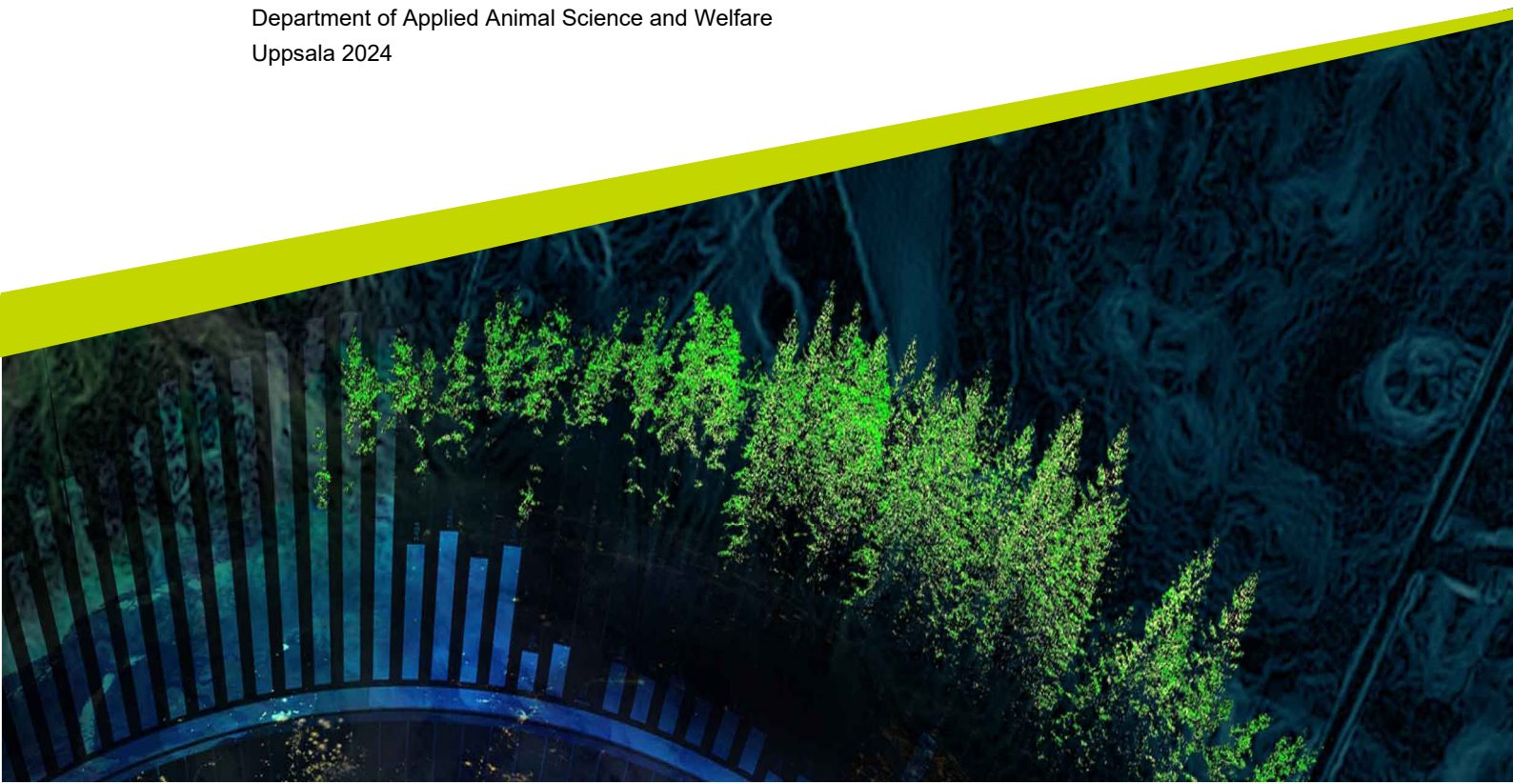




Recurrent backgrounds and character traits in dogs with separation related problems

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Degree project/Independent project • 30 credits
Swedish University of Agricultural Sciences, SLU
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Uppsala 2024



Recurrent backgrounds and character traits in dogs with separation related problems

Återkommande bakgrunder och karaktärsdrag hos hundar med separationsrelaterade problem.

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Credits: 30 credits

Level: A2E

Course title: Independent project in Biology

Course code: EX0871

Programme/education: Independent course

Course coordinating dept: Department of Animal Environment and Health

Place of publication: Uppsala

Year of publication: 2024

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Keywords: Separation related problems, Dog behavior, Animal Welfare, Dog, SRP

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Abstract

Separation related problems (SRP) in dogs have gained increasing attention in the field of animal behavior and welfare. However, there is still a gap between science and professional behavior practice, as the two fields are not yet fully connected. Particularly, research has not sufficiently drawn knowledge from professional practice, with only one article found where researchers have attempted to do so on this subject. The study included fifteen semi-structured, 45 minute interviews with dog professionals in Denmark, Sweden, and Norway, targeting a diverse group of professionals within the behavioral field. The transcriptions were analyzed using reflexive thematic analysis. Six themes and seventeen sub themes were produced. The themes derived from the interview material are called “behavioral issues”, “significant changes in routine”, “a body in flux”, “dog training gone wrong” and “psychological interplay between dogs and their owners”. These themes describe consistently identified backgrounds and character traits by dog professionals in dogs with SRP. The dog professionals also found that breed type was worth mentioning in this context. Most of the backgrounds and traits identified by dog professionals could be linked to potential risk factors for the development of SRP according to existing literature.

Keywords: Separation related problems, Dog behavior, Animal Welfare, Dog, SRP

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Abbreviations

SRP Separation related problems

1. Introduction

The dog, *Canis lupus familiaris*, is a species with inherent social needs (Griffin *et al.*, 2023). Free-ranging dogs, which can be seen as displaying the species' natural social preferences, are social toward both humans and other dogs (Bhattacharjee *et al.*, 2020). In comparison to their close relative the wolf, *Canis lupus*, dogs have genetic predispositions that make them more "hypersocial" (Lazarotti *et al.*, 2020).

Dogs have been domesticated longer than any other animal (Perri *et al.*, 2021) and show a strong attunement to human behavior and emotion (Albuquerque *et al.*, 2022). Studies have shown that dogs often use humans to help them in difficult or stressful situations (Mendes *et al.*, 2021; Hirschi *et al.*, 2022). When faced with environmental stressors, dogs' benefit from the presence of a human with whom they have a good relationship (Cimarelli *et al.*, 2019; Gácsi *et al.*, 2013).

Separation related problems (SRP) in dogs have gained increasing attention in the field of animal behavior and welfare. Recent literature has sought to clarify various facets of SRP, ranging from their manifestations to their underlying triggers (Tiira *et al.*, 2016; Hargrave, 2023). Still, there remains a gap in the bridge between science and professional behavior practice. To this authors knowledge only one published paper on the causes of SRP includes researchers connecting to those who work with this population every day (Hunter *et al.*, 2020). The aim of this study is to further help bridge the gap between science and practice, offering insights into backgrounds and character traits of dogs with SRP. Through this endeavor, this paper aspires to contribute to the existing body of knowledge, hoping that the results can facilitate better preventive strategies for SRP in dogs and help identifying topics for future studies.

1.1 Background

1.1.1 Definition of separation related problems

While the term 'separation anxiety' was once dominantly used to describe these issues, there has been a shift in the nomenclature over time. Terms such as 'separation disorder', 'separation syndrome', 'separation related problems', and 'separation related behaviors' have been introduced, reflecting a more nuanced understanding of the multifaceted nature of this type of behavior problem (Hargrave, 2023).

De Assis *et al.* (2020) argue that SRP in dogs represent a syndrome rather than a clear diagnosis, as we do not have a definitive diagnostic test pinpointing an underlying mechanism as regards to emotion or motivation (de Assis *et al.*, 2020). This is also represented in the different terms used to describe SRP, where some mention "anxiety" or "disorder" while others focus on "behavior" without labelling it with an emotion. In this study, the term separation related problems (SRP) will be used, in order to include all facets of the issue.

There are two emotions related to stress that are frequently mentioned as fundamental to SRP; anxiety and frustration. Anxiety is an emotion where the dog suffers from severe mental stress (Kurachi *et al.*, 2017). Frustration is an emotion that may stem from lack of stimulation (Amat *et al.*, 2020) or if a resource is unreachable through previously reinforced behavior (Lenkei *et al.*, 2018). To assess which emotion is being felt by the dog, some studies have suggested behavioral measures indicative of different emotions (de Assis *et al.*, 2020; Hargrave, 2023). For example, frequent barking may indicate frustration rather than anxiety

according to Lenkei *et al.*, 2018. Other studies do not make any distinction between different types of stress or negative emotions associated with SRP, and do not claim that different behaviors are linked to different emotions underlying SRP.

1.1.2 How does separation related problems manifest?

Fundamentally, all SRP are characterized by specific behaviors (Table 1) that manifest in the actual, perceived, or imminent absence of the owner. These behaviors can recur with varying frequency, from occasionally to every instance the pet is left alone (de Assis *et al.*, 2020). The range of behaviors exhibited by dogs with SRP are diverse (Table 1).

Table 1. Examples of common behavioral symptoms of separation related problems (SRP); all in the actual, perceived, or imminent absence of the owner. Symptoms were collected into the table while gathering background information on SRP. Those mentioned in the results by more than one paper were included. This is not a complete review of all reported symptoms of SRP.

Behavior label	Behavior description	Mentions this symptom
Destructive Behavior	Tendencies to focus destructive behavior on areas of the home where the owner last was seen or items the owner frequently uses, resulting in destructive behavior	Seksel <i>et al.</i> , 2001; Gaultier <i>et al.</i> , 2005; Tod <i>et al.</i> , 2005; Blackwell <i>et al.</i> , 2006; McGreevy <i>et al.</i> , 2008; Hunter <i>et al.</i> , 2020
Vocalization	Engaging in vocal sounds such as barks, yelps, or whimpering.	Seksel <i>et al.</i> , 2001; Gaultier <i>et al.</i> , 2005; Tod <i>et al.</i> , 2005; Blackwell <i>et al.</i> , 2006; McGreevy <i>et al.</i> , 2008; Hunter <i>et al.</i> , 2020
Elimination	Otherwise house-trained dogs soil indoors.	Seksel <i>et al.</i> , 2001; Gaultier <i>et al.</i> , 2005; Tod <i>et al.</i> , 2005; Blackwell <i>et al.</i> , 2006; McGreevy <i>et al.</i> , 2008; Hunter <i>et al.</i> , 2020
Hyperventilation	Exhibiting increased breath rates.	Lund <i>et al.</i> , 1999; Seksel <i>et al.</i> , 2001; Gaultier <i>et al.</i> , 2005; Hunter <i>et al.</i> , 2020
Excessive Salivation	Unusually high salivation.	Seksel <i>et al.</i> , 2001; Gaultier <i>et al.</i> , 2005; Blackwell <i>et al.</i> , 2006; Hunter <i>et al.</i> , 2020
Escape Attempts	Efforts to break out of the space where the dog is left alone.	Seksel <i>et al.</i> , 2001; Tod <i>et al.</i> , 2005; Hunter <i>et al.</i> , 2020
Passivity	Becoming very passive (behavioral depression).	Seksel <i>et al.</i> , 2001; de Assis <i>et al.</i> , 2020; Hunter <i>et al.</i> , 2020
Self-mutilation	For example, biting their own tail or paws.	Blackwell <i>et al.</i> , 2006; McGreevy <i>et al.</i> , 2008;
Stereotypic Behaviors	Continuous, monotonous behaviors.	Seksel <i>et al.</i> , 2001; Blackwell <i>et al.</i> , 2006; Hunter <i>et al.</i> , 2020

Given the range of behaviors indicative of SRP, which also vary when comparing different studies, it is worth noting that different studies might be looking at different variations of SRP. Some symptoms, like passivity, might be overlooked by the owners, due to not looking like obvious distress or not leaving any lasting evidence for when the owners return (de Assis *et al.*, 2020).

1.1.3 What consequences can separation related problems have for dogs and their owners?

SRP in dogs can present a significant threat to the welfare of the dogs and the individuals who care for them.

A primary concern is the well-being of dogs; those with separation anxiety not only face considerable emotional distress but also have an increased likelihood of being relinquished or euthanized (Ballantyne, 2018). Additionally, the health consequences for these dogs are notable; they may be more vulnerable to illnesses, such as skin problems (Dreschel, 2010).

The emotional toll on caregivers is also profound. Addressing SRP can be challenging, a sentiment echoed by 31% of behavioral counsellors who express the difficulty associated with treating these issues (Doane, 2023). These challenges sometimes stem from the complexities of recommended interventions. For instance, when dog owners attempt behavioral interventions such as classical counter conditioning and desensitization, they might not be able to adhere to the recommendations given, potentially due to the emotional strain of watching their pets in distress or the demands of the techniques themselves (Butler *et al.*, 2011). Moreover, the nuances of SRP are further complicated by the presence of other behavioral concerns. A significant proportion of dogs with SRP exhibit signs of generalized fear and aversion to loud noises (Tiira *et al.*, 2016). Furthermore, there's a cognitive aspect to consider. Dogs with SRP tend to exhibit a more "pessimistic" cognitive outlook compared to dogs without this condition (Karagiannis *et al.*, 2015; Mendl *et al.*, 2010), implying a lower quality of life in general.

In conclusion, the consequences of SRP are serious, affecting both the emotional and physical health of dogs, as well as posing significant challenges for their caregivers. The multifaceted nature of the problem emphasizes the need for comprehensive, informed, and compassionate approaches in addressing and preventing it.

1.2 Prevalence and Scope

The prevalence of SRP in dogs has been a subject of investigation across several studies, yielding varying estimates. A study from Finland indicated that 17.2% of surveyed dogs were reported to have separation anxiety (Tiira *et al.*, 2016). Similarly, another observation from the same researchers found the frequency at 18% (Tiira *et al.*, 2016). These figures roughly align with findings from Norway, which placed the frequency at 20% (Martínez *et al.*, 2011). Nevertheless, it's worth noting that other studies have reported even higher estimates, with frequencies reaching as high as 34% in data from the UK (Blackwell *et al.*, 2013). A study on a population of dog owners who sought help from a behavior clinic suggested that between 20% to 40% of the patients at the behavior clinic exhibited signs of separation anxiety (Horwitz, 2012). Variations in reported figures emphasize the challenges in pinning down a

definitive frequency and underscore the need for more detailed insights into the specific behaviors that define separation anxiety (Tiira *et al.*, 2016).

However, there is no denying the significance and prevalence of this behavioral issue. Studies conducted by Denenberg *et al.* (2005) and Bamberger and Houpt (2006) clearly illustrate that SRP is the second most common reason dog owners seek assistance from a behavioral specialist. This observation is further strengthened by the fact that every single behavioral counsellor included in a Swedish study (N=56), irrespective of their level of experience, have likely dealt with cases of SRP in their practice (Doane, 2023).

In essence, while the precise prevalence may vary across studies, the consensus remains that SRP is a prevalent and serious issue that many dog owners and professionals encounter. The reported figures, even with their variability, indicate the importance of recognizing, understanding, and addressing these problems for the well-being of both dogs and their caregivers.

1.2.2 Significance of the Study and Expected Contribution

This study addresses existing knowledge gaps that exist within the nuanced field of canine SRP (Ogata, 2016; de Assis *et al.*, 2020). By directly engaging with dog professionals, the research builds upon preexisting studies into behavioral correlations and predispositions, such as those between separation anxiety and specific phobias (Dinwoodie *et al.*, 2019; Herron *et al.*, 2013), providing an analysis more rooted in applied, professional behavior practice than what current literature offers. This study can potentially shed light on new risk factors and approaches to preventing separation anxiety in dogs. In essence, it serves as a critical stepping-stone toward a more applied scientific approach in preventing canine SRP.

1.3 Research Questions

In order to reach the aim of the thesis, the following research questions were formulated: Which backgrounds and character traits are consistently identified by dog professionals in dogs with separation related problems?

Can the backgrounds and traits identified by dog professionals be linked to potential risk factors for the development of separation related problems according to existing literature?

2. Method

2.1 Respondents

The study included semi-structured interviews with dog professionals in Denmark, Sweden, and Norway, targeting a diverse group of professionals within the behavioral field: veterinarians, behaviorists specialized in handling challenging dog behaviors and dog trainers responsible for general training programs (Daniels *et al.*, 2023). Eligible participants were those actively engaged in dog behavior management and specifically advising on SRP in dogs.

A list of potential interviewees was compiled through professional networks and online research. Contact persons for each country were assigned within the research project to communicate with the dog professionals in their native languages. The participants were

informed about the purpose and format of the study and asked about their professional background and current work in order to determine if and how they fitted into the study. In Sweden, all five dog professionals who were contacted agreed to participate. In Denmark, seven dog professionals were invited but one declined, and another did not respond. In Norway, eleven dog professionals were invited but only five were included.

Prior to interviews, participants received detailed information sheets outlining interview themes, data handling, and anonymity assurances. Communication was conducted in the participants' native languages to enhance understanding and ensure nuanced information.

In total, this study included five interviews from each country (15 in total). Four participants were veterinarians, eleven were behaviorists and nine were dog trainers. Most respondents fell into more than one category, using the definitions from Daniels *et al.* (2023). In their definition, Daniels *et al.* (2023) state that dog trainers provide general training while behaviorists are trained to deal with problematic behavior.

Table 2. A description of the respondent's professional roles, as defined by Daniels *et al.* (2023).

	Veterinarian	Behaviorist	Trainer
ID1SWE		x	x
ID2SWE		x	x
ID3SWE		x	
ID4SWE		x	x
ID5SWE	x		
ID1DK	x	x	
ID2DK	x	x	
ID3DK		x	
ID4DK			x
ID5DK		x	x
ID1NO		x	x
ID2NO		x	x
ID3NO	x		
ID4NO		x	x
ID5NO			x

This study was a part of a larger research project called “Treatment of separation related problems in dogs: what works and what does not”. The larger project was examined regarding research protocols, data processor agreement, interview guide, informed consent and general information to the informants and got its research approval from The Research Ethics Committee for SCIENCE and SUND (CASE: 504-0431/23-5000).

2.2 Interviews

The interview manuscript was developed through collaborative meetings involving the Danish project manager and researcher, a Norwegian master's student, and the author of this study; a Swedish master's student. It encompassed questions divided into eight themes, with a written wording and purpose for each question related to the research questions. The manuscript of the interview guide was subsequently reviewed by and refined in collaboration with researchers from the University of Copenhagen, the University of Oslo, and the Swedish University of Agricultural Sciences. The collected knowledge and research experience ensured that the interview guide made a comprehensive and effective tool for gathering relevant data related to the main research purpose as well as for the two master projects within the project.

Interviews with participants were conducted via Zoom Meetings in the respective native languages. Consent for recording and using the interviews was obtained verbally before the interview started. Each interview followed the same guideline and took about 45 minutes to one hour. Following the interviews, audio files were extracted, and video files were deleted.

Auto transcriptions of the audio files were handled by the Danish researcher and project manager in NVivo 12, with final editing by respective country representatives. The audio files were stored securely and coded for privacy, and the transcriptions were edited to make the respondent anonymous before sharing them with anyone but the interviewer or the Danish researcher.

2.3 Thematic Analysis

The research methodology adopted a reflexive thematic analysis (TA) approach, adhering to the six-stage framework proposed by Braun and Clarke (2021). Behavior is inherently complex, and reflexive TA offers the analytical depth necessary to grasp nuances, complexities, and contradictions within the data. This study specifically employed an inductive variant of reflexive TA, prioritizing data-driven analysis and letting the transcripts lead rather than previous findings. This approach allow researchers to develop themes organically from the data, ensuring that any analysis remain grounded in the actual content of the new data rather than preconceived notions or existing literature on the subject.

In the initial stage (called “Familiarising yourself with the dataset”) of analysis, I immersed myself in the data, conducting thorough readings of each transcript to develop an intimate understanding of the content. This involved printing out the transcripts for detailed, handwritten annotations. During this process, I noted any expressions in Norwegian and Danish that required clarification and highlighted key segments relevant to understanding the backgrounds and character traits of dogs with SRP.

The second stage (called “Coding”) of the analysis involved generating initial codes. I meticulously recorded these preliminary codes both within the margins of the transcripts and on separate sheets to facilitate an overview of emerging patterns.

Subsequent stages, specifically the third through fifth stages (called “Generating initial themes”, “Developing and reviewing themes” and “Refining, defining and naming themes”), focused on finding patterns between these initial codes and developing themes. This involved multiple re-readings of the data and an iterative process of sorting, combining, and subdividing codes. Preliminary themes were then formed, carefully named to capture their essence and relevance to the research questions. I paid particular attention to the prevalence of quotations and the breadth of respondents discussing each theme to ensure robust data support.

In the sixth and final stage (called “Writing up”), I prepared a detailed analytical report linking the refined themes directly to the research inquiry. The themes were described in a narrative style, with selected quotations serving to illustrate key points and enhance thematic descriptions. The selection was made following the recommendation by Braun and Clarke (2021), to ensure engaging and accurate representation of the theme. Efforts were made to balance the representation of respondents to prevent the overrepresentation of any single viewpoint. For each chosen quote, I noted the associated respondent code. After selecting all quotes, I reviewed them for any imbalances or overrepresentation of specific respondents. I did find such over representation when I first looked over my notes and I revisited the quotes to achieve better balance without compromising the integrity of the theme's representation.

Consistent with the traditional structure of our field of scientific reporting, I separated the results and discussion sections even though the instructions from Braun and Clarke (2021) included a preference to merge these. To avoid repetition, the results included a descriptive report of the data, and the discussion included the interpretation. The methodology during the theme development and presentation of results was experiential, aimed at capturing the informants' personal perceptions of SRP. This approach prioritized the authenticity of the informants' experiences, providing a direct reflection of their views within the thematic analysis. Conversely, the discussion adopted a more critical and relativist stance, aiming to delve deeper into the meanings derived from the data rather than simply recounting the respondents' interpretations of "the truth." This shift facilitated a more nuanced exploration of the underlying dynamics and implications of the identified themes. For example, rather than only accounting for results and whether or not they were true or questionable, I aimed to find reasons why the respondents may have perceived the patterns they reported.

2.4 Researcher reflexivity statement

Within the recommended practice for reflexive TA is a written statement on the researcher background and possible associated biases (Braun and Clarke, 2021).

My path to researching canine SRP is deeply rooted in both professional- and personal experience. With a bachelor's degree in biology specializing in ethology and my years dedicated to educating dog owners about animal behavior, I've collected both academic knowledge and practical experience. My studies and experiences have colored my understanding of the issue, and I did not enter this project without preconceptions. I did however also approach the subject with a curiosity fueled by the gaps of knowledge I had noticed during both academic and applied, practical work.

My personal journey with my own dog's SRP has lent me an insider's perspective on the challenges and strategies involved in managing this condition from the perspective of a dog owner. I have also worked with treating several cases of SRP in my professional role. Due to

what I have seen personally and professionally, I view SRP as a serious welfare risk for both dog and owner.

Engaging in qualitative research for this study marks a significant shift from my quantitative background, fueled by a curiosity to explore more nuances of dog behavior as reported by dog professionals. My dual role as both a peer and an academic during interviews has, I believe, facilitated open and in-depth answers from the respondents.

I was asked to participate in the selection of the Swedish respondents, and doing so in accordance with the definitions described above. However, I reflected that my interpretation of the definitions may show a bias towards professionals committed to science-based, ethical practices.

2.5 Use of AI

During my master's thesis, I used Chat GPT 4 (Open AI) continuously to aid my work. However, I independently formulated the research question and conducted the entire research process without the aid of generative AI tools for literature research and analysis. This included independently searching, compiling, evaluating, and critically interpreting relevant information in order to fulfill the set examination requirements.

To ensure the integrity and originality of my work, I developed a specialized GPT within Open AI's system tailored exclusively to assist with refining texts. This version of GPT was designed to operate strictly within the parameters set by my instructions, without access to internet browsing capabilities, thereby preventing it from contributing external information.

The use of this GPT was limited to the refinement of text, focusing on grammar, wording, and stylistic adjustments based on my own written compilations and drafts. I utilized the GPT to suggest names for themes that emerged from my analysis, based on the descriptions I provided. This is in line with a guiding text published by the Swedish University of Agricultural Sciences (2024) where they state that generative AI will be a part of our professional lives in the future and that students should learn to handle it within their professional role.

3. Results

A total of 15 anonymized interview transcripts were received and analyzed. Figure 1 provides an overview of themes and sub-themes that were identified. Six themes and two to three sub themes per theme were produced from analyzing the entire data material to answer the research question regarding backgrounds and character traits of dogs with SRP. The themes are presented below with their sub-themes, and these were: "other behavioral issues", "a body in flux", "dog training gone wrong", "breed type is worth mentioning", "significant changes in routine" and "psychological interplay between dogs and their owners".

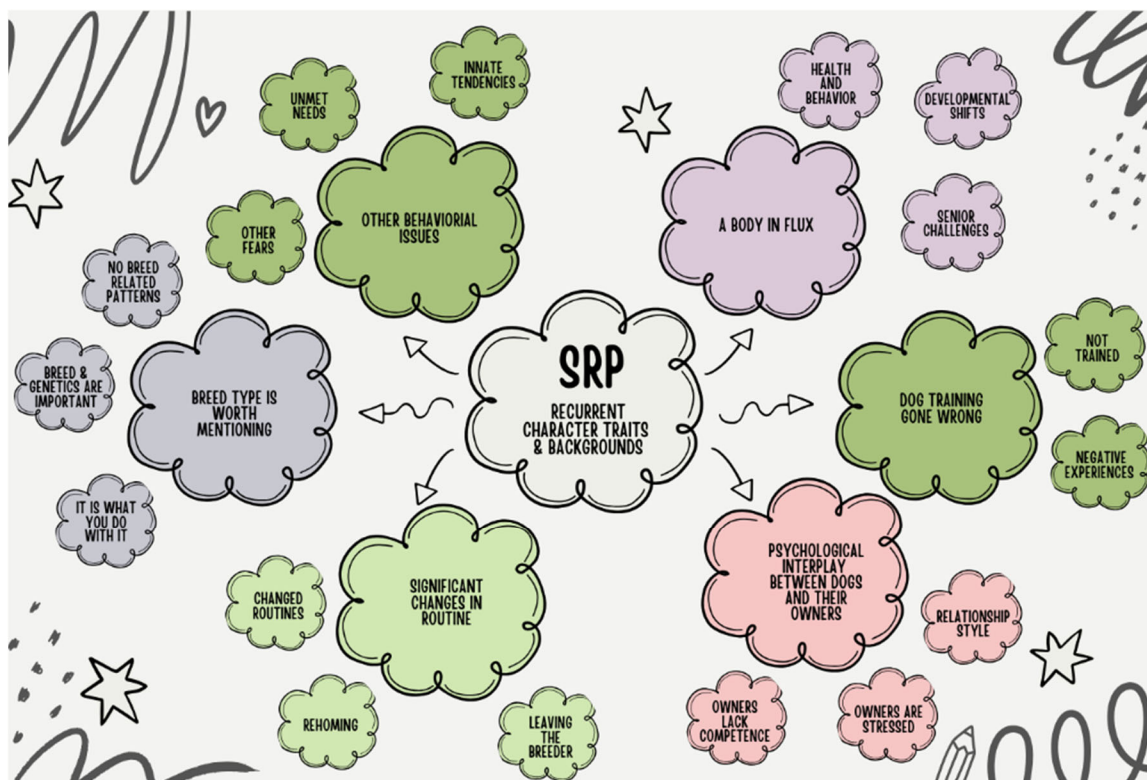


Figure 1. Themes and sub-themes. Some names are shortened in this figure.

Theme 1: Other Behavioral Issues

"Other Behavioral Issues" explored the intertwined nature of various behavioral problems, offering a broader perspective on the multifaceted behavioral challenges affecting dogs with SRP.

The essence of this theme revealed that professional dog trainers identified that it is common for dogs with SRP to also have other behavioral issues, such as sound-related anxieties, specific fears, stress-related behaviors, resource guarding, and reactivity during walks.

"[...] but if a dog has challenges in several areas, and that's not unusual really I would say, then that affects the training to be alone too, and it's something with all impressions that need to be processed and then suddenly one has to be alone with everything- Everything it has experienced in a way. All the impressions." ID4NO

Unlike themes focused on physiological changes or specific training mishaps, "Other Behavioral Issues" zeroed in on the psychological states affecting these dogs. This theme points to the importance of a complete understanding of a dog's overall behavior.

Other Fears. This sub-theme explored the layers of fear and anxiety that is expressed outside of a separation setting but might still significantly affect a dog's stress levels and, consequently, behavior when left alone. Respondents suggested that dogs with SRP can have co-occurring fears, such as fear of sounds or new situations.

"So there are some of them...who also have other forms of anxiety. I mean, towards strangers or towards sounds. But definitely not all of them." ID2DK

Innate Tendencies. In this sub-theme respondents reported that dogs may have innate tendencies that affect SRP, going further than simply their social needs and providing cause for the variation seen from an early age. A dog's inherent personality traits or behavioral strategies — whether they are more anxious, resilient, or sensitive from early puppyhood — can affect both development and training when it comes to being comfortable alone, according to some respondents.

"they have all received advice before. In most cases, it amounts to forcibly leaving the dog until it gives up. [...] Some never give up, about 20-25% never give up, [...] they don't give up no matter how long you leave them." ID3SWE

"There are some that have had it, from the time they were puppies, who have never been able to be alone. Never have been able to stay at home alone, where owners say that from day one they have never been able to go, uh, just to the toilet and that they have never been able to leave, step out of the door for even 10 seconds, so they never ever feel that they have been able to train anything alone at home." ID2DK

Unmet Needs. Frustration and boredom, arising from unmet physical or mental stimulation needs, were identified by professional dog trainers in this study as factors that can exacerbate or mimic symptoms of SRP.

"And then I have some who are like, where it's not really separation anxiety, but where they are under-stimulated and so when they are alone, they find a lot of things to do because they have a hard time relaxing in that situation." ID4SWE

Theme 2: A Body in Flux

Theme 2, "A Body in Flux," delved into the impact of physiological changes and health issues on dog behavior, especially regarding the manifestation of SRP. This theme provided a critical lens through which to examine how stages of development, aging, and physical health conditions influence SRP.

In "A Body in Flux", professional dog trainers highlighted the intricate relationship between the developmental or pathological states of dog's body and the development of SRP, identifying recurring traits within the population of dogs with SRP. These traits were transitioning through puppyhood, sexual and social maturity, advancing into old age, and health conditions. Insights from the professional dog trainers emphasize the necessity of integrating knowledge of a dog's physical development and health status with behavioral observations to fully grasp the complexities of SRP.

"And it ruins something in the training when you don't have the physical aspect with you." ID4DK

"A Body in Flux" uniquely explored the physical and physiological dimensions of canine behavior. It is different from themes focused on training or owner influences in highlighting how bodily factors may contribute to behavioral outcomes, offering a distinct perspective that calls for connecting veterinary insights with behavioral science.

Developmental Shifts. Within this sub-theme, the respondents mentioned critical periods of development, especially during adolescence, and how these periods are fraught with vulnerabilities that can initiate or worsen SRP. They reflected on the physiological and psychological upheavals during sexual maturity.

"But I see a connection between, and like..., developmental periods. Often when the puppies, the young dogs, are in a fearful period at 6-8 months, it can happen that suddenly they can't be left alone and even the young dogs. When they are 18 months there... somewhere, they usually develop problems." ID2SWE

Senior Challenges. Focusing on the later stages of a dog's life, this sub-theme informed us that one group of dogs commonly experiencing more SRP are the senior dogs. Respondents reported that dogs who have not previously had SRP can develop issues when they reach old age.

"[...] and also in older dogs then of course, since we know that it can be linked to cognitive dysfunction or dementia and similar conditions." ID5SWE

Health and Behavior. This sub-theme delved into the varying opinions on the impact of health issues on SRP, highlighting a split in perspectives within the respondent group. Some respondents emphasized the critical, often-underestimated role of pain, disease, and overall physical discomfort in influencing SRP. Conversely, other respondents did not observe this pattern as distinctly for dogs with SRP, indicating a diversity of experiences and viewpoints within the professional community regarding the interplay between health and behavior in SRP cases.

"If something is pain-related or as I mentioned earlier something like itching and allergies something with intestines, stomach. Clearly, it affects the dog's response very much in relation to the surroundings and feeling relaxed and safe and comfortable in its own body. If there's something health-wise, that affects it negatively." ID4NO

"At least I haven't found anything, that they have looked into if dogs with separation related problems often are in pain, maybe they have back problems or neck problems. [...] So the answer to that is well, it's not the first thing I think about. Like, pain and separation related problems." ID2SWE

Theme 3: Dog Training Gone Wrong

"Dog Training Gone Wrong," explored the pivotal role that early training experiences—or the lack thereof—play in the development of SRP in dogs. This theme uncovered the nuanced relationship between the methodologies, timing, and consistency of training practices, particularly concerning periods of being alone, and the behavioral outcomes observed in dogs.

At the heart of "Dog Training Gone Wrong" was the understanding that many instances of SRP and related behavioral issues can be traced back to poor initial training approaches or significant gaps in training. The professional dog trainers identified one or both of these as common backgrounds for the dogs they see with SRP.

"Everything from that I see very often dogs that have been with the owner a lot, like typical corona dogs. And I obviously see that if they- they do what they are used to, so if they are used to always being together, then it's clear that it will be a big shock to be separated." ID2NO

Unlike themes focused on intrinsic factors such as physiological changes ("A Body in Flux") or broader behavioral issues ("Other Behavioral Issues"), "Dog Training Gone Wrong" centered specifically on the human element in the dog's life. It differentiated itself by pointing to the critical influence of human-led interventions on a dog's behavioral development, offering a unique lens through which to understand and address SRP.

Not Trained. In this sub-theme, professional dog trainers addressed a lack of training in the dogs' backgrounds, especially during puppyhood and the first months in their own home, and how this might cause or worsen SRP. The narrative here was multifaceted, involving dogs that lack experience with being alone due to owner oversight, misconceptions, or lifestyle circumstances such as the Covid-19 pandemic. It illuminated a critical gap in many dogs' upbringing, where the absence of gradual, continuous, and supportive training to tolerate solitude leads to profound challenges.

"A common factor, or a quite common factor is that they haven't even trained (note: the dog) to be alone when they seek help, but just realized. And especially during the pandemic, it was very common that they never needed to leave the dog and then suddenly the dog is two years old and they realize that they might need to start training to be alone and then they haven't laid any groundwork for it when the puppy was, or when the dog was a puppy. So that's a relatively common thing that they simply haven't trained to be alone at all."
ID4SWE

Negative Experiences While Training. The second sub-theme explored the consequences of poorly managed training, where the approach taken was too rapid, forceful, or not sufficiently considerate of the dog's welfare. Respondents highlighted the delicate planning required in training dogs to be alone, emphasizing that negative experiences can deeply embed SRP. The stories from trainers suggested that dogs with SRP often have a background of different well-intentioned but misguided training efforts. One example mentioned by dog trainers was letting the dogs "cry it out" which can exacerbate the SRP symptoms or lead to dogs "giving up" – which means that the dogs is showing less intense behavioral symptoms but are no less stressed. The trainers underscored the need for informed, patient, and welfare centered training methodologies.

"So, I would also say that one characteristic is extremely unrealistic perceptions, and then they get it from Dr. Google- Many get like this; leave the room when the dog sleeps. Can you imagine anything more cruel than you go to sleep, and then everyone's gone when you wake up?" ID5NO

Theme 4: Breed Type is Worth Mentioning

Almost every informant in this study mentioned breed when interviewed about characteristics and backgrounds. While "breed" was presented by the interviewer as an example of traits to discuss, various other examples were also introduced by the interviewer but were not as commonly referenced by the participants. Breed type seemed to be worth mentioning as regards to SRP, although with somewhat contradicting views on the importance of this trait.

At the core of this theme was the nuanced understanding that while breed characteristics are frequently mentioned and considered by dog professionals in the context of SRP, the relationship between breed and behavior is complex and influenced by multiple factors, including genetics, environment, and owner actions.

"But I also think there is, that category of Labrador, those very well-trained, very polite, very pleasing dogs, right, which otherwise function super well in all kinds of contexts, they have a really hard time with it. We have those too. Where the owner is highly motivated and the dog is just really easy to reward, etc., etc., right, but as soon as it's left alone, it just can't handle it." ID1DK

The theme "Breed Type is Worth Mentioning" highlighted the importance of recognizing breed-specific traits while also acknowledging the limitations of breed as a sole predictor of SRP. It illustrated a broader perspective that while breed and genetics provide a framework, the individual dog's experiences, training, and environment play crucial roles in their behavior.

Breed and genetics are important. This sub-theme acknowledged the role of genetics and breed-specific predispositions may have in influencing canine behavior, especially in terms of how certain breeds may be more susceptible to anxiety or particular behavioral patterns.

"Because there is presumably some genetic factor also, that matters here in terms of anxiety at least" ID1DK

"Companion dogs bred to be together. They take it much harder. Interestingly, we have some breeds that aren't necessarily bred to be companion dogs, but still have it. For example, we know the Dachshund can be very prone to SRP. So yes, breed definitely plays a role." ID2NO

There are no breed related patterns. This sub-theme reflected the observations from professionals that clear patterns linking specific breeds to SRP were not consistently observed, despite common assumptions about breed-specific behaviors. This challenged the notion that breed alone can predict or fully explain SRP.

"What I can see, is that I can't see that there's any...uh, breed-specific - I can't see that I have specific breeds." ID5DK

"I can say that the breed I've worked most with when it comes to loneliness issues is the poodle, but that doesn't really say anything. One could say poodle owners might be more responsible and seek help more? We know that people don't seek help for this as much as they should. So that... No, I don't see any patterns in this actually." ID3SWE

It's what you do with the breed that matters. This sub-theme emphasized the significant role of environmental factors and owner interactions in shaping a dog's behavior, suggesting that breed predispositions can be mitigated or exacerbated by the dog's living conditions, training, and the owner's understanding of their dog's needs.

"Yeah, you know, I think genetics absolutely plays a role, but I think there are very many environmental type things that are at least as important, if not more." ID3NO

"Then I think that certain dogs of the breeds like Welsh Terriers, or a Lab or a Beagle that are a bit more inclined to enjoy being in large packs or the polar dogs. There, separation can be difficult, especially for the polar breeds, but it's greatly reduced just by having more dogs. But it's not so much about the human as it is just wrong that there's only one dog or somehow that's where the shoe pinches." ID1SWE

Theme 5: Significant changes in routine

Theme 5, "Significant changes in routine" delved into how major life changes and disruptions can profoundly affect dogs, particularly in how such changes can lead to SRP. This theme explored the sensitivity of dogs to their environments and routines, highlighting how alterations in their familiar world can significantly impact their behavior and emotional well-being.

In "Significant changes in routine" respondents underscored the concept of safety and stability as foundational to a dog's ability to relax during time spent alone. The professional dog trainers identified disruptions of every day routines, rehoming and problems related to leaving the breeder as common backgrounds for dogs with SRP. Significant life changes—such as rehoming, alterations in family dynamics, or changes in daily routines—challenge this foundation, often leading to stress, anxiety, and behavioral issues when dogs are separated from their owners.

"[...] and changes in daily routines in general." ID3DK

"Significant changes in routine" uniquely highlighted the environmental and social influences on SRP. It shifted the focus from individual dog characteristics or isolated owner actions to the broader context of the dog's life, emphasizing how long-term external changes can deeply impact their emotional and behavioral health.

Changes to Routine. This sub-theme delved into how alterations in daily life and family structures, such as moving homes, divorce, changes in work hours, or the arrival of new family members, can unsettle dogs. Respondents reported a sensitivity to routines and social environments in dogs, that might cause or worsen SRP.

"Yes, there I think that it has suddenly become like- changed routines, that they have moved, even if it's with the same family that they have moved. That they have divorced so that the dog either lives in the same place or just lives with half the family, so to speak. And changed work hours... can affect it. A change in the family if they have had children or such things can also affect the dog." ID2SWE

Rehoming. "Rehoming" focused on the challenges faced by dogs who undergo rehoming or adoption. This sub-theme highlighted a possible vulnerability of rehomed dogs to develop SRP, as respondents reported that these dogs are common with in the population of dogs they see.

"I see connections with these rescue dogs or rehomed dogs, as I mentioned, that bond very closely with their owner and find it difficult to be away from them." ID1SWE

Leaving the breeder. This sub-theme encapsulated discussions on the significant impact of the transition from the breeder to a new home, can have on a dog's ability to cope with separation in the future. This sub-theme included observations from professional dog trainers of how early separation from the mother or littermates, as well as the timing of rehoming, can set the stage for SRP.

"Early separation from the mother dog or if a puppy became sick and needed to be removed or the mother dog got sick and was removed. Or the last puppy, like, left in the litter. And who has been with the mother dog a lot, there I can see a certain tendency." ID1SWE

Theme 6: Psychological Interplay between Dogs and Their Owners

Theme 6, "Psychological Interplay between Dogs and Their Owners," investigated the complex dynamics between the mental states of owners and their relationship with their dogs, particularly how these factors contribute to the development of SRP in dogs.

The core of "Psychological Interplay between Dogs and Their Owners" was the psychological interdependence between dogs and their owners. The professional dog trainers in this study highlighted how owner traits are common factors in the background of dogs with SRP.

"I have a little gut feeling theory that if you leave the dog while you're very anxious yourself, then the dog senses this." ID2NO

"Psychological Interplay between Dogs and Their Owners" stands out from other themes by the focus on the owners' indirect contribution to the development of SRP in dogs. Unlike themes centered on training practices, breed characteristics, or physiological changes, this theme brought to light the psychological and emotional dimensions of the human-dog relationship, emphasizing the individual owner's personal role in the dog's behavioral health.

Owners are Stressed. This sub-theme underscored the interconnectedness of owner and dog emotional states, more specifically suggesting that dogs can sense and mirror their owners' anxieties, directly impacting their behavior when alone. Observations from respondents suggested that addressing SRP in dogs might also necessitate supporting the mental health of the owner, advocating for a comprehensive approach to prevention and treatment.

"I also experience...uh, also often experience, when I start talking about stress in the dog, then they say 'no, and I know what you're talking about because I've been off work sick with stress.' So I often experience that...when we start to get into it, then the owner...has the owner also often been... exposed to stress. And maybe broken down with stress" ID3DK

Owners Lack Competence. This sub-theme emphasized the critical role of knowledge and realistic expectations in dog ownership. Misunderstandings and unrealistic expectations about the demands of caring for a dog, particularly training them to be alone, may contribute to the development of SRP. Educating and supporting owners to improve their understanding and capabilities is highlighted as essential for the well-being of both dogs and their owners.

"But, but that they don't expect to have to spend a lot of time on them. I think that's a recurring theme. That people had a bit of a wrong understanding of what they were getting into when they got a dog." ID3NO

Relationship Style. This sub-theme explored how the nature of the bond between dog and owner affects the dog's behavior, especially regarding SRP. Certain qualities in the bond with

their owner are more common within the population of dogs with SRP, according to professional dog trainers in this study.

"Then there is a very big difference... if... whether it's, uh... That is, there are some where it's very - where the dog is obviously very attached to one owner, where there's a big difference depending on whether it's one owner leaving, or if it's...that is there's a difference depending on whether it's the one or the other owner, and if one owner disappears from the home, then the dog also howls." ID2DK

"Yes, it's an owner factor. Yes, the owner factor plays a significant role. I think they do. Partly how strongly they attach to the dog [...]" ID1DK

Additional note

One informant (ID1NO) answered that they did not see any reoccurring characteristics or background traits within the population of dogs they met with SRP.

6. Discussion

The purpose of this study was to interview dog professionals about recurrent backgrounds and character that they may have noticed in dogs with SRP and compare their answers to existing literature. Through a comprehensive analysis of the professional insights gathered, the analysis has outlined several key themes including behavioral, physiological, and training-related factors that underpin SRP in dogs.

Within the subtheme “other fears” are suggestions to moving beyond understanding SRP as an isolated behavioral issue, advocating for a comprehensive and nuanced approach that considers multiple aspects of a dog's behavior for effective prevention and treatment and prevention of SRP.

As SRP have been defined in many different ways, and professional dog trainers in this study reported on different motivations behind the behaviors shown. One such potential motivation they spoke about was frustration, due to unmet behavioral needs. Tiira & Lohi (2015) found that dogs displaying SRP got to exercise less than other dogs. Daily exercise was the largest differentiating environmental factor between dogs having SRP and dogs without (Tiira & Lohi, 2015). Dogs with SRP display many different symptoms, and some of those such as frequent barking may indicate frustration rather than for example anxiety (Lenkei *et al.*, 2018). However, in their review on factors that may contribute to SRP, Meneses *et al.* (2021) concluded that if the cause of SRP is frustration the dogs should show the same symptoms when frustrated in the presence of the owners. However, as many behaviors change topography in different circumstances this may also be debatable.

A dog's inherent personality traits or behavioral strategies were said by respondents in this study to affect how easy it is for a dog to be comfortable alone. One study that looked at dogs' personality traits and SRP concluded that dogs displaying SRP were more often impulsive and inattentive (Salonen *et al.*, 2020). Dogs who were considered excitable, scared, or anxious by their owners also scored higher in SRP (McGreevy & Masters, 2008). Other studies found that dogs classified as neurotic or with a negative cognitive bias were more likely to have SRP (Mendl *et al.*, 2010; Knok *et al.*, 2015). This might be because such dogs were more prone to stress and negative emotions in general (Knok *et al.*, 2015) or because living with SRP induces negative affective states (Meneses *et al.*, 2021).

Professional dog trainers consistently identified co-existing fears, such as those related to sounds or new situations, as prevalent traits in dogs with SRP. The most commonly noted comorbidity in both this current investigation and in other studies were between noise sensitivity and separation anxiety (Martinez et al 2011; Overall *et al.*, 2001). Noise sensitivity is one of the most common canine anxieties (Salonen *et al.*, 2020), so it is unclear if there is a causation or if this type of fear is just generally common in dogs. In a study by Salonen *et al.* (2020) dogs showing SRP were 2.8 times more likely to be fearful than other dogs. This highlights the importance for researchers and professionals to examine co-occurrence with other behavioral issues challenges to understand SRP further.

The theme “a body in flux” revealed a nuanced understanding of how developmental shifts, aging processes, and physical health directly impact canine behavior. This analysis suggests that SRP is not merely a behavioral or environmental issue, but that it can be intertwined with the physical states dogs navigate throughout their lives. This theme contains encouragements of a holistic approach to addressing and preventing SRP, advocating for interventions that consider both the mental and physical well-being of dogs.

The respondents in this study reported different, and sometimes contrasting observations when it comes to physical problems or diseases and how it affects SRP. Hauser (2024) writes that physical illness can cause dogs with a history of SRP to relapse, and that the symptoms of SRP may get worse in an affected dog if it also falls ill. The stress from living with unmanaged SRP can also contribute to development and worsening of illnesses (Hauser, 2024). Several physical diagnoses should be considered when a dog develops SRP without a triggering event, due to shared symptoms with SRP (Hauser, 2024). For example, many symptoms of SRP could also be caused or exacerbated by gastrointestinal disorders (Hauser, 2024) and cognitive canine dysfunction can lead to or look like SRP. Hormonal fluctuations are not classified as a physical disease, but the dog professionals in this study mentioned them as a body-related factor that could contribute to SRP. However, drawing conclusions about SRP in relation to neutering is challenging, as most studies do not consider when dogs developed SRP in relation to the timing of neutering or hormonal cycles, making the causal relationship unclear (Meneses *et al.*, 2021). One study that did consider the timing of neutering was Spain *et al.* (2004), which found that the prevalence of SRP decreased when dogs were neutered before 5.5 months of age. However, the same study, along with others (Zink *et al.*, 2014; Balogh *et al.*, 2018), also found that neutering increased the likelihood of noise or thunder phobia, which in turn could elevate the risk of SRP. The impact of neutering varies across studies, and further research is needed to clarify these effects (Palestrini *et al.*, 2021).

In a study by Salonen *et al.* (2020) SRP was most common in the early- and senior years, compared to in the middle of a dog’s life, which is in line with the findings in the current study where respondents mentioned that adolescent and senior dogs seem to be at higher risk of developing SRP. Concerning adolescent dogs, they reflected on how the inner fluctuations of sexual- and social maturity might contribute to SRP arising even from previously calm dogs, further indicating a need of studying the relationship between sexual hormones and SRP. It is possible that dogs undergo a similar teenage phase as humans, where they show more conflict-like behavior toward their attachment figure, may be prone to anxiety due to a destabilization of the attachment (Asher *et al.*, 2020). In a study about behavioral problems in dogs at six and nine months of age, 5-8% of the owners reported SRP (Lord *et al.*, 2020). This

number is lower than estimates of SRP in the general dog population of 17-35 % (Martínez *et al.*, 2011; Blackwell *et al.*, 2013; Tiira *et al.*, 2016) which could dispute the observations from the dog professionals in this study. However, the dog professionals mentioned dogs from six months of age up to one and a half years old, which is a broader spectrum than in the mentioned study on young dogs. Lord *et al.* (2020) noted that they found a lower prevalence of all behavior problems in their study compared to the majority of studies. They discussed that this might be due to the dog's young age and that most problems do not yet become serious enough or established enough to be considered a problem by the owners. It may be that the dog professionals they later consult for help can establish that the problem started during adolescence, even though the dog owners did not make that connection themselves at the time.

In accordance with the findings of Salonen *et al.* (2020) the other age group mentioned by the respondents were the senior dogs who develop SRP after many years without this type of issues. They reflected on how declining cognition can affect SRP, underscoring that dog owners need to prepare for the risk of increased SRP as their dog ages. Studies on aging and cognitive decline in dogs have mentioned general fear and SRP as common symptoms (Fast *et al.*, 2013; Schütt *et al.* 2015). Mongillo *et al.* (2013) speculated that this may be due to a decrease in the ability to cope with emotional social distress, such as being left alone, as dogs age.

The theme "Dog Training Gone Wrong" revealed a critical insight: SRP and related issues often stem from foundational training missteps. The respondents underscored the importance of early, gradual, and welfare-centered training practices that prepare dogs to be alone without inducing anxiety or frustration. The respondents suggested that SRP is, to a large extent, preventable or manageable through informed, compassionate, and consistent training efforts. It was noted during this study that no scientific studies could be found on training protocols for teaching puppies or adult dogs to adapt to separation, neither with nor without previous SRP. Hence, it is highly recommended that future research should focus on efforts to identify valid science-based training protocols or procedures to enhance the success of training dogs to cope with being alone.

The dog professionals highlighted that the absence of structured and supportive training to manage solitude, often due to owner oversight or the recent pandemic restrictions, creates critical gaps in training that often result in SRP. Well-socialized and 'gradually trained' puppies have been found to handle separation better than untrained puppies (Vaterlaws-Whiteside & Hartmann, 2017). A study by Harvey *et al.* (2022) found that 10 % of the previously unaffected dogs in their study developed SRP after the pandemic, likely due to not having been left alone to the same extent during that period and therefore lacked continuous training in being alone.

Trainer testimonials underscored the necessity of employing informed, patient, and welfare-focused training approaches to prevent. They stated that poorly managed and forceful, punishment based training methods can lead to exacerbating the symptoms of SRP. Behavioral depression and "giving up" after having been left to "cry it out" was one example mentioned in the interviews. Older dogs with SRP have been described to display several symptoms of elevated stress, but lower activity compared to younger SRP dogs and non-SRP dogs within the same age groups (Mongillo *et al.*, 2013; Marx *et al.*, 2021). Researchers

suggest that these dogs may still suffer as much as dogs with more overt SRP symptoms but are simply displaying a different coping mechanism (Marx *et al.*, 2021), which may be what the respondents in this study were observing. The effect of punishment or forceful training on SRP has not been researched specifically, but such training approaches have been linked to an increase in fear, stress and in general problematic behavior (Hiby *et al.*, 2004; Herron *et al.*, 2009; Lord *et al.*, 2020). It has been suggested that common training advice given to dog owners concerning separation training lacks important stress reducing components, such as increasing predictability of owner departure and frustration tolerance training (Amat *et al.*, 2020).

The theme concerning breeds revealed a multifaceted view of breed characteristics and if these might predispose certain dogs to SRP or influence their behavior when left alone. Respondents also underscored the significant impact of how dogs are raised and the environments in which they live, suggesting that the mere presence of breed-specific traits is not deterministic of developing SRP. However, most respondents touched upon the issue as they mentioned the influence or lack of influence of breed.

Some respondents did not observe any breed related patterns, or were doubtful that the breed in itself contributed to the development of SRP. Previous studies have found that mixed breeds have a higher percentage of SRP affected dogs than pure bred dogs (Takeuchi *et al.*, 2001; Bradshaw *et al.*, 2002; Storengen & Lingaas 2015; Salonen *et al.*, 2020). Furthermore, although differences in the prevalence of SRP has been found between breeds, those differences were not significant in one large study (Salonen *et al.*, 2020). Meneses *et al.* (2021) reasoned that since shelter dogs are often over represented in studies on SRP, the high percentage of mixed breed dogs in shelters might make patterns across pure bred dogs overshadowed by the amount of mixed breed dogs (Meneses *et al.*, 2021). The possible contribution to SRP of staying in a shelter is discussed later in this study. It is worth noting that the studies that point to certain breeds having higher prevalence of SRP are yet to find consensus on what breeds may be predisposed to SRP (see below).

Many respondents had observed that breed and genetics can influence canine behavior in a way that may predispose them for SRP. Several studies have found evidence that fear and SRP have genetic components and can therefore be influenced by breeding (Bradshaw *et al.*, 2002; Arvelius *et al.*, 2014; van Rooy *et al.*, 2016). Certain breeds, such as Cocker Spaniels, Schnauzers, and Dachshunds, were found to be disproportionately diagnosed with SRP at a behavior clinic relative to their prevalence in a dog population registered in the Norwegian Kennel Club (Storengen *et al.*, 2014). Cooperative working dogs display more intense separation-related stress behaviors like barking and moving when left alone, compared to other breeds (Pongrácz *et al.*, 2020).

To make matters of SRP and heritability even more complex, both respondents and research point to the intertwined nature of heritage and environment in the displayed SRP. A meta-analysis of different study results indicated that while the heritability of categorized behavioral traits in dogs is low, adult dog behavior is significantly influenced by various environmental factors (Hradecká *et al.*, 2015). A study by McGreevy *et al.* (2013) found dog size to be relevant to the prevalence of several unwanted behaviors, including SRP. However, in a large study from Finland, dog size was only a significant factor when daily exercise was excluded (Tiira & Lohi, 2015). According to the researchers, this suggests that smaller dogs

often experience less exercise and different daily routines, which may influence observed behavioral patterns rather than body size in itself (Tiira & Lohi, 2015).

"Significant Changes Disrupt Safety" reveals that dogs can be deeply affected by changes in their living conditions, social structures, and daily routines. This theme suggests that interventions for SRP must account for the dog's entire living context, recognizing the impact of recent changes or disruptions may have.

Respondents indicated that alterations in everyday routines, including divorces, changes in work hours, or the arrival of new family members, can destabilize dogs and potentially trigger or exacerbate SRP. This is in line with findings in a study by Flannigan & Dodman (2001) and another by McGreevy & Masters (2008). Divorce in particular significantly seems to increase attention seeking behavior in dogs, which may in turn be linked to SRP (Bennett & Rohlf, 2007).

Many respondents pointed out that rehomed dogs are particularly vulnerable to developing SRP, and that these dogs frequently appear among the population they encounter with such issues. The scientific findings on this topic point in two different directions. Some studies did not find any differences in the prevalence of SRP for rehomed dogs compared to the other dog populations (Vitulová *et al.*, 2018; Bradshaw *et al.*, 2002). Other studies found a very high percentage of adopted shelter dogs with SRP, between 79.2 % (Powell *et al.*, 2022) and 87.5 (Bohland *et al.*, 2023) compared to maximum of 20 % in the general dog population (Martínez *et al.*, 2011). To the author's knowledge, no existing research definitively establishes causal relationships explaining why shelter dogs may exhibit increased incidence of SRP. Possible causes may be the stressful environment at the shelter contributing to an increase in general anxiety (Meneses *et al.*, 2021), dogs may be given up to the shelter because they have developed SRP and stray dogs at shelters lack training to be alone in a home. Generally, there may be an increased risk of all other risk factors in shelter dogs.

According to interviewed dog professionals and previous studies (Pierantoni *et al.*, 2011; Foyer *et al.*, 2013; Tiira & Lohi, 2015), the experiences within the puppy den and the subsequent process of transitioning out from the den can significantly influence a dog's future capability to manage stress. Tiira and Lohi (2015) discovered that dogs with multiple anxieties, including SRP, often had received lower quality of maternal care according to their owners.

The theme "Psychological Interplay between Dogs and Their Owners" underscored the possible influence of the owner's mental state and everyday interactions on the development of SRP in dogs. The dog professionals suggested that interventions for prevention and treatment of SRP might need to extend beyond the dog itself, incorporating strategies to address owner characteristics and relationship styles.

In this study, dog professionals highlighted "hyper attachment" and close relationships between dogs and their owners as potential risk factors for SRP. The term "hyper attachment" is occasionally used in discussions about SRP, although it does not have a recognized scientific definition. In dog behavior literature and non-academic texts, "hyper attachment" typically describes dogs that show excessive affection and tend to follow their owners closely (Konok *et al.*, 2011; Meneses *et al.*, 2021). However, attachment theory as applied to the dog-owner relationship, originally derived from human developmental psychology, does not

recognize "hyper attachment" as a formal classification (Konok *et al.*, 2011; Rehn & Keeling, 2016). Moreover, most studies have not found a correlation between SRP and the loosely defined term "hyper attachment" (Flannigan & Dodman, 2001; Parthasarathy and Crowell-Davis, 2006; Konok *et al.*, 2011). One study observed that dogs affected by SRP in a specific population were more affectionate, though a contrary pattern emerged in another population within the same study (Konok *et al.*, 2015). Owners who spent a lot of time with their young dogs tended to report fewer instances of SRP in their pets between the ages of 9 and 12 months (Bradshaw *et al.*, 2001). The researchers speculated that this correlation may stem from enhanced socialization rather than a close relationship (Bradshaw *et al.*, 2001). Dogs who play with their owners are less likely to have severe SRP (McGreevy & Masters, 2007). Other, scientifically defined attachment styles have been studied in human-dog-dyads (Topál *et al.*, 1998; Rehn & Keeling, 2016). Results from one study indicated that owners with an avoidant attachment style were more likely to have dogs with SRP, though causality remains unclear (Konok *et al.*, 2015). A study by Konok *et al.* (2019) found dogs with SRP across all attachment styles, although the SRP symptoms differed slightly. They found the highest percentage of SRP in dogs who showed an insecure-anxious attachment style, and who in turn had owners with an avoidant attachment style.

Observations from respondents suggest that dogs with SRP often have owners who are particularly anxious. The observation that dogs are influenced by their owners' stress or anxiety is supported by research, but the extent to which this impacts SRP remains uncertain. Research on dogs' working memory performance support this observation by suggesting that dogs may indeed absorb and reflect their owners' stress levels in acute situations (Sümegei *et al.*, 2014). With regards to long-term stress levels, using hair cortisol concentrations reveals that dogs and their owners are synchronized, which the researchers attribute to dogs mirroring their owners' stress rather than *vice versa* (Sundman *et al.*, 2019). Additionally, while one study linked high neuroticism in dog owners to similar traits in their dogs, potentially contributing to SRP (Turcsán *et al.*, 2012), another study did not find a correlation between owners' neuroticism and the presence of SRP in their dogs (Konok *et al.*, 2015).

Misunderstandings and unrealistic expectations about the demands of dog care, particularly on how to prevent SRP, can contribute to the development of SRP according to the dog professionals in this study. Three studies showed that participation in a dog class reduced the likelihood of a dog developing SRP (Flannigan & Dodman, 2001; Takeuchi *et al.*, 2001; van Rooy *et al.*, 2018; Lord *et al.*, 2020). However, it's uncertain whether this is due to increased socialization or improved owner competence (Meneses *et al.*, 2021). Experience with dog ownership could give owners a realistic expectation on future dog care, but experience alone does not seem to prevent the development of behavioral problems (Lord *et al.*, 2020). The expectation that dogs, a social species, should be able to handle being alone for several hours a day may be set quite high. However, many dogs appear to manage being left alone without showing obvious signs of distress, or at least without exhibiting distress that is noticeable to their owners.

Implications for sustainable dog ownership

All research within the field of dog behavior has the potential of improving the dog-owner relationship and dog welfare, by contributing to our understanding of what might create problems and how to best educate dog owners. Research and development in this field is important as many old, widespread "truths" about dogs later have been found to impact dogs

negatively and not hold up under scientific scrutiny (Fernandez et al., 2017; Meneses et al., 2021; Daniels et al., 2023). It is possible that common information relayed to dog owners could be causing more harm than good. As mentioned earlier, expecting dogs, a highly social species, to cope well with being left alone might be an unrealistic expectation. Coupled with the fact that many symptoms of SRP are subtle, it's possible that more dogs experience poor welfare when left alone than their owners realize or report in studies.

The stress from having a dog with SRP can cause a deterioration of the dog-owner relationship, and because of this many dogs with SRP are rehomed or euthanized (Salman *et al.*, 2000; Takeuchi *et al.*, 2000; Gonzalez *et al.*, 2011). As SRP is considered difficult to treat (Doane, 2023), it can take a lot of support from a professional dog trainer to reach improvement. This is both financially challenging for the owner and time consuming. If the dog is showing vocalization or destructive behavior as symptoms of SRP, it might affect the owner financially when they have to replace destroyed items and can cause stress related to having to deal with complaints from neighbors or landlords. If some cases of SRP could be prevented both dogs and owners would be spared the associated stress, or even having to euthanize the dog, and a more sustainable dog ownership could be the result.

Another possible positive effect of preventing SRP is the reduced carbon footprint associated with one of the common symptoms of SRP: destruction. Sustainable dog ownership involves minimizing the need for constant replacement of destroyed property due to behaviors like SRP-induced destructiveness. By addressing these issues early or preventing them all together, owners can prevent frequent buying of new items (furniture, crates, toys), thereby lowering their environmental footprint.

Future research

Research on SRP has so far been focused on owner reported factors. This study contributes to a perspective that has not been as thoroughly researched; risk factors reported by dog professionals. Several risk factors brought up by the respondents of this study has not been explored in depth by any existing scientific papers and should be topics for future research. Examples of possible risk factors for SRP brought up in this study that we still lack a proper scientific understanding of are sexual hormones, adolescence, and poor training. For most risk factors we lack an understanding of causal relationships between the risk factor and SRP.

It is also clear that existing research articles define SRP and the symptoms of SRP differently, which makes the results hard to compare and use as a consistent body of research. This author suggests more communication between researchers from different disciplines to contrast, discuss and define terminology and measurements related to SRP.

Overall, this study provides essential insights into preventing and managing SRP in dogs. It provides a foundational basis for future research directions and practical guidelines for dog owners as well as professionals. It is vital that science continues to research dog welfare and aid dog owners in caring for these animals that we as a society has deemed ethically acceptable to hold as pets.

Strengths and limitations

Reflexive TA was selected for its suitability in handling qualitative data, which in this case comprised interview transcripts. Reflexive TA provides a comprehensive means to explore

the complex patterns embedded within qualitative responses, going beyond mere quantitative measures that could have been used - such as the frequency of mentions of various backgrounds and character traits. The latter would have produced a flatter result, and the report would have risked losing the nuance that could be reached with reflexive TA. Some researchers could argue that quantitative research would have been more objective, but all research is subject to interpretation which always carries some bias. In reflexive TA the researcher is encouraged to acknowledge their biases and use that knowledge actively to analyze the data (Braun and Clarke, 2021).

Within the larger project that this study was a part of, the scientific team selected the respondents of the interviews that were later analyzed. Many other studies have self-selected subjects, which may then not describe the general population the research want to describe (McGreevy & Masters, 2008). It is also true however, that selected respondents could instead reflect biases and contacts of the research group. This was prevented to some extent by the diverse group of researchers and students that together came up with a list of possible respondents for this study.

Some symptoms of SRP can be easily overlooked by owners, and all studies relying on data from owner reported interviews or questionnaires should therefore be interpreted cautiously as not all dogs with SRP might be registered as having symptoms (de Assis *et al.*, 2020). The same type of angle can be used to critique this study, as the dog professionals interviewed in this study only meet the owners that notice the SRP and are sufficiently concerned to seek help. Risk factors for the entire population of dogs with SRP may differ from risk factors for the population of dogs that receive help from dog professionals.

The research question that was chosen did contain a hypostudy that there would be risk factors associated with SRP. This points to a preconception that there would be patterns noted by the interview subjects, which could have not been the case. However, would that have been the result, the analysis could have dealt with that in relation to the research question.

During the interviews, the interviewer used a fixed manuscript in order to relay the questions in the same way to every respondent. Within this manuscript was a question specifically about whether the dog professional could see any recurring backgrounds or character traits for the dogs that came to them with SRP. To make the question clear the interviewer read a handful of examples of different types of backgrounds and character traits.

“Now we will discuss your general experiences and observations regarding the background of dogs that come to you with SRP. Are there any recurring characteristics or past life events that you frequently notice in dogs you treat for SRP? Referring, for example, to breed, age, genetics, socialization, early upbringing environment, other problematic behaviors, the amount of stimulation the dog receives, the owner, or anything else.” (Interview guide, from the project Treatment of separation related problems in dogs: what works and what does not?)

This may have increased the likelihood of some answers compared to others. However, many examples were dismissed or not mentioned by respondents and other backgrounds and character traits were brought up in their answers. The term “recurring” was translated into Swedish, Danish, and Norwegian to best match the English word, but no definition was provided to the informants. This could have led to varying interpretations of the term, potentially influencing their responses.

Conclusions

Behavioral issues, significant changes in routine, a body in flux, dog training gone wrong and psychological interplay between dogs and their owners were consistently identified backgrounds and character traits by dog professionals in dogs with separation related problems. The dog professionals also found that breed type was worth mentioning in this context.

Most of the backgrounds and traits identified by dog professionals could be linked to potential risk factors for the development of separation related problems according to existing literature.

Future research should focus on creating an understanding of causal relationships between the risk factors and SRP, in order to not confuse correlation with causation. It should also focus on looking into if sexual hormones, adolescence, and poor training can contribute to SRP and if so, how. In order to decrease the issue of SRP in dogs, future research should test and evaluate if and how we might apply the knowledge we have to actually prevent some cases of SRP.

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Popular science summary

Separation-related problems in dogs are a big deal. They can compromise the welfare of dogs and can be tough for people who care for them. Understanding and managing these issues require a kind and well-rounded approach. Despite lots of studies trying to figure out why dogs feel anxious when left alone, there has been a communication gap between scientists and the dog professionals who work with these dogs every day.

My master's thesis bridges this gap by bringing together what dog trainers, behaviorists, veterinarians and science? know about the backgrounds and character traits of dogs with separation related problems. By looking at what these professionals see in their day-to-day work, my study helps highlight new ways to prevent these problems and suggest risk factors that need further investigation.

I analysed interviews from 15 dog behavior experts from Denmark, Sweden, and Norway who work with dogs facing these challenges all the time. By carefully examining their experiences, the study identified common patterns and traits among dogs that struggle when left alone. Some of these findings match up with what is already known from scientific research, while others point out new areas that need more study.

Here is what the study found about the backgrounds and character traits of dogs with separation problems:

Other Behavior Problems: Dogs that get anxious when left alone often have other worries, like being scared of loud noises or new situations. These issues can make it harder for them to cope when alone.

Changes in Routine: Dogs like routine. Big changes, like moving to a new house, a family member leaving, or even a change in daily schedule, can upset them a lot.

A body in flux: Just like people, dogs go through different stages as they grow from puppies to older dogs. Health issues or just getting older can affect how well they handle being alone.

Training: If dogs are not trained properly with their welfare in focus, they might find it hard to be alone. Good, consistent training from the start can prevent a lot of these issues.

Breed type: While the breed is not everything, some types of dogs might be more likely to get anxious when left alone. But how they are raised and trained plays a big part too.

By understanding these factors better, we can find better ways to prevent dogs from having to get separation related problems. This study shows how important it is to use both what scientists know and what dog trainers experience to make life better for dogs and their owners. This kind of teamwork can lead to happier, healthier dogs and less stress for everyone involved.

Acknowledgements

First and foremost, I would like to thank my supervisor, Therese Rehn, for her unwavering encouragement and belief in my work. Our regular meetings and her uplifting support have been invaluable throughout this journey.

My co-supervisor, Iben Meyer, provided essential guidance during the early stages of this project, especially with the interview format. Her close contact and support were critical in shaping the direction of this project. A big thank you to the whole research team from the project "Treatment of separation related problems in dogs: what works and what does not?" for their collaboration and support.

Marie Edbom, my opponent, posed insightful questions and was great moral support in the last weeks before the oral presentation.

I am deeply grateful to the anonymous dog professionals who took the time to participate in the interviews. Their valuable insights and experiences were crucial for this research.

I also want to thank Jenny Afvander and Kerstin Lyttkens for their help with interpreting Danish dog training terminology, which was essential for understanding the nuances of the information gathered from the interviews.

To my family and friends, your unwavering support has been a cornerstone of my completion of this study. Finally, I want to acknowledge my dog, Ossi, whose struggles with separation-related problems inspired and motivated this entire research endeavour.

Finally, I would like to acknowledge my examiner, Maria Andersson, who provided valuable feedback and insightful suggestions for refining the text. Her experience, combined with her curious mindset, helped to bring out even more depth from this study.

Thank you all for your invaluable contributions.

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