

Supplementary material 1: Example of assessment for a resident living in the “N” Alzheimer’s Unit (ADU).

Evaluation grid for “N” Alzheimer’s living Unit (ADU)							
Resident	Age	To what extent do the resident's disorders or pathology have an impact on his/her ability to communicate and interact with others (humans and animals) on a daily basis? (0 = the resident is totally unable to interact physically/verbally with others and 10 = the resident is totally able to interact with others)			Date of arrival in the unit		
R28		Verbally: 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10 Physically: 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10					
		Sight problem	<input type="checkbox"/> No	<input type="checkbox"/> Yes, light	<input type="checkbox"/> Yes, moderate		<input type="checkbox"/> Yes, severe
		Hearing problem	<input type="checkbox"/> No	<input type="checkbox"/> Yes, light	<input type="checkbox"/> Yes, moderate		<input type="checkbox"/> Yes, severe

Of the 14 residents, how many are subject to treatment that could influence their interaction(s) with others? (e.g. antidepressant, antipsychotic)

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What are the disorders/pathologies of residents living in this unit?

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Supplementary material 2: Ethogram constructed and used for recording the general activity of cats (adapted from the work of Stanton *et al.*, 2015).

Behaviors	Description
Inactivity/Resting	
Lying asleep	The cat is motionless and inactive, eyes closed, lying on its side or stomach, with no other behavior described.
Lying awake	The cat lies on its side or stomach, eyes open or half-closed, able to observe what's going on around it, head up or down, making minimal movements.
Lying with all four paws on the ground	The cat is motionless and inactive, lying on its belly with all four legs tucked underneath or in contact with the ground. Its ears are pointed forward, its head following a stimulus (person, situation, etc.). This behavior may precede avoidance.
Sitting	The cat sits alert and attentive to its environment, eyes open, ears forward, mouth closed or slightly open and head raised. The cat's eyes may be directed in a specific direction or scan the space, accompanied by movements of the head and possibly the ears.
Standing	The cat is in an upright, immobile position, with all four paws on the ground and legs outstretched, supporting its body.
Activity/locomotion	
Walking	The cat moves with a slow, calm gait (with at least two paws in contact with the ground).
Trotting	The cat moves with a rapid, alternating gait. Movements are faster than walking, but slower than running.
Running	The cat moves with a very fast gait. Movements are faster than trotting and walking (may have no paws in contact with the ground at times).
Jumping	The cat jumps onto a surface or object to climb on (e.g. table).
Playing	
Play	The cat plays with an object or without an apparent object. The animal may play alone, with a resident, with a caregiver or even with another cat. Play may be characterized by an upright posture (standing on the hind legs) with the front legs to grasp an object or not (in the void) or by a paw stroke in the direction of the object or in the void. Eyes and ears are relaxed and fairly alert.
Avoidance	
Withdrawing	The cat moves away from an object, person or situation it was looking at.
Avoid	The cat moves or changes direction by moving away from a stimulus (object, situation or person).
Hiding	The cat occupies a place away from a specific stimulus (object, situation or person). Hides under an object, in an object, etc.
Feeding	
Eat	The cat sniffs or touches the bowl, may taste, eat or chew food from the bowl.

Drink	The cat swallows a liquid (e.g. water).
Explore food	The cat sniffs, olfactory exploration of a liquid (e.g., a bowl of water) or food.
Exploration	
Explore the environment	Sniffs, touches, chews, licks or scratches the floor with its paws, toys or any other element in the room or environment.
Watch from the window	The cat looks out of the window at a specific stimulus in the outside environment (patio).
Maintenance	
Stretching	The cat extends its front legs while curving its back inwards. The cat may extend one, two, three or all four paws.
Straightens	The cat stands with both hind legs in contact with the ground, while the two front legs may be resting on an object, surface or person, or in non-contact on a target (in the void).
Rubbing	The cat rubs any part of its body (head, abdomen) against objects or humans (resident or caregiver).
clawing	The cat moves its front claws over an object or surface, probably leaving visual marks behind.
Grooming	Cat cleans itself by licking, scratching, biting or chewing their body hair. It may also lick a paw and wipe it on its head.
Eliminate	It defecates or urinates.
vocalize	The cat emits vocalizations when looking at or following a caregiver/resident.
Location	
In his cat tree, in his box	The cat rests and/or grooms itself in its cat tree or box (enrichment). This behavior is observed in a unit (DISU).
In the bedroom	The cat performs resting, activity, feeding, exploration or maintenance behavior in a resident's room, in the presence or absence of the resident. Behaviors emitted and received in this space have not been observed.
In the corridor	The cat is resting, active, feeding, exploring or maintaining itself in the corridor leading to a resident's room.
In the living room	The cat is resting or active or feeding or exploring or maintaining itself in the common room (including the kitchen and living area).
In the locker room	The cat displays resting, activity, feeding, exploration or maintenance behaviors in the caregiver's checkroom (living room). This area is only present in one unit (DISU).
Outside	The cat is resting, active, feeding, exploring or maintaining itself on the unit's outdoor patio. Behaviors emitted and received in this area were not observed.
Invisible	The animal is not visible to the observer at the time of observation.

Reference: Stanton, L. A., Sullivan, M. S., & Fazio, J. M. (2015). A standardized ethogram for the felidae: A tool for behavioral researchers. *Applied Animal Behaviour Science*, 173, 3–16.

Supplementary material 3: Ethogram built and used to record social and pseudo-social interactions by residents and/or caregivers with the cat(s).

Interactions	Description
Pseudo-social interactions by the resident and/or caregiver with the cat	
The resident or caregiver carries the cat	A resident or caregiver carries the cat in their arms.
Resident or caregiver touches cat	The resident or caregiver voluntarily touches the animal stealthily and quickly, either with fingertips (i.e. touching the tip of the nose, the vibrissae, the tip of the tail), or by "kissing" the animal. A resident or caregiver may also touch the animal with the palm of the hand resting entirely on the animal's coat. This behavior involves repeated movements (back and forth) of the hand over the animal's coat.
The resident or caregiver gives cat a treat	A resident or caregiver spontaneously gives the cat a treat or fills its bowl with kibble in the animal's presence. The same applies when a resident (at the table) feeds the cat during the meal.
Resident or caregiver talks to cat	A resident or caregiver talks to the cat, addressing it directly in a familiar or unfamiliar voice. This behavior can be observed when the resident or caregiver touches the animal (by stroking it) or not, moves it or approaches it while talking to it. This behavior takes place in close proximity to the cat.
Resident or caregiver asks the cat	A resident or caregiver solicits the cat by clicking his tongue or making a "sound" with his mouth, by calling it by its first name or otherwise (e.g. "mimi"* , "minou"*) or by extending his hand in the air, in its direction, in order to draw it towards him. This behavior takes place at some distance from the cat. *French nicknames
Resident behaves aggressively towards cat	A resident behaves aggressively (verbally or physically) towards the cat (e.g.: a resident kicks it in the air or pushes it with his hands, telling it to move away...).
Social interactions between caregivers and residents regarding the cat	
Caregivers talk to each other about the cat	Two or more caregivers initiate conversation about the cat by talking about it (with or without the animal nearby). Caregivers can search for the cat and verbally inquire about it.
Residents talk to each other about cats	Two or more residents engage in conversation about the cat by talking about it (in the presence or absence of the nearby animal). Residents can search for the cat and verbally inquire about it.
Residents and caregivers talk to each other about cats	One or more caregivers engage in conversation with one or more residents by talking about the cat (in the presence or absence of the nearby animal). Conversely, one or more residents engage in conversation with one or more caregivers while talking about the cat. The resident(s) or caregiver(s) can then look for the cat and verbally ask questions about it.

Supplementary material 4: Ethogram built and used to record social proximity between residents, caregivers/nurses and cat.

Social Proximities	Description
In contact	The resident and/or the caregiver and/or the animal are in contact. This proximity can be observed during care (grooming), meals or physical contact with the animal.
In contact and "talking" to each other	The resident and/or caregiver and/or animal are in contact and talk to each other. This proximity can be observed during meals or activities (entertainment) or when there is physical contact between the resident or caregiver talking to the animal.
One arm's length	The distance between the resident and/or caregiver and/or animal is of the order of an arm's length. This can represent two people sitting next to each other (in a chair) ↑↑ or with their backs turned ← → (arrows indicating direction of gaze).
One arm's length and "looking" at each other	An arm's length distance between the resident and/or caregiver and/or animal facing each other. This can represent two people sitting next to each other at a table (tables being rounded) ∟ or two people standing or sitting opposite each other → ←.
One arm's length away and "talking" to each other	An arm's length distance between the resident and/or caregiver and/or animal facing and talking to each other. This can represent two people sitting side by side at a table (tables being rounded) ∟ or two people standing or sitting opposite each other and talking → ← to each other (or to the animal).
Two arm's lengths	Distance of two arm lengths between resident and/or caregiver and/or animal. This can represent two people sitting next to each other (in a chair) ↑↑ or turning their backs ← → each other.
Two arm's lengths and "looking" at each other	Distance of two arm lengths between resident and/or caregiver and/or animal facing each other. This can represent two people sitting next to each other at the table (tables being rounded) ∟, or two people standing or sitting opposite each other → ←.
Two arm's lengths away and "talking" to each other	Distance of two arm lengths between resident and/or caregiver and/or animal facing and talking to each other. This can represent two people sitting side by side at a table (tables being rounded) ∟, or two people standing or sitting facing each other and talking to each other → ← (or talking to the animal).
Far (more than two arm's lengths)	The resident and/or caregiver and/or animal are more than two arm lengths apart and are therefore considered distant from each other.
Far away and "talking" to each other	The resident and/or caregiver and/or animal are more than two arms' length apart, in space, when they are talking to each other or to the animal.
In bedroom with...	This proximity describes the case where the cat is in the resident's room in the presence of the resident and/or caregiver(s).

Supplementary material 5: Grouping of social proximities into three categories for analysis results and social network visualization.

“In contact”	In contact In contact and “talking” to each other
“Nearby”	One arm’s length One arm's length and “looking” at each other One arm's length away and “talking” to each other Two arm’s lengths Two arm’s lengths and “looking” at each other Two arm's lengths away and “talking” to each other In bedroom with...
“Talking to/looking at each other”	In contact and “talking” to each other One arm's length and “looking” at each other One arm's length away and “talking” to each other Two arm’s lengths and “looking” at each other Two arm's lengths away and “talking” to each other Far away and “talking” to each other

Supplementary material 6: 1C PCA components and social proximity variables between cats and caregivers. The value shown represents the correlation coefficient (r) or eigenvector explaining the component.

	Caregivers (N = 36)	
	Component 1: "In contact with the cat"	Component 2: "Proximities and exchanges with the cat"
% of total inertia	80.99%	14.71%
In contact with the cat	0.94	
proximity to the cat		0.86
Talk/look at the cat		0.93

1C PCA: First principal component analysis on the caregiver population.

Supplementary material 7: 1R PCA components and resident health variables. The value shown represents the correlation coefficient (r) or eigenvector explaining the component.

	Residents (N = 53)	
	Component 1: "Autonomy"	Component 2: "Perception Problems"
% of total inertia	42.15%	26.18%
Autonomy	0.79	
Verbal communication note (V)	0.77	
Physical communication note (P)	0.90	
Hearing problems		0.77
Sight problems		0.83

1R PCA: First principal component analysis on the resident population.

Supplementary material 8: 2R PCA and 2C PCA components and sociality variables of residents and caregivers. The value shown represents the correlation coefficient (r) or eigenvector explaining the component.

	2R PCA components Residents (N = 53)		2C PCA components Caregivers (N = 36)	
	Component 1: “proximity and exchanges”	Component 2: “in contact”	Component 1: “Quantity and quality of social ties”	Component 2: “Number of social ties”.
% of total inertia	51.33%	29.41%	77.04%	8.92%
Degree of SN in contact		0.95	0.84	
Weighted degree of SN in contact		0.88		0.62
Vector centrality of SN in contact		0.94	0.87	
Degree of SN nearby	0.9		0.84	
Weighted degree of nearby SN	0.86			0.88
Vector centrality of nearby SN	0.82		0.82	
Degree of SN talking to/looking at each other	0.9		0.81	
Weighted degree of SN talking to/looking at each other	0.86			0.92
Vector centrality of SN talking to/looking at each other	0.9		0.81	

2R PCA: Second principal component analysis on the resident population.

2C PCA: Second principal component analysis on the caregiver population.