Supplementary Material 1

Table 3. *Whole-brain analysis: Areas showing an Age of Face X Participant Age interaction (F-contrast; each at p < .001)*

			Activation Peak				
Hemi	***BA***	***Anatomical Area***	***x***	***y***	***z***	***F-value***	***# vox***
R	9	Superior Frontal Gyrus, Medial Frontal Gyrus	15	51	24	15.04	12
B	**10**	**Middle Frontal Gyrus**[a]	**-39**	**51**	**0**	**12.67**	**4**
R	**9, 32, 10**	**Medial Frontal Gyrus, Anterior Cingulate, Superior Frontal Gyrus**	**21**	**45**	**9**	**15.45**	**11**
B	**8**	**Superior Frontal Gyrus, Medial Frontal Gyrus**	**9**	**39**	**42**	**12.86**	**13**
B	9	Middle Frontal Gyrus	-36	27	36	13.87	31
R		Caudate	18	12	3	18.63	49
B		**Insula, Claustrum**	**-36**	**6**	**-3**	**17.27**	**29**
B	21, 38	Middle Temporal Gyrus, Superior Temporal Gyrus	60	3	-18	14.83	15
L	21, 22	Middle Temporal Gyrus, Superior Temporal Gyrus	-54	-30	-3	15.35	10
L		Middle Temporal Gyrus	-45	-69	24	13.83	9
B	**19, 37**	**Middle Occipital Gyrus, Inferior Occipital Gyrus,**	**-45**	**-75**	**0**	**12.45**	**4**

			Activation Peak				
Hemi	***BA***	***Anatomical Area***	***x***	***y***	***z***	***F-value***	***# vox***
		Inferior Temporal Gyrus, Fusiform Gyrus					

Notes. Areas sorted from anterior to posterior and, next, from dorsal to ventral. **Bolded areas** are mentioned in text and/or overlap with areas reported in Table 2. MNI coordinates (x, y, z) and maximum *F*-value are given for the peak voxel (local maximum) within each region of activation. Hemi: hemisphere; B: bilateral, L: left, R: right; BA: Brodmann Area; # vox: number of voxels in cluster. Full activation maps for all areas shown in the table are available from the authors. Only clusters > 2 voxels are reported.

[a]Orbitofrontal gyrus following suggestions from Chiavaras et al. (2001).

Supplementary Material 2

Individuals' social networks are populated more by own-age than other-age peers (Ebner and Johnson, 2009; He et al., 2011a; see also Kuefner et al., 2008; Rhodes and Anastasi, 2012). More frequent contact with individuals of one's own age group is associated with better recognition (He et al., 2011a) and expression identification (Ebner and Johnson, 2009) of own-age faces. Based on this evidence, we examined to what extent the amount of self-reported exposure to members of one's own age group compared to the other age group would predict brain activity in areas showing age-based in-group vs. out-group effects in young and older adults.

In particular, after the scan, participants indicated the frequency of contact with persons of their own and the other age group using an 8-point scale for each question, with 1 = *less than once per year*, and 8 = *daily* (Media contact: "*How often are you exposed to young (approx. between 18-30 years of age)/older (approx. 65 years of age and older) adults on television or in other media?*"; Personal contact: "*How often do you have personal contact with young/older adults?*"; Other types of contact: "*How often do you have other types of contact with young/older adults?*"). All three types of contact were collapsed into one composite score for contact with young persons and contact with older persons, respectively. Cronbach's α for self-reported frequency of contact with the own-age group was .76 (Young participants: .47; Older participants: .77). Cronbach's α for self-reported frequency of contact with the other-age group was .73 (Young participants: .77; Older participants: .56).

A mixed 2 Participant Age (Young, Older) X 2 Contact Person (Own-Age, Other-Age) repeated-measures ANOVA showed a main effect for Contact Person ($F(1,60) = 40.20$, $p < .001$, $\eta_p^2 = .40$) and a Participant Age X Contact Person interaction ($F(1,60) = 32.24$, $p < .001$, $\eta_p^2 =$

.35). In particular, young (t(29) = 8.76, p < .001), but not older (t(31) = .46, p < .650), participants reported more frequent contact with own-age than other-age individuals.

We then examined correlations between self-reported frequency of contact with own-age relative to other-age individuals (computed as frequency of contact with own-age minus other-age) with the difference in BOLD response (extracted beta values at peak voxel of activation within cluster of interest) to own-age vs. other-age faces in medial prefrontal cortex, insula, and amygdala, respectively, across facial expressions. Based on the behavioral findings that young but not older adults differed significantly in their self-reported frequency of contact with the own compared to the other age group, we examined these correlations separately for young and older participants.

Neither medial prefrontal cortex nor insula showed brain-behavior correlations for young or older participants. However, for left amygdala (MNI: x = -21, y = -9, z = -15) there was a positive correlation for young participants (Pearson r = .48, p = .007). For older participants this correlation was also positive but not significant (Pearson r = .15, p = .420). Direct comparison of these correlations in young and older adults showed that they were not significantly different from each other (Fisher's z = 1.39; p = .164), suggesting a comparable pattern of findings in young and older participants.

To provide additional information about neural regions that may contribute to processing of own-age vs. other-age faces as a function of the frequency of contact, we conducted exploratory whole-brain analyses correlating self-reported frequency of contact with neural response to own-age relative to other-age faces at a threshold of p < .001 (uncorrected, 0 contiguous voxels; Table 4; Supplementary Material 2). Greater self-reported frequency of contact to own-age than other-age individuals was positively correlated with greater activity to own relative to other age faces in various brain regions (e.g., superior frontal gyrus, hippocampus, posterior cingulate) for young but not older participants. There were no significant negative correlations.

Taken together, these secondary analyses provide some first evidence for self-reported frequency of contact as one of the potential underlying factors for differences in processing in-group vs. out-group faces, in that in young adults greater self-reported frequency of contact with own-age relative to other-age individuals was correlated with greater amygdala activity to own-age relative to other-age faces. More frequent exposure to members of one's own age group may not only increase the familiarity of own-age faces but also the importance and value of own-age individuals as social interaction partners, with impact on cognition and behavior. The correlational nature of the present data does not allow us to test the causality between affective evaluation of, frequency of contact with, and neural responding to own-age vs. other-age faces. It will be important to experimentally target causality of this relationship in future research. This will clarify whether greater frequency of contact increases familiarity and positive affective evaluation of the own-age relative to other-age faces, which may then be reflected in greater neural activation to own-age relative to other-age faces, or whether greater positive affective evaluation increases frequency of contact of and neural activation to own-age relative to other-age faces.

But why was frequency of contact related to amygdala activity only for young but not older participants, especially given that older compared to young participants showed greater differences between own-age than other-age faces in amygdala activity? The high scores in both young and older adults self-reported frequency of contact with own-age and other-age individuals suggest that the scale may not have been particularly sensitive overall. Moreover, it may be that the self-report measure we used was not sufficiently sensitive to pick up variations in frequency of contact among older adults, as suggested by no differences in self-reported amount of contact with own-age and other-age individuals in older adults. Also, the everyday life contexts of older compared to young adults in our samples may be more equally populated with people of different ages; exposure to other-age individuals in the media or in the family context may be greater for older than young adults. However, note that when directly compared, young and older participants' brain-behavior correlations were not significantly different from each other, and the correlation in the older adults showed a positive trend, in line with findings for the young adults.

At first glance, our findings seem to stand in contrast with Wright et al. (2008) who manipulated contact in young and older participants to create novel vs. familiar young and older faces. However, even though novelty and age-based in-group face effects were largely overlapping in Wright et al., the peak voxels for each of these effects were somewhat different, suggesting that there are two partially overlapping sets of neurons in the amygdala that differentially respond to these two stimulus features. Thus, Wright et al. come to the conclusion that novelty may not be the driving force in the age-defined in-group effect. Importantly, general familiarity with a category of own-age as opposed to other-age faces as assessed in the present study does not necessarily have the same neural correlates as familiarity with specific faces as examined by Wright et al., and thus future research is warranted to follow up on the effects of amount of contact on own-age effects.

Table 4. *Whole-brain analysis: Positive correlations between self-reported frequency of contact and brain activity to own-age relative to other-age faces for young participants (each at p < .001)*

			Activation Peak				
Hemi	***BA***	***Anatomical Area***	***x***	***y***	***z***	***T-value***	***# vox***
R	9	Superior Frontal Gyrus	18	66	24	4.41	9
B	6	Superior Frontal Gyrus	15	33	57	4.81	31
R		Putamen	21	-3	-9	3.83	6
L		Caudate	-15	-12	24	4.13	17
B		Hippocampus, Caudate	-36	-30	-9	5.53	67
R	30, 29	Posterior Cingulate, Culmen	3	-51	6	3.85	23
B		Culmen	6	-54	-33	4.36	56
L	19, 37	Middle Occipital Gyrus, Inferior Temporal Gyrus	-60	-69	-3	3.92	8

Notes. Areas sorted from anterior to posterior. MNI coordinates (x, y, z) and maximum *T*-value are given for the peak voxel (local maximum) within each region of activation. Hemi: hemisphere; B: bilateral, L: left, R: right; BA: Brodmann Area; # vox: number of voxels in cluster. Full activation maps for all areas shown in the table are available from the authors. Only clusters > 2 voxels are reported.