The Experience of Ostracism over the Adult Life Span

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Abstract

Ostracism, that is, being excluded and ignored by others, is a highly painful and threatening experience for individuals. Most empirical research on ostracism has been carried out in the lab or focused on samples in specific contexts. Here, we investigate the effects of age on how individuals experience ostracism within a broad, representative sample of the adult German population (the Socio-Economic Panel). We find a generally negative relation between ostracism and age, such that older adults report experiencing ostracism less frequently. Further analyses show that a particular dip in the ostracism frequency curve around the age of 65 might be at least partly due to leaving the workforce. We further investigate cross-sectional as well as longitudinal effects of age on relations between ostracism frequency and psychological well-being, showing relatively stable associations between ostracism and negative emotions, reduced life satisfaction, as well as dysfunctional social behavior across the adult life span.

Keywords: ostracism, social exclusion, age

9510 words

Ostracism, that is, to be ignored and excluded by others, has been extensively researched in the previous decades, with many studies pointing to its detrimental effects on motivational, cognitive, affective, physiological, and behavioral variables (eg., Eck, Schoel, & Greifeneder, 2016; Williams, 2009). Most of these studies have been conducted in the laboratory and have investigated reactions to experimentally induced ostracism situations in which participants are excluded by unknown strangers for a couple of minutes (e.g., Rudert & Greifeneder, 2016; Rudert, Hales, Greifeneder, & Williams, 2017). In real life, however, people are often ostracized by colleagues, family members, friends, or even their romantic partner; and ostracism episodes can last for weeks, months, or longer (Williams, 2009). Surprisingly, to the present date we know comparatively little about the occurrence of ostracism in individuals' day to day lives (Nezlek, Wesselmann, Wheeler, & Williams, 2012). For instance, certain groups of the population might either be more or less at risk of becoming a target of ostracism or prone to experience subjective consequences of ostracism. Knowing about such risk factors for ostracism is important as it furthers a general understanding about the antecedents of being socially left out and provides important information for interventions that aim to prevent ostracism. Here we argue and empirically substantiate that one risk factor is age. We investigate this risk factor by providing data on age differences in the experience of ostracism as well as relations between ostracism and psychological functioning over the adult life span.

Studies show that ostracism can occur at all life stages, starting at a very early age (e.g., among preschoolers from 4 to 6 years; Fanger, Frankel, & Hazen, 2012). Even children are already sensitive to its occurrence both when experiencing ostracism (Abrams, Weick, Thomas, Colbe, & Franklin, 2011; Hawes et al., 2012) and when observing such behavior (Marinović & Träuble, 2018; Marinović, Wahl, & Träuble, 2017; Over & Carpenter, 2009; Song, Over, & Carpenter, 2015). However, ostracism does not necessarily affect individuals

at all life stages equally. Laboratory studies investigating the potential moderating effects of age have documented that adolescents and emerging adults (12 -17 years) tend to react more negatively to ostracism compared to older adults (Pharo, Gross, Richardson, & Hayne, 2011; Sebastian, Viding, Williams, & Blakemore, 2010), as they report stronger feelings of threat, worse mood, less positive affect, and more state anxiety after being excluded in the virtual ball-throwing game Cyberball for a couple of minutes. Similarly, Hawkley, Williams, and Cacioppo (2010) showed that middle-aged adults experienced less negative affect following exclusion compared to young adults and old adults experienced less negative affect than middle-aged adults (age range 18-86 years). However, a study comparing adolescents and children found no differences in reactions to ostracism depending on age (Wölfer & Scheithauer, 2013), and neither did a recent meta-analysis across 120 Cyberball studies (Hartgerink, van Beest, Wicherts, & Williams, 2015). It should be noted, though, that many of the existing studies on ostracism are laboratory studies conducted with college student participants, and thus the age range investigated in the meta-analysis by Hartgerink and colleagues (2015) is limited (10 to 32 years; M_{age} = 20.5).

To our knowledge, there has been no systematic study investigating (a) age differences in the experience of real-life ostracism and (b) age-related differences in reactions to real-life ostracism in a broad, representative sample. Data from such studies, however, would be highly informative for several reasons: First, it would allow investigating whether effects of age on the experience of ostracism that were documented in the laboratory would hold for real life ostracism experiences. This is especially important as it can be assumed that real-life ostracism situations differ as a function of life stage. For instance, for children, adolescents, and young adults, ostracism might mainly be due to the formation and re-formation of social groups, networks, and couples (Coie, Dodge, & Kupersmidt, 1990; Masten et al., 2009). During middle age, the main sources of ostracism are likely associated with the workplace

(Robinson, O'Reilly, & Wang, 2013; Robinson & Schabram, 2019) or silent treatment by one's romantic partner (Downey, Freitas, Michaelis, & Khouri, 1998). Finally, in old age, the main reason for ostracism might be that elderly people find themselves in a role-less position, become (at least from their own perspective) burdensome to friends as well as family members (Walsh, Scharf, & Keating, 2017), are not able to participate in various activities due to functional limitations (Luhmann & Hawkley, 2016), or are subjected to negative stereotypes and ageism (North & Fiske, 2012, 2013). Investigating age differences in ostracism with standardized manipulations systematically neglects this variance in ostracism situations. An assessment of ostracism in real life is therefore particularly informative.

Second, extending research about the effects of ostracism with representative survey data allows us to go beyond the study of short-term reactions to ostracism — such as effects on need threat and mood — that are typically investigated in laboratory research,. Empirical evidence for the long-term effects of ostracism is rare, with the exception of a study from Riva, Montali, Wirth, Curioni, and Williams (2016) showing that targets who repeatedly face ostracism report increased feelings of helplessness, detachment, depression, and worthlessness. Again, however, it is not known whether some or all of these reactions are susceptible to age-related differences.

Here we take a first step to address some of these outlined gaps in the literature and investigate both age differences in real-life ostracism experiences over the adult life span as well as cross-sectional and longitudinal associations between ostracism and psychological functioning at different life stages. Given the nature of our dataset, this study focuses on adult individuals (> 17 years) only. Consequently, all subsequent theoretical assumptions as well as empirical conclusions are limited to adult individuals. It should further be noted that we treat age as a continuous variable within this contribution. Thus, if in the following we refer to

"younger" compared to "older" adults, we refer to linear relations rather than comparisons between pre-defined age groups.

Age Differences in Experienced Ostracism across the Adult Life Span

How often individuals experience and report ostracism depends on both the frequency of ostracism, that is, how often ostracism actually occurs, as well as on individuals' sensitivity to signs of ostracism, that is, how easily individuals detect and interpret certain social incidents as ostracism. Regarding the *actual frequency*, predictions can be derived from Socioemotional Selectivity Theory (Carstensen, 1992, 1995), which states that individuals actively and strategically frequent social contexts that are beneficial in reaching age-specific goals. While young adults approach contexts in which they can obtain information and develop their self-concept, older adults choose social contexts mainly because of the emotional benefits these contexts offer. Consequently, younger adults often have both broader but also less stable social networks (Carstensen, 1992; Sander, Schupp, & Richter, 2017). This might increase their chances of gaining information and status but also puts them at a higher risk of experiencing ostracism. This selection effect might be further enhanced by demands of social norms and roles who require young adults to adapt more often to new environments with changing social contacts (university, novel work environments; Nikitin & Freund, 2008). In contrast, older adults focus more on their emotional needs and thus increasingly limit their social network to a few selected, close persons who provide emotional support and are possibly less likely to ostracize them.

Regarding *sensitivity to signs of ostracism*, one could argue that younger compared to older individuals are more sensitive, at least for ostracism occurring in one's larger social network. This notion would be in line with research having demonstrated that older adults are in general less sensitive to negative (social) information than younger adults (for an overview, see Reed, Chan, & Mikels, 2014). Particularly, ostracism represents a major threat to one's

social connectedness and acceptance, which is of primary importance for adolescents (Blakemore, 2018; Knoll, Magis-Weinberg, Speekenbrink, & Blakemore, 2015) but also for younger adults (Carstensen, 1992; Nikitin, Schoch, & Freund, 2014). Moreover, within the larger social networks of younger adults, social relationships might be characterized by a lower stability and stronger ambiguity than the more stable and reliable social relations of older adults (Carstensen, 1992). A quick detection of cues of emerging ostracism is thus essential to prevent the risk of becoming socially isolated (Williams, 2009). Adolescents and younger adults thus need to monitor their social relationships more closely and might interpret more incidents as ostracism than older adults. However, laboratory research showed no age-related differences in the ability to detect ostracism (Hawkley et al., 2010). This finding, though, might be partially due to the power of the Cyberball manipulation and not necessarily transfer to real-life ostracism incidents which might be more subtle and ambiguous. It should further be noted that the increased sensitivity to signals of ostracism may be expected for ostracism by strangers or loose acquaintances only. Ostracism by emotionally close others should be detected regardless of age, as it represents a strong threat for older adults' goal of emotional regulation as well (Carstensen, 1992).

Taken together, one plausible assumption is that younger adults experience ostracism more often than older adults, either because a) younger adults more frequently engage within less stable social contexts in which ostracism might be more likely or b) due to a higher sensitivity for ostracism occurring in one's social network, although the latter explanation currently lacks empirical support.

Risk Factor Workplace

So far, we have focused on social selectivity as a function of motivational needs at specific life stages and differential sensitivity to signs of ostracism. In addition, social contexts and associated riskiness for experiencing ostracism may change as a function of age.

One particularly important age-specific social context for young to middle-aged adults, in which ostracism occurs frequently, is the workplace (Ferris, Brown, Berry, & Lian, 2008; Hitlan & Noel, 2009; Robinson et al., 2013). The workplace can often be a competitive, stressful environment with high constraints regarding time and resources in which individuals both need to rely on each other while competing for resources at the same time (Rudert & Greifeneder, 2017). As active aggression is mostly unacceptable in professional environments, ostracism can serve, for instance, as an accepted way to reinstate social norms by punishing colleagues that are perceived as "troublemakers" (Robinson & Schabram, 2019; Rudert, Keller, Hales, Walker, & Greifeneder, 2020; Rudert, Ruf, & Greifeneder, 2020). In other cases, ostracism can be promoted via hierarchical structures or even occur involuntarily, when co-workers are ignored or forgotten especially in highly stressful work environments (Rudert & Greifeneder, 2017). Moreover, unlike in other life domains, individuals usually have limited freedom to choose the colleagues they want to interact with, and they are often obliged to be in a certain arranged work environment (e.g., an office) together with these colleagues for a large portion of their working time. That means it can be difficult for ostracized individuals to avoid contact with their ostracizing co-workers. Importantly, because the workforce mostly consists of young and middle-aged adults, these groups run a particularly high risk of social exclusion experiences.

The flip-side of this coin is that the risk of experiencing workplace related ostracism is abruptly reduced when individuals leave the workforce and retire. Germany has a statutory retirement age (between 65 and 66 at the time of this contribution, depending on one's birth year). Retired individuals might have more liberties in selecting the social contexts they want to be in and the individuals they want to interact with. Retirement may thus decrease the frequency of ostracism, contributing to a lower frequency of ostracism experiences in older age. Alternatively, it is also conceivable that retirement associated changes in one's social

environment may threaten one's belongingness – such as not being part of a work group any longer or not feeling able to contribute to society in a meaningful way. Against this background, this contribution considers individuals belonging to the workforce and individuals being retired as likely facing very different situations and risks of being socially excluded.

Associations Between Ostracism and Psychological Functioning over the Life Span

Most theories on ostracism, such as the Temporal Need Threat Model of Ostracism (Williams, 2009) as well as the Multimotive Model (Smart Richman & Leary, 2009) predict that ostracism negatively affects psychological well-being and functioning of individuals. These predictions have been corroborated in many empirical studies (for an overview, see Blackhart, Nelson, Knowles, & Baumeister, 2009; Gerber & Wheeler, 2009; Hartgerink et al., 2015; Williams, 2009). Specifically, ostracism induces the *experience of threat*, namely threats to individuals' needs for belonging, self-esteem, control, and meaningful existence (e.g., Williams, 2009), as well as the experience of negative emotional states such as increased anger, sadness, anxiety, and decreased happiness (Hawkley et al., 2010; Sebastian et al., 2010). Long-term ostracism is further linked to *decreased life satisfaction* and well-being that may ultimately result in depression (Gilman, Carter-Sowell, DeWall, Adams, & Carboni, 2013; Riva et al., 2016; Rudert, Janke, & Greifeneder, 2017). Finally, as a response to ostracism, excluded individuals often show *dysfunctional social behavior*. Specifically, ostracized individuals engage less in prosocial behavior such as forgiving others or returning favors (Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007) and more in antisocial, hostile behavior such as retaliating against their perpetrators but also against uninvolved others (Twenge, Baumeister, Tice, & Stucke, 2001) in order to regain a feeling of control. Moreover, ostracism in the laboratory has been shown to result in social withdrawal (Ren, Wesselmann, & Williams, 2016), which—in real life—could manifest itself in ostracized

individuals refraining from participation in social activities, or a narrowing of social circles to reduce the risk of experiencing future ostracism. Interestingly, in some studies, experimentally induced ostracism has been linked to more affiliative and prosocial behavior, too (for an overview, see Wesselmann, Ren, & Williams, 2015). This increase has been observed when individuals assume that their behavior is instrumental in achieving (re)affiliation (Maner, DeWall, Baumeister, & Schaller, 2007), but is unlikely to generalize to all situations, especially when individuals are chronically ostracized over longer periods of time.

In the current contribution we investigate age-related differences in the associations between ostracism and indicators of psychological functioning. In most theories as well as the majority of the existing empirical research, it has been implicitly assumed that the negative effects of ostracism are generalizable to all life phases. A notable exception is research on the *experience of threat*. Laboratory research has demonstrated that adolescents (e.g., 12 - 17; Pharo et al., 2011; Sebastian et al., 2010) react with more threat and stronger negative emotions to the experience of ostracism than adults, and younger adults react more strongly than older ones (Hawkley et al., 2010), with a possible explanation being that older adults can regulate their emotions better than younger ones and experience negative events as less severe (Carstensen, Fung, & Charles, 2003). Yet to date, there is no clear consensus on how age could affect ostracism's association with *life satisfaction*, or *social behavior*. Based on the available literature, two opposite predictions are conceivable: On the one hand, if ostracism is experienced as more threatening, its downstream consequences might be more severe as well. Thus, for instance, maladaptive associations of ostracism with life satisfaction and social behavior might be stronger for younger compared to older adults. On the other hand, being repeatedly ostracized over one's lifetime might push individuals into vicious circles of experiencing rejection and showing maladaptive responses such as dysfunctional social

behavior. This might in turn result in more ostracism from others, as has been shown in research on rejection sensitivity (Downey et al., 1998) as well as disagreeableness (e.g., Hales, Kassner, Williams, & Graziano, 2016; for an overview see e.g. Smart Richman & Leary, 2009; Timeo, Riva, & Paladino, 2019; Williams, 2009). From this perspective, one can derive the prediction that ostracism, life satisfaction, and social behavior might be related more strongly in older than in younger age. As the (lack of) existing literature on effects of ostracism over the lifespan does not allow for a more directed hypothesis here, we investigate this question in explorative fashion.

Research Questions

The present contribution aims to close the outlined gaps in the literature and investigate the relationship of the experience of ostracism and age within a broad, representative sample of the adult German population. One of our goals is to investigate age differences in the frequency of experienced ostracism over the adult life span (Research Question 1). To substantiate a (partial) explanation for those age differences, we further investigate the role of one particularly prominent, age-normative life event, namely retirement from the workforce.

Moreover, we investigate whether age (longitudinally and cross-sectionally) moderates typical associations between ostracism and indicators of psychological functioning (Research Question 2). Our respective theoretical assumptions rely heavily on assumptions derived from theoretical models about ostracism as well empirical laboratory studies (Williams, 2009). Based on these, we expect a positive association between ostracism and the experience of threat (indicated by measures of emotions and self-esteem; Hawkley et al., 2010; Sebastian et al., 2010; Williams, 2009) and a negative association between ostracism and life satisfaction (Gilman et al., 2013; Rudert, Janke, et al., 2017). Finally, we expect maladaptive associations between ostracism and social behavior, particularly positive

associations with hostile behavior (indicated by higher negative and lower positive reciprocity and a lower tendency to forgive; Twenge et al., 2007; Twenge et al., 2001) as well as withdrawal tendencies (Ren et al., 2016; indicated by one's number of close friends as well as engagement in social activities). In an explorative fashion, we further investigate whether negative associations between ostracism and negative psychological functioning are generalizable to all life phases or whether there are age-related differences in the strength of associations.

Method

The IRB of the University of Koblenz-Landau approved the assessment of ostracism in real life within the context of a survey as part of the framework "Research about Social Exclusion" (0002-16-1). As this contribution contains only an analysis of secondary data, IRB approval was not sought for this specific project ("Ostracism and Age").

Sample

The sample consisted of participants from the Socio-Economic Panel (SOEP), a longitudinal data panel representative of the adult German population (Goebel et al., 2018). More specifically, we used a data sample of the 2015 wave of the SOEP innovation sample (SOEP-IS), which is a subsample of the SOEP that allows for testing new research questions, scales, and methods. In sum, we analyzed the data of 2745 adult participants (53 % female, M_{age}= 53.44, *SD* = 18.26, Range = 18 - 97). While we treat age as a continuous variable in all further analyses, about 14% of participants could be categorized as young adults between 18 – 30 (*n* = 378), 56% as middle aged adults between 30 – 65 (*n* = 1543), and 30% as old adults > 65 years (*n* = 824; age-bracketing as in Luhmann & Hawkley, 2016). Regarding education, 33 % obtained a school leaving certificate, 32 % an intermediate school degree, and 20% a college entrance exam (12 % other, 1% dropout, 2 % currently in school). With regard to income, 1178 participants did not have a personal income, the remaining participants reported

a monthly personal net income of 1566.86 Euro on average (*SD* = 1252, *Mdn* = 1320, *Range* = 35 – 18 500). Monthly household net income (across participants) was 2925.05 Euro on average (*SD* = 1685.85, *Mdn* = 2600, *Range* = 300 – 20 000). On all this demographic information, the current sample is comparable to the general population (frequency distributions derived from census data for Germany; Statistisches Bundesamt, 2020).

Data on ostracism was assessed again in the 2018 SOEP-wave. A total of n = 2215 persons participated at this measurement point (53.8 percent female; M_{age} = 55.48, *SD* = 18.52, Range = 18 – 98). Not all of the participants that had participated in 2015 also participated in 2018 and some participants only participated in 2018. In total, our data set consists of 2959 adults, out of which 2001 have participated at both measurement points. A t-test showed that the 744 participants who dropped out of the sample by 2018 did not differ from participants within the remaining sample with regard to experienced ostracism in 2015, $t(2743) = 0.10$, $p = .920$, gender, $\chi_2(1) = 2.61$, $p = .105$, health, $t(2743) = 0.25$, $p = .801$, education, $\chi_2 (6) = 9.74$, $p = .136$, and all indicators of psychological functioning analyzed in the present study, $F(1, 19) = 1.27$, $p = .193$, $\eta^2 < .01$.

Measures

Frequency of Social Ostracism. To measure the subjective frequency of ostracism, we used the Ostracism Short Scale (OSS; Rudert, Keller, et al., 2020), a measure based on the Ferris scale that measures ostracism in the workplace (Ferris et al., 2008). The OSS is a four-item scale assessing the general subjective frequency that a person had felt ostracized within the previous two months, a time frame that is generally considered long enough to be less sensitive to situational fluctuations but short enough to be reliably represented in individuals' minds (i.e., less memory distortions). In the SOEP-IS-2015 wave, the OSS was included for the first time; in 2018, the OSS was administered for the second time. Participants were asked: *"How often did you experience the following occurrences during the last two months?"*

"Others ignore me," "Others exclude me from conversations," "Others treat me as if I was not there at all," "Others do not invite me to activities." All items were rated on a 7-point Likert scale *(1 = never, 7 = always)*, Cronbach's α = .85. For the scale's pretest results, see Rudert, Keller, and colleagues (2020).

Emotions and Self-esteem. Emotions were assessed with four items measuring the frequency of being angry / happy / worried / sad within the last four weeks *(1= very rarely, 5 = very often)*. Moreover, as a measure of self-esteem, survey participants were asked whether they have a positive attitude towards themselves (*1 = does not apply at all; 7 = applies completely)*. Emotions were assessed in the 2015 and the 2018 waves, self-esteem only in 2015.

Life Satisfaction. The SOEP-IS assesses general satisfaction with life with one item *(0 = completely dissatisfied, 10 = completely satisfied)*. Life satisfaction was assessed in 2015 and 2018.

Social Behavior. As a proxy for hostile behavior characterized by decreased prosocial and increased antisocial tendencies, we used SOEP-IS-measures targeting negative and positive reciprocity towards others (Caliendo, Fossen, & Kritikos, 2012) as well as the Tendency to Forgive (Weinhardt & Schupp, 2011). Reciprocity was measured with three items each (e.g., Negative Reciprocity: *"If I suffer a serious wrong, I will take revenge as soon as possible, no matter what the cost."* α = .80*;* Positive Reciprocity: *"If someone does me a favor, I am prepared to return it."; 1 = does not apply at all; 7 = applies completely,* α = .59). The Tendency to Forgive was measured with four items (e.g., "*If other people wrong me, I will try to just forgive and forget."; 1 = does not apply at all; 7 = applies completely*, α = .59). Withdrawal tendencies were operationalized as low engagement in social interactions, indicated by the (low) number of close friends (open answer format) as well as information about how often participants engage in several (social) leisure activities that are assessed in the SOEP. These leisure activities are typically voluntary (and thus, individuals can withdraw

from them if they want to) and assumed to be social in nature or have inherent social components, such that they either require social interactions and/or are experienced within a group or crowd. In particular, these activities were: attend cultural events; attend cinema, pop concerts, dance or sport events; participate in sports; artistic activities[1]; attend social gatherings; helping relatives, friends or neighbors; perform volunteer work; participate in local politics; attend Church or other religious events *(1 = never, 4 = every week)*. Social behavior measures were collected in the SOEP-IS in 2015 but not in 2018.

Analyses

We organized our analyses in three steps: In a first step, we conducted regression analyses to investigate the associations between age and ostracism within the 2015 and the 2018 data. We also investigated whether age trends could be partly attributed to retirement from the workforce as an age-normative life event, by controlling for whether individuals received a pension or not. In addition, we tested whether the experienced frequency of ostracism decreased more strongly over the three-year interval for individuals who had retired between 2015 and 2018 compared to individuals of a similar age who did not.

In a second step, we investigated whether age moderates associations between ostracism and psychological functioning in the cross-sectional data sets of 2015 and 2018. To do so, we conducted a path model in which we regressed all criteria (see measures) at once on the full predictor set consisting of ostracism, age, and the interaction between age and ostracism.

In a third step, we tested for longitudinal associations using the 2015 and the 2018 measurement waves. Specifically, we investigated a) the stability of ostracism across the two measurement points, b) whether age moderates the stability of ostracism over the three-year timespan (and thus, whether the stability of ostracism differs depending on age), and c) whether longitudinal paths linking ostracism measured in 2015 to indicators of psychological

functioning measured in 2018 are moderated by age. We conducted cross-lagged panel models with an interaction term, testing whether experiences of ostracism measured in 2015 predict both experiences of ostracism measured in 2018 (construct stability) and one aspect of psychological functioning in 2018 (temporal effect of ostracism). Similarly, the respective aspect of psychological functioning measured in 2015 was used to predict both the same aspect of psychological functioning measured in 2018 (construct stability) and experienced ostracism measured in 2018 (temporal effect of the variable in question). Furthermore, we introduced the interaction between age and ostracism into the cross-lagged panel models. We allowed for an association between the interaction term and the respective criterion measured in 2015 (cross-sectional moderation) and freed a direct effect on the criterion measured in 2018 (longitudinal moderation).

Results

Subjective Frequency of Experienced Ostracism

Reflecting that ostracism represents a norm-violating behavior (Rudert & Greifeneder, 2016), the average frequency of feeling ostracized within the previous two months was relatively low ($M = 1.75$, $SD = .77$). This corresponds to frequencies reported in previous studies on the experience of ostracism in the workplace (Ferris et al., 2008; Hitlan & Noel, 2009). While the general mean was relatively low, it should be noted that 25% of the participants had felt ostracized at least once within the previous two months (i.e., they had an average subjective ostracism value > 2.00 on a 7-point scale).

Age Differences in the Experience Ostracism across the Lifespan

A linear regression analysis showed that age significantly predicted ostracism in the 2015 dataset, such that ostracism was negatively associated with age, $\beta = -.09$, $p < .001$, $R^2 = .008$. We further tested whether a quadratic or cubic term would significantly explain additional variance, which was not the case, smallest $p = .062$. In the 2018 dataset, the effect

remained stable, β = -.14, $p < .001$, $R^2 = .020$, in addition, adding a quadratic term significantly added to the explained variance, $\Delta R^2 = .003$, $p = .006$.

To visualize the age distribution and get a more accurate distribution of ostracism across the lifespan, we used locally estimated scatterplot smoothing (LOESS). In that form of local regression, the regression curve is estimated within smaller subsets. Thus the LOESS curve can also display nonlinear functions without making any respective a priori assumptions (Cleveland, 1979; Luhmann & Hawkley, 2016).

The LOESS-curve visualizing the age trends in 2015 and 2018 is depicted in *Figure 1*. The age distribution of experienced ostracism shows a declining curve, with the sharpest dip following the age of 60 to 70. While the decline of the curve seemingly continues after that age, ostracism was estimated with less precision in very old age (> 80), as indicated by the widening 95% confidence bands. This is probably due to the small number of very old adults in the sample (only 5,3% of the participants were older than 80 years and only 1,4% older than 85).

Consistent with our theoretical argument about the workplace as a systematic risk factor for social exclusion, one plausible explanation for the negative age trend between age 60 to 70 is that individuals experience ostracism less frequently because many retire from the workforce at the age of 65–66. Thus, we tested whether controlling for retirement reduces the explained variance of ostracism by age. The best indicator in the data set for whether someone had retired was whether this person was receiving a pension at the point of questioning. We therefore regressed ostracism on whether participants received a pension and computed the residuals. Next, we regressed these residuals on age and compared potential age effects between the two models. A drop in explained variance of age on ostracism between the original and the adjusted model indicates that retirement is linked to lower ostracism frequency.

While age still predicted ostracism significantly in the second regression model (under control of retirement), the magnitude of the association diminished from the original to the adjusted model, $\beta = -.05$, $p < .001$, $R^2 = .003$, see *Figure 2*. Comparing the difference in the proportion of explained variance ($\Delta R^2 = -.006$) between the original and the adjusted model, we can conclude that 68% of variance of the association between age and experienced ostracism throughout the lifespan can be attributed to leaving the workforce due to retirement.

In addition, we analyzed whether the reported frequency of ostracism experiences decreases more strongly for individuals who had left the workforce between 2015 and 2018. To this end, we focused on participants aged between 55 and 65[2] who reported full-time employment at the first measurement point in 2015 and who had also participated at the second measurement point three years later ($n = 151$). Of these, 27 participants (MP1: $M_{age} = 62.30$, $SD = 1.98$, Median = 63 years, *Range:* 56 – 65) reported in the 2018 wave that they were not working anymore and received a pension. We ran a 2 (recently retired vs. non-retired) x 2 (first vs. second measurement point) mixed ANOVA with measurement point as a repeated variable to investigate whether ostracism decreases more strongly for individuals who had left the workforce between 2015 and 2018. Levene's test indicated that variance homogeneity was given at both measurement points, $F(1, 149) = 2.35$, $p = .127$ and $F < 1$. There was a significant effect of measurement point, $F(1, 149)$, $p < .001$, $\eta^2 = .09$, reflecting that the experience of ostracism had decreased within the three years for all individuals. Retirement was not a significant predictor, $F < 1$, but there was a significant interaction between retirement x measurement point, $F(1, 149) = 5.79$, $p = .017$, $\eta^2 = .04$. Simple main effects show that the decrease in experienced ostracism was stronger for individuals who had retired between the two measurement points ($M_{MP1} = 1.89$, $SD = .70$ vs. $M_{MP2} = 1.47$, $SD = .58$), $F(1, 149) = 12.16$, $p < .001$, $\eta^2 = .08$, compared to those who had not, ($M_{MP1} = 1.63$, $SD = .57$ vs. $M_{MP2} = 1.53$, $SD = .56$), $F(1, 149) = 3.18$, $p = .076$, $\eta^2 = .02$. Interestingly, the

retirement group reported more ostracism than the comparison group at the first measurement point (i.e., prior to retirement), $F(1, 149) = 4.07$, $p = .046$, $\eta^2 = .03$.

Cross-sectional Interaction Effects Between Ostracism and Age

Looking at the zero-order correlations of the 2015 measurement point (see *Tables 1* and *2*), we found that ostracism frequency was positively related to anger, anxiety, sadness, negative reciprocity, and engagement in artistic activities. It was negatively related to happiness, self-esteem, life satisfaction, positive reciprocity, tendency to forgive, the number of close friends, attending social gatherings, and helping relatives, friends, or neighbors. For those variables that were again assessed in 2018 (anger, anxiety, happiness, sadness and life satisfaction, see *Table 3*), these correlations proved to be significant, too.

Next, we conducted a path model in which we regressed all criteria (see measures) at once on the full predictor set consisting of ostracism, age, and the interaction between age and ostracism, using a robust maximum likelihood estimator (MLR). We also allowed for associations between criteria and within the predictor set. Thus, the path model was saturated. To control for the substantial amount of variables indicating psychological functioning and an inflation of the family-wise error rate, we corrected for the number of tested interactions using both the more conservative Bonferroni and the more liberal Hochberg-Benjamini procedure (Benjamini & Hochberg, 1995).

Most associations between ostracism and the criteria were not moderated by age. In fact, when adjusting the alpha-level (regardless of the procedure) we only found two indications for moderation effects within the 2015 data: First, there was a statistically significant ostracism x age interaction for the association between ostracism and anxiety, $\beta = -0.06$, $p = .002$. Simple slope analyses (dichotomized moderator) indicate that the relation between ostracism and anxiety was stronger for younger adults (estimated at -1 SD of age, i.e., 35yrs: $\beta = 0.20$, $p < .001$) than for older ones (estimated at +1 SD, i.e., 72yrs: $\beta = 0.08$, p

= .008). In addition, we aimed to identify regions of significance using the Johnson-Neyman technique (Bauer & Curran, 2005; Johnson & Fay, 1950). The resulting interval indicated that the conditional slope of ostracism was no longer significant for individuals older than 76.59 years.

Second, we found a significant interaction with age regarding the association between ostracism and negative reciprocity, β = 0.07, p = .001. Simple slope analyses indicated that for older adults, the relation between ostracism and negative reciprocity was stronger than for younger adults (-1 *SD* of age: β = 0.08, p = .001; + 1 SD of age: β = 0.21, p < .001). The Johnson-Neyman interval indicated that the conditional slope of ostracism was no longer significant for individuals younger than 29.02 years. See Supplemental Materials for a depiction of the Johnson-Neyman intervals (*Figures S1 and S2*).

At the second measurement point three years later, anxiety, anger, happiness, sadness and life satisfaction were measured. However, in the 2018 dataset, the moderation of the ostracism–anxiety association via age did not replicate, β = -0.02, p = .307, nor did age moderate any other association between ostracism and other aspects of psychological functioning (anger, happiness, sadness, life satisfaction), lowest p = .117. Negative reciprocity was not measured in 2018.

Stability of Ostracism and Longitudinal Interaction Effects Between Ostracism and Age

Participants experienced moderately stable levels of ostracism over the observed three-year period (r = .41; p < .001). We found no indication for the assumption that age might be linked to the observed stability of ostracism, β = -.01, p = .859.

We investigated longitudinal associations of ostracism with psychological functioning by conducting cross-lagged panel models. While this type of analysis allows for dissecting temporal trends from mere cross-sectional associations, it also requires that both constructs are measured at both measurement points. Within the innovation sample of the SOEP, this was the

case for the measured emotions and life satisfaction but not for any variables indicating social interactions, which is why our analyses are limited to anxiety, anger, sadness, happiness, and life satisfaction. We computed the cross-lagged panel analyses for all five criteria (anxiety, anger, sadness, happiness, life satisfaction) separately.

All models were calculated using a robust maximum likelihood estimator (MLR). To evaluate the model fit, we used a combination of misfit (RMSEA, SRMR) and fit indices (CFI, TLI). Our interpretation of these indices relies on established rules of thumb for cut-off values (Schermelleh-Engel, Moosbrugger, & Müller, 2003). We distinguish between an acceptable model fit (RMSEA ≤ .08, SRMR ≤ .10, CFI ≥.95, TLI ≥.95) and a good model fit (RMSEA ≤ .05, SRMR ≤ .05 CFI ≥.97, TLI ≥.95). To handle missing data when estimating any cross-lagged panel model, we applied the Full Information Maximum Likelihood (FIML) method. We corrected the alpha-level for the number of tested temporal trends as well as longitudinal interactions familywise, once again using both the more conservative Bonferroni and the more liberal Hochberg-Benjamini procedure.

The cross-lagged panel models (including the interaction term) reached a very good model fit with $\chi^2(1) \leq 0.60$, $p \geq .806$, CFI ≥ .99, TLI ≥ .99, RMSEA ≤ .01, SRMR ≤ .01. The models show bi-directional longitudinal associations for all negative emotions (see *Table 4*): Thus, ostracism in 2015 predicted anger, anxiety, and sadness in 2018 and vice versa. We only found unidirectional longitudinal associations regarding happiness and life satisfaction: Life satisfaction and happiness predicted ostracism negatively but not vice versa (at least after alpha-adjustment). In addition, we found indication that age moderated the direct path from ostracism to happiness, $\beta = -0.04$, $p = .044$. However, it should be noted that whether one regards this interaction as statistically significant depends on the method of alpha-adjustment: While the liberal Hochberg-Benjamini procedure suggests that this interaction should be treated as statistically significant (cut-off value for this case: $p < .05$), the more conservative

Bonferroni procedure does not support this conclusion (cut-off value for this case: $p < .01$). This stands in sharp contrast to all other tests that we had run before (no influence of the method of adjustment on the interpretation of the test). Simple slope analyses indicate that for older adults, ostracism in 2015 predicted happiness in 2018 (+1 SD of age: $\beta = -0.08$, $p = .015$), whereas for younger adults, it did not (-1 *SD* of age: $\beta = 0.01$, $p = .734$). The Johnson-Neyman interval indicated that the conditional slope of ostracism was no longer significant for individuals older than 58.73 years. Besides this potential moderation, we did not find indication that age moderates any other of the longitudinal associations, smallest $p = .104$.

Discussion

Most research on ostracism has been conducted either within the laboratory or with small, specific samples. In contrast, this contribution investigates the effects of age on the experience of ostracism within a broad, representative sample of the German population. We find that, generally, the subjectively reported frequency of ostracism is negatively associated with age, and this relationship can be traced at least partly back to leaving the workforce between the age of 60-70 with analyses taking an indicator of retirement into account. Longitudinal analyses showed that ostracism was moderately stable over the investigated timespan of three years and that this stability did not vary depending on age. While ostracism was overall negatively related to measures of psychological functioning both cross-sectionally as well as longitudinally, only few of these relations were moderated by age. A few exceptions were anxiety, negative reciprocity, and happiness, even though these moderations did not prove overly stable. We discuss these findings in the following.

Older Adults Experience Ostracism less Frequently

There are several possible explanations for the negative association between ostracism and age. First, in line with Socioemotional Selectivity Theory, adults might be increasingly selective in the choice of their social contexts and the people they want to interact with as

they mature (Carstensen, 1992, 1995). This is because younger adults have a stronger motivational interest in information-acquisition within their social networks. Consequently, they might expose themselves more often to novel, unfamiliar contexts where they need to adapt to new environments and become a member of new groups and networks. As a result of all this, they are at higher risk of ostracism. With increasing age, in contrast, individuals prioritize their emotional needs and thus favor more stable private as well as professional networks. Thus, ostracism from new or unstable groups becomes less likely over the adult lifespan.

In addition to a higher selectivity regarding one's social contacts, age-specific context effects (e.g., leaving the workforce) may result in an age-normative discontinuation of social contexts (e.g., one's co-workers). To the extent that these social contexts carry a particularly low or high risk of ostracism, systematic age-related effects may ensue. Several lines of research converge in suggesting that when individuals leave the workforce, an important risk factor for being actively ostracized disappears. This is because ostracism in the workplace is ubiquitous (Hitlan & Noel, 2009), and this ubiquity is at least partly traced back to competitiveness and the necessity to frequently adapt to new co-workers and structures in modern work environments (Robinson et al., 2013; Rudert & Greifeneder, 2017; Williams, 2002). In contrast, following retirement, individuals can more actively choose for themselves who they want to interact with and thus more easily avoid situations with a high risk of experiencing ostracism as well as people that might ostracize them.

In line with the assumption of retirement marking an important life event with regard to ostracism experiences, an additional subgroup-analysis of individuals between 55 to 65 (in the year 2015) showed the strongest decrease of ostracism frequency between 2015 and 2018 for individuals who retired within that period (in Germany, statutory retirement age was between 65-66 at the time of this contribution). Interestingly, at the descriptive level,

individuals approaching retirement reported even *more* ostracism than comparably old individuals who were not retiring yet. One could speculate whether this might be an effect of individuals feeling replaced or increasingly obsolete in the last years before retirement, but more research is needed to draw reliable conclusions here. As a potential caveat, we emphasize that these assumptions may apply only for individuals retiring due to reaching the statutory retirement age. In contrast, individuals who are forced to retire unusually early, for instance due to health issues or restrictive company policies, could potentially even suffer from an increased risk of ostracism. Unfortunately, the SOEP data does not allow for more differentiated conclusions here, as it does not distinguish why an individual retired from the workforce. Future research on ostracism and retirement may thus yield interesting insights by further investigating different groups of retirees and taking into account different reasons why individuals may leave the workforce.

One may also speculate about the role of other life events for the experience of social ostracism, such as marrying, becoming a parent, or negative events such as unemployment or the loss of a partner. While these events are undoubtedly associated with large changes in one's social environment, it is less evident that they are systematically related to being ignored and excluded by others per se. Rather, social norms and expectations in one's personal social network may further play a crucial role in determining whether a life event strengthens ostracism or, reversely, increases inclusion (Rudert & Greifeneder, 2016): For instance, the time interval during which individuals become parents varies largely depending on education (Livingston, 2015a, 2015b). As a result, in social networks where education levels vary, individuals become parents at different time points. If an individual is the first parent in their circle of friends, parenthood might result in feelings of ostracism. Reversely, if their social network already consists predominantly of parents, parenthood might even become a source of inclusion. Social network analyses in datasets that consider social norms

with regard to individuals' social connections might be helpful in investigating the role of life events that are not per se associated with being ignored or excluded.

So far, our argument centered around changes in *actual frequency* of ostracism. In addition, it is interesting to consider that the *sensitivity* for detecting ostracism may also vary as a function of age. In particular, sensitivity for detecting ostracism may decrease over the adult lifespan, which by itself, or in interaction with actual frequency, could account for the negative association between age and ostracism, too. For instance, as individuals' social relations become more stable and as the size as well as the importance of (large) social networks decrease over the course of adulthood (Carstensen, 1992, 1995), detecting ostracism might become less relevant. As a result, the monitoring of and sensitivity to signs of social exclusion may decrease. In addition, with increasing age, individuals become emotionally more composed and balanced (Gross et al., 1997), adhere more to positive than to negative information (Reed et al., 2014), and develop strategies to cope with situations in which they are not included due to their increased age (for an overview, see Freund, Nikitin, & Riediger, 2012). Thus, older adults might interpret fewer occasions as ostracism or discard them more easily than younger adults (Carstensen et al., 2003). Related to this argument, older compared to younger generations might adhere to differential social norms and values. Consequently, certain exclusion experiences that are perceived as unfair by younger adults might be perceived as acceptable and in line with social norms by elder adults (e.g., exclusion related to traditional gender roles). Such differences might subsequently influence how individuals experience social exclusion (Rudert & Greifeneder, 2016; Rudert, Janke, et al., 2017). Separately or in combination, these age-related changes may lower the sensitivity for ostracism, resulting in lower correct identifications (i.e., actual ostracism correctly identified), but also lower false alarms (i.e., innocuous situations erroneously perceived as ostracism).

Can we tell the contributions of the two explanations—chances in actual frequency or changes in sensitivity—apart? In the SOEP, the OSS scale assesses the subjectively experienced frequency of ostracism, that is, how often an individual *feels or thinks* that she/he is not part. This subjective frequency may not fully overlap with the objective frequency of ostracism, as individuals may feel ignored when they aren't, or may fail to perceive ostracism. Because social behavior is driven by the subjectively experienced frequency of ostracism (Rudert & Greifeneder, 2016), the OSS provides a valid assessment of the psychologically important driver. Yet, it does not afford peaking beneath the surface on the level of psychologically processes, and thus does not allow disentangling the two suggested explanations. Although future research teasing the two explanations' contributions apart will be highly valuable, it should be emphasized that the two suggested processes may act in tandem more often than not, as both hinge on the same age-related changes in the social network structure (e.g., more stable social contexts with increasing age).

While the experience of being actively ostracized by others is negatively associated with age, age might bring other threats to belongingness, too. Particularly, and in stark contrast to our results, Luhmann and Hawkley (2016) showed that the feeling of *loneliness* is positively associated with age. The authors put these elevated levels of loneliness in old age down to factors such as the increase of functional limitations, the absence of significant attachment figures, as well as insufficient income of the elderly. This points to a crucial, and interesting difference between ostracism and loneliness: Whereas the elderly might experience less (intentional or oblivious) ostracism by others, feelings of social isolation might nevertheless be more frequent in old age. The reason for this may be the loss of loved ones and self-experienced difficulties in participating in social life that may cause feelings of loneliness in older individuals, but are not experienced as being intentionally ignored or excluded (i.e., ostracism). Unfortunately, the 2015 wave of the SOEP IS that contained the

OSS did not contain data about loneliness (and neither did the 2018 wave). Thus, a direct empirical comparison between the two constructs is forestalled. It might be interesting in future studies to measure both ostracism and loneliness at the same time to gain a deeper understanding about the interrelations between both constructs over the lifetime. In addition, it might be informative to differentiate between different types of loneliness (social vs. emotional) in these studies.

While we favor the above notion of self-selection into non-exclusive environments as predicted by Socioemotional Selectivity Theory with an associated decrease in sensitivity for ostracism cues, other reasons may be considered regarding the negative association between ostracism and age, too. From a methodological standpoint, one may wonder about (experimental) mortality. Ostracism and reduced belongingness are connected to risk factors such as depression and poorer health (DeWall, Gilman, Sharif, Carboni, & Rice, 2012; Riva et al., 2016), and, thus, individuals who suffer from ostracism might either die younger or may not be interested or able to participate in surveys any longer. On the other hand, the same argument could be made for loneliness, which has nevertheless been shown to be positively associated with (high) age (Luhmann & Hawkley, 2016). Given the cross-sectional nature of the data, it is also possible that there might be certain cohort effects. For instance, it might often be easier to ostracize others online or via social media than face-to-face (Smith & Williams, 2004; Vorderer & Schneider, 2016; Williams, Cheung, & Choi, 2000). As a result, younger generations might be more at risk of being ostracized than older generations, who use the internet, smartphones, and social media less frequently (Perrin & Anderson, 2019; Pew Research Center, 2019; Silver, 2019). It is less evident, however, why internet proficiency should result in the documented sharp dip in ostracism frequency around the age of 65.

Age as a Moderator of the Relation between Ostracism and Psychological Functioning

Generally and consistent with the extant literature, ostracism was related to negative emotions, self-esteem, reduced satisfaction with life, and dysfunctional social behavior. Longitudinal cross-lagged panel investigation showed bidirectional relations between ostracism and negative emotions (anger, sadness, anxiety), which supports previous research demonstrating vicious circles between ostracism and individual behavior. Ostracism might not only foster negative affect but individuals who often show dysfunctional behavior bound to these emotions might also be perceived as burdensome or norm-violating to others, which might itself result in more ostracism (e.g., Downey et al., 1998; Hales et al., 2016; Rudert, Keller, et al., 2020). The latter process might be even more impactful for individuals lacking a positive outlook on life (characterized by low happiness and life satisfaction) as we only found unidirectional effects linking happiness and life satisfaction measured in 2015 to ostracism measured in 2018 but not vice versa.

We found only three interaction effects with age that were small in effect size and not overly stable. Thus, our findings could be interpreted as further evidence for the ubiquitous threat that experienced ostracism represents for young and old individuals alike, leaving only little room for moderation (Williams, 2009). As a result, while we discuss the interaction effects observed in the data in what follows, we emphasize the need for further replication and clarification in future research.

Within the 2015 SOEP-IS wave, age moderated the relationship between ostracism and feelings of anxiety as well as between ostracism and negative reciprocity towards others. We found that ostracism and anxiety were more strongly related in younger compared to older adults. This conceptually replicates findings from laboratory research, in which younger individuals showed more threat, more negative mood, and more state anxiety following exclusion in Cyberball compared to older adults (Hawkley et al., 2010; Pharo et al., 2011; Sebastian et al., 2010). The laboratory and our survey results might be a consequence of the

high centrality that belongingness and the development of a social identity have at this point in life (Blakemore, 2018; Knoll et al., 2015; Nikitin & Freund, 2008; Nikitin et al., 2014). However, it is important to note that the obtained moderation effect was fragile in the case of anxiety and did not reach significance three years later. As a meta-analysis of laboratory studies (Hartgerink et al., 2015) also questioned the robustness of age effects within Cyberball paradigms, it remains an open question as to whether experienced ostracism episodes are indeed perceived as more severe at a younger age.

In contrast, the positive relation between Negative Reciprocity and Ostracism was stronger for older than for younger adults. One possible causal explanation amongst many could be that individuals become more hostile and aggressive as a function of repeated experiences of ostracism and rejection within their lives, as research has demonstrated vicious circles between ostracism and antisocial or troublesome behavior (Downey et al., 1998; Hales et al., 2016). However, as no data on negative reciprocity is available in 2018, substantial conclusions await further replication.

Longitudinally, we found a stronger negative association between ostracism in 2015 and happiness in 2018 for older adults compared to younger adults. Because this relation did not prove significant when applying the conservative Bonferroni correction, and because the pattern did not replicate for any other emotion, we think that further research is needed before robust conclusions can be drawn.

Strengths and Limitations

A major strength of our study is that we used representative data collected from a sample that spanned a large age range. To our knowledge such investigations into ostracism are unprecedented and improve our understanding of experienced ostracism in demographic groups beyond college students during emerging adulthood. However, as we used existing survey data from the SOEP, we could not freely determine the measures and had to rely on proxies for the

concepts we were interested in (e.g., non-engagement in social activities as an indicator for social withdrawal). While this imperfect match may be fruitfully improved in future research, we also see value in operationalizing conceptual constructs in ways that add to the ostracism literature. For instance, the experience of ostracism was negatively related to the attendance of social gatherings and helping friends or neighbors. This finding could be a real-life indication of social withdrawal as a typical reaction to ostracism (Ren et al., 2016), even though the cross-sectional nature of the association calls for more research in order to draw reliable causal conclusions.

A second limitation pertains to the age range. While our data set offers a broad picture of experienced ostracism during emerging adulthood, adulthood, and old age, unfortunately it does not allow conclusions to be drawn about the experience of ostracism in earlier developmental phases such as childhood or adolescence. This, of course, would be highly important to obtain a full picture about the age differences in ostracism across the entire life span. In the investigated life phase of adulthood, we found little evidence for moderation effects of age on associations between ostracism and psychological functioning. This might be different for adolescents, as particularly within that life stage, ostracism could be expected to have strong effects due to the high importance of peer acceptance for emotional regulation in this life phase (Guyer, Caouette, Lee, & Ruiz, 2014) and the resulting social motivation to avoid rejection (Blakemore, 2018; Knoll et al., 2015). Moreover, experiencing chronic ostracism in early and critical life stages such as childhood or adolescence, in which individuals form a sense of (social) identity and learn to interact within social contexts, might even contribute to severe long-term behavioral consequences such as developmental disorders or foster depression (Coie, Terry, Lenox, Lochman, & Hyman, 1995; Nolan, Flynn, & Garber, 2003). While most representative data sets will be limited in their scope to a certain age range, it could thus be highly rewarding for future research to investigate representative survey data containing the

data of children and adolescents in order to compare the experience of ostracism in these age ranges to the experience of adults.

Finally, the existing literature sometimes allowed for competing hypotheses, as outlined in the introduction. As a result, the respective findings should be regarded as preliminary, awaiting further confirmatory hypothesis testing. It should also be emphasized that the cross-sectional nature of some of the data (particularly with regard to all constructs indicating social interaction that were only measured in 2015) is not suitable to draw causal conclusions. Furthermore, the two wave points, three years apart, do not allow for longitudinal conclusions regarding developmental trends bound to the process of aging . To answer questions of causality, longitudinal data from longer time spans and over several measurement points will be required.

In addition, it is yet unclear which factors drive the association between age and the experience of ostracism. While we argue for a selectivity effect into more inclusive environments over the lifetime combined with age-specific differences in sensitivity to ostracism cues, there may be other age-related factors influencing the experience of ostracism, such as cohort effects, differences in values and norms, or other factors that affect individuals' subjective experience. For future research, it might also be helpful to differentiate between different kinds of ostracism (e.g., workplace ostracism, cyberostracism) to arrive at a more conclusive picture.

Conclusions

The present contribution offers first insight into the experience of ostracism over the lifespan, using data from a broad, representative panel (the SOEP-IS). Results show that ostracism is negatively associated with age, with a stark dip of ostracism frequency in the age bracket of 60 to 70 years, which can at least partly be explained by individuals leaving the

workforce. Moreover, results show that ostracism is associated with negative emotions, reduced life satisfaction, and dysfunctional social behavior within old and young age.

Footnotes

1 Artistic activities was the only leisure activity included in the SOEP that does not seem to have an inherent social component per se. For the sake of completeness, we decided to include it in the analysis nevertheless in exploratory fashion.

2 The statutory age of retirement in Germany at the time was 65 – 66 at the time of this contribution, but as individuals sometimes retire earlier for various reasons (i.a., illness, disability, voluntarily when agreeing to pension cuts) we decided on a timespan starting with age 55 in 2015.

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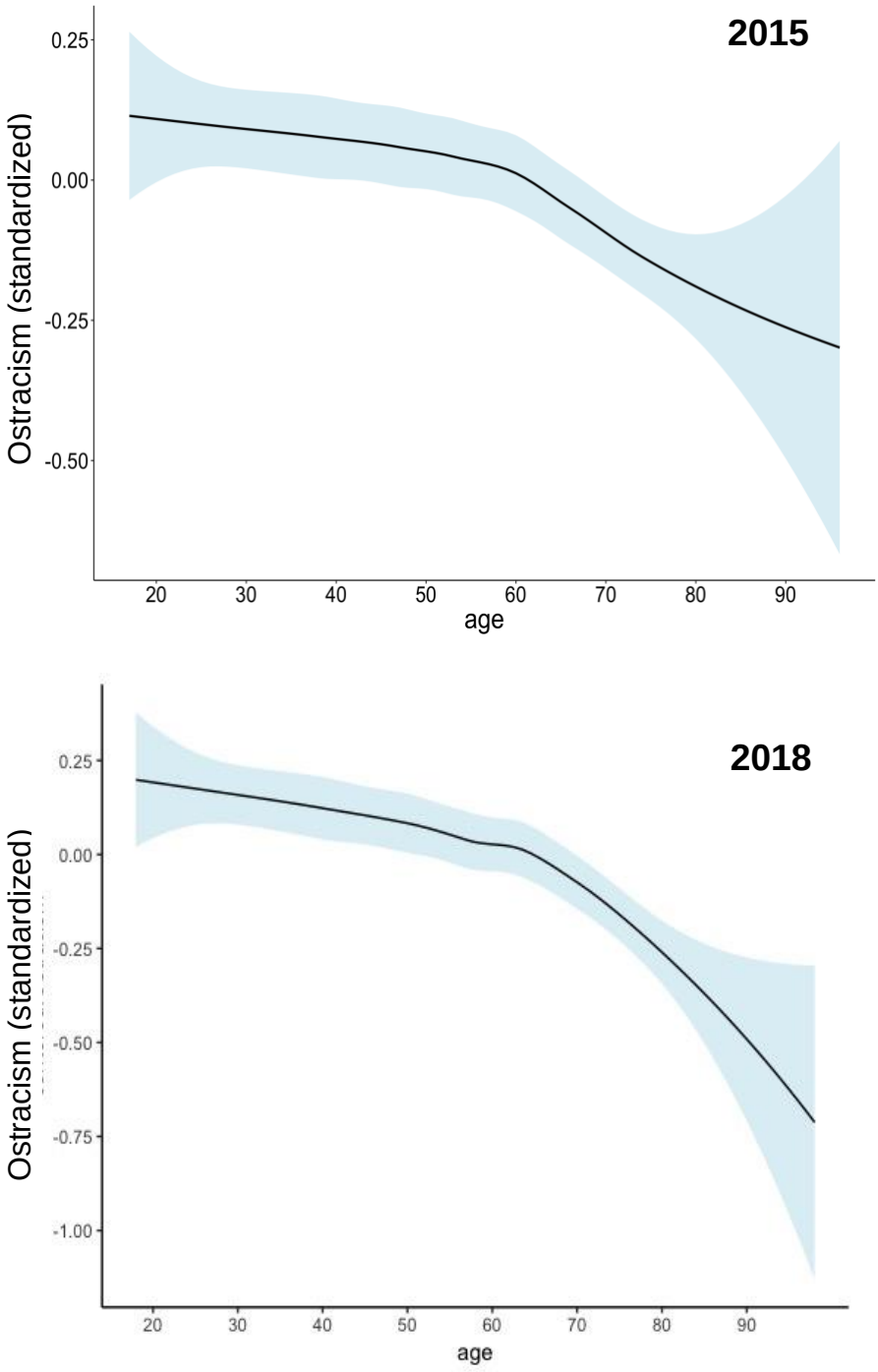

Figure 1. Distribution of experienced ostracism from adolescence to old age in 2015 and 2018. The confidence bands reflect the 95% confidence interval of the LOESS curve. Ostracism has been z-standardized, thus 0 represents the mean level of ostracism within the sample.

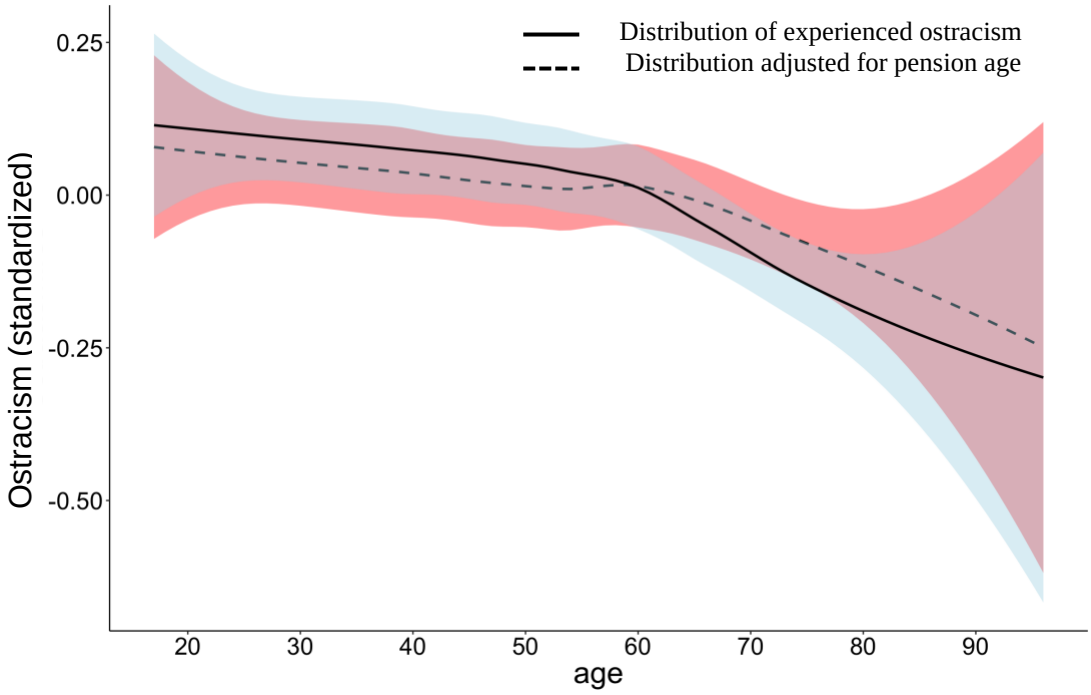

Figure 2. Distribution of experienced ostracism in 2015 (solid line) and ostracism adjusted for pension age (dashed line) from adolescence to old age. The confidence bands reflect the 95% confidence interval of the LOESS curve. Ostracism has been z-standardized, thus 0 represents the mean level of ostracism within the sample.

Table 1

Descriptive statistics and correlations between ostracism, age, indicators of threat experience, and life satisfaction at the 2015 measurement point

Scale	*M*	*SD*	Scale Range	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Ostracism	1.75	0.77	1–7								
(2) Anger	2.75	1.03	1–5	.21**							
(3) Anxiety	1.90	0.95	1–5	.14**	.33**						
(4) Happiness	3.58	0.84	1–5	-.15**	-.21**	-.26**					
(5) Sadness	2.26	1.00	1–5	.15**	.35**	.48**	-.33**				
(6) Self-Esteem	5.71	1.24	1–7	-.22**	-.20**	-.26**	.27**	-.23**			
(7) Life Satisfaction	7.48	1.65	0–10	-.19**	-.32**	-.30**	.47**	-.37**	.36**		
(8) Age	53.44	18.26		-.09**	-.20**	.03	-.16**	.05**	.07**	.00	

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

Table 2
Descriptive statistics and correlations between ostracism, age and social behavior at the 2015 measurement point

Scale	*M*	*SD*	Scale Range	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Ostracism	1.75	0.77	1–7															
(2) Positive Reciprocity	5.86	0.91	1–7	-.12**														
(3) Negative Reciprocity	2.71	1.36	1–7	.15**	-.01													
(4) Tendency to Forgive	4.01	1.11	1–7	-.12**	.00	-.28**												
(5) Number of Close Friends	3.99	3.53	0-50	-.08**	.10**	-.08**	. 10**											
(6) Attend Cultural Events	1.97	0.69	1–4	-.04	.11**	-.10**	.03	.21**										
(7) Attend Cinema, Pop concerts, Dance or Sport Events	2.01	0.82	1–4	-.01	.06**	.02	.00	.17**	.33**									
(8) Participate in Sports	2.50	1.34	1–4	-.01	.06**	-.04	.01	.14**	.30**	.32**								
(9) Artistic Activities	1.92	1.08	1–4	.06**	.05**	-.10**	.00	.11**	.31**	.21**	.24**							
(10) Attend Social Gatherings	3.20	0.80	1–4	-.14**	.15**	-.04*	.02	.21**	.23**	.33**	.21**	.17**						
(11) Helping Relatives, Friends or Neighbors	2.65	0.82	1–4	-.09**	.18**	-.02	.05**	.15**	.15**	.20**	.13**	.10**	.43**					
(12) Perform Volunteer Work	1.75	1.09	1–4	.01	.05**	-.12**	.05*	.11**	.25**	.14**	.20**	.24**	.14**	.17**				
(13) Participate in Local Politics	1.15	0.51	1–4	.01	.02	-.05**	.05**	.06**	.15**	.08**	.06**	.11**	.07**	.08**	.34**			
(14) Attend Church /Religious Events	1.73	0.96	1–4	.02	.01	-.12**	.02	.07**	.14**	-.07**	.09**	.13**	.07**	.06**	.32**	.14**		
(15) Age	53.44	18.26		-.09**	-.02	-.06**	.04*	-.02	.03	-.45**	-.16**	-.16**	-.28**	-.19	.00	.03	.18**	

Table 3
Descriptive statistics and correlations at the 2018 measurement point

Scale	*M*	*SD*	Scale Range	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Ostracism	1.57	0.69	1–6							
(2) Anger	2.62	1.01	1–5	.22**						
(3) Anxiety	1.80	0.91	1–5	.18**	.38**					
(4) Happiness	3.59	0.82	1–5	-.13**	-.21**	-.23**				
(5) Sadness	2.25	0.98	1–5	.21**	.35**	.51**	-.30**			
(6) Life Satisfaction	7.50	1.63	0-10	-.22**	-.35**	-.33**	.51**	-.38**		
(7) Age	55.48	18.52	18-98	-.14**	-.24**	-.02	-.17**	.05*	.00	

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

Table 4
Longitudinal associations (2015 → 2018).

Scale	β	*p*
(1) Ostracism → Anxiety	**.07**	**.001**
(2) Ostracism → Anger	**.08**	**> .001**
(3) Ostracism → Sadness	**.11**	**> .001**
(4) Ostracism → Happiness	-.03	.136
(5) Ostracism → Life Satisfaction	-.08	.006
(6) Anxiety → Ostracism	**.09**	**> .001**
(7) Anger → Ostracism	**.07**	**.002**
(8) Sadness → Ostracism	**.09**	**> .001**
(9) Happiness → Ostracism	**-.07**	**.001**
(10) Life Satisfaction → Ostracism	**-.10**	**> .001**

Bold coefficients indicate statistical significance after alpha adjustment (cut-off value with Hochberg-Benjamini: $p < .006$ and with Bonferroni: $p < .005$).