

## RESEARCH ARTICLE

# The “Alzheimer Village”: Assessment of Alzheimer’s disease representations in the general population: A cross sectional phone survey

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**Abstract**

**Introduction:** In most countries, the societal view of Alzheimer’s disease (AD) is very negative. The initiatives that are part of the so-called “dementia-friendly approach” aim not only at promoting well-being and dignity of persons suffering from AD but also improving the way they are regarded and their inclusion in society. Unfortunately, scarce research has been conducted to assess whether such goals can be achieved. In France, the experimental Alzheimer Village in Dax is designed as a dementia-friendly community. Due to the recent opening (2020) and the strong local media coverage of this project, a survey has been designed to determine whether the representations of AD have been impacted by such a project.

**Methods:** The survey was conducted before and after the opening of the Alzheimer Village in the city of Dax (hosting the village) and surrounding areas, and in a control city with similar socio-demographics. The analyses intend to compare different dimensions of the representations and attitudes toward AD in the general population.

**Results:** A total of 423 persons living in the Alzheimer Village city (37.4% were men) and 415 persons living in the control city (40.2% were men) were interviewed, resulting in 838 complete questionnaires. The main results report significantly lower rating in the perception of loss of identity ( $\beta = -0.57, P = .014$ ) and in the feeling of disgust for persons with AD ( $\beta = -0.61, P = .008$ ) in the city hosting the village after the opening of the Alzheimer Village. No significant changes were seen in the control city sample.

**Discussion:** While societal representations of AD are very robust and difficult to change, this study suggests a modest but significant evolution of representations of AD in the surrounding areas of the Alzheimer Village.

**KEYWORDS**

aging and Alzheimer’s disease, dementia-friendly, societal representations, The Landes Alzheimer Village

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## Highlights

- The French Alzheimer Village is one of the very few ones in the world.
- This is the first study assessing the impact of an Alzheimer Village on disease representations.
- After the opening of the village, attitudes toward Alzheimer's disease have changed.

## 1 | INTRODUCTION

Worldwide, the societal view of elderly people is rather negative. Ageism refers to all forms of discrimination, segregation, or contempt based on age and is a growing concern with important health implications.<sup>1</sup> Social representations generate specific attitudes in terms of cognitions (stereotypes), emotions, and behaviors.<sup>2</sup> A person with Alzheimer's disease (AD) may suffer from a double stigmatization, due to his/her advanced age, and because of the disease.<sup>3</sup> Such a negative view may impact the disease trajectory and patient management, and induce different forms of rejection toward patients and carers.<sup>4,5</sup> According to the Stereotype Content Model,<sup>6</sup> elderly people are perceived as low-skilled persons but warm (as they are generally considered non-competitive persons in the society), which is accompanied by feelings of pity and sympathy. These representations induce socially negligent behaviors like avoidance and exclusion.<sup>7</sup> Regarding AD specifically, it is generally associated with a loss of identity and humanity, contributing to a lack of perceived warmth toward the persons. As part of the French national plan 2008–2012, the National Institute for Prevention and Health Education (INPES) conducted a survey to better understand the perception of AD in the general population. Loss of memory, loss of intellectual capacity, dependence, loss of identity, and fear were the most frequently reported representations and attitudes.<sup>8</sup> These results are consistent with Gerritsen et al.'s review<sup>9</sup> highlighting those persons with AD are seen as vulnerable, dependent, and unable to show reciprocity in relationships. Additionally, AD is perceived as a burden for the health system and society.<sup>10</sup> Furthermore, the negative representations toward AD could contribute to under-diagnosis. Because of the fear associated with the disease, physicians, family caregivers, and patients may be tempted to delay the diagnosis.<sup>4,5,11</sup>

Social representations are robust but may be modifiable to a certain extent. Some studies showed that increasing contacts and education about aging and AD are key factors.<sup>11,14</sup> According to the model of Positive Education about Aging and Contact Experiences,<sup>14</sup> increasing education about aging and the experiences of positive individualized contacts, sharing, and cooperation generate more positive attitudes toward elders. Similarly, another study conducted on students showed that a higher frequency of contact with elders was associated with more positive attitudes.<sup>13</sup> Merely knowing someone who has positive relationships with elderly people may be enough to improve attitudes toward aging. Similar results have been reported for AD. Individuals who have limited contacts with persons with AD have more negative attitudes toward them than those who have regular contacts.<sup>15</sup> Finally,

a systematic review and meta-analysis on the effects of interventions designed to reduce ageism showed that interventions promoting both education and intergenerational contacts had positive effects.<sup>12</sup>

Beyond the experimental studies assessing the effect of specific factors or interventions on ageism, the initiatives that are part of the so-called “dementia-friendly approach” pursue similar goals. The objectives of dementia-friendly actions are not only to promote the well-being and quality of life of persons with AD but also to change the way the society views those persons. Worldwide, this approach has gained popularity these last years as many initiatives have emerged to develop welcoming living spaces for persons with dementia called “dementia-friendly communities”.<sup>16</sup> For example, Heathrow Airport has become the first airport with an inclusive facility for persons with dementia, in the framework of the Prime Minister's 2020 Challenge on Dementia encouraging public and private facilities to make commitments to become “dementia friendly”.<sup>17</sup> In Bruges (Belgium), the Foton center of expertise launched an “inclusive city” project to make it more suitable for persons with dementia where shopkeepers, police officers, the public, and cultural organizations have been trained to better communicate with people with cognitive impairment to allow them to continue performing daily activities as much as possible.<sup>18</sup> These initiatives, not limited to those mentioned above, have the merit of leading society to better understand, support, and respect persons with dementia and to promote their social integration.

If such a purpose is unquestionably praiseworthy, too scarce research is conducted on dementia-friendly initiatives,<sup>16</sup> so it is difficult to know whether the “theoretical” objectives, among which changing the perception of AD, are really achieved. In France, the Alzheimer Village in Dax is an experimental village designed as a dementia-friendly community.<sup>19</sup> The village has been built like a traditional village with a “historic” center and typical regional architecture, where medical institution stigmas are avoided (e.g., carers wear plain clothes) to make the environment feel home-like. Equipped with several places to live and socially interact (a square, a restaurant, a hair salon, a grocery, a theater, a library, a vast park, and so on), it aims at providing a home-like environment optimizing the opportunities for participating in daily living and physical activities, social life with other residents, families, volunteers, and citizens as the village is open to the city. Opened in 2020, the village hosts 120 patients accompanied by 120 professionals and numerous volunteers. This original and ambitious project has received extensive media attention and is to date the only Alzheimer Village in France and one of the very few in the world.

Due to the recent opening of the village and the strong local media coverage of this project (the project is supported by the County

Council), a survey has been designed to determine whether the representations of AD have been impacted by such a dementia-friendly project promoting contacts with persons with AD and education on the disease. As the village opened in summer 2020, the survey has been conducted before and after the opening of the village in the city of Dax (where the village is located) and in a control city with similar socio-demographics, and compares different dimensions of the representations and attitudes toward AD in general population.

## 2 | METHODS

### 2.1 | Participants

Four samples of participants were interviewed. Two samples were selected in Dax, that is, the city hosting the Alzheimer Village and surrounding areas, before and after the date of the Alzheimer Village opening. Two other samples were selected in Villeneuve-sur-Lot and surrounding areas, considered the control city, set up before and after the date of Alzheimer Village opening. Interviews in Dax and Villeneuve-sur-Lot were conducted in parallel. The city of Villeneuve-sur-Lot was chosen because according to French national statistics,<sup>23</sup> this city has similar socio-demographic characteristics as Dax, and no village or other ambitious dementia-friendly project is planned in the next years. To be included in the survey, the participants had to be fluent French speakers, at least 18 years old, and had to be in the phone book as the selection was made at random among the inhabitants of the two areas whose name and phone number appear in the directory. To be included, the participants had to answer at least 90% of the questionnaire. The sample size was calculated as follows: as AD is the third most feared disease in the general population,<sup>8</sup> we considered the impact of the village on AD-associated fear in the general population as one of the main endpoints. A 10% to 15% decrease in fear of developing AD was considered to be a significant difference. With a Type I error of .05% and 90% power to evidence this difference in fear between the waves of the survey, we planned to include  $\approx$ 200 participants for each city sample/wave.

### 2.2 | Procedure

The study consisted of a repeated cross-sectional phone survey conducted in Dax and Villeneuve-sur-Lot in 2018 and 2019 before the opening of the Alzheimer Village (Wave 0) and in 2020 and 2021 after the opening of the Alzheimer Village (Wave 1). No nominative personal information was collected. Seven pollsters conducted the phone interviews. Before starting the questionnaire, the interviewer provided general information on the study and requested an oral agreement for participating. The participants were invited to provide socio-demographic information. The frequency of contacts with persons with AD, as well as the participants' personal knowledge about the village were assessed. Finally, the interviewer administered various scales (or subscales) previously used in the literature to evaluate

### RESEARCH IN CONTEXT

- 1. Systematic Review:** Dementia-friendly initiatives aim not only at promoting well-being of persons with Alzheimer's disease (AD) but also improving societal perceptions. Taking advantage of the opening of the French Alzheimer Village (in the city of Dax), one of the very few Alzheimer Villages in the world, this phone survey conducted in the general population was designed to determine whether the representations of AD have been impacted by the opening of the village.
- 2. Interpretation:** For this study, 838 participants were interviewed before and after the opening of the village in the city hosting the village and in a control city. The results show some changes in the attitudes and perceptions (loss of identity and disgust toward persons suffering from AD less reported) in the city hosting the Alzheimer Village with no changes in the control city.
- 3. Future Directions:** This is the first study assessing the impact of an Alzheimer Village on the representations and attitudes toward AD. Stimulating this type of research is essential because we need to have a clearer insight on the real benefits of such innovative programs.

societal attitudes toward persons with AD. The interview lasted 15 minutes.

### 2.3 | Material

The interview included questions to collect socio-demographics, frequency of contact with persons with AD, knowledge and attitudes toward the Alzheimer Village, social attitudes, stereotypes, and emotions and behaviors.

#### 2.3.1 | Socio-demographic

Socio-demographic information included sex, age (in six categories: 18–29, 30–44, 45–59, 60–74, 75–90, 91 and over), level of education (in four categories: no schooling, primary education, secondary school and high school, and higher education), and occupational status (in eight categories: student, working, unemployed, retired, disabled, voluntary work, retired and volunteer work, and other).

#### 2.3.2 | Contacts with persons with AD

Participants had to report the frequency of contacts with persons with AD: number of times per day, week, month, or year.

### 2.3.3 | Knowledge and attitudes toward the Alzheimer Village

Participants were asked whether they had heard of the village and if so, how they had heard about it.

### 2.3.4 | Attitudes toward persons with dementia: social attitudes

The questions relating to societal attitudes were gathered from the Stereotype Content Model.<sup>6,7</sup> The questions assessed the stereotypes, the emotions toward persons with dementia, and the behaviors resulting from such stereotypes. The participants had to provide an answer about the image they believe the society has about persons with AD rather than their personal beliefs. This method limits the social desirability bias. All items were scored on a 7-point Likert scale ranging from 1 (I strongly disagree with the statement) to 7 (I strongly agree with the statement).

### 2.3.5 | Stereotypes

Stereotypes were assessed using six items adapted from Fiske et al.'s scale (2002, study 2).<sup>6</sup> This scale assessed the population's perception of persons with AD regarding two dimensions: competence and sociability. Participants were questioned about the social status<sup>20</sup> and social participation of persons with AD, as well as the economic burden they cause on society.<sup>21</sup> The items referring to the loss of identity and the ability to feel emotions were extracted from a survey conducted by the INPES in 2008<sup>8</sup> among the French general population.

### 2.3.6 | Emotions and behaviors

Emotions were measured using items gathered from Cuddy et al.'s scale.<sup>7</sup> These items are used to identify the emotions and behaviors that may result from the Stereotypes Content Model.<sup>6</sup> In this perspective, the questions assessed the level of admiration, contempt, pity, and envy one feels toward persons with AD. We also assessed apprehension and fear specifically linked to AD.<sup>22,23</sup>

Also, behaviors were assessed with the following items: the propensity to help, to attack, to cooperate with, or to avoid persons with AD. Such items were gathered from previous studies investigating attitudes toward AD.<sup>22,23</sup>

### 2.3.7 | Statistical analyses

Several cross-comparisons were made to ensure the study samples were similar regarding socio-demographics (samples set up at Waves 0 and 1 and samples set up in the Alzheimer Village city and in the control city). We provided a description of the samples according to sex,

age, education, and current employment status. The characteristics of participants were described using frequencies and percentages categorical variables and compared using chi-square tests, or Fisher tests, as appropriate. Then we made a comparison of the answers provided by the respondents at the two waves within the two cities' samples. For attitudes and representations toward AD, we performed linear regressions adjusted for two potential confounding variables: interviewer effect due to the number of pollsters who conducted the interviews, and the frequency of contacts the participants had with persons with AD due to the context of interview. Unfortunately, the survey was carried out during the COVID-19 pandemic. Wave 1 took place during the first period of the pandemic during which protective measures were highly restrictive in particular toward elderly people resulting in a substantial reduction of contacts. As the frequency of contacts with older adults may influence one's own representations of aging, we controlled for this variable.  $P$ -value < .05 was considered statistically significant. Statistical analyses were performed using RStudio (version 3.4.3).

## 3 | RESULTS

### 3.1 | Participants

Table 1 presents the comparison of characteristics of the city hosting the village (i.e., Dax, called hereinafter Alzheimer Village city) and Villeneuve-sur-Lot (called hereinafter control city) samples. The final sample consisted of 423 complete questionnaires for the Alzheimer Village city (of whom 158 were men; 37.4%) and 415 for the control city (of whom 167 were men; 40.2%). For age, category 5 (75–90) was grouped with category 6 (91 and over) because there were only nine participants aged 91 and over. For education, because of the low number of participants in category 1, we grouped the education categories 1 (no schooling) and 2 (primary education). Regarding occupational status, the categories were grouped as follows: categories 4 (retired) and 7 (retired and volunteer work); and categories 5 (disabled), 6 (volunteer work), and 8 (other). For the Alzheimer Village city, the samples at Wave 0 (before the opening of the village) and Wave 1 (afterward) were similar in sex, age, education, and employment status. For the control city, the samples at Wave 0 and Wave 1 were similar in sex, age, and education. Only employment status was marginally different (with slightly more participants in the category “retired, retired and volunteer” at Wave 0 and slightly more “employee” participants at Wave 1). Finally, there was no difference between the Alzheimer Village city and the control city samples, neither at Wave 0 nor at Wave 1 (results not presented). Such cross-comparisons ensure the study samples were comparable.

### 3.2 | Contacts with persons with AD

Concerning the survey in the Alzheimer Village city (Table 1), 95 participants (46.8%) reported contacts with persons with AD at Wave 0

**TABLE 1** Description and comparison of characteristics of the Alzheimer Village city (Dax) and the control city (Villeneuve-sur-Lot) samples (2018–2021)

		Alzheimer Village city (n = 423)			Control city (n = 415)		
		W0 <sup>a</sup> (n = 203)	W1 <sup>b</sup> (n = 220)	P-value <sup>c</sup>	W0 <sup>a</sup> (n = 204)	W1 <sup>b</sup> (n = 211)	P-value <sup>c</sup>
<b>Sex, n (%)</b>							
	Female	124 (61.1)	141 (64.1)	.522	125 (61.3)	123 (58.3)	.535
<b>Age, n (%)</b>							
	18–29 years	40 (19.7)	41 (18.6)		31 (15.2)	34 (16.1)	.444
	30–44 years	16 (7.9)	25 (11.4)		22 (10.8)	21 (10.0)	
	45–59 years	35 (17.2)	37 (16.8)	.823	31 (15.2)	46 (21.8)	
	60–74 years	53 (26.1)	57 (25.9)		71 (34.8)	61 (28.9)	
	75 years and more	59 (29.1)	60 (27.3)		49 (24.0)	49 (23.2)	
<b>Level of education, n (%)</b>							
Missing data Dax = 1	No education/primary education	21 (10.3)	36 (16.4)		25 (12.3)	41 (19.4)	
Missing data VSL = 1	Secondary education	126 (62.1)	117 (53.4)	.105	118 (58.1)	116 (55.0)	.131
	Higher education	56 (27.6)	66 (30.1)		60 (29.6)	54 (25.6)	
<b>Current employment status, n (%)</b>							
	Student	28 (13.8)	37 (16.9)	.667	26 (12.7)	31 (14.7)	.022*
	Employee	51 (25.1)	61 (27.9)		49 (24.0)	74 (35.1)	
	Unemployed	8 (3.9)	10 (4.6)		13 (6.4)	4 (1.9)	
	Retired/retired and volunteer	107 (52.7)	105 (47.9)		112 (54.9)	98 (46.4)	
	Other	9 (4.4)	6 (2.7)		4 (2)	4 (1.9)	
<b>Frequency contacts with people with AD, n (%)</b>							
Missing data Dax = 2	Daily	21 (10.4)	10 (4.6)	.023*	12 (5.9)	18 (8.6)	.262
Missing data VSL = 1	Weekly	18 (8.9)	23 (10.5)		23 (11.3)	18 (8.6)	
	Monthly	22 (10.9)	17 (7.8)		27 (13.2)	19 (9.0)	
	Annually	34 (16.8)	25 (11.4)		23 (11.3)	34 (16.2)	
	No contact	107 (53.0)	144 (65.8)		119 (58.3)	121 (57.6)	
<b>Knowledge village, n (%)</b>							
	Yes	177 (87.6)	194 (88.2)	.861	23 (11.3)	45 (21.3)	.006*
	No	25 (12.4)	26 (11.8)		181 (88.7)	166 (78.7)	
<b>Knowledge bias of village, n (%)</b>							
	Professional network	7 (4.0)	11 (5.7)		3 (13.0)	5 (11.1)	
	Media	129 (72.9)	133 (68.9)	.556	14 (60.9)	34 (75.6)	.590
	Acquaintances (family, friends, etc.)	30 (16.9)	41 (21.1)		5 (21.7)	5 (11.1)	
	Other	11 (6.2)	9 (4.6)		1 (4.3)	1 (2.2)	

Abbreviations: AD, Alzheimer's disease; VSL, Villeneuve-sur-Lot.

<sup>a</sup>First wave (2018–2019) before the opening of the Alzheimer Village (W0).

<sup>b</sup>Second wave (2020–2021) after the opening of the Alzheimer Village (W1).

<sup>c</sup>Comparison between W0 and W1 and estimated using the chi-square test.

\* $P < .05$ , \*\* $P < .01$ , and \*\*\* $P < .001$ .

and 75 (34.1%) at Wave 1; the difference was significant ( $P = .023$ ). In the control city, 85 (41.7%) reported contacts with people with AD at Wave 0 and 89 (42.2%) at Wave 1; the difference was not significant ( $P = .262$ ).

### 3.3 | Knowledge toward the village

At Wave 0 of the Alzheimer Village city, 87.6% of the participants interviewed had heard about the village and at Wave 1, there were 88.2%.

**TABLE 2** Assessment of social perception (stereotype) changes toward people with Alzheimer's disease in the Alzheimer Village city (Dax) and the control city (Villeneuve-sur-Lot) samples (2018–2021)

Variable	Alzheimer Village city			Control city		
	N	$\beta$ (SE)	P-value	N	$\beta$ (SE)	P-value
<b>Fiske and al.'s scale (2002, study 2)</b>						
Capable	419	-0.49 (0.21)	.023*	415	-0.27 (0.15)	.085
Friendly	418	-0.11 (0.21)	.597	415	0.08 (0.16)	.602
Competent	418	-0.37 (0.21)	.080	415	-0.08 (0.15)	.584
Efficient	418	-0.29 (0.19)	.133	415	-0.15 (0.14)	.271
Sociable	418	0.32 (0.21)	.131	415	0.01 (0.16)	.948
Warm	418	0.27 (0.21)	.202	415	0.02 (0.16)	.877
<b>Le Core et al.'s scale (2010)</b>						
Loss of identity	414	-0.57 (0.23)	.014*	412	0.01 (0.17)	.954
Ability to feel emotions	415	0.30 (0.21)	.155	413	0.19 (0.16)	.254
<b>Vauclair et al.'s scale (2015)</b>						
Societal status	414	0.11 (0.22)	.658	412	0.10 (0.18)	.584
<b>Cuddy et al.'s scale (2009)</b>						
Possible pursuit activity	416	-0.08 (0.21)	.711	414	-0.08 (0.16)	.603
Burden for French health care	416	-0.37 (0.21)	.083	413	0.15 (0.18)	.406

Note: Estimated from linear regression adjusted for pollsters, and the frequency of contact with people with Alzheimer's disease.

Abbreviation: SE, standard error.

\* $P < .05$ , \*\* $P < .01$ , and \*\*\* $P < .001$ .

For the control city sample, at Wave 0, 11.3% of the participants had heard about the village while there were 21.3% at Wave 1. The difference is statistically significant for the control city sample ( $P = .006$ ). Regarding the way the participants were informed of the existence of Alzheimer Village (i.e., professional network, media, etc.), there is no significant difference between the two waves neither for the Alzheimer Village city ( $P = .556$ ) nor for the control city ( $P = .590$ ).

### 3.4 | Attitudes toward persons with AD: social attitudes

Table 2 displays the items related to societal perception of people with AD. The score of the item assessing the perception of capacity is lower at Wave 1 compared to Wave 0 in the city hosting the village ( $\beta = -0.49$ , standard error [SE] = 0.21) and in the control city samples ( $\beta = -0.27$ , SE = 0.15), but this difference is only significant for the city hosting the village sample ( $P = .023$ ). The score of the item referring to loss of identity is significantly lower ( $\beta = -0.57$ , SE = 0.23) at Wave 1 in the city hosting the village only ( $P = .014$ ).

### 3.5 | Emotions toward persons with AD

Table 3 displays the responses referring to the emotions experienced by the general population toward persons with AD. For the positive emotions such as respect, sympathy, envy, and admiration, there is no

significant difference between Wave 0 and Wave 1 of the two city samples. For negative emotions, the score referring to disgust for people with AD is significantly lower ( $\beta = -0.61$ , SE = 0.27) at Wave 1 compared to Wave 0 for the city hosting the village sample only ( $P = .008$ ). There was no difference for the other negative emotions between Wave 0 and Wave 1 of the two city samples.

### 3.6 | Behaviors toward persons with AD

Table 4 displays the items referring to the way people behave in front of persons with AD. There is no significant difference between Wave 0 and Wave 1 within the two city samples.

## 4 | DISCUSSION

The objective of this study was to determine whether the representations of AD in the general population could be impacted by a relatively notorious dementia-friendly initiative, like the Alzheimer Village in Dax. To do this, a survey was conducted before and after the opening of the village in the city of Dax (where the village is located) and in a control city with similar socio-demographics, assessing different dimensions of the representations and attitudes toward AD. The main hypothesis was that, in the city of Dax, the societal perception of AD could potentially change over time due to the large media coverage of this innovative project conveying a less negative image of age and AD.

**TABLE 3** Assessment of emotions changes toward people with Alzheimer's disease in the Alzheimer Village city (Dax) and the control city (Villeneuve-sur-Lot) samples (2018–2021)

Emotions	Alzheimer Village city			Control city		
	N	$\beta$ (SE)	P-value	N	$\beta$ (SE)	P-value
<b>Positive valence</b>						
Respect	420	0.19 (0.19)	.328	415	0.15 (0.16)	.347
Sympathy	420	0.04 (0.18)	.805	414	0.11 (0.15)	.460
Envy	418	-0.12 (0.18)	.523	415	0.14 (0.14)	.314
Admiration	419	0.07 (0.25)	.793	414	-0.13 (0.19)	.481
<b>Negative valence</b>						
Fear	420	-0.11 (0.27)	.692	415	-0.20 (0.20)	.315
Pity	420	-0.07 (0.25)	.766	415	0.13 (0.18)	.483
Contempt	420	-0.02 (0.23)	.939	415	0.02 (0.17)	.907
Jealousy	419	-0.24 (0.14)	.099	414	-0.02 (0.11)	.856
Apprehension	420	0.03 (0.27)	.902	415	-0.05 (0.19)	.778
Disgust	419	-0.61 (0.23)	.008**	415	-0.04 (0.18)	.817

Note: Estimated from linear regression adjusted for pollsters and the frequency of contact with people with Alzheimer's disease.

Abbreviation: SE, standard error.

\* $P < .05$ , \*\* $P < .01$ , and \*\*\* $P < .001$ .

**TABLE 4** Assessment of behaviors changes toward people with Alzheimer's disease in the Alzheimer Village city (Dax) and the control city (Villeneuve-sur-Lot) samples (2018–2021)

Behaviors	Alzheimer Village city			Control city		
	N	$\beta$ (SE)	P-value	N	$\beta$ (SE)	P-value
<b>Positive valence</b>						
Protect	420	-0.31 (0.19)	.101	415	0.20 (0.15)	.185
Cooperate	419	-0.32 (0.22)	.156	415	-0.18 (0.17)	.298
Help	420	-0.08 (0.20)	.672	415	0.12 (0.16)	.443
Associate	419	-0.34 (0.24)	.164	415	-0.29 (0.19)	.120
<b>Negative valence</b>						
Aggressive	420	-0.24 (0.23)	.289	415	-0.20 (0.17)	.236
Distance	419	-0.41 (0.25)	.101	415	-0.24 (0.19)	.199
Attack	420	-0.09 (0.19)	.624	415	-0.21 (0.15)	.152
Avoid	420	-0.15 (0.26)	.554	415	-0.16 (0.19)	.409

Note: Estimated from linear regression adjusted for pollsters and the frequency of contact with people with Alzheimer's disease.

Abbreviation: SE, standard error.

\* $P < .05$ , \*\* $P < .01$ , and \*\*\* $P < .001$ .

The results suggest that this hypothesis is partially confirmed because not all the dimensions explored, but some of them, that is, loss of identity and disgust toward persons with AD, were rated lower in the second wave of the survey, and such changes occurred only in the city of Dax.

Another modest change was observed in the perception of the capacity of persons with AD. Surprisingly, persons were seen as less capable after the opening of the village in the sample of Dax, with a similar trend observed in the control city sample (with a  $P$ -value marginally significant). While the perception of low-skilled persons is

commonly shared in the general population when it comes to persons with AD,<sup>11</sup> a strengthening of this perception may be surprising. Actually, we hypothesize that this change may be due to the pandemic context. Indeed, the COVID-19 pandemic during which this survey was conducted, has highly fomented the image of frail elderly people, and may have contributed to the image of incapability. Several studies conducted during the COVID-19 pandemic have shown that although ageism has existed for a long time, it has been exacerbated during the pandemic context by the media.<sup>24,25</sup> A study showed that the media predominantly presented elders as passive recipients

seeking resources from families, public institutions, and governments at various levels to cope with the COVID-19 pandemic.<sup>25</sup> Therefore, we hypothesize that the less capacity reported by the participants may be the consequence of the perception of older adults as vulnerable and passive people, which was strengthened by the pandemic.

Regarding the perception of identity loss, our results are interesting. Indeed, loss of identity is one of the main stereotypes associated with AD.<sup>6,9</sup> Therefore, such a change observed in the Alzheimer Village city only suggests that the humanistic approach promoted by the dementia-friendly project may have an impact, at least modestly, on societal perceptions.

Beyond this perception of identity loss, disgust toward persons with AD was lower after the opening of the village in Dax. Disgust is linked to negative stereotypes about persons with AD. Indeed, persons with AD are generally seen as persons having unpleasant and disturbing symptoms and having poor control over their life, mostly due to their need of assistance in basic daily activities including continence, using the toilet, bathing, or eating.<sup>9</sup>

The main limitation of our study is the context in which the survey was carried out. Unfortunately, the opening of the village occurred during the COVID-19 pandemic. Nationwide protective measures resulted in a substantial reduction of contacts with other people, and more particularly with older adults. Furthermore, educational opportunities aimed at the general population could not be implemented in the village. Both could have reinforced the image of “vulnerable/frail” people, who need to be “protected,” so the evolution of representations could have been possibly underestimated in this context. It has been shown that individuals who have limited contacts with persons with AD have more negative attitudes toward AD.<sup>15</sup> One way to partially account for this bias was to control for the number of contacts participants had with persons with AD. Also, we may underline that we did not apply correction for multiple statistical comparisons. This choice was made because the ratio between the number of comparisons and the number of participants is quite acceptable. However, this may be seen as a limitation, so we should be cautious about interpreting the significant results as trends rather than robust changes in perception.

A strength of our study is the study sample. All in all, 838 participants were interviewed, a number established after sample size calculation, which ensures sufficient statistical power. Additionally, the sample was designed to be representative of the French population, according to French national statistics.<sup>26</sup> Finally, to control for the potential changes in representations that would not be due to the opening of the village, but rather to external factors, the survey included a control city (with no dementia-friendly project) similar in age, sex, education, and employment status.

This research on societal representations of AD is important as it addresses one of the two objectives of the dementia-friendly approach. Indeed, the objective of such initiatives is not only to promote well-being and dignity of persons suffering from AD but also to improve their inclusion in the society. This study is part of a more general research project aiming at assessing the impact of the village considering numerous indicators collected from residents, caregivers, and professionals, as well as medico-economic indicators. Stimulating this

type of research is essential because we need to have a clearer insight on the real benefits of such innovative devices.

Finally, it should be underlined that it is very difficult to change the societal representations of AD. The fatalistic image of AD is not a simple belief but, to some extent, a reality because the disease inexorably evolves to severe stages of dependency and undoubtedly conveys suffering for the person and his/her family and caregiving team. However, this evolution may not be impossible; the results of this study report a modest but significant evolution. The media coverage of the Alzheimer Village over the last few years could have contributed to these results. Indeed, the Alzheimer Village has been covered in France by national media, but it is still more popular in the city of Dax and surroundings where the village appears as a local pioneer project, where all is done to provide older adults with AD a “normal life” in an environment open to the city and to the general public, thereby conveying a very different image from that of nursing homes. The observed trends are encouraging for the evolution of representations and it would be interesting to replicate this survey in the next years to determine whether these trends persist and whether other dimensions in the perception of AD change over time. Moreover, we could speculate that if such devices were to multiply, the impact on representations would be more important.

#### ACKNOWLEDGMENTS

This work is part of a project supported by Health Regional Agency Nouvelle-Aquitaine, Fondation Spoelberch, CNSA, Fonds de dotation B2V des Mémoires, Association France Alzheimer. The sponsor had no role in the design, data collection, analysis, and preparation of the manuscript.

#### CONFLICTS OF INTEREST

The authors report no conflicts of interest. [Author disclosures](#) are available in the supporting information.

#### AUTHOR CONTRIBUTIONS

Marion Pech wrote the manuscript and conducted the statistical analysis. Céline Meillon contributed to the methodological design of the study and to the statistical analysis and revised the manuscript. Manon Marquet contributed to the methodological design of the study and revised the manuscript. Jean François Dartigues contributed to the methodological design of the study and revised the manuscript. Hélène Amieva designed the study, supervised the whole study, and revised the manuscript. All authors provided final approval of the version submitted.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

**How to cite this article:** Pech M, Meillon C, Marquet M, Dartigues J-F, Amieva H. The "Alzheimer Village": Assessment of Alzheimer's disease representations in the general population: A cross sectional phone survey. *Alzheimer's Dement*. 2022;8:e12328. <https://doi.org/10.1002/trc2.12328>