



Early-life management routines are associated with behavioral outcomes in companion dogs: a cross-sectional study

Silvia Baglietto*

Dog trainer freelance

Abstract: Early-life experiences are considered crucial for behavioral development in dogs, although the role of everyday management routines has received less attention than puppy socialization. To investigate the association between early-life management practices and behavioral outcomes in companion dogs, an owner-based cross-sectional questionnaire was completed for 79 dogs. Associations between early-life management variables and behavioral outcomes were evaluated using chi-square tests and multivariable binary logistic regression. Leash reactivity was the most common behavioral problem (48.1%), followed by noise sensitivity (35.4%) and hyperactivity (21.5%). Gradual habituation to solitude during puppyhood was significantly associated with lower odds of separation-related behaviors (OR = 0.062; 95% CI: 0.012–0.286; $P < 0.001$). Sleep management remained significantly associated with leash reactivity after adjustment for age and sex ($P = 0.001$). In contrast, early socialization variables showed weaker or non-significant associations. Early management routines, particularly habituation to solitude and consistent sleep management, may contribute to reducing the risk of specific behavioral problems. These findings highlight the importance of integrating practical management recommendations with traditional puppy socialization programs.

Key Words: dog behavior; puppy; early-life management; socialization; leash reactivity; separation-related behavior.

* Corresponding Author: silviabaglietto3@gmail.com

Introduction

Behavioral disorders represent one of the most common welfare concerns in companion dogs (V. Gazzano & Ogi, 2020) and are among the leading causes of relinquishment (V. Gazzano et al., 2025; Iacopini & Gazzano, 2023), reduced quality of life and, in severe cases, euthanasia (Dietz et al., 2018; Hitchcock et al., 2024; Salonen et al., 2020). In addition to their impact on animal welfare, behavioral problems may compromise the human–animal bond and represent an important challenge for veterinary practitioners and owners alike (Barcelos et al., 2024; Dietz et al., 2018; Merritt et al., 2025).

The first months of life constitute a sensitive developmental period during which puppies acquire behavioral responses to both social and environmental stimuli (Dietz et al., 2018; Gazzano et al., 2008a; Majecka et al., 2019; Stolzlechner et al., 2022). During this phase, experiences with conspecifics, humans and novel environments contribute to shaping adult behavior. Consequently, early-life experiences have long been considered fundamental determinants of behavioral development, and appropriate puppy socialization has become a cornerstone of preventive behavioral medicine (Cocco et al., 2025; Majecka et al., 2019; McEvoy et al., 2022).

Previous studies have focused primarily on the effects of early socialization, age separation from the dam, and exposure to environmental stimuli (Gazzano et al., 2008b). These studies have generally shown that inadequate socialization or inappropriate early experiences may increase the risk of fear-related behaviors, aggression, and other behavioral disorders later in life. As a result, current behavioral recommendations largely emphasize structured socialization programs during the sensitive period (Dale et al., 2024; Dietz et al., 2018).

However, early behavioral development is likely influenced by a broader range of management practices than socialization alone (Mai et al., 2021). Daily routines established during puppy-

hood, including habituation to temporary social isolation (Holland et al., 2021), sleep management and owner-guided behavioral routines, may contribute to the development of behavioral self-regulation and coping strategies (Kinsman et al., 2024). Despite their potential importance, these aspects of early management have received considerably less scientific attention than socialization, and evidence regarding their contribution to later behavioral outcomes remains limited.

The present study aimed to investigate the association between early-life management practices and specific behavioral outcomes in companion dogs using data collected through an owner-based questionnaire. We hypothesized that puppies exposed to more structured early management routines, particularly regarding solitude and sleep management, would show a lower prevalence of behavioral problems later in life.

Materials and methods

Study design and participants

A cross-sectional observational study was carried out using an anonymous online questionnaire (Google Forms, Google LLC) addressed to owners of companion dogs, aimed at investigating the association between early-life management and socialization experiences and the occurrence of behavioral problems in adulthood. The questionnaire was distributed through social media and word of mouth between March and May 2026. Participation was voluntary and anonymous, and no incentive was offered. Owners were eligible to participate if they currently owned, or had owned, a companion dog and were able to report on its early-life history and current behavior. In households with more than one dog, owners were instructed to complete a separate questionnaire for each dog, so that each response referred to a single animal. Questionnaires were fully completed by all respondents; no exclusions were necessary. All participants were informed of the general aims of the study and of the anonymous, voluntary nature of data collection, as stated in the introductory section of the questionnaire. No personally identifiable information was collected. Consent to participate was implied by voluntary completion and submission of the questionnaire. Because participation was voluntary and fully anonymous, and no sensitive personal data were collected, formal written informed consent and institutional ethical approval were not deemed necessary.

Questionnaire structure

The questionnaire was organized around five thematic areas, without formal section breaks: (1) demographic data and provenance of the dog (age, sex, neuter status, breed, source of acquisition, age at acquisition, relationship with the dam); (2) motivation underlying the decision to acquire the dog, including whether professional advice was sought prior to acquisition; (3) activities and socialization experiences proposed to the puppy during the first three months of life, including environmental exposure, intraspecific and interspecific socialization, and structured activities (e.g., walks, play, chewing activities, problem-solving games, puppy classes, dog sports); (4) management of daily routines and living spaces, including habituation to solitude, house-training method, and sleeping arrangements; and (5) behavioral problems observed in adulthood, selected from a predefined checklist of 13 items (inappropriate elimination, destructiveness, possessiveness, fear of loud noises, hyperactivity/inability to settle, separation-related behaviors, leash reactivity, pica, coprophagia, aggression toward same-sex dogs, aggression toward opposite-sex dogs, aggression toward people, or none), with an open-ended field for additional comments.

Statistical analysis

Statistical analyses were performed using Jamovi (Version 2.7, The Jamovi Project, Sydney, Australia). Descriptive statistics were calculated for all variables. Continuous variables were summarized as mean ± standard deviation (SD) or median and range, as appropriate, whereas categorical variables were reported as absolute frequencies and percentages.

Behavioral outcomes were coded as binary variables (presence/absence of each behavioral problem). The frequency of each behavioral problem was calculated for the study population.

To improve statistical robustness and biological interpretability, variables describing early-life experiences (e.g., environmental exposure, intraspecific and interspecific socialization, management practices) were recoded into biologically meaningful categories before analysis.

Associations between categorical explanatory variables and behavioral outcomes were initially explored using Pearson’s chi-square test. Fisher’s exact test was used whenever the assumptions of the chi-square test were not met. To account for multiple comparisons across the univariable tests, P values were corrected using the Benjamini–Hochberg procedure (Benjamini & Hochberg, 1995).

Variables considered biologically relevant and/or showing evidence of association in the univariable analyses were subsequently entered into multivariable binary logistic regression models. Separate logistic regression models were built for each behavioral outcome of interest. Age was included as a continuous covariate, whereas sex and management variables were included as categorical predictors.

Model coefficients were reported as odds ratios (ORs) with 95% confidence intervals (95% CI). Model fit was assessed using McFadden’s pseudo- R^2 , Akaike’s Information Criterion (AIC), and likelihood-ratio omnibus tests.

A two-sided P value < 0.05 was considered statistically significant. Analyses were performed using complete-case analysis; therefore, sample size varied slightly across models depending on data availability for each variable.

Results

A total of 79 dogs were included in the study. The demographic characteristics of the study population are summarized in Table 1.

The prevalence of the investigated behavioral problems is reported in Table 2. Leash reactivity was the most frequently reported behavioral problem, followed by noise sensitivity and hyperactivity. Overall, dogs presented a mean of 1.78 ± 1.18 behavioral problems, with a median of 2 (range: 0–4).

Table 1. Characteristics of the study population (n = 79)

Variable	Value
Age (years), mean ± SD	8.0 ± 6.2
Sex	
Male	36 (45.6%)
Female	43 (54.4%)
Neuter status	
Intact	38 (48.1%)
Neutered	41 (51.9%)
Breed	
Mixed breed	53 (67.1%)

Purebred	26 (32.9%)
Source of acquisition	
Home-bred litter	31 (39.2%)
Shelter	20 (25.3%)
Rescue association (transport program)	12 (15.2%)
Amateur breeder	10 (12.7%)
Professional breeder	6 (7.6%)
Age at acquisition	
< 60 days	15 (19.0%)
60–90 days	34 (43.0%)
> 90 days	24 (30.4%)
> 2 years	6 (7.6%)

Note. Data are presented as mean $\pm$ standard deviation (SD) for continuous variables and as number (percentage) for categorical variables.

Table 2. Prevalence of behavioral problems (n = 79)

Behavioral problem	n	%
Leash reactivity	38	48.1
Noise sensitivity	28	35.4
Hyperactivity	17	21.5
Separation-related behaviors	14	17.7
Aggression toward same-sex dogs	12	15.2
Possessive behavior	12	15.2
Coprophagia	8	10.1
Aggression toward opposite-sex dogs	6	7.6
Pica	6	7.6
Behavioral problems per dog (mean $\pm$ SD)	1.78 $\pm$ 1.18	
Median (range)	2 (0–4)	

Note. Behavioral problems were coded as present/absent. Dogs could present more than one behavioral problem.

The associations between early-life management practices and behavioral outcomes are summarized in Table 3.

Neither age at acquisition, maternal relationship, nor human socialization during puppyhood showed a significant association with leash reactivity.

In contrast, intraspecific socialization showed a moderate association with leash reactivity, although statistical significance was not reached.

A significant association was identified between early management of solitude and the occurrence of separation-related behaviors. Dogs gradually habituated to remain alone during puppyhood showed a markedly lower prevalence of separation-related behaviors than dogs that had never been left alone.

Furthermore, sleep management during puppyhood was significantly associated with leash reactivity after correction for multiple comparisons, whereas its association with hyperactivity did not survive correction; environmental exposure was not associated with noise sensitivity.

Table 3. Univariable associations between early-life management practices and behavioral outcomes

Predictor	Outcome	Test	Statistic	P value (raw / BH-corrected)
Age at acquisition	Leash reactivity	Chi-square	$\chi^2=1.91$	0.591 (BH: 0.591)
Maternal relationship	Leash reactivity	Chi-square	$\chi^2=4.99$	0.417 (BH: 0.577)
Intraspecific socialization	Leash reactivity	Chi-square	$\chi^2=6.59$	0.085 (BH: 0.170)
Human socialization	Leash reactivity	Chi-square	$\chi^2=1.67$	0.433 (BH: 0.577)
Environmental exposure	Noise sensitivity	Chi-square	$\chi^2=2.96$	0.565 (BH: 0.591)
Management of solitude	Separation-related behaviors	Chi-square	$\chi^2=18.6$	<0.001 (BH: 0.004)
Sleep management	Hyperactivity	Chi-square	$\chi^2=8.59$	0.035 (BH: 0.093)
Sleep management	Leash reactivity	Chi-square	$\chi^2=14.8$	0.002 (BH: 0.008)

Note. P values in Table 3 were corrected for multiple comparisons ($n = 8$ tests) using the Benjamini–Hochberg procedure (Benjamini & Hochberg, 1995). After correction, the associations between management of solitude and separation-related behaviors (raw $P < 0.001$; BH-corrected $P = 0.004$) and between sleep management and leash reactivity (raw $P = 0.002$; BH-corrected $P = 0.008$) remained statistically significant, whereas the association between sleep management and hyperactivity did not survive correction (raw $P = 0.035$; BH-corrected $P = 0.093$).

The results of the multivariable logistic regression analyses are presented in Tables 4 and 5.

The multivariable logistic regression model showed that sleep management remained significantly associated with leash reactivity after adjustment for age and sex (Table 4), although causality cannot be inferred. Specifically, dogs sleeping on the sofa/bed had significantly lower odds of leash reactivity than dogs sleeping in their own bed/mat (OR = 0.056, 95% CI: 0.010–0.316; $P = 0.001$). No significant associations were observed for age, sex or the remaining sleep-management categories.

In the multivariable logistic regression model, management of solitude remained significantly associated with separation-related behaviors after adjustment for age and sex. Dogs gradually habituated to being left alone had lower odds of separation-related behaviors than dogs that had never been left alone (OR = 0.062, 95% CI: 0.012–0.286, $P < 0.001$). Age and sex were not significant predictors.

Table 4. Multivariable logistic regression model for leash reactivity

Variable	Odds ratio (95% CI)	P value
Sleep management Sofa/bed vs Bed/mat	0.056 (0.010–0.316)	0.001
Sleep management No fixed sleeping place vs Bed/mat	0.252 (0.026–2.42)	0.197
Sleep management Other vs Bed/mat	0.042 (0.001–19.45)	0.962
Age (years)	0.96 (0.95–1.07)	0.769
Sex (Male vs Female)	0.95 (0.26–3.49)	0.947

Table 5. Multivariable logistic regression model for separation-related behaviors

Variable	Odds ratio (95% CI)	P value
Management of solitude Gradually habituated to being left alone vs Never left alone	0.062 (0.012–0.286)	<0.001
Management of solitude Left alone to cry/destroy vs Never left alone	Not interpretable*	0.992
Age (years)	0.93 (0.82–1.06)	0.253
Sex (Male vs Female)	0.75 (0.19–2.88)	0.680

Note. Model adjusted for age and sex. McFadden pseudo- $R^2 = 0.217$. The category ‘Left alone to cry/destroy’ contained very few observations, resulting in unstable estimates; therefore, its odds ratio should not be interpreted.

Discussion

The present study investigated the association between early-life management practices and behavioral outcomes in companion dogs using a cross-sectional owner questionnaire (Merritt et al., 2025; Meyer et al., 2023).

The main finding was that early management routines, particularly those related to habituation to solitude and sleep management, were more strongly associated with specific behavioral outcomes than the socialization variables investigated (Dale et al., 2024; Mai et al., 2021). In particular, dogs that were gradually accustomed to remaining alone during puppyhood showed a markedly lower prevalence of separation-related behaviors, whereas sleep management remained independently associated with leash reactivity after adjustment for age, sex and intraspecific socialization.

The present findings suggest that predictable management routines may represent an overlooked component of early behavioral development. Previous studies have highlighted the importance of early environmental experiences in shaping adult behavior, particularly through appropriate socialization and controlled exposure to novel stimuli (Appleby et al., 2002; Howell et al., 2015). Our results suggest that management practices promoting behavioral predictability may represent an additional, and potentially underestimated, component of early behavioral development.

One of the strongest associations identified in the present study concerned the management of solitude. Dogs gradually habituated to remain alone during puppyhood were significantly less likely to exhibit separation-related behaviors. This finding is biologically plausible and agrees with current behavioral medicine recommendations, which advocate progressive and positive habituation to temporary social isolation during the sensitive developmental period (Overall, 2013; Sherman & Mills, 2008). Although causal relationships cannot be inferred from the present cross-sectional design, these results support current preventive recommendations commonly adopted in veterinary behavioral practice.

Interestingly, variables describing socialization experiences showed weaker associations than expected (Vaterlaws-Whiteside & Hartmann, 2017). Neither human socialization nor environmental exposure were significantly associated with the investigated behavioral outcomes, whereas intraspecific socialization showed only a moderate, non-significant association with leash reactivity. This observation should not be interpreted as evidence that socialization is unimportant. Rather, several explanations may account for these findings. First, the relatively limited sample size reduced statistical power. Second, owner-reported measures may not fully capture the qual-

ity, duration, or timing of socialization experiences. Finally, behavioral traits such as leash reactivity are multifactorial conditions influenced by genetics, learning history, training methods and owner management throughout life, potentially diluting the contribution of early-life experiences alone.

Sleep management also emerged as a significant predictor of leash reactivity in multivariable analysis. To our knowledge, relatively few studies have specifically investigated the relationship between early sleeping routines and later behavioral outcomes. One possible explanation is that consistent resting routines may contribute to behavioral self-regulation by promoting predictability and reducing chronic arousal during development (Harvey et al., 2016). Alternatively, sleep management may represent a proxy measure for overall owner consistency and household routine rather than an isolated behavioral factor. Further prospective studies are required to clarify this relationship.

The present study has several limitations. First, the cross-sectional design precludes causal inference. Second, all information was obtained through owner questionnaires and is therefore subject to recall bias and subjective interpretation. Third, several variables required recoding into biologically meaningful categories because of sparse data, which may have reduced the level of detail available for analysis. Finally, although the sample size was adequate for exploratory analyses, larger prospective studies are needed to confirm these findings.

Despite these limitations, the study provides clinically relevant information. The results suggest that, alongside appropriate socialization, early management routines, particularly gradual habituation to solitude and the establishment of consistent resting routines, may contribute to reducing the likelihood of specific behavioral problems later in life. These findings reinforce the importance of providing owners with practical behavioral guidance during the first months following puppy acquisition and highlighting early-life management as a potentially modifiable factor in behavioral prevention.

Conclusions

The present study suggests that early-life management routines may represent important determinants of behavioral development in companion dogs.

Gradual habituation to solitude and consistent sleep management were associated with lower odds of specific behavioral problems, whereas traditional socialization variables showed weaker associations within this study population.

Although prospective longitudinal studies are required to establish causal relationships, these findings highlight the importance of providing owners with practical guidance on everyday puppy management in addition to conventional socialization programs.

Bibliography

- Appleby, D. L., Bradshaw, J. W. S., & Casey, R. A. (2002). Relationship between aggressive and avoidance behavior by dogs and their experience in the first six months of life. *Vet Rec*, 150(14), 434–438. <https://doi.org/10.1136/vr.150.14.434>
- Barcelos, A. M., Kargas, N., & Mills, D. (2024). The Effects of Dog Behavioral Problems on Owner Well-Being: A Review of Literature and Future Directions. *Pets*. <https://doi.org/10.3390/pets1010007>
- Benjamini, Y., & Hochberg, Y. (1995). Controlling the False Discovery Rate: A Practical and Powerful Approach to Multiple Testing. *Journal of the Royal Statistical Society: Series B*, 57(1), 289–300, <https://doi.org/10.1111/j.2517-6161.1995.tb02031.x>
- Cocco, R., Arfuso, F., Sechi, S., Piccione, G., Giannetto, C., Arrigo, F., & Rizzo, M. (2025). The Puppies'

- Age at Adoption Time Influences the Behavioral Responses of Adult Dog. *Veterinary Sciences*, 12. <https://doi.org/10.3390/vetsci12020176>
- Dale, F. C., Burn, C., Murray, J., & Casey, R. A. (2024). Canine separation-related behaviour at six months of age: Dog, owner and early-life risk factors identified using the “Generation Pup” longitudinal study. *Animal Welfare*, 33. <https://doi.org/10.1017/awf.2024.56>
- Dietz, L., Arnold, A.-M. K., Goerlich-Jansson, V. C., & Vinke, C. (2018). The importance of early life experiences for the development of behavioral disorders in domestic dogs. *Behavior*, 155, 83–114. <https://doi.org/10.1163/1568539x-00003486>
- Gazzano, A., Mariti, C., Alvares, S., Tognetti, R., & Sighieri, C. (2008a). The prevention of undesirable behaviors in dogs: effectiveness of veterinary behaviorists’ advice given to puppy owners. *Journal of Veterinary Behavior: Clinical Applications and Research*, 3(3), 125–133. [10.1016/j.jveb.2008.04.004](https://doi.org/10.1016/j.jveb.2008.04.004)
- Gazzano, A., Mariti, C., Notari, L., Sighieri, C., & McBride, E. A. (2008b). Effects of early gentling and early environment on emotional development of puppies. *Applied Animal Behavior Science*, 110(3–4), 294–304. [10.1016/j.applanim.2007.05.007](https://doi.org/10.1016/j.applanim.2007.05.007)
- Gazzano, V., Curadi, M. C., Baragli, P., Sacchettino, L., & Gazzano, A. (2025). Physiological and Behavioral Evaluation of Shelter Dogs During Veterinary Routine Health Checks. *Veterinary Sciences*, 12(6), 583. <https://doi.org/10.3390/vetsci12060583>
- Gazzano, V., & Ogi, A. (2020). Canine Phobia. *Dog Behavior*, 6(2), 31–39. <https://doi.org/10.4454/db.v6i2.121>
- Harvey, N., Craigon, P. J., Blythe, S., England, G., & Asher, L. (2016). Social rearing environment influences dog behavioral development. *Journal of Veterinary Behavior-Clinical Applications and Research*, 16, 13–21. <https://doi.org/10.1016/j.jveb.2016.03.004>
- Hitchcock, M., Workman, M. K., Guthrie, A. P., Rupple, A., & Feuerbacher, E. (2024). Factors associated with behavioral euthanasia in pet dogs. *Frontiers in Veterinary Science*, 11. <https://doi.org/10.3389/fvets.2024.1387076>
- Holland, K. E., Owczarczak-Garstecka, S. C., Anderson, K. L., Casey, R., Christley, R., Harris, L., McMillan, K. M., Mead, R., Murray, J., Samet, L., & Upjohn, M. (2021). “More Attention than Usual”: A Thematic Analysis of Dog Ownership Experiences in the UK during the First COVID-19 Lockdown. *Animals*, 11. <https://doi.org/10.3390/ani11010240>
- Howell, T., King, T., & Bennett, P. (2015). Puppy parties and beyond: the role of early age socialization practices on adult dog behavior. *Veterinary Medicine: Research and Reports*, 6, 143–153. <https://doi.org/10.2147/vmrr.s62081>
- Iacopini, L., & Gazzano, V. (2023). Analysis of the management of shelter dog kennels. *Dog Behavior*, 9(3), 41–45. <https://doi.org/10.4454/db.v9i3.183>
- Kinsman, R., Jim, H.-L., Casey, R. A., Ruiz-Izagirre, E., Owczarczak-Garstecka, S. C., Cooper, B., Tasker, S., & Murray, J. (2024). Puppy Socialisation Experiences in Relation to Age and COVID-19 Lockdown Restrictions in the UK and ROI. *Animals*, 14. <https://doi.org/10.3390/ani14101471>
- Mai, D., Howell, T., Benton, P. M., & Bennett, P. (2021). Socialisation, training, and help-seeking - Specific puppy raising practices that predict desirable behaviours in trainee assistance dog puppies. *Applied Animal Behaviour Science*, 236, 105259. <https://doi.org/10.1016/j.applanim.2021.105259>
- Majecka, K., Pąsiek, M., Pietraszewski, D., & Smith, C. (2019). Behavioural outcomes of housing for domestic dog puppies (*Canis lupus familiaris*). *Applied Animal Behaviour Science*, 222, 104899. <https://doi.org/10.1016/j.applanim.2019.104899>
- McEvoy, V., Espinosa, U. B., Crump, A., & Arnott, G. (2022). Canine Socialisation: A Narrative Systematic Review. *Animals*, 12. <https://doi.org/10.3390/ani12212895>
- Merritt, B. L., O’Neill, D., Brand, C., Belshaw, Z., Dale, F. C., Pegram, C. L., & Packer, R. (2025). Lasting lockdown love? Problem behaviour and pandemic and non-pandemic related risk factors influencing the owner-dog relationship in a UK cohort of dogs reaching early adulthood. *PLOS ONE*, 20, e0316166–e0316166. <https://doi.org/10.1371/journal.pone.0316166>
- Meyer, I., Forkman, B., Lund, T., & Sandøe, P. (2023). Behavior problems in dogs - an assessment of prevalence and risk factors based on responses from a representative sample of Danish owners. *Journal of Veterinary Behavior*. <https://doi.org/10.1016/j.jveb.2023.11.002>
- Overall, K. (2013). *Manual of Clinical Behavioral Medicine for Dogs and Cats*.

- Salonen, M., Sulkama, S., Mikkola, S., Puurunen, J., Hakanen, E., Tiira, K., Araújo, C., & Lohi, H. (2020). Prevalence, comorbidity, and breed differences in canine anxiety in 13,700 Finnish pet dogs. *Scientific Reports*, 10. <https://doi.org/10.1038/s41598-020-59837-z>
- Sherman, B. L., & Mills, D. S. (2008). Canine Anxieties and Phobias: An Update on Separation Anxiety and Noise Aversions. *Veterinary Clinics of North America: Small Animal Practice*, 38, 1081–1106. <https://doi.org/10.1016/j.cvsm.2008.04.012>
- Stolzlechner, L., Bonorand, A., & Riemer, S. (2022). Optimising Puppy Socialisation-Short- and Long-Term Effects of a Training Programme during the Early Socialisation Period. *Animals*, 12. <https://doi.org/10.3390/ani12223067>
- Vaterlaws-Whiteside, H., & Hartmann, A. (2017). Improving puppy behavior using a new standardized socialization program. *Applied Animal Behaviour Science*, 197, 55–61. <https://doi.org/10.1016/j.applanim.2017.08.003>

Le routine di gestione nei primi anni di vita sono associate agli esiti comportamentali nei cani da compagnia: uno studio trasversale

Silvia Baglietto

Addestratrice cinofila freelance

Sintesi

Le esperienze dei primi anni di vita sono considerate cruciali per lo sviluppo comportamentale dei cani, sebbene il ruolo delle routine di gestione quotidiane abbia ricevuto meno attenzione rispetto alla socializzazione dei cuccioli. Per indagare l'associazione tra le pratiche di gestione nei primi anni di vita e gli esiti comportamentali nei cani da compagnia, è stato somministrato un questionario trasversale ai proprietari di 79 cani. Le associazioni tra le variabili di gestione nei primi anni di vita e gli esiti comportamentali sono state valutate mediante test del chi-quadrato e regressione logistica binaria multivariata. La reattività al guinzaglio è risultata il problema comportamentale più comune (48,1%), seguita dalla sensibilità al rumore (35,4%) e dall'iperattività (21,5%). L'abituazione graduale alla solitudine durante la fase di cucciolo è risultata significativamente associata a una minore probabilità di comportamenti legati alla separazione (OR = 0,062; IC 95%: 0,012–0,286; $P < 0,001$). La gestione del sonno è rimasta significativamente associata alla reattività al guinzaglio anche dopo l'aggiustamento per età e sesso ($P = 0,001$). Al contrario, le variabili relative alla socializzazione precoce hanno mostrato associazioni più deboli o non significative.

Le routine di gestione precoce, in particolare l'abitudine alla solitudine e una gestione costante del sonno, possono contribuire a ridurre il rischio di specifici problemi comportamentali. Questi risultati sottolineano l'importanza di integrare raccomandazioni pratiche di gestione con i tradizionali programmi di socializzazione dei cuccioli.

