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# Creative Aging: Unraveling the Psychosocial Benefits of Art Among Germany's Oldest Old. Findings From the Nationally Representative Study "Old Age in Germany (D80+)"

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### **ABSTRACT**

**Objective:** There is a dearth of studies examining the link between artistic activity and psychosocial outcomes exclusively among the oldest old. Therefore, the purpose of this study was to investigate the association between artistic activity and psychosocial outcomes among individuals aged 80 years and over in Germany.

**Methods/Design:** Data for this analysis were taken from the "Old Age in Germany (D80+)" study, a nationwide sample encompassing both community-dwelling individuals aged 80 and above, as well as those residing in care facilities. The analytic sample included a total of n = 3181 individuals. Established tools were used to quantify the variables of interest.

Results: Approximately 25.5% of individuals engaged in artistic activities, with the most popular being singing (9.0%) and making music (7.7%). Most participants engaged in these activities frequently, predominantly at home (84.8%). Regressions showed that overall engagement in the arts was not significantly associated with outcomes, except for reduced loneliness among men. Specific types of arts activities were associated with favorable psychosocial outcomes (e.g., singing and making music were associated with lower loneliness among men, whereas photography/filming was associated with lower loneliness among women). In addition, engaging in artistic activities outside the home was associated with higher life satisfaction among the total sample and women. The frequency of engagement in artistic activities was mainly not associated with psychosocial outcomes. Conclusions: About one in four individuals aged 80 years and over in Germany is engaged in artistic activities (frequently; mostly at home). Our findings show that engaging in artistic activities may have positive psychosocial benefits (depending on the type and sex-specific), particularly in reducing loneliness and increasing life satisfaction. Artistic engagement, particularly outside the home, may contribute to increased life satisfaction among women. Even rare artistic activities could prove beneficial.

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## **Summary**

- About one in four individuals aged 80 years and over in Germany is engaged in artistic activities (frequently; mostly at home).
- Engaging in artistic activities may have positive psychosocial benefits (depending on the type and sex-specific) particularly in reducing loneliness and increasing life satisfaction.
- Artistic engagement, particularly outside the home, may contribute to increased life satisfaction among women.
- Even rare artistic activities could prove beneficial.

# 1 | Introduction

In many high-income countries, a strong demographic change can be determined. This is reflected in increasing life expectancy in particular. Therefore, it can be assumed that there will be more and more individuals aged 80 years and older ("oldest old") stressing the relevance of this age group. Such individuals have to deal with various critical life events such as the loss of friends and relatives or significant deterioration in health (e.g., in cognition or functional capacity) [1]. These events can lead to unfavorable psychosocial factors such as loneliness, a reduction in life satisfaction or increased depressive symptoms (e.g., [2]).

To address adverse psychosocial factors, different strategies can be used. For example, former research has shown that pets (particularly dogs) may help to maintain favorable psychosocial outcomes [3, 4]. Moreover, neighborhood-related factors (such as closeness of contact with neighbors) can help to avoid unfavorable psychosocial outcomes in later life [5].

A few studies also indicate a positive association of artistic activities with psychosocial outcomes (as an overview: [6]). For example, Noguchi et al. very recently showed that a diversity of (sustained and increased) cultural activities and creative arts can help to avoid loneliness among community-dwelling older adults in Japan aged 65 years and over (mean age of 74.3 years) [7]. Another study showed that participation in arts and cultural groups may improve psychosocial outcomes among communitydwelling older adults aged 65 years and over in both Japan and England [8]. More precisely, participation in arts and cultural groups was associated with increased life satisfaction and social support in Japan. In England, group participation was associated with higher social support scores in individuals aged 50 years and over [8]. A further study showed that arts group participation was associated with various psychosocial outcomes (e.g., higher positive affect, purpose in life and greater life satisfaction) based on data from community-dwelling older adults (mean age was 68.1 years) in the United States [9]. Active engagement in participatory arts was also associated with greater quality of life among community-dwelling individuals aged 50 years and over in Singapore [10]. Favorable consequences of arts on mental health and life satisfaction have also been shown by Wang et al. [11] among the general adult population in the United Kingdom.

The existing studies are restricted in that they do not exclusively refer to the oldest old (but rather to older adults in general) and commonly do not include individuals residing in institutionalized surroundings. Additionally, there is often also a lack of detailed information on the artistic activities (e.g., location, frequency and type) in existing studies. To address these gaps in knowledge, our aim was:

• to examine the association between artistic activity—(i) in general, and additionally in terms of the (ii) specific types of artistic activity, (iii) location, and (iv) frequency—and psychosocial outcomes (in terms of loneliness, life satisfaction and depressive symptoms) among individuals aged 80 years and over in Germany.

Such knowledge can assist in gaining a better understanding of the link between artistic activity and psychosocial outcomes among the oldest old (both, individuals residing in the community and those living in institutionalized settings)—a vulnerable age group which has rarely been examined thus far. This is important because artistic activities can be seen as modifiable health-promoting factor which can help to avoid unfavorable psychosocial outcomes [7, 12]. Addressing individuals susceptible to unfavorable psychosocial well-being is of great importance because such psychosocial factors predict morbidity and mortality and reflect successful aging [13, 14].

In accordance with former research [7–9, 11] among older adults, we expect that artistic activity in general is associated with favorable psychosocial outcomes. We do not expect major differences in the relationship between artistic activity and the three outcomes. Additionally, we have no specific hypotheses as to which artistic activities are particularly associated with favorable psychosocial outcomes. Further, we expect that artistic activities outside one's own house are associated with favorable psychosocial outcomes as these can presumably stimulate social interaction. We also expect more frequent artistic activities to be associated with more favorable psychosocial outcomes.

Possible mechanisms by which artistic activity may contribute to psychosocial outcomes may be that artistic activities stimulate creativity and provide emotional expression—which can be of great importance in coping with grief (e.g., due to the loss of a spouse [15]) [16]. Additionally, artistic activities may provide opportunities for social interaction and promote a sense of community which may ultimately contribute to low loneliness and depression levels as well as high life satisfaction [7]. According to the self-identity theory, artistic activities may also help to boost self-confidence and identity through the creative expression of one's life story and experiences [17]. Furthermore, they can stimulate cognitive abilities which may drive satisfaction.

## 2 | Materials and Methods

# 2.1 | Sample

The data used for this study came from the "Old Age in Germany (D80+)" study. This is a large, nationally representative

sample of individuals aged 80 and older residing in Germany. This study includes participants from both community settings and institutional environments, such as nursing or old age homes. The D80+ study was carried out by the University of Cologne in collaboration with the Cologne Center for Ethics, Rights, Economics, and Social Sciences of Health (ceres) and the German Center of Gerontology (DZA). It was funded by the Federal Ministry for Family Affairs, Senior Citizens, Women and Youth (BMFSFJ). The data collection was executed by a reputable institute specializing in market and social research (Infas).

Owing to the pandemic, written questionnaires replaced the originally planned face-to-face interviews. Data collection occurred between November 2020 and April 2021. Albrecht et al. [18] provided further details regarding the D80+ study. The final analytic sample consisted of 3181 participants (when depressive symptoms served as outcome measure).

Ethical approval for the D80+ study was granted by the medical faculty's ethical board at the University of Cologne (Protocol #: 19-1387\_1). The study also adheres to the principles outlined in the Helsinki Declaration. A brief introduction and privacy statement were provided within the questionnaire, and consent was obtained when respondents completed and returned the form. Interviews were conducted only with the consent of the interviewees.

## 2.2 | Outcomes

The "Short Form of the Depression in Old Age Scale" (DIA-S4) [19, 20] was used to quantify depressive symptoms. It has four items (in each case: 0 = no; 1 = yes), the resulting sum score ranges from 0 to 4, with higher scores reflecting more depressive symptoms. Earlier studies reported favorable psychometric characteristics [19, 20].

A frequently used single-item tool was used to measure life satisfaction. It has 11 categories (ranging from 0 = completely dissatisfied to 10 = completely satisfied). Previous studies demonstrated that comparable single-item tools to quantify satisfaction have favorable psychometric properties [21, 22].

A single-item tool (from 1 = almost never or never to 4 = almost always or always) was used to assess loneliness. Comparable measures of loneliness are often used to quantify loneliness in later life [23]. Similarly, favorable psychometric characteristics have been shown in former research [24].

# 2.3 | Independent Variable of Interest: Artistic Activity

Individuals were asked: "In the last 12 months, have you engaged in an artistic activity, for example, painting, singing, writing poetry, playing a musical instrument or something else?". They could respond with no or yes. In an open question, the people were able to report what exactly they did there (multiple entries were possible). These options were grouped

into seven categories (singing; making music; painting, drawing; handwork and crafts; (creative) writing; photography, filming and editing; other).

Individuals engaged in artistic activities were also asked how often they had done this in the last 12 months (daily; weekly; monthly; several times a year; once a year). They were also asked where they had predominantly done this in the last 12 months (at home/in the home; in the immediate vicinity; in the wider surroundings).

Overall, four key independent variables were used: (1) artistic activity in general (no or yes) among the total sample, (2) type of artistic activity among individuals among the total sample, (3) frequency of artistic activities among individuals engaged in artistic activities, and (4) predominant location of artistic activities among individuals engaged in artistic activities.

## 2.4 | Covariates

Guided by previous research (e.g., [25, 26]), determinants were chosen for regression analysis. Sociodemographic factors encompass sex (men; women), age in years, family status (married, living with spouse; married, living apart from spouse; divorced; widowed; single), education (according to the ISCED-11 classification [27]: low education; medium education; high education), living arrangement (private household; institutionalized setting). As lifestyle factor, physical activity in general (no; yes) was used in regression analysis. Health-related covariates were multimorbidity (presence of at least two chronic conditions). For this purpose, 21 common chronic diseases were considered. These diseases are based on the multimorbidity index in old age [28, 29].

# 2.5 | Statistical Analysis

The characteristics of the weighted analytic sample are first shown (among the total sample and stratified by artistic activity). Subsequently, the association between (i) artistic activity and psychosocial outcomes (in terms of loneliness, life satisfaction, and depressive symptoms) among the total sample was examined using multiple linear regressions. Moreover, the association between (ii) type, (iii) frequency, and (iv) location of artistic activities and psychosocial outcomes among individuals engaged in artistic activities was also determined using multiple linear regressions. Cluster-robust standard errors were computed. Additionally, sampling weights were applied to adjust for the sampling design and to address non-response [30]. To address missing data, a full-information maximum likelihood approach [31] was employed in this study. Variance inflation factors (VIFs) were also computed, showing an average VIF of 1.30 (with the highest value being 2.06), which suggests that multicollinearity is not present. A level of p < 0.05 was used for determination of statistical significance in this study. Marginal significance was assumed if p < 0.10. All statistical analyses were conducted using Stata 18.0 (Stata Corp., College Station, Texas).

# 3.1 | Sample Characteristics

For the weighted analytic sample with n=3181 (also stratified by the presence of artistic activities), sample characteristics are shown in Table 1. Among the total sample, the mean age was 85.6 years (SD: 4.2; 80–100 years) and 64.4% of the respondents were female. The mean loneliness score was 1.6 (SD: 0.7), the mean life satisfaction score was 7.3 (SD: 2.0), and the mean depressive symptoms score was 1.3 (SD: 1.3). More details are shown in Table 1. For example, among community-dwelling individuals, 23.8% were engaged in artistic activities. In

contrast, among institutionalized individuals, 41.1% were engaged in artistic activities.

In the weighted analytic sample, about 25.5% of the individuals were engaged in artistic activities. Most often, individuals were engaged in singing (9.0%), followed by making music (7.7%), painting, drawing (6.4%), (creative) writing (5.7%), handwork and crafts (5.6%), photography, filming and editing (1.3%), and others (2.7%). Worth repeating that multiple answers were possible.

Overall, 2.7% of those engaged in artistic activities did so once a year, while more frequent engagement was much more

**TABLE 1** | Sample characteristics, also stratified by artistic activities (weighted analytic sample, with n = 3181 individuals).

Variables	Absence of artistic activities $N = 2369$	Presence of artistic activities $N = 812$	Total $N = 3181$
Loneliness	1.6 (0.7)	1.6 (0.7)	1.6 (0.7)
Life satisfaction	7.3 (2.0)	7.3 (2.1)	7.3 (2.0)
Depressive symptoms	1.3 (1.3)	1.4 (1.3)	1.3 (1.3)
Sex	, ,	, ,	, ,
Men	924 (39.0%)	289 (35.6%)	1214 (38.2%)
Women	1444 (61.0%)	523 (64.4%)	1967 (61.8%)
Age	85.7 (4.3)	85.4 (4.0)	85.6 (4.2)
Marital status			
Married	946 (40.0%)	297 (36.5%)	1243 (39.1%)
Married, but living separated from spouse	14 (0.6%)	6 (0.7%)	20 (0.6%)
Divorced	107 (4.5%)	36 (4.4%)	143 (4.5%)
Widowed	1200 (50.6%)	445 (54.8%)	1645 (51.7%)
Single	101 (4.3%)	29 (3.5%)	130 (4.1%)
Education			
Low education	558 (24.2%)	141 (17.7%)	699 (22.5%)
Medium education	1171 (50.8%)	402 (50.4%)	1572 (50.7%)
High education	574 (24.9%)	254 (31.9%)	829 (26.7%)
Living situation			
Private household	2181 (92.1%)	681 (83.9%)	2862 (90.0%)
Institutionalized setting	188 (7.9%)	131 (16.1%)	319 (10.0%)
Sports activity			
No	983 (41.5%)	263 (32.4%)	1246 (39.2%)
Yes	1386 (58.5%)	549 (67.6%)	1935 (60.8%)
Multimorbidity			
Absence of multimorbidity	234 (10.0%)	76 (9.6%)	310 (9.9%)
Presence of multimorbidity	2095 (90.0%)	718 (90.4%)	2814 (90.1%)
Dementia			
Absence	1168 (54.8%)	477 (64.2%)	1645 (57.2%)
Mild cognitive impairment	562 (26.4%)	145 (19.6%)	708 (24.6%)
Dementia	402 (18.9%)	121 (16.2%)	523 (18.2%)

Note: Loneliness ranges from 1 to 4, whereby higher values indicate higher loneliness levels; depressive symptoms score ranges from 0 to 4, whereby higher values indicate more depressive symptoms; life satisfaction ranges from 0 to 10, whereby higher values indicate greater life satisfaction.

common (several times a year: 20.0%; monthly: 16.1%; weekly: 41.8%; daily: 19.4%). Those engaged in artistic activities did so mostly at home/in the home (84.8%), whereas other locations were much less common (15.2%; thereof: 13.7% in the immediate vicinity and 1.5% in the wider surroundings).

# 3.2 | Artistic Activities and Psychosocial Outcomes

In Table 2, the associations between artistic activity in general and psychosocial outcomes are shown based on a series of multiple linear regressions (among the total sample and stratified by sex). Engagement in artistic activity in general was not significantly associated with the outcomes, except with lower loneliness among men ( $\beta = -0.07$ , p < 0.05).

Further results are shown for the association of type of artistic activity with loneliness, life satisfaction and depressive symptoms among the total sample (Table 3). Other types of artistic activities were significantly associated with lower loneliness ( $\beta=-0.16,\ p<0.05$ ). Moreover, handwork/crafts ( $\beta=0.38,\ p<0.10$ ), and photography/filming/editing ( $\beta=1.28,\ p<0.10$ ) were marginally significantly and other types of activities were significantly associated with higher life satisfaction ( $\beta=0.83,\ p<0.001$ ). Furthermore, singing ( $\beta=0.30,\ p<0.10$ ) was marginally significantly associated with more depressive symptoms and photography/filmy/editing was significantly associated with fewer depressive symptoms ( $\beta=-0.49,\ p<0.05$ ).

Sex-stratified regressions are shown in Tables S1 and S2. Singing ( $\beta = -0.14$ , p < 0.05) and making music ( $\beta = -0.13$ , p < 0.01) were significantly associated with lower loneliness among men. Furthermore, photography/filming/editing  $(\beta = 1.13, p < 0.10)$  were marginally significantly and other types of activities ( $\beta = 0.92$ , p < 0.001) were significantly associated with higher life satisfaction among men. None of the types of artistic activities were significantly associated with depressive symptoms among men. Other types of activities  $(\beta = -0.20, p < 0.10)$  were marginally significantly and photography/filming/editing ( $\beta = -0.47$ , p < 0.001) were significantly associated with lower loneliness among women. Handworks/crafts ( $\beta = 0.42$ , p < 0.10) were marginally significantly and other types of activities ( $\beta = 0.86$ , p < 0.01) were significantly associated with higher life satisfaction among women. Similar to men, none of the types of artistic activities were significantly associated with depressive symptoms among women.

The association between the frequency of artistic activity and psychosocial outcomes and the association between the location of artistic activity and psychosocial outcomes (in both cases: among the total sample and stratified by sex) are shown in Tables S3 and S4, respectively. Worth repeating that these regression models only refer to individuals engaged in artistic activities. In comparison to daily arts activities, other frequencies had no significant association with psychosocial outcomes in almost all cases. Engagement in artistic activity in the immediate vicinity/in the wider surroundings (compared to: at home/in the home) was significantly associated with higher life

TABLE 2 | Artistic activity (in general) and psychosocial factors among the total sample and both sexes. Results based on multiple linear regressions.

		Life	Depressive		Life	Depressive		Life	Depressive
Independent variables	Loneliness—among the total sample	Independent Loneliness—among satisfaction—among variables the total sample the total sample	symptoms—among the Loneliness—among total sample men	Loneliness—among men	satisfaction—among men	symptoms—among men	symptoms—among Loneliness—among satisfaction—among men women	satisfaction—among women	symptoms—among women
Artistic activity (in general)	in general)								
Yes	-0.04 (-0.12 to	0.10 (-0.12 to	0.02 (-0.13 to	-0.07*	0.16 (-0.10 to	0.04 (-0.17 to	-0.02 (-0.13	0.08 (-0.23 to	-0.004 (-0.20 to
(Reference	0.03) [0.26]	0.32) [0.39]	0.17) [0.83]	(-0.15  to	0.43) [0.23]	0.24) [0.73]	to	0.38) [0.63]	0.19) [0.97]
category: No)				-0.00) [0.04]			0.09) [0.71]		
Covariates	`	`	`	`	`	`	`	`	`
Observations	3106	3100	3181	1591	1601	1632	1515	1499	1549
$R^2$	0.19	0.13	0.17	0.23	0.08	0.12	0.15	0.15	0.15

Vote. Unstandardized beta-coefficients are displayed; 95% CI in parentheses; exact p-values are shown in square brackets; sampling weights were used; cluster-robust standard errors were computed; FIML was used to address missings. Covariates include: age, sex (if applicable), marital status, living arrangement, education, physical activity, multimorbidity and dementia. \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.05, \*p < 0.05, \*p < 0.05.

**TABLE 3** | Artistic activity (type) and loneliness, life satisfaction and depressive symptoms among the total sample. Results based on multiple linear regressions.

Independent variables	Loneliness	Life satisfaction	Depressive symptoms
Type of artistic activity			
Singing (Reference category: No)	0.04 (-0.11 to 0.19) [0.63]	-0.08 (-0.50 to 0.34) [0.71]	0.30+ (-0.01 to 0.60) [0.06]
Making music (Reference category: No)	-0.03 (-0.13 to 0.08) [0.58]	0.06 (-0.25 to 0.36) [0.72]	0.01 (-0.20 to 0.22) [0.94]
Painting, drawing (Reference category: No)	0.01 (-0.12 to 0.13) [0.89]	0.20 (-0.16 to 0.57) [0.28]	-0.03 (-0.24 to 0.19) [0.81]
Handwork and crafts (Reference category: No)	-0.09 (-0.20 to 0.02) [0.12]	0.38+ (-0.01 to 0.77) [0.06]	-0.19 (-0.43 to 0.04) [0.11]
(Creative) writing (Reference category: No)	-0.02 (-0.14 to 0.10) [0.75]	0.04 (-0.36 to 0.43) [0.85]	-0.02 (-0.23 to 0.19) [0.85]
Photography, filming and editing (Reference category: No)	-0.08 (-0.49 to 0.34) [0.72]	1.28+ (-0.06 to 2.61) [0.06]	-0.49* (-0.89 to -0.09) [0.02]
Other	-0.16* (-0.30 to -0.02) [0.03]	0.83*** (0.48-1.18) [0.000]	-0.20 (-0.47 to 0.08) [0.17]
Covariates	✓	✓	✓
Observations	3108	3102	3183

Note: Variables of type of artistic activity were entered separately into the analytical model. Unstandardized beta-coefficients are displayed; 95% CI in parentheses; exact p-values are shown in square brackets; sampling weights were used; cluster-robust standard errors were computed; FIML was used to address missings. Covariates include: age, sex, marital status, living arrangement, education, physical activity, multimorbidity and dementia.  $R^2$  values ranged from 0.19 to 0.20 (with loneliness as outcome), 0.13–0.14 (with life satisfaction as outcomes), and was 0.17 (with depressive symptoms as outcomes).

\*\*\*p < 0.001, \*\*p < 0.01, \*p < 0.05, +p < 0.10.

satisfaction among the total sample ( $\beta = 0.37$ , p < 0.05) and women ( $\beta = 0.56$ , p < 0.05), but not men. The location of artistic activity was not significantly associated with loneliness and depressive symptoms (only marginally significant for depressive symptoms among men).

## 4 | Discussion

The aim of this study was to investigate the association between artistic activity and psychosocial outcomes among individuals aged 80 years and over in Germany based on a nationally representative sample. We showed that participating in artistic activities can have positive psychosocial benefits (particularly in terms of diminishing feelings of loneliness and enhancing overall life satisfaction) which may vary based on the type of activity and sex. Artistic engagement outside the home in particular was associated with life satisfaction among women. The frequency of artistic activities was mostly unrelated with psychosocial outcomes. This study, which captures art in depth among the oldest old and also includes individuals who reside in institutional settings, adds to our current knowledge, which is based primarily on studies of community-dwelling older adults [7–9, 11].

Regressions showed that overall engagement in the arts was not significantly associated with outcomes, except for reduced loneliness among men. A potential explanation may be that women are better able to cope with the challenges of aging through other social contacts [5, 32]. In this respect, art may be important for social integration for oldest old men in particular.

Former research also demonstrated that art was unrelated to depressive symptoms among older adults in England [8].

Interestingly, in our study, different artistic activities are associated with loneliness, depending on sex. While singing and making music were significantly associated with lower loneliness among men, photography/filming/editing were significantly associated with lower loneliness among women. Perhaps, singing and playing music may promote social interaction and camaraderie (e.g., via group musical activities) among men, which could diminish loneliness [33, 34]. In contrast, photography and similar activities such as filming may provide women with a way to engage with their surroundings and share experiences, which may alleviate loneliness. In addition to more artistic activities, this could also include photos and videos of the grandchildren, for example [35, 36].

Artistic activities outside the home were associated with higher satisfaction with life among the total sample and women. The social components of artistic activities outside the home could be of particular importance for older women—as shown by a previous study in Germany [5]. The results on the location of artistic activities should also be interpreted against the background of the pandemic conditions. It could be liberating for individuals to be artistically active with other people against the backdrop of the pandemic restrictions (see: [37, 38]). Worth noting that the pandemic restrictions may explain why most individuals engaged in artistic activities did so mostly at home/in the home.

Interestingly, the frequency of artistic activities was mostly unrelated with psychosocial outcomes in our study. In line with

the self-identity theory, it could be that individuals perceive themselves as artists even when they engage in infrequent artistic activities—which could have a positive impact on factors such as self-esteem and life satisfaction [17]. We recommend future research to explore the link between self-perceptions as an artist and psychosocial outcomes.

In interpreting the current results, several strengths and limitations must be considered: The data were drawn from a large sample that represents the population aged 80 and older in Germany, including both those living independently and those in institutional care. The latter group in particular has hardly been studied to date due to its vulnerability (especially during the pandemic) and factors such as accessibility. Established tools were used to quantify the outcomes. Nevertheless, more sophisticated tools (e.g., to quantify loneliness) may better capture the complexity of phenomena such as loneliness or life satisfaction. Artistic activities have been measured using tools with a high face validity. In addition to simply asking about artistic activities (no or yes), the types, location and frequency were also collected in the D80+. However, future studies might benefit from even more questions, such as attachment to artistic activities to gain further insights. A notable limitation of the D80+ study is its cross-sectional nature, particularly concerning causal inferences.

# 5 | Conclusion

In conclusion, about one in four individuals aged 80 years and over in Germany is engaged in artistic activities (frequently; mostly at home). Our findings show that engaging in artistic activities are positively associated with psychosocial outcomes (depending on the type and sex-specific), particularly in terms of lower loneliness and greater life satisfaction. Art can be an important wellbeing resource for individuals in this age group. Artistic engagement, particularly outside the home, may contribute to increased life satisfaction among women. Even rare artistic activities could prove beneficial. Post-pandemic studies on this topic would also be of interest.

# **Author Contributions**

André Hajek: conceptualization, data curation, methodology, project administration, visualization, writing-original draft, writing-review & editing, formal analysis. Razak M. Gyasi: writing-review & editing, visualization, methodology. Karl Peltzer: writing-review & editing, visualization, methodology. Hans-Helmut König: conceptualization, resources, writing-review & editing, supervision, visualization. Supa Pengpid: writing-review & editing, visualization, methodology, supervision.

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## **Ethics Statement**

The ethical board of the medical faculty at the University of Cologne (Protocol #: 19-1387\_1) approved the D80+ study. The D80+ study is in

line with the Helsinki Declaration. The interviews were only conducted with the consent of the interviewees. The questionnaire itself contains a brief introduction and the privacy policy. Consent is given when the respondents complete and return the questionnaire.

#### **Conflicts of Interest**

The authors declare no conflicts of interest.

## **Data Availability Statement**

All data are available from the German Center of Gerontology. For further details (application for data use): https://www.dza.de/en/research/fdz/access-to-data/application.

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# **Supporting Information**

Additional supporting information can be found online in the Supporting Information section.