Age differences in forgivingness: The role of transgression frequency and intensity

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ABSTRACT

The present study examined age differences in the disposition to forgive others and the role of interpersonal transgression frequency and intensity. Data from a representative cross-sectional sample of Swiss adults (N = 451, age: 20–83 years) were used. Participants completed a self-report measure of forgivingness and indicated whether and how intense they have experienced different types of interpersonal transgressions during the past 12 months. Results indicate that older adults were, on average, more willing to forgive others than younger adults. Frequency and intensity of transgressions were negatively related with age. Moreover, the results show that transgression frequency and intensity explained, in part, age differences in forgivingness. Future directions concerning the meaning of age differences in forgivingness are discussed.

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1. Introduction

Research suggests age differences in response to interpersonal problems. For example, older adults report fewer negative interpersonal interactions and more positive feelings towards their social partners compared to younger adults (Akiyama, Antonucci, Takahashi, & Langfahl, 2003; Almeida, 2005; Rook, 1984). Older adults also perceive interpersonal conflicts as less stressful and anger-provoking, and they use passive emotion regulation strategies such as suppressing feelings more often than younger adults do (Birditt & Fingerman, 2003; Charles & Carstensen, 2008; Coats & Blanchard-Fields, 2008). Furthermore, older adults differ in their cognitive and behavioral reactions to difficult interpersonal situations as compared to younger adults (Birditt & Fingerman, 2005; Blanchard-Fields & Coats, 2008; Blanchard-Fields, Mienaltowski, & Seay, 2007).

These age group differences in responses to interpersonal events are also reflected in older people's goals for responding to interpersonal problems (Birditt, Fingerman, & Almeida, 2005). For example, Sorkin and Rook (2006) discovered that preserving goodwill in the relationship was the most common coping goal (endorsed by 59.4% of participants), followed by reducing one's own distress (endorsed by 23.2% of participants), whereas getting the interaction partner to change his or her behavior was the coping goal of a minority of older people (endorsed by 17.4% of participants). This finding is in line with research by Van Lange, Otten,

De Bruin, and Joireman (1997). The authors showed that higher percentages of older adults (82%) can be classified as having prosocial interpersonal orientations as opposed to individualistic or competitive interpersonal orientations, compared to younger adults (56% of the adults under age 30).

Interpersonal transgressions are one type of interpersonal problems that has remained understudied in the adult lifespan development literature. The main purpose of the present study was thus to examine cross-sectional age differences in how individuals tend to deal with interpersonal transgressions. Specifically, this study sought to investigate the disposition to forgive others by clarifying the role of transgression frequency and intensity as an explanatory account for age differences in forgivingness. Given the significance of interpersonal transgressions for emotional and social distress (Leary, Springer, Negel, Ansell, & Evans, 1998), it is important to understand how people of different ages are exposed to interpersonal transgressions and to examine whether a lower frequency of encountering transgressions can help to explain age group variation in people's characteristic responses to them.

1.1. Forgivingness as a personality dimension

Forgiveness can be considered as a contextualized psychological process of change with respect to a specific transgressor and a specific transgression (Fincham, 2000; McCullough, Fincham, & Tsang, 2003). In addition, it can also be conceptualized as a personality dimension (McCullough & Witvliet, 2002). As a disposition, *forgivingness* refers to individual differences in the tendency to forgive others across different contexts (e.g., Berry, Worthington, Parrott, O'Connor, & Wade, 2001; Brown, 2003; Hill & Allemand, 2010; Mullet, Houdbine, Laumonier, & Girard, 1998; Roberts, 1995).

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People high in forgivingness are more likely to forgive a transgression regardless of the specific transgressor or situation. It is then unsurprising that forgivingness is positively related to agreeableness (Allemand, Sassin-Meng, Huber, & Schmitt, 2008; Berry, Worthington, Parrott, O'Connor, & Wade, 2001; Fehr, Gelfand, & Nag, 2010; McCullough & Hoyt, 2002) and other personality variables describing prosocial tendencies. For example, dispositionally forgiving individuals tend to score higher on empathic concern and perspective taking (Berry, Worthington, O'Connor, Parrot, & Wade, 2005) and gratitude (McCullough, Emmons, & Tsang, 2002). In contrast, forgivingness is negatively related to neuroticism (Allemand, Sassin-Meng et al., 2008; Berry, Worthington, O'Connor, Parrott, & Wade, 2005; Fehr et al., 2010; McCullough & Hoyt, 2002) and intrapersonal features comprising neurotic elements such as dispositional anger (Rye et al., 2001), depression (Brown, 2003) and rumination (Berry et al., 2005). Research has also shown that people with high levels of dispositional abilities to down-regulate negative affective states and to disengage from ruminative thoughts are more willing to forgive others (Allemand, Job, Christen, & Keller, 2008). Although forgivingness is correlated with the two broad personality domains neuroticism and agreeableness and their facets it is a distinct personality construct. A recent study reported empirical evidence for the discriminant validity of forgivingness with respect to the two personality domains (Steiner, Allemand, & McCullough, in press).

1.2. Age differences in forgivingness

Previous research has shown that forgivingness varies as a function of age, with young children and adolescents, on average, being least willing to forgive and older adults being most willing (e.g., Allemand, 2008; Enright, Gassin, & Wu, 1992; Girard & Mullet, 1997; Krause & Ellison, 2003; Mullet & Girard, 2000; Mullet et al., 1998, 2003; Subkoviak et al., 1995). For example, Subkoviak et al. (1995) found college students to be less prone to forgive than their middle-aged parents. In an US probability sample, Toussaint, Williams, Musick, and Everson (2001) reported middle-aged and older adults being more willing to forgive others as compared to a younger age group. Lawler-Row and Piferi (2006) found an age effect in forgivingness in a study of adults ranging in age from 50 to 95 years, with older adults describing themselves as being more forgiving than the middle-aged adults.

These findings lead to the question of what accounts for age differences in forgivingness. Several possible explanations exist (cf. Allemand & Steiner, 2010, in press). For example, older adults may have certain beliefs or value systems that predispose them to be more forgiving (Romero & Mitchell, 2008). Several studies have shown that religiousness is positively related to forgivingness (Mullet et al., 2003; Rye et al., 2001) and age (Idler, 2006). Building on the theory of socio-emotional selectivity (Carstensen, Isaacowitz, & Charles, 1999), age-related differences in forgivingness might reflect, in part, changes of goal preferences across the lifespan. The future time perspective is the dominating force that structures human motivations and goals. When future time is perceived as limited, emotional experiences assume primacy; people are motivated to keep close relationships, social and emotional well-being. When future time is perceived as open-ended, goals aimed at optimizing the future are prioritized. Because chronological age is inextricably associated to time left in life, the theory assumes that the regulation of emotions received greater priority as people age. Hence, forgiveness becomes a useful resource and strategy (Bono & McCullough, 2004). Recently, Allemand (2008) and Cheng and Yim (2008) reported experimental results showing that the perception of time as limited versus open-ended influences people's willingness to forgive hypothetical interpersonal transgressions, and explained, in part, age differences in forgivingness.

### 1.3. The role of transgression frequency and intensity

Another possibility is that age differences in forgivingness may be due to age effects in the *exposure* and *reactions* to interpersonal transgressions across the adult lifespan. For the present study we thus focused on three indicators of transgressions: frequency, intensity, and type. Frequency denotes an objective indicator of transgression occurrences, whereas intensity denotes a subjective indicator of the perceived impact of transgressions. Type refers to the diverse contents of transgressions that may range from simple divergence in preference to deep hurts and severe transgressions. Although event frequency and event intensity are correlated they reflect two conceptually distinct indicators of interpersonal transgressions, and it is common to distinguish between them in research on positive and negative life events and affective experiences (Maybery, Jones-Ellis, Neale, & Arentz, 2006; Maybery, Neale, Arentz, & Jones-Ellis, 2007; Schimmack & Diener, 1997).

First, *frequency* of interpersonal transgressions may be a function of the frequency of social contacts across the lifespan. Studies have shown a decrease in the number of social network partners as people age (cf. Antonucci, 2001), which, in turn, might diminish the risk of being hurt by others. For example, Akiyama et al. (2003) found that negative interactions tend to decrease with age and that contact frequency partially explained these age differences.

A similar explanation is that frequency of interpersonal transgressions might vary across the adult lifespan as a consequence of being exposed to different social contexts and roles. Broadly, one might distinguish between status roles that encompass work and social position roles, and between belongingness roles that include friendship, family, and community roles. Many of these roles are age-graded (Roberts & Wood, 2006). The number and the nature of these social roles change systematically across the lifespan. Younger adults are occupied with disengaging from their parents, finding a mate, and advancing in their job. Middle-aged adults generally hold multiple social roles, e.g., spouse, parent, and worker, with widest responsibilities (Antonucci, Akiyama, & Merline, 2001; Helson & Soto, 2005). Toward retirement the number of social roles decreases (Helson & Soto, 2005). Older adults' roles often focus on close relationships with family or good friends (Carstensen et al., 1999). Because younger and middle-aged adults' social roles tend to be more numerous and more diverse, they might consequently have an increased probability of being intentionally hurt by others.

Another explanation is based on the social input model of socioemotional aging (Fingerman & Charles, 2010; Fingerman & Pitzer, 2007) and assumes that older and younger adults evoke different behaviors from social partners. Older adults engage in thoughts and behaviors leading to positive experiences with social partners, and usually, their social partners react positively to their efforts. Indeed, Miller, Charles, and Fingerman (2009) found that perceivers of a social faux pas engaged in more avoidant behaviors with older transgressors (e.g., "accept there is nothing you can do about the situation"), more confrontational behaviors with younger transgressors (e.g., "confront the person") and roughly equal amongst of engagement behaviors (e.g., "calmly discuss the situation") with both. According to the social input model, we would assume that proactive strategies on the part of older adults and the responses of their social partners lead to a lower level of transgression frequency.

Second, perceived *intensity* of transgressions may also vary across the adult lifespan. For example, Baumeister, Bratslavsky, Finkenauer, and Vohs (2001) found that younger adults process negative information more thoroughly than positive information
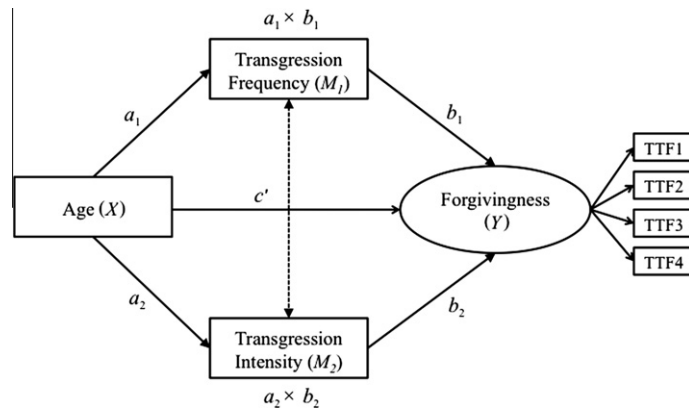
Fig. 1. The conceptual model includes a manifest independent variable (X), two manifest mediators (M_1, M_2), a latent outcome variable (Y) with four manifest indicators (TTF1–TTF4), five direct effects (a_1, a_2, b_1, b_2, c'), two indirect (mediating) effects ($a_1 \times b_1, a_2 \times b_2$), and a residual covariance between the two mediators.

and do weigh negative information more heavily in impression formation, memory, and decision making than older adults. Older adults perceive daily stressors as less severe and less threatening (Charles & Almeida, 2006) and report less negative reactivity than younger adults after interpersonal conflicts (Coats & Blanchard-Fields, 2008). Moreover, life experiences may change the ways people approach social situations by affecting how people process and respond to emotional information (Blanchard-Fields et al., 2007; Charles & Piazza, 2009). With increasing knowledge and experiences, people may learn strategies that serve to minimize negative experiences. Hence, older people may recognize the conflict potential of situations and avoid the situation or use passive strategies (Birditt et al., 2005).

Age differences in the perception of transgression intensity might also reflect socio-emotional selectivity across the adult lifespan. Older adults may not only limit their exposure to stressful situations, but also engage in adaptive emotion regulation strategies (Charles & Carstensen, 2010). In line with these arguments, we would expect a negative relationship between transgression intensity and age.

Finally, the *types* of transgressions people encounter may vary with age. The variety of potential transgressions is wide and ranges from feeling misunderstood over feeling betrayed to violent interpersonal behavior and damaged property. However, to the best of our knowledge, no taxonomy for interpersonal transgressions exists to date.

1.4. The present study

The present study had three objectives: The first objective was to replicate and extend findings on age differences in forgivingness with an age-stratified, randomly selected representative cross-sectional sample. In line with previous research, we expected an age effect with older adults being, on average, more willing to forgive than middle-aged and younger adults. The second objective was to examine age differences in frequency, intensity, and type of interpersonal transgressions using a list of transgressions we adapted from McCullough, Emmons, Kilpatrick, and Mooney (2003). We expected older adults to experience fewer transgressions and to perceive the transgressions as less intense than middle-aged and younger adults. On an exploratory basis, we also examined age differences in type of interpersonal transgressions. The third objective was to examine whether age differences in transgression occurrences mediate age differences in forgivingness. Our primary goal was to determine whether transgression frequency and intensity explained, in part, the association between age and forgivingness. We expected transgression frequency and

intensity to partially mediate the relationship between age and forgivingness.[2] The conceptual model of this study is depicted in Fig. 1. It is important to note from the outset that the design of our study is cross-sectional and therefore might be confounded by cohort effects.

2. Method

2.1. Participants and procedure

2.1.1. Participants

The sample consisted of 451 adults (56.7% women) ranging in age from 20 to 83 ($M = 52.3$ years, $SD = 16.9$). There was a broad range in educational attainment. Of the participants, 7.8% reported having a basic education (i.e., primary and secondary school) as the highest level of education, 44.5% had a high school education or equivalent (e.g., vocational school), 24.9% completed a degree from a technical school, and 22.7% completing a university degree. Regarding marital status, 32.4% participants were single, 48.2% were married, 12.3% were either separated or divorced, and 7.1% were widowed. Participants rated their health relative to an average person health on a scale ranging from 1 (*poor*) to 5 (*excellent*; Idler & Kasl, 1991). Perceived health ($M = 4.03$, $SD = 0.81$) was virtually unrelated to age, $r = .04$.

2.1.2. Sampling procedure

The sampling procedure included an age-stratified random selection of prospective study participants accomplished by the registration office of the city of Zurich, a city in the German part of Switzerland with about 380,000 inhabitants. From each 1-year age group (1927–1987) we included 30 adults with an approximately equal ratio of men and women, resulting in 1800 prospective participants. To avoid problems due to lack of linguistic skills the random selection only included German-speaking persons (78% of the population of Zurich do speak German). Prospective study participants received a package consisting of (a) a personalized letter including a description of the study and its required time commitment, (b) information about protection of data privacy, (c) a sociodemographic questionnaire, (d) the study materials including several questionnaires, (e) and a postage-paid business reply envelope for mailing the material back to the researchers. Parts of the questionnaire of the large-scale survey were items on forgivingness and transgression frequency and intensity.

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[2] In a recent study we examined the comparative validity of two different theoretical accounts for age differences in forgivingness. Particularly, we simultaneously tested the mediating role of agreeableness and neuroticism in relation to transgression occurrences (Steiner et al., in press, Study 2).

After sending the package to prospective participants, the procedure included the deletion of the postal addresses due to the protection of privacy. Thus, we were not able to remind participants to fill out the questionnaire. The response rate was 25%. All participants were unpaid volunteers. We have only information regarding age and gender of the prospective participants. To determine the degree of sample selectivity, we compared the initial sample of prospective participants (N = 1800) with the final sample (N = 451) with respect to age and gender. The mean age in the final sample (M = 52.3, SD = 16.9) was slightly higher than in the initial sample (M = 50.6, SD = 17.0). However, in terms of effect sizes this difference is small, d = .10. The gender distribution in the initial sample was 53.0% women to 47.0% men, and only a slightly higher proportion of females participated in the study (56.7%).

2.2. Measures

2.2.1. Forgivingness

The Tendency to Forgive Scale (TTF; Brown, 2003) is a brief measure to assess individual differences in forgivingness. Example items are "I tend to get over it quickly when someone hurts my feelings," and "When people wrong me, my approach is just to forgive and forget." Each of the four items was followed by a 7-point Likert-type scale anchored with *strongly disagree* (1) and *strongly agree* (7). The alpha reliability estimate for the TTF was .71. Several studies provided support for the TTF being a reliable and valid instrument that also demonstrated favorable self-informant correlations. Moreover, the TTF is related to several individual and social outcomes and processes (Brown, 2003; Brown & Phillips, 2005; Hill & Allemand, 2010).

2.2.2. Transgression frequency and intensity

The Transgression Occurrences Measure (TOM; McCullough, Emmons et al., 2003) was used to assess frequency of a variety of interpersonal transgressions (e.g., insulted you, took advantage of you, stole from you, was violent toward you or betrayed you). The TOM was developed in the tradition of life event checklists (Scully, Tosi, & Banning, 2000). It focuses on transgressions at a broader level of analysis and does not provide details about each transgression. Due to difficulties in translating adequately the items "got even with you for something that happened previously", "was 'two-faced' or insincere", and "failed to protect you or stick up for your rights" into German, we replaced them and added "disrespected own rights", "being refused", and "being neglected" (all items are depicted in Table 3). Approximately half of the transgressions were "sins of commission" that would be relatively unambiguous and thus highly visible to a third party (e.g., degraded you in public, damage something that belonged to you), and approximately half were "sins of omission" (e.g., failed to appreciate you adequately, took advantage of you). Participants were instructed to indicate how *frequently* the transgressions have occurred to them in their relationships with other people in the last 12 months. The items were rated on a 4-point Likert-type scale ranging from *never* (0) to *often* (3). Besides the assessment of frequency of transgression occurrences by the TOM, participants were also asked to rate the perceived *intensity* of the experienced transgressions. Items were rated on a 4-point Likert-type scale ranged from *not at all* (0) to *very extremely* (3). In addition to the frequency and perceived intensity of each single transgression, we were also interested in the overall frequency and intensity of transgressions. If not otherwise specified, the items for frequency and intensity were aggregated by taking their arithmetic mean. Higher scores reflect more frequent interpersonal transgressions or the transgressions were perceived as more intense. The alpha reliability estimates for the frequency and intensity subscales were .90 and .92, respectively.

3. Results

3.1. Age differences in forgivingness

The first objective of the present study was to examine age differences in forgivingness. Table 1 shows the zero-order correlation between age and forgivingness. To formally examine differences in forgivingness across adulthood, the relation between age and forgivingness was tested within a regression framework by means of structural equation modeling (SEM). We first tested a model with age as a continuous manifest indicator that is related to forgivingness as a latent variable where each of the four TTF items was specified to load on this latent factor (see path $X \rightarrow Y$ of the conceptual model in Fig. 1). The model was identified by the marker variable method. In this case, the loading and intercept of one of the indicators of the forgivingness construct is fixed to be one and zero, respectively. The model did not achieve an acceptable fit, $\chi^2(5)$ = 42.03, p < .01, CFI = .902, SRMR = .051, RMSEA = .128, 90% CI = .094–.165, p_{close} < 01. The CFI and RMSEA were not in the acceptable range, whereas the SRMR is acceptable (cf. Browne & Cudeck, 1993). The χ^2-value, however, is almost always significant in large samples. Inspection of the modification indices indicated that there is a large residual covariance between the item 2 ("If someone wrongs me, I often think about it a lot afterward") and item 4 ("When people wrong me, my approach is just to forgive and forget"). This residual covariance reflects the fact that both items consist of the term "to be wronged by someone." Thus, the residual covariance between the two items was freely estimated. Doing so improved model fit considerably, $\chi^2(4)$ = 12.01, p < .05, CFI = .979, SRMR = .030, RMSEA = .067, 90% CI = .025–.112, p_{close} = .22. We therefore decided that this model adequately describes the data. Age had a positive linear relationship with forgivingness, β = .26, p < .01. This finding is consistent with previous research and implies that older participants are more willing to forgive others than middle-aged and younger adults. We also tested for a curvilinear relationship between age and forgivingness. Age-squared was virtually unrelated to forgivingness, β = .03. Table 2 gives the descriptive statistics and effect sizes for forgivingness for three age groups: young adults (20–39 years; n = 125), middle-aged adults (40–59 years; n = 153), and older adults (60+ years; n = 173). These age groups were based on divisions used in the lifespan development literature that identify young, middle, and older adulthood as important age categories in the lifespan (Heckhausen, Dixon, & Baltes, 1989). In terms of effect sizes, the age differences in forgivingness in Table 2 represent small to medium-sized effects (Cohen, 1988).

3.1.1. Equivalence of scale functioning

One critique of these results is that the reported age differences in forgivingness might reflect differential scale functioning. If the measure does not assess the same construct across different age groups because the items have different meanings across

Table 1
Means, standard deviations, and correlations between study variables.

Variable	1	2	3	4
1. Age	–			
2. Forgivingness (TTF)	.23[*]	–		
3. Overall transgression frequency	−.19[*]	−.20[*]	–	
4. Overall transgression intensity	−.30[*]	−.25[*]	.76[*]	–
Possible range	20–83	1–7	0–3	0–3
M	52.26	3.94	0.62	0.77
SD	16.88	1.16	0.42	0.55

Note. N = 451.
[*] p < .01.

Table 2
Means and standard deviations of forgivingness for younger, middle-aged and older adults, and effect sizes.

Age groups (years)	Young adults (20–39)	Middle-aged adults (40–59)	Older adults (60+)
M	3.67	3.79	4.28
SD	1.09	1.21	1.09
n	125	153	173
Mean differences	Young and middle-aged adults	Middle-aged and older adults	Young and older adults
d	.10	.43	.56
95% confidence interval (CI)	−.13 to .34	.21–.65	.32–.79

Note. N = 451; d = standardized mean difference.

age groups, then any comparisons across age would be misleading. In order to ensure that age differences in forgivingness were due to actual variations in forgivingness across age and not to differential scale functioning, we examined the equivalence of scale functioning across three age groups (young adults, middle-aged adults, older adults; see above) by means of multiple group analyses.

To examine the scale functioning of the TTF across three age groups we started with a multiple group analysis by estimating an unconstrained model. More specifically, we tested the hypothesis that the structure of the TTF holds for young, middle-aged, and older participants on a general level without any parameter constraints across age groups (Model 0). Again, the residual covariance between the items 2 and 4 was freely estimated. This model demonstrated an acceptable fit as judged by the CFI, SRMR and RMSEA statistics which were above .90 and below .08, respectively, $\chi^2(3) = 9.03$, $p < .05$, CFI = .982, SRMR = .013, RMSEA = .067, 90% CI = .019–.119, $p_{close} = .23$. Hence, the structure of the TTF appears to hold for young, middle-aged, and older participants.

Next, we examined the more constrained hypothesis testing the hypothesis that not only did a similar forgivingness structure exist across the age groups, but the specific loadings for each item were also equivalent across age groups (Model 1). The residual covariance between the items 2 and 4 was freely estimated. The fit statistics for the constrained model were $\chi^2(9) = 13.64$, $p > .10$, CFI = .986, SRMR = .022, RMSEA = .034, 90% CI = .000–.068, $p_{close} = .75$. The χ^2-difference test between the unconstrained and constrained models

was not statistically significant, $\Delta\chi^2(6) = 4.61$, $p > .10$. Moreover, the CFI was similar to the former model statistic, whereas the RMSEA even showed an improvement. Therefore, equivalent factor loadings can be assumed across age groups as well as equivalent factor structures.

Based on the Model 1 we tested the hypothesis that the latent intercepts of the manifest indicators were also equivalent across age groups (Model 2). Item intercepts are the values of the observed scores when the latent factor is zero. Equivalent intercepts across age groups indicate that the observed mean differences at the item level reflect the mean difference at the latent level. If factor loadings and intercepts are equivalent across groups, comparisons of factor means across groups are rendered meaningful. Again, the residual covariance between the items 2 and 4 was freely estimated. This model achieved a good fit, $\chi^2(15) = 17.58$, $p > .10$, CFI = .992, SRMR = .029, RMSEA = .020, 90% CI = .000–.051, $p_{close} = .95$. Compared to the former model, this model did not represent a loss in model fit because the χ^2-difference test was not statistically significant, $\Delta\chi^2(6) = 3.94$, $p > .10$. Thus, in addition to equivalent factor loadings, equivalent latent intercepts can be assumed. Establishing this form of equivalence allows for meaningfully comparing factor means across age groups.

In addition to Model 2 we also tested a model with an equal residual covariance between the items 2 and 4 across age groups (Model 2a), $\chi^2(17) = 31.24$, $p < .05$, CFI = .958, SRMR = .069, RMSEA = .043, 90% CI = .017–.067, $p_{close} = .65$. The χ^2-difference test was statistically significant, $\Delta\chi^2(2) = 13.66$, $p < .01$. This finding indicates that the residual covariance between the items was not equal across age groups. The estimated correlations for each age group based on the former model (Model 2) were −.07, $p > .10$ (young adults), −.45, $p < .01$ (middle-aged adults), and −.41, $p < .01$ (older adults), implying that the error terms of the two items were unrelated in the younger age group and share common variances in the two older age groups.

Finally, based on Model 2 we tested the hypothesis of equal latent factor means across age groups (Model 3). If Model 3 significantly differs with respect to Model 2, this would indicate age differences in latent forgivingness. The fit statistics for Model 3 were $\chi^2(17) = 43.66$, $p < .01$, CFI = .921, SRMR = .029, RMSEA = .059, 90% CI = .038–.081, $p_{close} = .22$. The χ^2-difference test between the Model 3 and Model 2

Table 3
Means and standard deviations of transgression occurrences, and correlations with age and forgivingness.

	Transgression frequency				Transgression intensity			
	M	SD	r_{age}	$r_{forgivingness}$	M	SD	r_{age}	$r_{forgivingness}$
Insulted you	1.10	0.77	−.09	−.18[**]	1.20	0.94	−.18[**]	−.28[**]
Took advantage of you[b]	1.15	0.91	−.01	−.11[*]	1.11	0.92	−.20[**]	−.21[**]
Betrayed you[b]	0.72	0.79	−.13[**]	−.19[**]	1.05	1.07	−.24[**]	−.20[**]
Lied to you[b]	0.92	0.82	−.14[**]	−.15[**]	1.05	1.00	−.25[**]	−.22[**]
Was unfaithful to you	0.35	0.64	.03	−.09	0.53	0.89	−.09	−.13[**]
Hurt you physically	0.18	0.48	.02	.01	0.26	0.63	−.10	−.07
Spread rumors or gossiped about you	0.48	0.72	−.22[**]	−.10[*]	0.60	0.91	−.24[**]	−.14[**]
Damaged something that belonged to you	0.27	0.58	.01	−.06	0.38	0.74	−.00	−.07
Stole from you	0.29	0.62	.06	−.07	0.45	0.83	.01	−.09
Failed to appreciate you adequately[a,b]	1.21	0.84	−.25[**]	−.21[**]	1.27	0.96	−.37[**]	−.28[**]
Told a secret that they promised not to tell	0.34	0.58	−.07	−.02	0.47	0.78	−.12[*]	−.09
Benefited from your misfortune	0.39	0.62	−.10[*]	−.11[*]	0.51	0.74	−.13[*]	−.08
Teased you	0.40	0.66	−.14[**]	−.07	0.47	0.75	−.21[**]	−.10[*]
Degraded you in public	0.45	0.66	−.08	−.11[*]	0.67	0.90	−.18[**]	−.15[**]
Was violent toward you	0.07	0.28	−.03	−.01	0.20	0.62	−.10	−.02
Got you in trouble	0.86	0.81	−.19[**]	−.14[**]	0.95	0.91	−.18[**]	−.17[**]
Told you something that hurt you[a,b]	1.02	0.84	−.20[**]	−.23[**]	1.24	1.01	−.32[**]	−.27[**]
Disrespected own rights	0.72	0.82	−.06	−.12[*]	0.95	1.04	−.19[**]	−.14[**]
Being refused[b]	0.81	0.81	−.25[**]	−.12[*]	1.06	1.04	−.36[**]	−.24[**]
Being neglected	0.75	0.85	−.20[**]	−.13[**]	0.96	1.01	−.28[**]	−.18[**]

Note. N = 451; possible range of frequency: never (0) to often (3), possible range of intensity: not at all (0) to very extremely (3), r_{age}: correlation with age, $r_{forgivingness}$: correlation with forgivingness; [a,b] reflects $r \geqslant .20$; see additional analyses.
[*] $p < .05$.
[**] $p < .01$.

was statistically significant, $\Delta\chi^2(2) = 26.08$, $p < .01$, suggesting that the latent means are not equal across age groups. The latent means and standard errors for forgivingness based on Model 2 were: $M = 3.68$, S.E. = .11 (young adults), $M = 3.82$, S.E. = .11 (middle-aged adults), $M = 4.32$, S.E. = .10 (older adults). To conclude, the tests of scale functioning have shown that age differences in forgivingness, as measured with the TTF, can be attributed to meaningful differences in variable functioning within the groups, and not to differential scale functioning within a specific age group.

3.2. Age differences in transgression frequency and intensity

The second objective of the present study was to examine age differences in frequency, intensity, and type of interpersonal transgressions. Table 1 shows the zero-order correlations between age and overall frequency and perceived intensity of interpersonal transgressions as measured with the TOM. As expected, participants rarely experienced interpersonal transgressions during the time frame of the past 12 months. Consistent with our hypothesis, age was negatively related to overall frequency and intensity of interpersonal transgressions. This indicates that older adults tended to experience fewer transgressions than middle-aged adults and younger adults, and moreover they tended to perceive the transgressions as less intense. Table 3 gives the descriptive statistics and correlations with age and forgivingness separately for the 20 different transgression types. For example, older adults reported being refused or neglected less frequent than younger people, and they experienced less often than younger adults, that someone failed to appreciate them adequately. In terms of effect sizes the correlations represent small to medium-sized effects (cf. Cohen, 1988). Other transgression types such as "hurt you physically," "damaged something that belonged to you," "stole from you," or "was violent to you" were virtually unrelated to age (see Table 3). Overall, older adults reported lower transgression frequency than younger adults, $r = -.19$, $p < .01$.

Similarly, perceived intensity of many transgression forms correlated significantly negative with age. When older adults were insulted, someone failed to appreciate them, someone told them something that hurt them or when they were refused, older people tended to perceive a transgression as less intense than younger adults. The correlations represented small to medium-sized effects. Again, no significant age effects were found when it comes to physical violence ("hurt you physically," "was violent toward you") and destruction of property or theft. Overall, older adults perceived transgressions as less intense than younger adults, $r = -.30$, $p < .01$. A test indicated that the correlations between age and the overall scores of the two indicators of transgressions, $-.19$ versus $-.30$, were different, $t(448) = 3.53$, $Z = 3.48$, $p < .01$. This implies that age is more strongly related to transgression intensity than frequency. Finally, the correlation between mean frequency and mean intensity was $r = .76$, $p < .01$.

In line with our hypothesis, we found significant negative correlations between different types of interpersonal transgressions and forgivingness, indicating that both frequency and intensity were negatively related to the tendency to forgive others (see Table 3). To conclude, the present results demonstrate that people experiencing transgressions more frequently were less forgiving than people with lower transgression frequency. Similarly, persons perceiving transgressions as more intense were less forgiving than persons with lower transgressions intensity.

3.3. Testing the mediational role of transgression frequency and intensity

After finding support for our initial hypotheses and confirmation of equivalence of scale functioning of the TTF, we next examined

whether the relationship between age and forgivingness is mediated by transgression frequency and intensity. In order to test our mediation hypothesis, we set up a mediation model using SEM. The model consists of one independent variable, two mediators, and one outcome variable (see Fig. 1). In this type of mediation model, there are five direct effects: a_1 for the effect age $(X) \rightarrow$ transgression frequency (M_1), b_1 for the effect $M_1 \rightarrow$ forgivingness (Y), a_2 for the effect age $(X) \rightarrow$ transgression intensity (M_2), b_2 for the effect $M_2 \rightarrow$ forgivingness, and c' for the effect $X \rightarrow Y$. Forgivingness was modeled as a latent variable with a freely estimated residual covariance between the items 2 and 4. Overall transgression frequency and intensity were modeled as continuous manifest indicators. Due to the fact that the two mediators were highly interrelated (see Table 1) a residual covariance was freely estimated. First, we tested the model with the two mediators simultaneously. The model demonstrated an acceptable fit, $\chi^2(10) = 30.39$, $p < .01$, CFI = .977, SRMR = .045, RMSEA = .067, 90% CI = .041−.096, p_{close} = .13. As expected, the residual correlation between frequency and intensity was $r = .79$, $p < .01$. At the same time, path b_1 from transgression frequency to forgivingness was virtually zero ($\beta = .03$). Fixing this path to be zero resulted in $\chi^2(11) = 30.48$, $p < .01$, CFI = .978, SRMR = .045, RMSEA = .063, 90% CI = .037−.090, p_{close} = .18. Compared to the former model, this model did not represent a loss in model fit, $\Delta\chi^2(1) = 0.09$, $p > .10$. Whereas the CFI and the SRMR were similar to the former model statistic, the RMSEA even showed slight improvement. In addition, given that the specific indirect effects of each mediator could be attenuated due to collinearity, we thus decided to test the mediating role of transgression frequency and intensity separately in two models.

Second, we estimated and tested all direct effects by means of the z-statistic and used bootstrapping to assess the indirect (mediating) effect $a \times b$ (cf. Preacher & Hayes, 2008). Simulation research has shown that bootstrapping is one of the more valid and powerful methods for testing indirect effect, it has higher power while maintaining reasonable control over the Type I error rate, and it can also be recommended when smaller samples are available (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Williams & MacKinnon, 2008). Tests of indirect effects were performed using 5000 bootstrapped samples. In our first model with a single mediator, we examined whether transgression frequency mediates the relationship between age and forgivingness. The fit statistics were $\chi^2(7) = 25.69$, $p < .01$, CFI = .955, SRMR = .040, RMSEA = .076, 90% CI = .046−.109, p_{close} = .08. We report on the standardized coefficient values for the direct and indirect effects, as well as the bootstrap 95% confidence intervals in Table 4 (Model 1). An effect is statistically significant if its confidence interval does not include zero. All direct effects were substantial (standardized effects >.10) and significant. An examination of the indirect effect supports our hypothesis that the effect of age on forgivingness is partially mediated by transgression frequency. Next, we examined whether transgression intensity mediates the relationship between age and forgivingness. The fit statistics were $\chi^2(7) = 28.46$, $p < .01$, CFI = .951, SRMR = .042, RMSEA = .08, 90% CI = .052−.115, p_{close} = .05. The significant indirect effect supports our hypothesis that the effect of age on forgivingness is partially mediated by transgression intensity (see Table 4, Model 2). To summarize, the present findings have shown that transgression frequency and intensity explain, in part, why older adults are more forgiving than younger adults.

3.3.1. Additional analyses

Because some transgressions were more strongly related to age and forgivingness, whereas others were virtually unrelated (see Table 3), we performed two additional analyses with a subset of transgressions that have correlations of $r \geqslant .20$ with age and forgivingness. Two items met this criterion for transgression frequency (see superscript a in Table 3) and six items for transgression intensity (see superscript b in Table 3). These selected items were

Table 4
Tests of mediation predicting forgivingness from age, with transgression frequency and intensity as mediators (standardized estimates).

Model	Path	Direct effect	Indirect effect	95% confidence interval (CI)
1	a age → frequency	−.19***		−.28 to −.10
	b	−.18**		−.29 to −.06
	frequency → forgivingness			
	c' age → forgivingness	.22***		.12–.32
	a × b		.03**	.01–.07
2	a age → intensity	−.28***		−.37 to −.19
	b	−.24***		−.35 to −.13
	intensity → forgivingness			
	c' age → forgivingness	.19***		.08–.29
	a × b		.07***	.03–.12
1A	a age → frequency	−.27**		−.35 to −.18
	b	−.24***		−.34 to −.13
	frequency → forgivingness			
	c' age → forgivingness	.19***		.09–.29
	a × b		.06***	.03–.11
2A	a age → intensity	−.36***		−.44 to −.28
	b	−.28***		−.40 to −.160
	intensity → forgivingness			
	c' age → forgivingness	.15**		.04–.26
	a × b		.10***	.06–.16

Notes. $N = 451$; bias-corrected 95% confidence intervals (CI) were estimated for the direct and indirect effects using 5000 bootstrap samples; an effect is statistically significant if its confidence interval does not include zero.

** $p < .01$.
*** $p < .001$.

aggregated using their arithmetic mean in order to form new frequency and intensity scores. We then repeated the mediation analyses with the new scores. The fit statistics for Model 1A was $\chi^2(7) = 21.98$, $p < .01$, CFI = .965, SRMR = .035, RMSEA = .070, 90% CI = .038–.103, $p_{close} = .14$; and for Model 2A, $\chi^2(7) = 30.20$, $p < .01$, CFI = .951, SRMR = .040, RMSEA = .086, 90% CI = .056–.118, $p_{close} = .03$. In both analyses, the confidence intervals of the standardized indirect effect exclude zero and therefore support the conclusion that the indirect effect of age on forgivingness through the mediator of frequency (Model 1A) and intensity (Model 2A), respectively, is statistically significant (see Table 4, Model 1A and Model 2A). Moreover, the results clearly demonstrate that the indirect effect of age becomes stronger with the new transgression intensity score. To summarize, the present results supported our hypothesis that transgression frequency and intensity partially mediate the relationship between age and forgivingness.

4. Discussion

The first objective of the present cross-sectional study was to examine age differences in forgivingness. We found a positive age effect in forgivingness with older adults, on average, being more willing to forgive others than middle-aged and younger adults. Systematic tests of equivalence of scale functioning demonstrated that age differences in forgivingness as measured with the TTF reflect actual variation in forgivingness across age rather than age differences in item functioning. The present finding is in line with previous research showing that forgivingness varies as a function of age (e.g., Allemand, 2008; Mullet et al., 1998; Toussaint et al., 2001) and with research showing that people's abilities to regulate their emotions and reactions to interpersonal problems and conflicts improve with age (e.g., Charles & Carstensen, 2010; Fingerman & Charles, 2010; Gross et al., 1997).

The second objective of the present study was to examine age differences in frequency, intensity, and type of interpersonal transgressions. Previous forgiveness studies are often limited to examining single transgressions (Lee & Chard, 2003; Pratt, Norris, Cressman, Lawford, & Hebblethwaite, 2008; Subkoviak et al.,

1995), or to specific age groups such as college students (Subkoviak et al., 1995). As expected, many transgressions occurred rarely. Three results stand out. First, in line with our expectation, we found a negative age effect for overall and specific transgression frequency with older adults, on average, tending to experience transgressions less frequent than middle-aged and younger adults. The strongest age effects were found for the transgressions "failed to appreciate you adequately," "being refused," and "spread rumors or gossiped about you." Older adults might experience transgressions less frequently than middle-aged and younger adults because they tend to avoid difficult interpersonal situations (Birditt et al., 2005; Blanchard-Fields et al., 2007). It is assumed that this tendency of avoidance is a result of time horizon and increasing knowledge about how to regulate their emotions and their social lives from experience made in the past (Carstensen et al., 1999; Charles & Carstensen, 2010; Charles & Piazza, 2009). Changes in perspective and knowledge enable older adults to navigate their environments so that they successfully avoid negative experiences such as interpersonal transgressions. It is also possible that older adults are treated differently by others than younger adults (Fingerman & Charles, 2010; Fingerman & Pitzer, 2007). No age effects were found for transgression types such as physical violence, damage of property or theft. These transgressions were extremely rare among all age groups.

Second, consistent with our expectation, we also found a negative age effect for overall transgression intensity as well as for the majority of the single transgression types (but again not in transgressions such as physical violence, damage of property, or theft). Older people seem better able to cope with missing appreciation, with a lie, when they are refused or someone told them something that hurt them. This is consistent with previous research on age differences in emotion regulation (Charles & Carstensen, 2010; Gross et al., 1997) and with research showing that older adults reported less distress and reactivity to interpersonal conflict than younger adults (Almeida, 2005; Birditt & Fingerman, 2003; Birditt et al., 2005).

Third, we explored age differences in types of interpersonal transgressions. It is interesting to note that there seem to be two groups of transgression types. One group – physical violence (two items), damage to property and theft – includes "criminal acts." These transgressions occurred very rarely, and therefore no significant correlations with age were found neither in transgression frequency nor in perceived intensity of the transgressions. The second group consists of the remaining transgression types as for example being refused or being neglected. In this group, we found significant age effects. One possible explanation might be that these transgression types allow more differences in the individual perceptions and interpretations of the situations than criminal acts do. Future research is needed to obtain more detailed accounts of the different transgression types.

The third objective of the present study was to investigate the role of transgression frequency and intensity as an explanatory account for age differences in forgivingness. In line with our expectation we found that transgression frequency and, particularly, intensity partially mediating the relationship between age and forgivingness. Older persons perceived transgressions less frequently and as less intense, and were thus more forgiving. Moreover, the findings of our additional analyses using a subsample of transgressions revealed that the relationships between age and the mediators and between the mediators and forgivingness, respectively, even became stronger. It should be noted that both transgression frequency and intensity partially explain age differences in forgivingness in the single mediation models, with slightly larger associations between perceived transgression intensity and age and forgivingness, respectively. However, in the model with both intensity and frequency simultaneously as mediators, only inten-

sity accounted for variance in age differences in forgivingness. This finding supports the view that although transgression intensity and frequency are highly correlated, they reflect two conceptually distinct indicators of interpersonal transgressions. This differential pattern follows other work distinguishing between frequency and intensity (Maybery et al., 2006, 2007; Schimmack & Diener, 1997).

Several possible explanations exist for the meditational role of transgression frequency and intensity. According to Carstensen et al. (1999), older adults are motivated to reduce the time and energy spent on negative experiences, particularly unpleasant social events. This motivation may lead to an increase in forgivingness, independent of the circumstances. A second possible explanation is based on the social input model of Fingerman and Pitzer (2007) predicting that not only the behavior of older adults, but the behavior and reactions of their social partners as well, have an influence on the positive social ties of older adults. A third possible explanation may be associated with the increasing life experience of older people. Birditt et al. (2005) report that older adults indicated fewer tensions and less emotional reactivity than younger adults and suggest that older adults have habituated to problems. Finally, Coats and Blanchard-Fields (2008) suggest that age differences in emotion regulation are a consequence of older adults' decreased ability to integrate emotion and cognition, their prioritization of emotion regulation goals, and decreased tendency to express anger. In this study, we found evidence for the idea that transgression frequency and intensity partially explain the relationship between age and forgivingness. In addition to this more context-related theoretical account for age differences in forgivingness we recently tested the hypothesis that agreeableness and neuroticism mediate the link between age and forgivingness (Steiner et al., in press). Results supported the notion that the effect of age on forgivingness also results because aging influences the two broad personality traits.

Several limitations of this study should be borne in mind. First, our study was based exclusively on self-reports. Future studies should consider using observer reports and behavioral measures as well as diary data in order to enhance the understanding of the role of transgression frequency and intensity for forgivingness. Second, the measure of transgression frequency and intensity might not assess the whole spectrum of interpersonal transgression types. It is possible that some age-specific transgressions were not included in the measure. Furthermore, we did not examine the details of each transgression as our measure focuses on transgressions at a broader level of analysis, similar to life event checklists (Scully et al., 2000). Future studies should assess interpersonal transgressions at a more specific level of analysis in order to investigate the sources and details of the transgressions. Third, it is possible that memory effects played a role because we asked about transgressions in the last 12 months. For example, in studies examining memory for positive, neutral, and negative stimuli, findings revealed that the memory of older adults is less negative than that of younger adults (cf. Charles & Carstensen, 2010; Charles & Piaza, 2007). Hence, people may vary in how well they remember past transgressions and their frequency. Future experimental research should take this aspect into account. Finally, although the hypothesis underlying this study implies a causal influence of age and transgression frequency and intensity on forgivingness, the cross-sectional nature of the study demands caution in interpreting our results. It is not clear whether the findings truly represent a developmental process or whether they simply mirror a cohort effect. For example, it might be that older cohorts have been taught and therefore learned to inhibit their negative emotions. To our knowledge, no studies to date have examined cohort effects on forgivingness and interpersonal transgressions. However, research on aggression may offer some insights. For example, aggressive behavior seems to be quite stable over time and generations (Huesmann, Eron, Lefkowitz, & Walder, 1984). In a recent study on cohort effects using large samples, Trzesniewski and Donnellan (2010) found little evidence for meaningful change in antisocial behavior over the last 30 years. Nevertheless, longitudinal studies will be needed to examine specific temporal and developmental aspects of forgivingness and age-related changes in transgression frequency and intensity.

In conclusion, the present study significantly extends prior research on age differences in forgivingness by providing some potential explanations for why older adults are more willing to forgive others than middle-aged and younger adults. It is clear from our findings that age differences in transgression frequency and intensity exist. It is also clear from our findings that age-related differences in transgression occurrences partly explain age differences in forgivingness. These results provide a challenge to future theorizing and research to provide a better understanding how people respond to interpersonal problems.

Acknowledgments

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