ISBN: 979-8-9935444-1-0

"Never be afraid to raise your voice for honesty and truth and compassion against injustice and lying and greed." -William Faulkner

2025 National Scholarly Press

October / November, 2025 Volume Two / Issue Two

Innovation

Economy/Business

Sports

Social Studies

Stay Active * Raise Voices * Be Motivated

Social Studies

Growing Together: A Longitudinal Study of Behavioral Synchrony Between Humans and Cats Across Developmental Stages

By: Sophie Gong

Abstract:

Emotional synchrony—the phenomenon in which one individual's emotional state influences another's behavior—has been widely studied in human relationships, yet little is known about how this applies to human–animal bonds. This research explores the behavioral synchrony between pet cats and their owners across different feline developmental stages. Three human–cat pairs were observed over a period of four weeks, including a kitten (3.5 months), an adult cat, and a senior cat. Owners recorded daily behaviors for their cats—such as vocalization, proximity-seeking, grooming, and restlessness—alongside their own psychological stress levels using the Perceived Stress Scale (PSS-4). Results suggest that cats exhibit behavioral changes that may correlate with fluctuations in their owner's emotional state. The sample size was intentionally limited to allow for deeper behavioral and emotional tracking. It is worth noting that behavioral tendencies may have been influenced by breed-typical traits or age-related activity levels. The degree of behavioral responsiveness varied by age, with the adult cat showing the most consistent synchrony, the kitten displaying more erratic but emotionally reactive patterns, and the senior cat maintaining a generally passive but steady proximity to the owner. While limited by small sample size, these findings support the potential for cross-species emotional influence and highlight the role of developmental stage in shaping interspecies interactions. This study provides a novel framework for understanding how domestic animals may mirror or absorb human emotional states in everyday environments.

Hypotheses:

1. Higher owner stress would correspond with decreased proximity-seeking and increased avoidance or vocalization.

2. Behavioral synchrony would be strongest in the developing kitten dyad and weaker in older, more independent cats.

3. Synchrony patterns would reflect the evolution of emotional co-regulation as the relationship matures.

Methods:

Sample	Cat	Age	Breed	Owner	Daily Interaction	Relationship Duration	Enviornment
1	Mochi	3.5 Month	American Shorthair	Sophie (17 years old, female)	4 hr/day	1 Month	Indoor
2	River	4 Years	Ragdoll	Kuang (18 years old, female)	4 hr/day	3.5 Years	Indoor
3	Pear	10 Years	Domestic Shorthair	Ariana (17 years old, female)	3 hr/day	6 Years	Indoor

Participants: Three human–cat pairs participated voluntarily, each representing a different developmental stage, including kitten, adult, and senior.

Procedure:

Each owner recorded data daily for 21 days (June 15 – July 5, 2025). Two main measures were collected:

1. Owner Stress Level (0–4): 0 = none, 4 = very high. Owners briefly noted daily stressors (e.g., academic pressure, interpersonal issues, or health).

2. Cat Behavior (0–4) across seven domains: Vocalization, grooming, proximity, seeking, avoidance, restlessness, sleep pattern, activity level.

3. Optional notes included to clarify if a special situation happens.

Data Analysis:

Because of the small sample and exploratory nature, analysis emphasized pattern-based correlation rather than statistics. Day-to-day comparisons were made between each owner's stress rating and concurrent changes in cat behaviors. Trends were interpreted within developmental context (kitten vs adult vs. senior).

Results:

1. Overall Trends: Across all the data, cats evidenced low variations in their behavioral responses to changes in owner stress levels.

Common sign of synchrony included: There was decreased proximity seeking that occurred on highly stressful days. Increased vocalization in the owner's restless periods was observed. Consistent sleep and grooming patterns persisted, even when the owner exhibited higher levels of stress. The mean stress scores for all subjects (mean ≈ 1.2) were rated low altogether, which facilitated the observation of subtle co-fluctuations of stress without acute distress reactions.

2. Individual Data Analyses

Sample 1: Sophie and Mochi (Kitten Stage)

This pair was the most closely bonded, and the synchronization between them was the strongest and most noticeable immediately.

Sophie experienced stress without being able to control its expression through play (6/15), and Mochi became less affectionate and turned away from her (6/19–6/24). The bonds strengthened during periods of low stress (6/25–6/30), associated with companionship and calm behavior. Mochi became increasingly reactive to changes in Sophie's state of mind, with the first signs appearing within 24 hours, thus, it was evident that an owner's psychological condition has considerable influence on a young animal. When the owner was gentle or in a good mood, the kitten came back to playing and cuddling, which made it clear that resiliency of emotions was very quick here.

Sample 2: Kuang and River (Adult Stage)

The time lag in this pair's case per synchronization was low-moderate and within limits. The behavior of River consisted of either retracting or displaying subtle signs of pecking, instability, distress, and discomfort one day after the peak of owner stress. For instance, over the time of the arguments about the SAT classes (6/20–6/21), River, after a while, became less noisy and was less hostile, but two days later resumed its usual behavior. Kuang's long-term bond with her seemed to diminish intense contagion, which showed the balance between empathic attunement and ability to independently modulate one's self.

Sample 3: Arianna and Pear (Senior Stage)

Interestingly, the nonidentical pair of the senior bunch depicted an insignificant but steady synchrony. In Arianna's psychological conflicts (6/24–6/26), Pear was pursuing a pattern of avoidance and exhibiting some signs of restlessness, but he soon came back to the good old routine. On the settling days, Pear's behavior in the environment was still constant and was not sensitive to minute physiological alterations. These patterns suggest emotional consciousness but don't exaggerate reactivity—this is, as if a steady, well-established bond in which the animal does not collapse with a short-term owner's mood shifts.

3. Cross-Stage Comparison

Feature	Kitten	Adult	Senior
Synchrony Strength	Strong (Immediate)	Moderate (Delayed)	Weak (Stable)
Emotional Reactivity	High	Medium	Low
Attachment Phase	Forming	Consolidated	Enduring
Primary Indicators	Proximity + Vocalization	Grooming + Sleep	Avoidance + Routine Stability

During the juveniles stage, there was a less reactive but more steady emotional connection between the cats. Kittens depicted immediate emotional cues, adult cats showed typical behavior patterns, and senior ones kept independent calmness.

Discussions:

Developmental Synchrony and Emotional Co-regulation

Findings supported the main hypothesis that human stress fluctuations are reflected in feline behavior. The intensity of this synchrony varied by developmental stage.

In the kitten stage, there was a highly sensitive emotional connection that was right away and heartbreaking. High social sensitivity and dependency on human cues can be the reason why kittens rapidly modify their behavior when their owner's mood changes. The moderating role of the adult stage was probably its reflection of the secure attachment and why the patterns were so established.

The older stage showed the independence of emotion as the cats could recognize distress but still did not behave in the same way, which protected the stability of the environment.

Mechanisms of Synchrony

Potential mechanisms include:

- Emotional contagion: random mimicry of arousal states
- Attachment-based attunement: behavioral cues formed through long term association.
- Routine-linked conditioning: living together reinforcing temporal coordination (feeding, rest, interaction).

Together, these mechanisms suggest that synchrony is not merely emotional imitation but a product of mutual adaptation developed over time.

Broader Implications:

Understanding human–cat behavioral synchrony may improve welfare strategies and strengthen the perception of cats as emotionally responsive companions. Recognizing early-stage synchrony could assist in socializing kittens, while appreciating older cats' stability may inform expectations in senior-pet care and therapeutic programs.

Future Directions:

Future research should combine behavioral logs with objective physiological data to quantify stress alignment. Video analysis and machine-learning behavior tracking could reveal micro-synchrony patterns (e.g., posture, gaze). A multi-month follow-up may show how synchrony evolves as kittens mature and relationships deepen.

Conclusion:

This research provides a new view on the way humans and their cats' emotions and behaviors link through the years, from kittens to the maturity stage. Days of consistent, long-term observation of three cat–owner pairs lead to discovering significant behavioral co-fluctuation between cats and the humans they lived with, with even slight changes of stress variations affecting house cat behavior interpreted through measurable ways. And although a small scope this study narrows, it underlies the innate emotional understanding which domestic cats have—an understanding that develops as the cat and the owner grow to be matured together.

The stage of kitten was the time of almost instant reaction and of mutual powerful emotional connection. The younger cats quickly acted upon the owner in light of the emotional tone of the day, mostly distancing themselves or changing play behavior on stressed days. Therefore, it seems that kittens may have an inner need to rely on human cues to navigate their social environment, which has a flexible attachment that closely resembles the feeling of young children or other socially forming mammals who form early bonds with their peers. In this regard, behaviorally synchrony can be officially the learning process for kittens, through which they establish their social models, roles, and a regular trust level with other environmental objects, like human caregivers.

Instead of the owner, the communication in the adult pair relied heavily on a balanced and co-regulated relationship. The owner's fleeting stress still affected the cat's routine of grooming and restlessness; still, the emotional expression of these reactions was weak and therefore short-term. This phase probably represents the rising level of attachment—a bond in which emotional signals can be perceived, yet they are moderated through the use of security instead of reliance. It highlights how both the parties, as the human-animal relationships become closer, tend to have similar tactics for achieving stability and predictability, which are the markers of any long-lasting relationship.

The senior dyad, in contrast, showed emotional resilience coupled with selective responsiveness. The older cat remained disinterested in the tension while exhibiting the same behavioral traits as that of his predecessor, as if he was enabling the owner's mood by being a buffer rather than a mirror. This possibly means changes in physiology and comfort that result from the aging process, as the older cat would be accustomed to the owner's behavior and would therefore realize no more behavioral adjustments. Rather than this, mutual acquaintance is a strength that brings harmony based on years of conjugation in rhythm and routine.

In sum, these descriptions reflect all stages of this synchrony from the youthful empathy to the old calm companionship. This is similar to the principles and ideas of human psychological development, which indicate that interspecies relationships also pass through the core emotional stages: dependence, co-regulation, and stability. Consequently, it underscores that cats, often associated with being emotionally detached, are actually able to show complex emotional engagement that is influenced by their common experiences and mutual adjustments.

Apart from the scientific importance, such research highlights the mutual advantages of being emotionally aware in the human/cat relationship. For cat owners, discovering synchrony can lead to a deeper way of caregiving, as they can regard behavioral signs as indicators of blended emotional states. For pet welfare and veterinary settings, awareness of how human stress affects feline well-being could incorporate interventions that will promote a sense of pet comfort and limit anxiety in times of changes, sickness, or environmental changes.

References:

Turner, D. C. (2021, March 31). The mechanics of social interactions between cats and their owners. Frontiers in veterinary science.
https://pmc.ncbi.nlm.nih.gov/articles/PMC8044293/

Team, N. R. (2025, April 4). Understanding animal behavior matters. Noldus.
https://noldus.com/blog/cats-react-to-human-emotional-scents

Symbiotic relationship human-cats: Its psychological and ...(n.d.).
https://medwinpublishers.com/PPRIJ/symbiotic-relationship-human-cats-its-psychological-an d-physiological-benefits.pdf

Feline developmental stages. Royal Canin Academy. (n.d.).
https://academy.royalcanin.com/en/veterinary/feline-developmental-stages

Cat life stages & behavior by age. Fresh Step®. (n.d.).
https://www.freshstep.com/cat-care/the-6-life-stages-of-your-feline/