A Chip Off the Old Block? The Relationship of Family Factors and Young Adults' Views on Aging

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9   **Abstract**

10   Views on aging (VoA), such as self-perceptions of aging or age stereotypes are generated in early
11   childhood and continue to develop throughout the entire lifespan. The ideas a person has about their
12   own aging and aging in general influence their behavior towards older persons as well as their own
13   actual aging, which is why VoA are already important in adolescence and young adulthood. The current
14   study investigates VoA of young adults in different domains (continued growth, physical losses, social
15   losses) and how different family aspects are related to VoA. From February to March 2021, $N = 305$
16   young adults [aged 18 - 30 years, M_{age}(SD) = 22.20(2.60)] participated in an online survey, in which,
17   in addition to sociodemographic variables and family aspects (contact with grandparents, family age
18   climate, i.e. the frequency and valence of talking about age in the family), self-perceptions of aging,
19   age stereotypes, and the young adults' ratings of their parents' VoA were assessed. The results of
20   stepwise regression analyses predicting the young adults' VoA, revealed significant associations
21   between the quality of contact with grandparents and the self-perceptions of aging of young adults.
22   However, the frequency of contact was neither related to young adults' self-perceptions of aging nor
23   age stereotypes. Grandparents' health status emerged as a significant moderator between the
24   relationship of contact quality and the young adults' self-perceptions of aging as continued growth and
25   physical decline. Family climate was also found to be significantly related to young adults' self-
26   perceptions of aging and age stereotypes. Similarities regarding VoA within the family were
27   demonstrated, based on proxy report from the respondents. The results underline the importance of
28   family aspects for the development of VoA in young adulthood, and the significance of interventions
29   targeting these factors to combat ageism.

30   **1   Introduction**

31   Views on aging (VoA) is an umbrella term, encompassing constructs that represent individuals'
32   conceptions about the process of aging, older people, and old age (age stereotypes) as well as ones'
33   own aging (self-perceptions of aging; Wurm et al., 2017). VoA are already generated in early childhood
34   and continue to develop throughout the entire life span (Levy, 2009), however, these views also seem
35   to be considerably stable throughout life (Wurm & Huxhold, 2012). Stereotypes that are endorsed and
36   internalized early in life turn into aging self-stereotypes as people get older, a process that is described
37   in Stereotype Embodiment Theory (SET, Levy, 2009). In general, it is assumed that both, self-

38 perceptions of aging and age stereotypes, inform future expectations of the self (Bellingtier, 2018;
39 Rothermund and Brandstätter, 2003; Ryff, 1991) as well as ones' own behavioral choices and later life
40 goals (Kornadt and Rothermund 2012; Lloyd et al. 2012). Furthermore, negative VoA also influence
41 later life outcomes via behavioral (e.g., decreased engagement in health behaviors) and physiological
42 (e.g., increased stress responses) pathways (Levy, 2009). Thus, it is of great importance to investigate
43 how VoA are formed and characterized in younger years (e.g., Kornadt et al., 2020).

44 A growing body of research has already provided evidence that VoA endorsed in earlier life have an
45 influence on behavior towards older people, for example leading to ageism in terms of
46 overaccommodating speech, avoidance, and other discriminatory actions (Lapp et al., 2020; Flamion,
47 Missotten, Goffinet et al., 2020; Mahne et al., 2017). In addition, as people move through the life span
48 and get older themselves, VoA also affect a person's own health outcomes and well-being. Numerous
49 studies have shown that negative VoA in earlier life are related to poorer health outcomes in later life
50 (Blawert et al, 2020; Levy et al. 2009; Levy et al., 2002). This suggests that young adults who associate
51 aging for example with physical decline might experience a negative impact on their own health in
52 later life (e.g., Lloyd et al., 2018).

53 Based on these findings that young adults' VoA affect their behavior towards older people and that
54 VoA also represent the basis for self-stereotypes of aging as people get older themselves, it is of utmost
55 importance to understand the development of VoA in young people (Kornadt et al. 2020). So far,
56 empirical studies have mostly focused on the existence and characteristics of VoA in childhood, in
57 adolescence and in young adulthood (Bergman, 2017; Flamion, Misotten, Jenotte et al., 2020) and on
58 intergenerational contact as a relevant factor in the development of VoA. However, we still know
59 relatively little about the family as a context for the developmental process of VoA in younger years
60 (Kornadt et al., 2020). The current study thus set out to investigate how contact with grandparents,
61 family age climate (i.e., the frequency and valence of talking about age in the family) and parents' VoA
62 are related to young adults' VoA.

Intergenerational Contact – The Role of Grandparents

64 As described in intergroup contact theory (Allport et al., 1954), greater contact is related to less
65 prejudice toward a specific stigmatized group. This also seems to be the case for older adults. In a
66 systematic review, Marques, Sibila, and colleagues (2020) found that contact with older people
67 (especially contact of high or positive quality) seems to reduce the prevalence of ageism and represents
68 one factor robustly associated with ageism (or lack thereof). In that regard, the relationship between
69 children and their grandparents seems to play a special role in their development of VoA, as
70 grandparents are usually the first older people that children meet as well as being those that are most
71 visible and important (Christian et al, 2016). A number of studies have demonstrated that if
72 intergenerational contact is present within the family, children are more likely to have positive VoA
73 (e.g., Attar-Schartz, Tan & Buchanan, 2009; Gilbert & Ricketts, 2008). However, there are still many
74 questions regarding whether only quality of contact with grandparents is related to VoA or if frequency
75 of contact is also a factor. (see Flamion et al., 2019 for an overview). In addition, most studies have
76 investigated the role of contact in childhood while there is relatively little research focusing on young
77 adults.
78
79 In addition, besides mere contact, grandparents' health might represent another essential factor relevant
80 for young adults' VoA (Blawert et al., 2020; Flamion et al., 2019). In a study by Flamion and colleagues
81 (2019), for example, grandparents' health status turned out to be an important factor besides the role
82 of contact: Children and adolescents aged 7 to 16 years who described their grandparents' health as

83   very good had significantly more positive VoA compared to participants who rated their grandparents'
84   health as only good or not so good. In addition to this main effect, the health status of a grandparent
85   might also moderate the impact of contact: Since declining health is one of the most pervasive, negative
86   stereotypes of old age (e.g., Kornadt et al., 2011), having it confirmed in a grandparent might override
87   the positive effects of contact. Thus, if a grandparent is sick, this might taint young adults' VoA in the
88   health domain, even if they experience good contact with them. Taken together, as intergenerational
89   contact outside the family is rare (e.g., Drury et al., 2016), grandparents might often not only be the
90   first and most significant contact that young adults have with older people, but also the only older
91   people that they have contact with. For this reason, their status and characteristics are of special
92   importance for the formation of VoA. It is therefore important to understand which characteristics and
93   contextual factors of the child-grandparent relationship are important for VoA development.

94   **Family as a context of VoA development**

95   Contact with grandparents seems to be of great significance, but other family characteristics can be
96   important for VoA development as well. In general, the family serves as a basis for value and attitude
97   development in children. As the first instance of socialization, knowledge is shared by parents and
98   siblings, family practices embody values and attitudes and social learning processes work via
99   interaction and observation (Albert & Ferring, 2012; Gilbert & Rickets, 2008; Mendonca et al., 2018)
100 It has been shown in a number of contexts that attitudes and values are passed on within the family and
101 that there are similarities in parents' and children's values and attitudes (Albert & Ferring, 2012;
102 Schönpflug, 2008; Schönpflug & Bilz, 2009). In a study by Schönpflug and Bilz (2009) for example,
103 an authoritative parenting style characterized by warmth and responsiveness turned out to be an
104 effective transmission process for various values and beliefs between parents and their children. Other
105 constructs, such as gender roles, attitudes toward risk and race attitudes are also intergenerationally
106 transmitted (Bredtmann et al., 2020; Gauly, 2017; Wolff, 2020). For instance, Cheng and Chang (2017)
107 investigated whether socialization in the primary family is a significant predictor of children's gender
108 role attitudes. Results showed that parents had strong effects on the development of children's gender
109 role attitudes and that the children's gender role attitudes mirrored their social background. These
110 findings provide evidence for the intergenerational transmission of different kinds of values and
111 attitudes.

112 However, despite acknowledging the importance of the family for VoA formation (Gilbert & Ricketts,
113 2008) research on the role of the family for VoA development has so far been limited. In SET (Levy,
114 2009), the importance of early age stereotype socialization and internalization is explicitly mentioned.
115 How age is dealt with in the family, for example via modeled behavior towards older adults, via old
116 age portrayal in media consumed by parents and children alike, and how age is discussed in the family,
117 provides context for how children see older people and old age. Despite this, empirical research on
118 family factors affecting VoA is rather scarce. In a study of children aged 6 to 14 years, Lineweaver and
119 colleagues (2017) found similarities between children's age stereotypes and those of their parents, and
120 this relationship was stronger for older children, pointing to possible cumulative effects of social
121 learning and cognitive development. Kennison and Byrt-Craven (2018) found that a strained mother-
122 child relationship and avoidant attachment style in childhood predicted ageism in young adulthood.
123 For older adults, Kim and colleagues (2021) found that parents' aging conditions (financial, health-
124 related) influenced their grown-up children's aging anxiety. However, to the best of our knowledge,
125 no study has thus far investigated to what extent family age climate and parents' VoA are related to
126 young adults' age stereotypes and self-perceptions of aging.

127 **Aims and Hypotheses**

128 The current study extends previous literature by focusing on the question of how different family
129 factors are related to young adults' VoA. We further extend previous studies by taking the
130 multidimensionality of VoA into account and investigating young adults' self-perceptions of aging as
131 well as their age stereotypes within different dimensions (continued growth, physical decline, and
132 social loss). VoA are inherently multidimensional (Kornadt et al, 2020), and children already have
133 differentiated views of older people that take into account different functional domains, as well as
134 differences between their own aging and older people in general (e.g., Flamion et al, 2020; Lloyd et
135 al., 2018).

136 Referring to studies on intergenerational contact and the important role of grandparents in younger
137 years, we hypothesized that contact between young adults and their grandparents would be related to
138 young adults' VoA by assuming that both contact frequency (H1) and contact quality (H2) are
139 positively related to VoA. Further, we predicted that grandparents' health status would moderate the
140 relationship between contact quality and VoA of young adults. The better the contact with
141 grandparents, the more positive/less negative young adults' VoA, but only if the grandparents are in
142 good health (H3). Taking into account theories of stereotype matching (Levy & Leifheit-Limson,
143 2009), this should be especially the case for VoA as physical decline.

144 Furthermore, taking family value transmission and social learning processes into account, we assumed
145 that there would be similarities in parents' and young adults' VoA, i.e., the more positive/negative
146 parents' VoA, the more positive/negative young adults' VoA, respectively (H4) and that family age
147 climate and parents' VoA are related to young adults' VoA. We hypothesized that an appreciative
148 family climate in the primary family on aging would be related to more positive /less negative VoA
149 (H5).

150 To investigate the robustness of these effects, we explored whether the relationship between variables
151 remained stable when including young adults' health status, age and gender. These variables are usually
152 used as controls in VoA research. Because of its relevance for the current research question, we also
153 controlled for contact with older people outside the family. For analyses regarding family age climate
154 and the relationship between parents' and children's VoA, we additionally controlled for parents' age.

155 **2   Materials and Methods**

156 2.1   Sample and Procedure

157 $N = 305$ participants, aged 18-30 years ($M_{age} = 22.20$, $SD = 2.60$) from the Grand-Duchy of
158 Luxembourg were recruited to participate in an online survey. 73.8% of the sample were female, 85.9%
159 had Luxemburgish nationality, 59% were students and the majority were still living with their parents
160 (64.6%). Further relevant sociodemographic information is presented in Table 1. The questionnaire
161 was created using the platform SoSci Survey and shared via social networks such as Facebook and
162 Instagram for a duration of 1 month, from February 25th to March 25th, 2021. Participants answered
163 questions concerning sociodemographic information, self-perceptions of aging, age stereotypes as well
164 as the perceived VoA of their parents. Other family aspects related to age were assessed in the
165 questionnaire such as the quantity and quality of contact with grandparents, the grandparents' health
166 status and the family climate in the primary family regarding aging and older people. Completing the
167 questionnaire took 20-25 minutes and the survey could be paused and returned to at any time. The
168 language of the survey was German. Psychology students of the University of Luxembourg received
169 25 minutes of participation credit. No other incentives were offered. The study received Ethics
170 Approval as foreseen by the Ethics Review Panel of the University of Luxembourg for final year theses.
171 A total of $N = 497$ people started the questionnaire, of which $N = 192$ (38.6%) dropped out.

Family Factors and Young Adults' Views on Aging

Table 1. Sociodemographic information for the Total Sample

	Total sample ($N = 305$)
Sex	
Female, *n* (%)	225 (73.8)
Male, *n* (%)	79 (25.9)
Other or n/a	1 (0.3)
Age, *M* (*SD*)	22.20 (2.60)
Marital status, *n* (%)	
Single	190 (62.3)
Married	4 (1.3)
Single, in relationship	97 (31.8)
In a registered relationship	11 (3.6)
Widowed	2 (0.7)
Other or n/a	1 (0.3)
Current Activity/Employment, *n* (%)	
High School Student	44 (14.4)
University Student	180 (59.0)
Employed	70 (23.0)
Unemployed	5 (1.6)
Other or n/a	6 (2.0)
Living situation	
With my parents	197 (64.6)
Alone	22 (7.2)
With my partner	42 (13.8)
In a shared flat	38 (12.5)
Other or n/a	6 (1.9)
Nationality	
Luxembourgish	262 (85.9)
German	25 (8.2)
French	1 (0.3)
Portuguese	9 (3.0)
Other or n/a	8 (2.6)
Educational background	
Primary school	26 (8.5)
High school degree	112 (36.7)
Secondary school degree	49 (16.1)
Technician's Diploma	6 (2.0)
Apprenticeship or vocational school	9 (3.0)
Bachelor	69 (22.6)
Master	12 (3.9)
Other or n/a	22 (7.2)

172 2.2   Measures

173 Personal information. Information on participants' socio-demographic characteristics included gender,
174 age, educational status, marital status as well as their current living situation. Table 1 shows the
175 categories that were used to assess sociodemographic information. We also assessed participants'
176 subjective health by asking them how they rated their general state of health (1= very bad to 5= very
177 good). Additionally, the parents' and grandparents' sociodemographic information was assessed, such
178 as their age, information regarding the parents' educational level and professional situation as well as
179 the current living situation of the grandparents. Participants indicated whether their grandparents were
180 still living at home or somewhere else, for example a nursing home, an assisted living facility or a
181 multigenerational house.

182 Views on aging. Young adults' self-perceptions of aging, age stereotypes and the parents' VoA were
183 assessed using the AgeCog scale (Steverink et al., 2001). The scale, consisting of a total of twelve
184 items (four per domain), was designed to capture the VoA in the domains of Continued growth (CG,
185 sample item "Aging means to me that I continue to realize my ideas"), "Social loss (SL, e.g., "Aging
186 means to me that I feel lonely more often")" and "Physical decline (PD, e.g., "Aging means to me that
187 I am less vital and fit.")". For age stereotypes, the introductory sentence started with "Aging means to
188 most other people that…." To assess estimations of the parents' self-perceptions of aging, the same
189 items were introduced again at the end of the questionnaire, this time with the instruction to "Aging
190 means to my mother/father…". Participants had to rate all items on a four-point Likert scale from
191 'completely applies' to 'does not apply at all'. All items were reverse coded so that higher scores
192 indicated more endorsement and sum scores were computed for each scale from the respective items.

193 Grandparents. Contact frequency with grandparents was assessed by asking "Overall, how often do
194 you have contact with your grandparents?" (1= almost never to 5= very often). Contact quality was
195 assessed by asking: "Overall, how would you rate the quality of contact with your grandparents?" (1=
196 very poor to 5= very good). For grandparents' health status, participants had to indicate "Overall, how
197 would you rate your grandparents' state of health? (1= very poor to 5= very good). Participants were
198 instructed to answer these questions by thinking of their grandparents in general. If there was a large
199 difference between the grandparents, participants should refer to the grandparent with whom they had
200 the most and the best contact and whose health was best.

201 Family age climate. We assessed the frequency and valence of age-related conversations within the
202 primary family. Participants were asked to indicate on a four-point Likert scale how often the topic of
203 aging and being old was discussed in the primary family (1= never to 4= frequently). The valence of
204 family climate, rated on a five-point Likert scale, intended to provide information about the quality of
205 the family climate toward aging "If there is conversation about aging and being old in your family, is
206 this rather 1= negative to 5= positive"?. N = 29 subjects stated that the topic of aging was never
207 discussed in their primary family and were therefore excluded from the subsequent analysis regarding
208 the valence of family age climate.

209 Contact. Young adults' contact with older people outside the family was assessed ("Do you have
210 contact with older people outside your family?", 1 = yes/2 = no) and if they answered in the affirmative,
211 also the quality of this contact ("Overall, how would you rate the quality of this contact", 1= very poor
212 to 5= very good). Most participants (n = 265, 87%) indicated having no contact with older people
213 outside the family.

214 2.3   Analyses

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215   SPSS 27 was used for all analyses and data as well as syntax for all analyses are accessible at
216   https://osf.io/z74vf/?view_only=090e504449c7435b8769db6721ccbe14. First, descriptive statistics
217   and correlations were computed to address means and bivariate relationships between the variables. To
218   test our hypotheses and to estimate the incremental contribution of the respective predictors and
219   covariates, stepwise regression analyses were calculated. First, the respective predictor variables were
220   included in the regression models. For grandparents, first frequency of contact was added, then quality
221   of contact. To address the impact of the grandparents' health status on the relationship between contact
222   quality and VoA, predictors were standardized before analyses and grandparents' health status was
223   included as a predictor, as well as the interaction term between quality of contact and health status
224   (Hayes, 2018). For family factors, first the parents' VoA were included, followed by the frequency and
225   valence of family conversations regarding age. In a final step for both analyses, control variables were
226   included to test the robustness of associations in the presence of these covariates: Participants' age,
227   gender (1 = male, 2 = female), and health status were included as is common practice in studies on
228   VoA; due to their potential relevance for the current research question, contact with older people
229   outside the family (1 = yes, 2 = no), and for analyses on family climate also parents' ages were added
230   as additional covariates.

231   **3   Results**

232   Descriptive statistics and bivariate correlations for all variables are presented in Table 2.

233   Self-perceptions of aging as physical decline and social loss were significantly related to all other
234   variables, except for the frequency of contact with grandparents as well as the frequency of talking
235   about age in the family. All three domains of self-perceptions of aging and age stereotypes correlated
236   significantly with all three domains of the parents' VoA. For self-perceptions of aging and age
237   stereotypes as physical decline there was a significant and high correlation ($r = .50$, $p < .001$) while for
238   VoA as continued growth and social loss there was a moderate correlation. Age stereotypes as
239   continued growth and physical decline were not significantly related to the variables regarding contact
240   with grandparents and the frequency of talking about age in family, however for the valence of talking
241   about age in the family, a significant and high correlation could be observed. Age stereotypes as social
242   loss was neither related to any variable regarding contact with grandparents, nor to any of the family
243   climate variables (Table 2).

244

245 Table 2. Descriptive statistics for all study variables and bivariate correlations for young adults' VoA with all study variables

Variable	n	M	SD	CG_SPA	PD_SPA	SL_SPA	CG_AS	PD_AS	SL_AS	α
Continued growth (CG_SPA)	305	2.99	0.56	-						.78
Physical decline (PD_SPA)	305	2.04	0.55	-.49**	-					.77
Social loss (SL_SPA)	305	2.79	0.55	-.56**	.52**	-				.70
Continued growth (CG_AS)	303	2.40	0.61	.36**	-33**	-30**	-			.83
Physical decline (PD_AS)	303	2.60	0.59	-.15**	.50**	.20**	-.55**	-		.74
Social loss (SL_AS)	303	3.22	0.55	-.23**	.31**	.41**	-.66**	-.62**	-	.82
Continued growth (CG_Parents)	300	2.84	0.53	.40**	-.32**	-.28**	.23**	-.21**	-.22**	.86
Physical decline (PD_Parents)	300	2.15	0.57	-.25**	.48**	.20**	-.17**	.11**	.37**	.83
Social loss (SL_Parents)	300	2.95	0.52	-.36**	.27**	.48**	-.22**	.42**	.17**	.75
Contact frequency	293	3.27	1.18	-.03	.04	-.07	-.04	.03	.01	
Contact quality	290	4.15	1.00	.10	-.15*	-.17**	-.04	-.07	-.09	
Family age climate (frequency)	305	2.78	0.85	-.01	.03	.10	-.04	.08	.01	
Family age climate (valence)	279	2.80	0.79	.25**	.36**	-.27**	.16**	-.17**	-.07	
Age	305	22.20	2.60	.07	.00	-.04	-.05	.01	.02	
Age Father	299	54.35	6.68	-.04	.00	-.02	-.06	.02	.01	
Age Mother	304	52.48	4.81	.04	.09	.00	-.05	.11	.08	
Health status of grandparents	289	3.46	0.93	.00	-.06	-.02	-.05	.04	.05	
Personal health status	305	4.29	0.76	.20	-.15	-.23	.08	-.03	-.11	
Quality of contact with older people outside the family	40	4.08	0.83	-.03	.03	.00	-.11	.05	.07	
Gender (1 = male, 2 = female)	305									

SPA, self-perceptions of aging; AS, age stereotypes; *p < .05. **p < .001.

246

247 **The Role of Grandparents**

248 To address the relationship of VoA with quality and quantity of contact with grandparents, we ran
249 stepwise multiple regressions with the respective VoA as the outcome variable (see Tables 3 and 4).
250 Contrary to hypothesis 1, which stated that more frequent contact should be related to more positive,
251 VoA, frequency of contact with grandparents was not significantly related to any of the three domains
252 of self-perceptions of aging, and neither to age stereotypes (Table 3, Model 1 for self-perceptions of
253 aging; Table 4, Model 1 for age stereotypes). In terms of hypothesis 2, which stated that higher contact
254 quality should be related to more positive VoA, quality of contact as an additional predictor was indeed
255 significantly related to all three domains of self-perceptions of aging (Table 3, Model 2) whereas no
256 significant effect could be observed for the respective age stereotypes (Table 4, Model 2)[1].

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[1] Adding the interaction between contact frequency and contact quality did not yield any significant additional effect (all
B < 0 .05, all p > .08).

Table 3: The role of grandparents for young adults' self-perceptions of aging (SPA)

Variables	Continued growth (CG_SPA)					Physical decline (PD_SPA)					Social loss (SL_SPA)				
	B	SE (B)	$ß$	R^2	ΔR^2	B	SE (B)	$ß$	R^2	ΔR^2	B	SE (B)	$ß$	R^2	ΔR^2
Model 1				.00	.00				.00	.00				.01	.01
Constant	2.98	0.03				2.8	0.03				2,05	0.03			
Frequency of contact	-0.02	0.03	-.03			-0.03	0.03	-.06			-0,05	0.03	-.08		
Model 2				.02*	.02*				.02*	.02*				.03**	.02**
Constant	2.98	0.03				2.8	0.03				2.05	0.03			
Frequency of contact	-0.07	0.04	-.12			0.02	0.04	.04			0.01	0.04	.01		
Contact quality	0.10	0.04	.17*			-0.09	0.04	-.17*			-0.10	0.04	-.18**		
Model 3				.02	.00				.02*	.00				.03*	.00*
Constant	2.98	0.03				2.8	0.03				2.05	0,03			
Frequency of contact	-0.07	0.04	-.13			0.03	0.03	.05			0.01	0.04	.01		
Contact quality	0.10	0.04	.17*			-0.09	0.40	-.17*			-0.10	0.04	-.18*		
Health status of grandparents	0.01	0.03	.01			-0.03	0.03	-.05			0.00	0.03	.00		
Model 4				.03	.01				.04**	.02**				.03	.00
Constant	2.97	0,03				2.81	0.03				2.05	0.03			
Frequency of contact	-0.07	0.04	-.13			0.03	0.04	.05			0.01	0.04	.01		
Contact quality	0.10	0.04	.18*			-0.10	0.04	-.18*			-0.10	0.04	-.18*		
Health status of grandparents	0.01	0.04	.03			-0.04	0.03	-.07*			0.00	0.03	-.00		
Contact quality x Health status of grandparents	0.05	0.03	.10			-0.07	0.03	-.14*			-0.01	0.03	-.03		
Model 5				.08**	.05**				.07**	.03**				.09**	.06**
Constant	2.26	0.43				2,92	0.42				2.61	0.43			
Frequency of contact	-0.07	0.04	-.13			0.02	0.42	.04			0.00	0.04	.00		
Contact quality	0.10	0.04	.17*			-0.10	0.04	-.17*			-0.10	0.04	-.16*		
Health status of grandparents	0.00	0.04	.01			-0.03	0.04	-.05			0.01	0.03	.02		
Contact quality x Health status of grandparents	0.06	0.03	.12*			-0.07	0.03	-.15*			-0.02	0.03	-.04		
Age	0.02	0.01	.10			-0.01	0.01	-.04			-0.02	0.01	-.07		
Sex	0.01	0.08	.01			0.12	0.07	.10			0.10	0.07	.08		
Contact to older people outside the family	-0.05	0.10	-.03			0.06	0.10	.04			0.01	0.10	.01		
Personal health status	0.16	0.04	.21**			-0.10	0.04	-.13*			-0.15	0.04	-.21**		

*$p < .05$. **$p < .001$.

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258

Table 4: The role of grandparents for young adults' age stereotypes (AS)

Variables	Continued growth (CG_AS)					Physical decline (PD_AS)					Social loss (SL_AS)				
	B	*SE (B)*	*ß*	*R²*	*ΔR²*	*B*	*SE (B)*	*ß*	*R²*	*ΔR²*	*B*	*SE (B)*	*ß*	*R²*	*ΔR²*
Model 1															
Constant	2.40	0.04		.00	.00	3.22	0.03		.00	.00	2.60	0.03		.00	.00
Frequency of contact	-0.02	0.04	-.03			-0.01	0.03	-.01			-0.01	0.04	-.01		
Model 2															
Constant	2.40	0.04		.00	.00	3.22	0.03		.01	.01	2.60	0.03		.01	.01
Frequency of contact	-0.01	0.04	-.01			0.02	0.04	.04			0.03	0.04	.06		
Contact quality	-0.02	0.04	-.04			-0.05	0.04	-.08			-0.07	0.04	-.13		
Model 3															
Constant	2.40	0.04		.00	.00	3.22	0.03		.01	.00	2.60	0.04		.01	.00
Frequency of contact	-0.00	0.04	-.00			0.01	0.04	.02			0.03	0.04	.05		
Contact quality	-0.02	0.04	-.04			-0.05	0.04	-.09			-0.07	0.04	-.13		
Health status of grandparents	-0.02	0.04	-.04			0.03	0.03	.05			0.03	0.04	0.05		
Model 4															
Constant	2.40	0.04		.01	.00	3.22	0.03		.01	.01	2.60	0.46		.01	.00
Frequency of contact	-0.00	0.04	-.00			0.01	0.04	.02			0.03	0.04	.05		
Contact quality	-0.02	0.04	-.03			-0.05	0.04	-.10			-0.08	0.04	-.13		
Health status of grandparents	-0.02	0.04	-.03			0.02	0.03	.04			0.03	0.04	.05		
Contact quality x Health status of grandparents	0.02	0.03	.04			-0.04	0.03	-.08			-0.01	0.03	.02		
Model 5															
Constant	2.63	0.48		.03	.03	2.85	0.43		.00	.12	2.40	0.46		.04	.03
Frequency of contact	-0.00	0.04	-.00			0.01	0.04	.01			0.02	0.04	.04		
Contact quality	-0.03	0.04	-.05			-0.04	0.04	-.08			-0.06	0.04	-.11		
Health status of grandparents	-0.04	0.04	-.06			0.03	0.03	.05			0.04	0.04	.08		
Contact quality x Health status of grandparents	0.02	0.03	.03			-0.04	0.03	-.07			-0.01	0.03	-.02		
Age	-0.02	0.01	-.06			0.00	0.01	.01			0.01	0.01	.03		
Sex	-0.02	0.08	-.01			0.13	0.07	.11			0.13	0.08	.10		
Contact to older people outside the family	-0.23	0.10	-.13*			0.09	0.09	.06			0.14	0.10	.09		
Personal health status	0.08	0.05	.10			-0.01	0.04	-.02			-0.08	0.05	-.10		

*p < .05. **p < .001.

261   To test hypothesis 3, which regarding the role of grandparents' health, we also added grandparents'
262   health status to the models and found no significant effect for all three domains of VoA. (Table 3,
263   Model 3 for self-perceptions of aging, Table 4, Model 3 for age stereotypes). In addition, the effect of
264   contact quality on self-perceptions of aging remained stable when including health status. In a next
265   step, we introduced the moderator term, which showed a significant moderation effect of the
266   grandparents' health status on the relationship between contact quality and self-perception of aging as
267   physical decline, ΔR^2 =4.17%, $F(1, 285) = 5.6678$, $p < .019$, 95% Cl [-.2462, -.0647]. Figure 1 shows
268   the interaction effect between contact quality and grandparents' health status. Higher contact quality
269   was related to less self-perceptions of aging as physical decline (as indicated by lower scores on this
270   scale), but only if grandparents' health status is perceived as high. If grandparents' health status is rated
271   as low, high contact quality was not related to reduced negative self-perceptions of aging as physical
272   decline.

273   Figure 1. Moderation effect of grandparents' health status on the relationship between contact quality
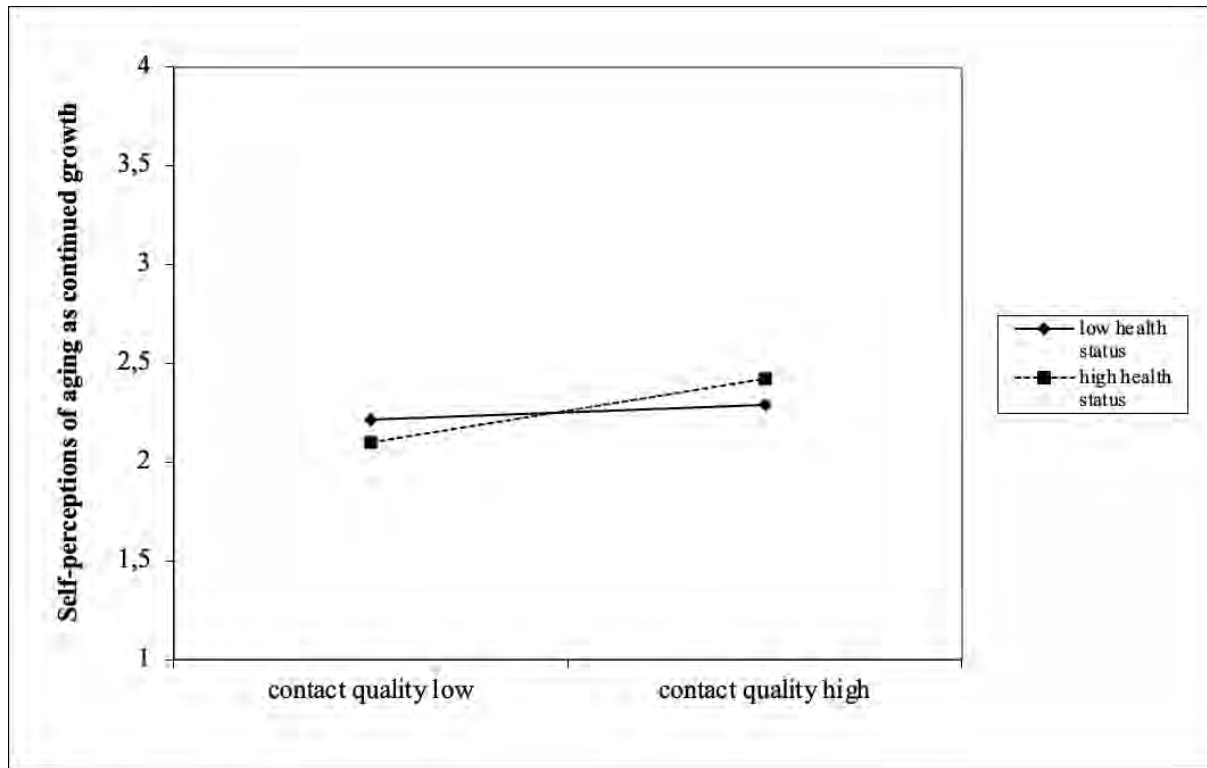274   and young adults' self-perceptions of aging as physical decline.
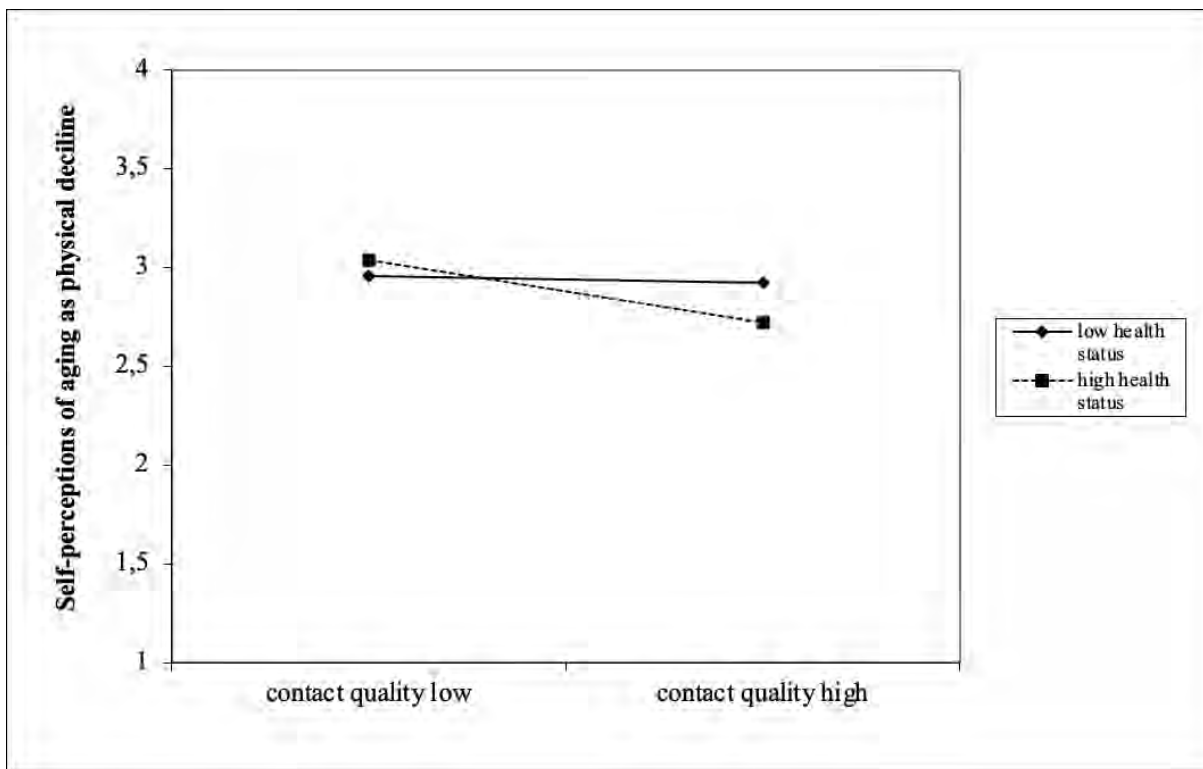
276   When including age, gender, contact with older people outside the family and personal health status in
277   a final step, all reported effects remained unchanged, except for the model predicting self-perceptions
278   of aging as continued growth, for which the interaction effect became significant and mirrored that of
279   physical decline (Table 3, Model 5). Figure 2 shows the interaction effect: The better the grandparents'
280   health, the more positive the self-perceptions of aging as continued growth, when the contact quality
281   is higher. If the health status of the grandparents' is poor, self-perceptions of aging as continued growth
282   is independent of contact quality.

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285 Figure 2. Moderation effect of grandparents' health status on the relationship between contact quality
286 and young adults' self-perceptions of aging as continued growth

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288 With regard to the effects of the control variables, personal health status of young adults was
289 significantly related to self-perceptions of aging as continued growth, β = .21, p < .001 and negatively
290 related to self-perceptions of aging as social loss, β = -.21, p < .001 and physical decline, β = -.13, p <
291 .034 (Table 3, Model 5). In addition, contact with older people outside the family was significantly
292 negatively related to age stereotypes as continued growth: Participants with contact had more positive
293 VoA, β = -.13, p < .026 (Table 4, Model 5).

294 **The Role of Family Factors**

295 To address the relationship of young adults' VoA with their parents' VoA, as well as the frequency
296 and valence of family conversations regarding age (family climate), we ran stepwise multiple
297 regressions with the respective VoA as the outcome variable (see Tables 5 and 6). Hypothesis 4, in
298 which we assumed a positive relationship between parents' and children's VoA, was supported:
299 Parents' views on aging were significantly related with their childrens' VoA (Table 5, Model 1 for
300 self-perceptions of aging; Table 6, Model 1 for age stereotypes). In terms of the fifth hypothesis, in
301 which a positive relationship between VoA and family age climate was assumed, the frequency of
302 talking about age in the family was neither related to the three domains of self-perceptions of aging
303 (Table 5, Model 2) nor to age stereotypes (Table 6, Model 2). The valence of age-related family climate
304 as an additional predictor, however, was significantly related to all three domains of self-perceptions
305 of aging (Table 5, Model 2) and for age stereotypes regarding continued growth and physical decline
306 (Table 6, Model 2). When adding age, gender, health status, contact with older people outside the
307 family, and parents' age, the effect of parents' VoA remained stable, whereas the effect of valence of

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308   family age climate remained significant only for self-perceptions of aging and age stereotypes as
309   physical decline. As for the effects of covariates, a small but significant negative effect of participants'
310   age was observed for self-perceptions of aging as continued growth, and personal health status was
311   negatively related to self-perceptions of aging as social loss $\beta = -.13$, $p < .023$ (Model 3, Table 5).

Table 5: The role of family factors for young adults' self-perceptions of aging (SPA)

Variables	Continued growth (CG_SPA)					Physical decline (PD_SPA)					Social loss (SL_SPA)				
	B	SE (B)	ß	R²	ΔR²	B	SE (B)	ß	R²	ΔR²	B	SE (B)	ß	R²	ΔR²
Model 1															
Constant	1.78	0.17		.16**	.16**	1.32	0.16		.24**	.24**	1.11	0.12		.20**	.20**
Parent's views on aging	0.43	0.06	.40**			0.50	0.06	.49**			0.43	0.05	.45**		
Model 2															
Constant	1.85	0.22		.18**	.02**	1.94	0.24		.29**	.06**	1.63	0.20		.23**	.03**
Parent's views on aging	0.38	0.07	.34**			0.43	0.06	.42**			0.40	0.05	.41**		
Family age climate (frequency)	-0.06	0.05	-.08			0.02	0.04	.03			-0.05	0.04	-.06		
Family age climate (valence)	0.09	0.04	.13*			-0.17	0.04	-.25**			-0.11	0.04	-.16*		
Model 3															
Constant	1.45	0.53		.22**	.04**	1.98	0.50		.31**	.01**	1,88	0.53		.26**	.03**
Parent's views on aging	0.38	0.07	.36**			0.43	0.06	.43**			0.37	0.06	.39**		
Family age climate (frequency)	-0.08	0.05	-.10			0.02	0.04	.03			-0.05	0.04	-.06		
Family age climate (valence)	0.07	0.04	.11			-0.15	0.04	-.22**			-0.08	0.04	-.11		
Age Father	-0.01	0.01	-.07			-0.01	0.01	-.08			0.00	0.01	-.03		
Age Mother	0.02	0.01	.09			0.00	0.01	.04			0.00	0.01	.03		
Age	0.03	0.01	.14*			0.00	0.01	-.01			0.00	0.01	-.10		
Sex	-0.06	0.07	-.04			0.09	0.07	.07			0.09	0.07	.08		
Contact to older people outside the family	-0.06	0.09	-.03			0.03	0.09	.02			0.02	0.09	.01		
Personal health status	0.07	0.05	.09			-0.03	0.04	-.05			-0.10	0.04	-.13*		

*$p < .05$. **$p < .001$.

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Table 6: The role of family factors for young adults' age stereotypes (AS)

Variables	Continued growth (CG_AS)					Physical decline (PD_AS)					Social loss (SL_AS)				
	B	SE (B)	ß	R²	ΔR²	B	SE (B)	ß	R²	ΔR²	B	SE (B)	ß	R²	ΔR²
Model 1															
Constant	1.50	0.20		.07**	.07**	2.00	0.16		.19**	.19**	1.79	0.13		.13**	.14**
Parent's views on aging	0.31	0.07	.27**			0.42	0.05	.44**			0.38	0.06	.37**		
Model 2															
Constant	1.29	0.25		.08**	.01**	2.24	0.24		.20**	.01**	1.85	0.23		.14**	.00**
Parent's views on aging	0.28	0.07	.25**			0.41	0.06	.43**			0.40	0.06	.38**		
Family age climate (frequency)	0.05	0.05	.06			-0.03	0.04	-.04			-0.06	0.05	-.06		
Family age climate (valence)	0.05	0.05	.06*			-0.04	0.04	-.06*			0.03	0.04	.03		
Model 3															
Constant	2.09	0.57		.10**	.02**	1.66	0.48		.21**	.02**	0.61	0.61		.17**	.02**
Parent's views on aging	0.29	0.07	.25**			0.41	0.06	.43**			0.41	0.06	.40**		
Family age climate (frequency)	0.05	0.05	.06			-0.03	0.04	-.04			-0.07	0.05	-.08		
Family age climate (valence)	0.05	0.05	.06			-0.03	0.04	-.05*			0.05	0.05	.06		
Age Father	-0.01	0.06	-.07			-0.01	0.01	-.06			0.00	0.01	-.04		
Age Mother	0.00	0.08	.00			0.01	0.01	.09			0.01	0.01	.10		
Age	0.00	0.02	-.01			0.00	0.01	-.02			0.01	0.01	.05		
Sex	-0.02	0.08	-.02			0.06	0.07	.06			0.13	0.08	.10		
Contact to older people outside the family	-0.19	0.12	-.11			0.07	0.09	.05			0.18	0.10	.11		
Personal health status	-0.03	0.05	-.03			0.04	0.04	.05			0.01	0.05	.01		

320   *p < .05. **p < .001.

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322   4   Discussion

323   Perceptions of aging and older people develop early in life and have an influence throughout the life
324   span, by impacting how younger people behave towards older people and also by becoming templates
325   for one's own aging process, ultimately influencing health and well-being in later life (Levy, 2009).
326   Intergenerational contact with grandparents and the family as a context of attitude and value
327   development in general are so far not well understood. The current study thus set out to investigate
328   family factors related to young adults' VoA in order to better understand the contexts influencing VoA
329   development in early life.

330   **The Role of Grandparents: Intergenerational Contact Within the Family**

331   Referring to studies showing the important role of contact with grandparents for VoA development
332   (Christian et al, 2016, Flamion, Misotten, Jenotte et al., 2020, Gualano et al., 2018), we set out to
333   investigate how contact frequency and quality as well as grandparents' health status are related to
334   young adults' VoA in different dimensions (continued growth, physical decline, and social loss). We
335   found that contact quality was significantly related to all domains of self-perceptions of aging
336   (supporting Hypothesis 2), whereas for contact frequency no significant associations were observed
337   (not supporting Hypothesis 1). Having a warm and meaningful positive relationship with one's
338   grandparents thus seems to be important for how one thinks about one's own age.

339   However, as expected, grandparents' health status emerged as a significant moderator between contact
340   quality and self-perceptions of aging as physical decline (supporting Hypothesis 3): When contact
341   quality was high, participants who perceived their grandparents' health status as good had less negative
342   self-perceptions of aging as physical decline. If grandparents' health was rated as bad, however, high
343   contact quality was not related to reduced negative self-perceptions of aging as physical decline.
344   Therefore, having a sick or frail grandparent seems to override the positive effect of contact quality on
345   young adults' views of their own aging in terms of health. Grandparents' negative health status thus
346   seems to strengthen the negative view of one's own aging as physical decline, which cannot be
347   improved by high quality contact. However, not only for self-perceptions of aging as physical decline
348   but also for self-perceptions as continued growth, a moderation effect could be observed after the
349   inclusion of covariates. Again, for those with high contact quality who also perceived their
350   grandparents' health as good, self-perceptions of aging as continued growth were higher. If health
351   status of grandparents was estimated as low, high contact quality was not related to improved self-
352   perceptions of aging as continued growth. This knowledge is important, since young adults with sick
353   grandparents might especially benefit from multifaceted knowledge on aging as well as from contact
354   with older people outside the family to diversify their picture of aging. Further research could
355   investigate whether similar moderators exist for other domain specific VoA of young adults, for
356   instance social inclusion of grandparents in relation to social losses.

357   The majority of our participants ($n = 265$, 87%) had no contact with older people outside their family.
358   This result matches those of Drury et al. (2016) and Newsham et al. (2020), who showed that
359   intergenerational contact outside the family is rare and that grandparents are often the only older people
360   that young adults have contact with. In addition, in our study, having contact with older people outside
361   the family was only a relevant predictor for age stereotypes as continued growth. This stresses the
362   importance of grandparents for VoA development, and the need to understand the conditions under
363   which this contact has a positive effect. However, grandparents are usually seen as different exemplars
364   compared to older people in general. Newsham and colleagues (2020) investigated college students'

365 perceptions of older people compared to those of their grandparents and found that participants
366 attributed more negative emotional terms to older people outside the family than to their grandparents.
367 Again, this calls for more diverse and also meaningful contact with older people outside the family, to
368 enrich age stereotypes with different examples and to make young people aware of the diversity of the
369 aging process.

370 **The Role of Family Factors: Family as a Context of VoA Development**

371 In accordance with the assumption that family serves as an important context of VoA development,
372 similarities were observed regarding young adults' VoA and those of their parents, supporting our
373 fourth hypothesis. These associations remained stable even when controlling for age, gender, contact
374 with older people outside the family and the personal health status of young adults. In terms of
375 hypothesis 5 in which we tested whether family age climate was related to VoA, the frequency of
376 talking about age in the family was not related at all to young adults' VoA. The valence of age-related
377 family climate was positively associated with all three domains of self-perceptions of aging as well as
378 age stereotypes regarding continued growth and physical decline. However, when adding the control
379 variables, the effect of valence of family age climate was maintained only for self-perceptions of aging
380 as physical decline and social loss. It seems that frequently talking about age without focusing
381 specifically on positive aspects of aging, might not be enough to perpetuate more positive VoA, maybe
382 because the discussion of more negative or rather mixed content rather confirms or cements prevailing
383 negative views.

384 The results concerning the role of family aspects as a context of VoA development are in line with
385 previous research on the transmission of values, attitudes, and other constructs such as for example
386 gender roles, risk, and race attitudes within the family (Albert & Ferring, 2012, Bredtmann et al., 2020;
387 Gauly, 2017, Wolff, 2020), and also with the musings of Stereotype Embodiment Theory, which
388 stresses the importance of early age stereotype socialization for development across the life span (Levy,
389 2009). Further research should be specifically aimed at identifying the role of parents in the
390 development of young adults' VoA to get a better understanding of how parents' perceptions of aging
391 could have an influence on the VoA of young adults, similar to what has recently been done with older
392 adults and their partners' VoA (e.g., Kim et al., 2018). It seems that a positive age climate within the
393 family is a powerful resource to shape young persons' views of their own aging as well as aging in
394 general, at least in terms of physical development. This knowledge might be helpful in designing
395 interventions to improve and diversify VoA which target the parents' VoA or even those of the whole
396 family system, for example by motivating resource-focused conversations about aging and older people
397 (for example discussing newspaper articles or movies) and implementing them in families' daily lives.

398 However, similarity within families in terms of values and attitudes is not only a matter of value
399 transmission, but also of genetic similarities (Hufer et al., 2020). With regard to VoA, Kornadt and
400 Kandler (2017) found in a sample of older twins that variability in multidimensional age stereotypes
401 was due to both genetic and environmental influences. It would be interesting to consider these aspects
402 in young adults in order to understand the role of family factors beyond shared environmental
403 experiences and to better understand gene-environment interplay and their developmental relevance in
404 sophisticated research designs (Mönkediek et al., 2020).

405 **The Role of Multidimensionality**

406 Given that VoA are multidimensional in nature, and that this multidimensionality is already visible
407 early in life (Kornadt et al, 2020), our study adds to previous research by focusing not only on VoA in

different functional domains (continued growth, physical decline and social losses), but also young adults' self-perceptions of aging as well as their views of older people in general, i.e., their age stereotypes. Both constructs are related, but also distinct, as is visible by their medium-sized correlations. Overall, relationships were strongest for self-perceptions, both for grandparents and family factors. Grandparents seem to be less important for young adults' age stereotypes, this might be due to the previously mentioned fact that grandparents are exemplars that are not generalized to the older population in general (Newsham et al. 2020). In addition, seeing a family member age might have special relevance for the anticipation of one's own aging and less for that of other people. With regard to the role of family age climate, effects were robust only for VoA as physical decline and social loss. Talking positively about aging within the family might thus combat negative instead of promote positive VoA. This shows the importance of a multidimensional assessment, since different facets of VoA might develop as a result of different factors, and thus only their consideration enables a holistic understanding (Kornadt et al., 2020, Kornadt & Rothermund, 2015).

Limitations and Directions for Future Research

Some limitations have to be taken into account when interpreting our results, that point to directions for future research. First, it should be noted that the implications we draw from our analysis are limited by the cross-sectional nature of our data and therefore no directional relationships or developmental processes could be investigated. Thus, longitudinal research with samples at different ages is needed that is able to follow up on the development of young people's VoA over time, and to investigate at which times in life family factors are most important and influential. Another significant limitation is that grandparents' health status as well as parents' VoA were obtained by proxy report from participants, which might have biased the results and resulted in inflated correlations. However, correlations were of medium size and the size varied for the different VoA indicators so there was by no means a complete match (or complete distancing) in terms of young adults' report of their parents' VoA. Nevertheless, truly dyadic or triadic data is absolutely necessary to confirm the results of our study. Furthermore, our sample was mainly composed of students (59%), in particular psychology students from the University of Luxembourg. Thus, the sample is rather homogeneous and precludes the generalization of effects to more diverse or even the general population. To reach more young people with different educational and cultural backgrounds, multilingual questionnaires could have been proposed, taking into account the diversity of the Luxembourgish population. In addition, the unequal distribution of female and male participants has a limiting effect on the generalizability of the results.

Some other limitations are related to the operationalization of the variables. In our survey, contact as well as the health status of the grandparents was not collected specifically for each grandparent but in general. In case of a discrepancy regarding the contact or the health status, participants were instructed to refer to the grandparent with whom they have the most contact. This might not correspond to the real situation for all grandparents. To obtain a more specific image of the situation, variables for each grandparent should be recorded. Furthermore, we did not assess whether our participants or their parents acted as caregivers. Having a grandparent or other family member in need of care might have an especially large impact on VoA and should therefore be included in further research. Finally, our study was focused on family-related factors that impact young adults' VoA, however, family contexts become less important in young adulthood, thus, it would be interesting to investigate, other aspects which could influence young adults' VoA development, for example teachers' or peers' VoA (Lineweaver et al.,2017) and also the age climate that is conveyed in classrooms or peer interactions.

Conclusion

453   The results of this study reinforce the assumption that intergenerational contact within the family as
454   well as different family factors, such as family climate and parents' VoA, represent important aspects
455   which could have an influence on the domain specific VoA of young adults. Given the importance of
456   intergenerational dialogue when it comes to future developmental challenges, be it climate change or
457   the current Covid-19 pandemic, understanding how views on aging develop and which factors may be
458   relevant for promoting a multifaceted, appreciative view of older age and older people, might facilitate
459   "aging well" not only for individuals, but also for society as a whole.

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