-3.34	0.89