



## Why do many pet owners avoid preventive veterinary consultations? Creation of the perceived barriers to preventive veterinary consultations scale

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### ABSTRACT

Preventive veterinary consultations can greatly increase the quality of life and lifespan of pets, but many people do not regularly take their pet to preventive veterinary consultations. Researchers have found that perceived barriers are among the strongest predictors of whether pet owners attend preventive veterinary consultations; however, a limitation of this literature is the investigation of only one or two perceived barriers at a time within studies, which poses concerns regarding the predictive abilities and psychometric properties of measures when multiple perceived barriers are studied together. The current article resolves this tension in the literature. We undergo a four-study scale development process to create the Perceived Barriers to Preventive Veterinary Consultations (PBPVC) Scale, which assesses the eight most commonly expressed perceived barriers to preventive veterinary consultations. Our results demonstrate that the PBPVC produces appropriate psychometric and validity information, and the dimensions together explain significant variance in the frequency that participants take their pets to preventive veterinary consultations. In our discussion, we identify theoretical lenses relevant to the dimensions that produced the most consistent relations with relevant correlates and outcomes, which were the perception that preventive veterinary consultations are expensive (Cost) and preventive veterinary consultations do not benefit pet well-being (Unneeded). By doing so, the present article opens several avenues for future research to better understand why pet owners may refuse preventive veterinary consultations.

Regular preventive consultations with a veterinarian can greatly increase the quality of life and lifespan of pets, as chronic health conditions can be identified and managed before they become debilitating (Belshaw et al., 2019; Robinson et al., 2018; Robinson et al., 2022). Preventive veterinary consultations can also reduce the spread of disease by ensuring regular vaccination, which improves the well-being of both pets and broader communities (Day, 2017; Evason et al., 2021; Schwedinger et al., 2021). Despite the many significant benefits of preventive veterinary consultations, research has shown that many pet owners do not routinely take their pets to a veterinarian, causing many authors to investigate why people do not engage in this broadly beneficial practice (Belshaw et al., 2018; Evason et al., 2021; Mueller et al., 2018).

Studies have found that perceived barriers are among the strongest predictors of whether people attend preventive veterinary consultations (Evason et al., 2021; Mueller et al., 2018; Wallis et al., 2024). Belshaw et al. (2018) determined that perceptions about adverse events and uncertainty about the utility of preventive veterinary consultations are among the two most significant perceived barriers; Evason et al. (2021)

supported the perceived lack of relevant knowledge as a notable barrier, although trust in veterinarians may counteract its detrimental effects; Wallis et al. (2024) provided evidence that the perceived need (or lack thereof) for preventive veterinary consultations is a primary barrier; and Mueller et al. (2018) found that several different perceived barriers influence participation in preventive veterinary consultations, including costs, access, and the belief that consultations are not needed for healthy pets. From this sampling of investigations alone, it is evident that many different perceived barriers have been identified as important predictors of participation in preventive veterinary consultations, but inconsistencies can also be seen regarding which barriers have been included in prior studies.

While these studies have provided notable contributions, significant tensions are also evident in this literature. Authors have most often studied barriers in relative isolation, wherein one or two barriers are investigated in a study (Belshaw et al., 2018; Evason et al., 2021; Wallis et al., 2024). This approach poses two primary concerns. A perceived barrier may produce significant relations with important outcomes

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when studied in isolation, but its effect may no longer be significant when studied alongside other relevant predictors – including other perceived barriers (Allison, 1999; Kelley and Bolin, 2013). It is possible – if not likely – that the influence of certain perceived barriers is over-estimated, and their effects may be small when investigated with more appropriate research designs with multiple predictors. Also, perceived barriers are typically measured via self-report Likert surveys (Evason et al., 2021; Mueller et al., 2018; Wallis et al., 2024). Authors rarely test the psychometric properties and validity of these measures, causing uncertainty about the accuracy of derived inferences even when studied in isolation. Psychometricians have further shown that measures supported in isolation may not function appropriately when administered together, as unanticipated biases may arise between measures (Brown, 2015; Howard, 2025; Kline, 2023). Even if authors provide psychometric support for a measure of a specific barrier, it cannot be readily studied alongside measures of other barriers, posing a significant obstruction to the advancement of modern research.

The current article resolves this tension in the literature. Following modern best practices (Clark and Watson, 1995; DeVellis and Thorpe, 2021; Hinkin, 1995, 1998; Howard, 2017, 2023; Howard et al., 2025), we undergo a four-study scale development process to create the Perceived Barriers to Preventive Veterinary Consultations (PBPVC) Scale, which assesses the eight barriers most commonly expressed as reasons that people do not attend preventive veterinary consultations. By using samples representing multiple countries, our results support the psychometric properties of our developed measure via exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), and we show that the PBPVC produces appropriate validity evidence. We lastly demonstrate that the PBPVC relates to important outcomes beyond other relevant predictors, assessing the relations of each perceived barrier when accounting for each other commonly expressed perceived barriers and other relevant predictors.

By creating the PBPVC, we provide several contributions to the current literature. First, we provide evidence that our measure assesses multiple perceived barriers while producing appropriate psychometric evidence, which cannot be said for extant measures of specific perceived barriers of preventive veterinary consultations. This evidence enables researchers to reliably apply the PBPVC with confidence in the validity of their results. Second, the present investigation is among the few to investigate multiple perceived barriers together. By doing so, we provide a more accurate assessment regarding the effects of each perceived barrier, as we account for all primary perceived barriers in our analyses. Third, prior studies have widely differed regarding the perceived barriers included in their investigations. By beginning our scale development process with a qualitative investigation to identify the most commonly expressed barriers, we center the perceived barriers that may be most influential in predicting relevant outcomes. Equally important, we identify which barriers are the most potent deterrents to attending preventive veterinary consultations, thereby directing researchers towards the most important perceived barriers for future studies. Fourth, the PBPVC includes eight distinct perceived barriers, and our discussion highlights theories that are relevant to the particularly important perceived barriers that emerge in our measure. By doing so, we identify novel directions in future research to better understand why people may not attend preventive veterinary consultations, opening new possibilities for future investigations to advance theory.

## Studies

### *Common methods across all studies*

We intended for our final measure to assess pet owners' perceived barriers to preventive veterinary consultations. In all studies, we asked participants whether they currently owned a pet, and participants were removed if they answered negatively. We then asked participants how many pets they own and the frequency that they took each pet to

preventive veterinary consultations. By asking these questions, we ensured that all respondents were pet owners.

All studies used a consistent methodology. Participants were recruited from the Prolific platform, which is a service that connects people who need small tasks completed with those willing to complete those tasks online, such as taking a survey. Research has supported the validity of results obtained via data collected from Prolific when following the precautions taken in the current article (described in the studies below) (Krendl et al., 2024; Peer et al., 2022). For each study, participants enrolled via Prolific and immediately completed the online survey.

### *Study 1*

The purpose of Study 1 is to identify a potential set of dimensions that represent barriers to attending preventive veterinary consultations. Following recommendations for scale pretesting (Howard, 2018; Presser and Blair, 1994), we perform a qualitative investigation wherein we ask participants to identify specific barriers, which serve as the template for our measure.

### *Study 1 method*

#### *Study 1 participants*

We required participants to provide qualitative responses in Study 1. Any low-quality qualitative responses were removed (e.g., gibberish), which enabled us to ensure that only appropriate responses were interpreted. Our final sample size included 207 participants ( $age \bar{x} = 37.44$ ,  $age SD = 11.94$ , 49% female, 100% United States).

### *Study 1 Measures*

After confirming that they were pet owners, participants answered two questions. The first read, "In years that you do not take your pet(s) to a yearly checkup with a veterinarian, why do you not take them? Please list at least three reasons." The second read, "Some people do not take their pets for a yearly checkup with a veterinarian. Please write at least three reasons that you believe people in general do not take their pets for a yearly checkup with a veterinarian." We administered both items due to the fundamental attribution error (Ross, 2018; Tetlock, 1985). People are more likely to attribute external causes for their own shortcomings and internal causes for the shortcomings of others. By asking both questions, we could ensure that participants identified barriers that represented both categories of responses.

### *Study 1 results*

We utilized an inductive thematic coding process to identify the emergent dimensions from our qualitative responses, which was performed in a multiple-step process (Howard, 2018; Presser and Blair, 1994). For each step, we identified the category that appeared most frequently in the uncoded qualitative responses, and we coded whether each response belonged to that category. We repeated the process until the uncoded qualitative responses were represented by no more than 10 % of participants, which was our cutoff for meaningful potential dimensions (Howard, 2018; Presser and Blair, 1994). We identified 12 barriers to attending preventive veterinary consultations, which are listed and described in Table 1. Three met our cutoff for both self- and other-referent responses, whereas an additional five met our cutoff for other-referent responses alone. Based on these results, we considered these eight categories to be potential dimensions for our created measure, which included Healthy, Cost, Busy, Transportation, Unneeded, Unavailable, Unknowledgeable, and Uncaring.

**Table 1**  
Study 1 Categorization Frequency.

Category	Description Each begins with, "Regular preventive veterinary consultations..."	Self Frequency	Other Frequency
Healthy	...Are not needed when pets are healthy.	40%	41%
Cost	...Are too expensive	36%	85%
Busy	...Do not fit into my schedule.	29%	36%
Transportation	...Are difficult to attend due to transportation issues.	7%	13%
Unneeded	...Do not benefit pets.	6%	14%
Unavailable	...Are difficult to attend due to a lack of available vets.	5%	15%
Pet Anxiety	...Cause excessive stress for pets.	5%	6%
Forget	...Are easy to forget.	4%	6%
Self-Treatment	...Are not needed because owners can treat pets.	3%	4%
Unknowledgeable	...Are something that I do not know enough about.	3%	30%
Uncaring	...Are not needed because I do not particularly care about my pet.	0%	18%
Lazy	...Are not worth my effort.	0%	5%
Other	[Other Given Answers]	7%	7%
Not Applicable	[Did not Answer Question]*	41%	2%

\* Most participants who chose not to answer took their pets for regular preventive veterinary consultations and felt that they could not provide a reason that they would not.

### Study 1 discussion

Study 1 demonstrated that people perceive relatively few reasons why they do not attend preventive veterinary consultations, whereas they identified many reasons that others may not. This discrepancy supports the importance of gauging perceptions regarding both referents, as guided by research on the fundamental attribution error (Ross, 2018; Tetlock, 1985). Further, eight primary barriers for not attending preventive veterinary consultations met our cutoff (Table 1). We test whether all eight of these potential dimensions arise in our measure, as they each may be viable reasons that people may not attend preventive veterinary consultations.

### Study 2

The goal of Study 2 is to create our initial over-representative item list to be subsequently reduced via EFA. Scale development guides recommend creating an over-representative item list to ensure the content validity of the created scale, as any potential construct contamination would be removed via the item reduction process (e.g., EFA and CFA) (Clark and Watson, 1995; DeVellis and Thorpe, 2021; Hinkin, 1995, 1998; Howard, 2017, 2023; Howard et al., 2025).

#### Study 2 method

##### Study 2 participants

Participants were recruited from Prolific. We included three attention checks (e.g., "Please mark agree to show that you are paying attention.") and excluded participant responses if they failed more than one. This resulted in the removal of six participants, producing a final sample size of 401 (age  $\bar{x}$  = 42.07, age  $SD$  = 13.71, 51% female, 100% United States).

#### Study 2 measures

**Over-Representative Item List.** To create our over-representative item list, we utilized the qualitative responses from Study 1. We

identified specific participant comments that were particularly frequent and/or encapsulated the meaning of the dimension, and we modified the response to become an item within our measure. For instance, the participant response, "If he seems healthy, I don't see the reason in taking him", was used to develop the item, "I only take my pet to the vet if there is something wrong with them." We also supplemented these items with those created by the authorship team to ensure content validity. Because we intended our created measure to be relatively concise, our goal was to create a final measure with four items per dimension. For this reason, we developed six items for each of our eight dimensions, with the intent of reducing this number of items through our scale development process.

It should also be emphasized that our items specifically refer to yearly vet appointments instead of preventive veterinary consultations. In our pilot testing, participants expressed significant confusion regarding the meaning of preventive veterinary consultations, whereas they readily understood the meaning of yearly vet appointments. To obtain more accurate responses from participants, we chose the phrasing that is more interpretable to participants.

#### Study 2 results

We followed modern recommendations in performing our EFA (Goretzko et al., 2021; Hinkin, 1995, 1998; Howard, 2023; Howard and O'Sullivan, 2024). We first performed Bartlett's test and KMO test to ensure that our responses were suitable for EFA. Bartlett's test was statistically significant ( $p < .01$ ), and the KMO test produced a value (.96) that exceeded widespread cutoffs. These results indicate the performing EFA on our items is appropriate.

To perform our EFA, we used a principal axis extraction method and an oblimin rotation. To determine the number of factors, we applied a visual scree plot analysis and parallel analysis, which together are among the most accurate approaches to determining the number of factors to retain (Goretzko et al., 2021; Hinkin, 1995, 1998; Howard, 2023; Howard and O'Sullivan, 2024). Authors recommend that solutions including one less and one more factors than indicated by the parallel analysis should also be inspected, as they may represent a plausible interpretation of the underlying factor structure (Lim and Jahng, 2019). We followed this recommendation.

The parallel analysis recommended that a seven-factor solution should be interpreted, whereas the visual scree plot analysis recommended that an eight- or nine-factor solution should be interpreted. We inspected the six, seven, eight, and nine factor solutions. The six-factor solution produced the expected factor structure but combined the dimensions of Healthy and Unneeded as well as Unavailable and Uncaring. The seven-factor solution again produced the expected factor structure but combined only the factors Healthy and Unneeded. The eight-factor solution entirely produced the expected factor structure. The nine-factor solution also produced the expected factor structure, but it also included a ninth factor that only included two weak factor loadings. Based on these results, we chose to interpret the eight-factor solution, which was supported by the parallel analysis, visual scree plot, and theoretical relevance.

Most items loaded onto their intended factors, and most did not produce cross-loadings. For this reason, we reduced our over-representative item list by removing items with the lowest primary factor loadings in a stepwise manner until we retained four items for each dimension. The final factor structure is provided in Table 2. All items produced a primary factor loading of .58 or above, and they produced cross-loadings of .25 or less. These results strongly support the psychometric properties of our reduced item list. Supplemental Material A provides correlations and Cronbach's alphas of our dimensions and frequency measure. Each dimension produced a Cronbach's alpha of .90 or above, further supporting the psychometric properties of the scale.

**Table 2**  
Exploratory Factor Analysis Results.

	Healthy	Cost	Busy	Transportation	Unneeded	Unavailable	Unaware	Uncaring
Item 1	.69							
Item 2	.75							
Item 3	.68							
Item 4	.58							
Item 5		.74						
Item 6		.76						
Item 7		.93						
Item 8		.89						
Item 9			.91					
Item 10			.95					
Item 11			.87					
Item 12			.72					
Item 13				.88				
Item 14				.88				
Item 15				.86				
Item 16				.89				
Item 17					.84			
Item 18					.92			
Item 19					.67			
Item 20					.84			
Item 21						.84		
Item 22						.85		
Item 23						.93		
Item 24						.65		
Item 25							.72	
Item 26							.75	
Item 27							.80	
Item 28							.70	
Item 29								.60
Item 30								.90
Item 31								.85
Item 32								.55

Note. Figures represent standardized factor loadings.

### Study 2 discussion

The results of Study 2 reduced our over-representative item list into a more concise measure of four items per dimension. These results also provided robust support for the psychometric properties of this reduced item list, supporting its continued investigation.

### Study 3

The goal of Study 3 is to further support the psychometric properties of our reduced item list via CFA. By performing this analysis, we arrive at our final measure.

#### Study 3 Method

##### Study 3 Participants

Participants were recruited from Prolific. We included three attention checks and excluded participant responses if they failed more than one. This resulted in the removal of 3 participants, producing a final sample size of 409 (age  $\bar{x}$  = 35.03, age  $SD$  = 12.55, 50% female, 51% South Africa, 15% United Kingdom, 15% United States; each other country <3% of total).

##### Study 3 measures

**Reduced Item List.** We administered the reduced list of 32 items.

##### Study 3 results

We conducted our CFA using a maximum likelihood estimation method and a full information maximum likelihood missing data approach. Initially, we tested whether our measure should be assessed as eight covaried dimensions or eight dimensions within a second-order

construct. The covaried model ( $AIC = 37,371$  &  $BIC = 37,869$ ) produced improved model fit relative to the second-order model ( $AIC = 37,491$  &  $BIC = 37,908$ ), as lower AIC and BIC values indicate the superiority of non-nested CFA models (Brown, 2015; Howard et al., 2025; Kline, 2023). For this reason, we further interpreted the covaried model.

Our model initially produced marginal fit ( $SRMR = .05$ ,  $RMSEA = .07$ ,  $CFI = .92$ ,  $RNI = .92$ ,  $\chi^2 = 1366$ ,  $df = 436$ ). When inspecting the modification indices, adding covariance between one pair of error terms could significantly improve model fit. Authors recommend adding error covariances when items load onto a common factor and their additional shared variance can be reasonably explained. When inspecting the pair with a large modification index, the two items loaded onto a common factor, and the two items had similar wordings that may explain their heightened covariance. Because this variance could be explained, we added covariances between the one pair of error terms with the largest modification indices, as these were significantly larger than the remaining modification indices. The revised model produced model fit indices that met widespread cutoffs ( $SRMR = .05$ ,  $RMSEA = .06$ ,  $CFI = .95$ ,  $RNI = .95$ ,  $\chi^2 = 1074$ ,  $df = 435$ ). The item factor loadings are provided in Table 3, and correlations and Cronbach's alphas are provided in Supplemental Material A. Each item produced a factor loading of .68 or above, and each dimension produced a Cronbach's alpha of .85 or greater. These results provide strong support for the psychometric properties of the reduced item list.

##### Study 3 discussion

Study 3 provided several insights regarding the reduced item list. Our results found that a model with eight covaried dimensions produced improved model fit relative to a model that subsumed each dimension within a second-order factor. This finding indicates that the eight dimensions should be interpreted as relatively independent perceived barriers to preventive veterinary consultations, rather than

**Table 3**  
Confirmatory Factor Analysis Results.

	Healthy	Cost	Busy	Transportation	Unneeded	Unavailable	Unaware	Uncaring
Item 1	.70							
Item 2	.88							
Item 3	.72							
Item 4	.85							
Item 5		.92						
Item 6		.95						
Item 7		.73						
Item 8		.68						
Item 9			.91					
Item 10			.91					
Item 11			.93					
Item 12			.90					
Item 13				.85				
Item 14				.93				
Item 15				.94				
Item 16				.92				
Item 17					.88			
Item 18					.95			
Item 19					.91			
Item 20					.72			
Item 21						.91		
Item 22						.96		
Item 23						.86		
Item 24						.73		
Item 25							.80	
Item 26							.72	
Item 27							.80	
Item 28							.76	
Item 29								.86
Item 30								.86
Item 31								.92
Item 32								.68

Note. Figures represent standardized factor loadings.

conceptualized as different aspects of barriers in general. In other words, the dimensions should be tested as independent predictors rather than averaged together into a single predictor. Also, our results provided significant psychometric support for the reduced item list, as it produced appropriate model fit via CFA. Given the significant evidence that the reduced item list produces our intended factor structure, we henceforth label it the Perceived Barriers to Preventive Veterinary Consultations (PBPVC) Scale (Appendix A).

#### Study 4

Our prior studies produced the finalized PBPVC. Study 4 investigates the convergent validity, concurrent validity, discriminant validity, and utility of our measure to further support its construct validity. To assess convergent and concurrent validity, we identified scales used in prior studies that measure individual barriers in isolation, and we assessed the extent that these measures related to the PBPVC dimensions. These scales included a measure of concerns about pet illnesses (Park et al., 2021), which is expected to negatively relate with Uncaring; a measure of general pet well-being, which is expected to negatively relate with Uncaring, Unneeded, and potential other dimensions as an indicator of concurrent validity; and a measure of barriers to accessing veterinary care, which includes seven single-item representations of barriers closely associated with Healthy, Cost, Busy, Transportation, Unneeded, and Unavailable. Lastly, we administered an indicator of preventive veterinary consultation frequency in Studies 2, 3, and 4. We assess the extent that our dimensions explain variance in this particularly relevant outcome.

#### Study 4 procedure

#### Study 4 participants

Participants were recruited from Prolific. We included three atten-

tion and excluded participant responses if they failed more than one. One participant was removed, producing a final sample size of 157 (age  $\bar{x}$  = 37.89, age SD = 14.11, 51% female, 100% United States).

#### Study 4 measures

**Perceived Barriers to Preventive Veterinary Consultations Scale.** We administered the 32-item PBPVC Scale.

**Pet Illness Concern.** We used the 17-item scale of Park et al. (2021) to measure participants' concerns for their pets regarding a variety of illnesses. The scale lists conditions (e.g., vomiting and weight loss), and we asked participants to indicate the extent that they would be concerned about the conditions on a scale of 1 (Not at All Concerned) to 5 (Very Concerned).

**General Pet Well-Being.** We administered the three-part scale of Mwacalimba et al. (2020) to measure aspects of general pet well-being. The scale first asks 15 questions regarding specific aspects of pet well-being, including, "My pet enjoys life" and "My pet moves normally." Participants responded on a scale from 1 (Strongly Disagree) to 7 (Strongly Agree). Second, the scale includes two questions about pet health since the last veterinary evaluation and when first acquired, and participants answered on a scale of 1 (Worse) to 5 (Better). Third, the scale includes a single item that asks participants to indicate the current quality of life for their pet on a scale from 1 (Poor) to 10 (Excellent). We treated these three sections as independent measures.

**Barriers to Accessing Veterinary Care.** We gave participants the measure of Mueller et al. (2018) to gauge barriers to accessing veterinary care. This scale includes seven single-item measures of perceived barriers. While single-item measures have often been criticized (see Allen et al., 2022), this measure is the closest indicator of convergent validity for many of the PBPVC Scale dimensions, indicating that its application is ideal in the current context. Example items are, "Veterinary care is too expensive" and "I do not have time to bring my pet to the

vet.” Participants responded on a scale from 1 (Strongly Disagree) to 7 (Strongly Agree).

**Preventive Veterinary Consultation Frequency.** In each sample, we asked each participant their number of pets and frequency of taking each pet for preventive veterinary consultations. We coded these responses for all participants who reported owning cats and/or dogs alone, as preventive veterinary consultations frequencies differ for other animals. Participants who never took their pets for preventive veterinary consultations were coded as 0, and participants who took their pets for preventive veterinary consultations once a year were coded as 1. All other responses were coded in increments relative to these responses. For instance, those who attended preventive veterinary consultations every other year were coded as .50, whereas those who attended preventive veterinary consultations twice a year were coded as 2. Also, we coded the average frequency that participants reported taking all their pets. For example, if a participant reported attending preventive veterinary consultations twice a year for one pet (2) and never for another pet (0), we took the average of these responses (1).

**Study 4 results**

Correlations and Cronbach’s alphas are provided in Supplemental Material A. Table 4 provides the regression results between the PBPVC Scale dimensions and the measures of pet illness concern, pet well-being, and barriers to accessing veterinary care. The most conceptually relevant dimension produced a statistically significant effect with each indicators of concurrent and convergent validity, as described below. No heterotrait-monotrait ratio included one within its confidence interval, supporting the discriminant validity of the PBPVC Scale dimensions. These results together strongly support the construct validity of the PBPVC Scale

One dimension significantly and negatively related to pet illness concern, which was Unneeded ( $\beta = -.33, p = .01$ ). Of the measures of general pet well-being, Uncaring significantly and negatively related to pet well-being ( $\beta = -.40, p < .01$ ) and quality of life ( $\beta = -.27, p < .01$ ); Cost significantly and negatively related to pet health ( $\beta = -.26, p < .01$ ) and quality of life ( $\beta = -.28, p < .01$ ); and Unneeded significantly and negatively related to pet health ( $\beta = -.27, p < .01$ ). Of the single-item measures of barriers to accessing veterinary care, Cost significantly and positively related to perceptions that veterinarians are too expensive ( $\beta = .72, p < .01$ ); Unavailable significantly and positively related to perceptions that no veterinarians are available nearby ( $\beta = .72, p < .01$ ); Healthy ( $\beta = .27, p < .01$ ) and Unneeded ( $\beta = .49, p < .01$ ) significantly and positively related to perceptions that veterinarians are not needed when pets are healthy; Busy ( $\beta = .47, p < .01$ ) and Unneeded ( $\beta = .28, p < .01$ ) significantly and positively related to perceptions that participants do not have time to take their pet to the vet; Transportation ( $\beta = .48, p < .01$ ) and Unavailable ( $\beta = .33, p < .01$ ) significantly and positively related to perceptions that transportation to the veterinarian is difficult; Unavailable ( $\beta = .37, p < .01$ ) significantly and positively related to perceptions that veterinarians are difficult to understand; and Busy ( $\beta = .36, p < .01$ ) and Unavailable ( $\beta = .32, p < .01$ ) significantly and positively related to perceptions that veterinarians have restrictive hours.

Table 5 presents the regression results between the PBPVC Scale dimensions and frequency of preventive veterinary consultations. Cost (Study 2,  $\beta = -.27, p < .01$ ; Study 3,  $\beta = -.21, p < .01$ ) and Unneeded (Study 2,  $\beta = -.31, p < .01$ ; Study 3,  $\beta = -.37, p < .01$ ) significantly and negatively related to frequency in two of three studies. Unaware significantly and negatively related to frequency in one study (Study 3,  $\beta = -.24, p < .01$ ). These results support the utility of the scale, as the dimensions explained a significant amount of variance in frequency of preventive veterinary consultations in each of the three samples.

**Table 4**  
Regression Results of Study 4.

	Pet Illness Concern	Pet Well-Being	Pet Health	Pet Life	Pet Quality of Life	Single-Item Expensive	Single-Item No Vet	Single-Item Healthy	Single-Item Time	Single-Item No Transportation	Single-Item Confusion	Single-Item Bad Hours
1.) Healthy	.05	.10	.03	.07	.07	-.01	.08	.27**	-.05	.04	.01	-.48**
2.) Cost	-.05	-.09	-.26**	-.28*	-.28*	.72**	.06	.06	-.19*	-.02	.06	.08
3.) Busy	-.22	-.13	-.04	.08	.08	-.18	-.10	-.10	.47**	.17*	-.10	.36**
4.) Transportation	.01	.08	.06	.02	.02	.01	-.09	.01	.18	.48**	-.03	.08
5.) Unneeded	-.33*	-.06	-.27*	.04	.04	.09	-.12	.49**	.28**	.06	.02	.06
6.) Unavailable	-.05	-.03	.21*	.05	.05	.13	.72**	.05	.08	.33**	.37**	.32**
7.) Unaware	.22	-.03	-.11	.03	.03	-.06	-.01	.11	.06	-.15	.14	.06
8.) Uncaring	.14	-.40**	.17	-.27*	-.27*	-.05	-.02	-.00	-.08	.02	.14	-.09
R <sup>2</sup>	.10	.22	.20**	.08	.08	.49**	.55**	.59**	.48**	.64**	.46**	.42**

Note. Figures represent standardized beta coefficients, with the exception of the bottom row that represents the total R-square value.

\*  $p < .05$

\*\*  $p < .01$

**Table 5**  
Regression Results of Studies 2, 3, and 4.

	Study 2	Study 3	Study 4
1.) Healthy	-.09	-.10	-.18
2.) Cost	-.27**	-.21**	-.15
3.) Busy	.08	.08	.26*
4.) Transportation	.03	.15*	.00
5.) Unneeded	-.31**	-.08	-.37**
6.) Unavailable	.12	-.02	.10
7.) Unaware	-.11	-.24**	-.14
8.) Uncaring	.20**	.14*	.25*
R <sup>2</sup>	.29**	.14**	.25**

Note. Figures represent standardized beta coefficients, with the exception of the bottom row that represents the total R-square value.

\*  $p < .05$

\*\*  $p < .01$

#### Study 4 discussion

The results of Study 4 supported the convergent validity, concurrent validity, discriminant validity, and utility of the PBPVC Scale. First, each dimension produced significant and strong relations with each alternative measure of the same or closely related constructs, supporting the convergent validity of the PBPVC Scale. Second, each dimension also produced relations in the expected direction with each alternative dimension and the additional measures, supporting the concurrent validity of the PBPVC Scale. Third, each dimension produced heterotrait-monotrait ratio confidence intervals that excluded one with each other measure, supporting the discriminant validity of the PBPVC Scale. Fourth, the dimensions explained a significant and sizable amount of variance in the frequency of preventive veterinary consultations, supporting the utility of the PBPVC Scale. Together, the current results suggest that the PBPVC Scale is a valuable tool for future research involving client perceptions of barriers to preventive veterinary consultations.

#### General discussion

Despite the known benefits of preventive veterinary consultations to both pets and people, many pet owners do not regularly take their pet to a veterinarian (Belshaw et al., 2018; Evason et al., 2021; Mueller et al., 2018). This contradictory behavior has spurred the attention of many, leading researchers to discover that perceived barriers are among the largest reasons that people do not attend regular preventive veterinary consultations (Evason et al., 2021; Mueller et al., 2018; Wallis et al., 2024). Although this scope of research has provided many significant advancements, it is also composed of studies that investigate one or two perceived barriers in isolation, which poses several significant drawbacks for the reliable interpretation of results. Namely, it cannot be assumed that the significant relations of a perceived barrier tested in isolation replicate when tested alongside other perceived barriers, and it likewise cannot be assumed that the measures of perceived barriers applied in isolation would produce appropriate psychometric and validity evidence when applied with other measures of perceived barriers.

The current article addresses these limitations in the present literature by creating the PBPVC Scale, which is an eight-dimension measure representing the most commonly expressed perceived barriers to preventive veterinary consultations. Via our four-study process, we showed that the PBPVC Scale produces appropriate psychometric and validity evidence, supporting that it can accurately measure multiple perceived barriers together. Our studies also found that the scale explains a significant amount of total variance in relevant outcomes, wherein only certain dimensions produced significant effects when studied together. Namely, the dimensions of Cost and Unneeded consistently produced statistically significant relations, while the other dimensions produced few – if any – statistically significant effects. This finding suggests that

future researchers should place a particular focus on these two dimensions to better understand why people may not attend regular preventive veterinary consultations, as they pose the greatest explanatory capabilities. Therefore, the current article centers this scope of literature, and we recommend specific theoretical integrations that may be fruitful for future researchers.

#### Cost

The perceived barrier that produced the most consistent significant relations with relevant measures was Cost, which refers to the perception that preventive veterinary consultations are too expensive. Several authors have suggested that cost may be a primary barrier to preventive veterinary consultations, but few have performed focused investigations on client perceptions of cost (Belshaw et al., 2018; Groves et al., 2022; Kipperman et al., 2017). Among these, Groves et al. (2022) found that almost one-fourth of veterinarian appointments include a discussion of cost, wherein about three-fourths of these conversations focus on the cost relative to the time or service being offered and about one-eighth of these conversations focus on the cost relative to pet health and well-being. The discussion of cost can also have profound impacts on not only the clients and pets, but they also affect veterinarians. Kipperman et al. (2017) found that more than half of surveyed veterinarians reported that “economic limitations affected their ability to provide the desired care for their patients on a daily basis” (p. 1), and many directly cited these economic limitations as an important contributing factor to veterinarian burnout. Based on these cumulative results (including the current investigation), it is clear that perceptions of cost have a powerful impact on pets, clients, and veterinarians.

We recommend two theoretical perspectives that may serve as useful lenses to understand the perceived barrier of Cost. First, theories of rational behavior propose that people weigh the benefits and detriments of their actions, and people perform behaviors with the greatest benefits relative to detriments (Hastie and Dawes, 2010; Thaler, 2016). These theories, often applied in both psychology and economics, differ based on the proposed cognitive processes that lead people to their decisions as well as whether and when people are biased in their judgements. In studying Cost, future researchers could assess to what extent people view the price of preventive veterinary consultations as a detriment relative to the benefits of their pets’ health and well-being, producing an optimized model (Hastie and Dawes, 2010; Thaler, 2016). Assessments could be made regarding the value that people place on aspects of their pets’ well-being, wherein researchers could determine the optimal price to maximally encourage the attendance of preventive veterinary appointments while still satisfying revenue necessities.

Second, marketing theory regularly identifies mechanisms that attract customers despite costs, and these theories could be applied to identify avenues to encourage preventive veterinary consultations. For instance, theories have been developed to elucidate the dynamics of social marketing, cause-related marketing, pay-what-you-want strategies, and transparent pricing (Carter and Curry, 2010; Mohan et al., 2020; Parris et al., 2016). We suggest the latter of these, transparent pricing, may be particularly relevant to preventive veterinary consultations. Transparent pricing is the practice of pricing information to customers about how costs are distributed between stakeholders, customer utility is greater when costs are transparent and a higher share of revenue is allocated to an entity with particular importance to the customer (Carter and Curry, 2010; Mohan et al., 2020; Parris et al., 2016). In the case of preventive veterinary consultations, a customer could be provided with information regarding the cost distribution of a diagnostic test between the veterinary clinic, diagnostic laboratory, product distributor, and other stakeholders. For clients with particularly positive relations with their veterinarian, demonstrating that the associated costs benefit the veterinary practice may encourage clients to more regularly attend preventive veterinary consultations without altering actual costs, especially if paired with information regarding

health benefits for pets.

These are only two potential theoretical directions for future research on perceived barriers to preventive veterinary consultations, but they are particularly relevant due to the observed importance of Costs in the present investigation. We urge future researchers to identify which theoretical lenses may be ideal for studying this specific perceived barrier. We also call for researchers to measure the other PBPVC dimensions, even when testing models that solely explicate the dynamics of cost. Accounting for these other perceived barriers provides a better depiction for the true impact of Cost, as it accounts for their shared predictive variance.

### Unneeded

The dimension of Unneeded also produced many significant relations with relevant measures, which refers to the perception that preventive veterinary consultations do little to improve the well-being of pets. Compared to Cost, fewer authors have suggested that Unneeded is a primary barrier to preventive veterinary consultations, and discovering the significant effects of this dimension represents a primary contribution of the current article. Of those that have, [Belshaw et al. \(2018\)](#) qualitatively identified that many clients questioned the necessity of using any preventative medicines recommended during consultations, but both [Belshaw et al. \(2018\)](#) and [Mueller et al. \(2018\)](#) recognized that this uncertainty often emerges as a lack of trust in veterinarians. That is, clients often question whether preventive veterinary consultations are necessary, causing them to believe that they are being sold unneeded services.

Given the importance of Unneeded observed in the current article, we recommend two primary directions for future research. First, we call for future researchers to quantitatively assess whether Unneeded negatively relates to trust when accounting for the other PBPVC Scale dimensions. Observing this relation would provide evidence for the suggestions of prior authors ([Belshaw et al., 2018](#); [Mueller et al., 2018](#)), enabling future researchers to more reliably apply the broader proposals regarding trust and preventive veterinary consultations. Namely, these prior authors have argued that a distrust of veterinarians is the reason that clients may feel that preventive veterinarian consultations are not needed, as clients may feel that untrustworthy veterinarians are only attempting to sell unneeded services. Testing a model wherein Unneeded mediates the relation of trust and frequency of preventive veterinarian consultations could validate the propositions of prior authors ([Belshaw et al., 2018](#); [Mueller et al., 2018](#)), representing a significant advancement by opening novel avenues for theoretical development.

Second, research on preventive health behaviors has repeatedly identified perceptions that the behaviors are ineffective as a primary predictor of these preventive behaviors ([Ahmadi et al., 2022](#); [Howard, 2020](#); [Taylor and Asmundson, 2021](#)). For instance, people were significantly less likely to wear face masks during the COVID-19 pandemic if they believed that they were ineffective for preventing infection ([Ahmadi et al., 2022](#); [Howard, 2020](#); [Taylor and Asmundson, 2021](#)). We suggest that future researchers should adopt theoretical perspectives applied in these prior investigations of preventive behaviors to study the relations of Unneeded. Of note, the COM-B model identifies three characteristics necessary for behavior change: capability, opportunity, and motivation ([Michie et al., 2014](#); [Michie et al., 2011](#)). All three must be satisfied to produce meaningful behavioral changes. While multiple PBPVC Scale dimensions may relate to these three COM-B dimensions, we specifically recommend that Unneeded may be related to motivation, as clients may be unmotivated to perform the behavior if they feel that it does not produce meaningful outcomes. If found to produce relations as predicted by the COM-B model, future research could more broadly assess whether the COM-B model explains the more nuanced dynamics of perceived barriers to preventive veterinary consultations

### Alternative dimensions

While Cost and Unneeded produced the most consistent significant relations many of the other dimensions provided intermittent significant effects, and probing these findings can likewise advance relevant theory and practice. Unaware produced a significant relation with frequency of preventive veterinary consultations in Study 3, which included a sample representing many different countries. This suggests that messaging regarding the importance of preventive veterinary consultations may not be widespread in many countries, signaling a potential avenue to improve pet well-being around the world. Likewise, Uncaring did not produce a significant bivariate relation with frequency of preventive veterinary consultations in any study, but it counterintuitively produced a positive relation with this outcome in all three studies when tested via multivariate analyses. This finding may have arisen due to controlling for the other dimensions, and future researchers should assess whether specific dimensions produced this effect; however, it is also possible that these effects represent the “Grumpy Dad” phenomenon ([Muldoon et al., 2015](#); [Myers, 2020](#); [Wibberley, 2019](#)). That is, a common cliché is that fathers are angry when their family adopts a pet due to the added burden, but they then become the family member that bonds most with the pet. While some participants may report that they are uncaring, they may be more likely to care for their pet. Future research is needed to test this assertion before it could be reliably assumed.

Additionally, our created multidimensional conceptualization naturally lends itself to the creation of adaptive interventions, which are optimized interventions that provide components that are specifically catered to participant characteristics ([Patrick et al., 2021](#); [Wang and Miller, 2020](#)). When applying an adaptive intervention, participant characteristics are first measured. Participants are then given intervention components for any characteristics with particularly detrimental scores. In the context of the current article, an adaptive intervention could be created wherein participants first complete the PBPVC Scale, and their standings on the dimensions are calculated. They could then be given intervention components for any dimension with particularly elevated responses. By doing so, participants would be provided only components believed to particularly benefit them, resulting in more effective interventions with fewer associated costs. Thus, the present investigation may lead to novel practical applications.

### Limitations

As with any investigation, certain limitations should be recognized. Each of our studies utilized a self-report methodology. We chose this design because perceived barriers are likely best assessed via self-reports; however, this design assumed that participants provide accurate responses, which may not always be possible due to (sub)conscious response biases (e.g., social desirability). For this reason, future researchers should replicate the current results with alternative research designs, such as experimental or multi-source studies. Although we expect the current results to be consistent with alternative research designs, replicating the present results can nevertheless support the robustness of our findings.

Each of our studies also utilized a common sampling source, the Prolific online platform. This platform enables the collection of data from diverse participants across the United States, and studies have supported the validity of results obtained from samples taken from Prolific ([Krendl et al., 2024](#); [Peer et al., 2022](#)). At the same time, Prolific often produces samples that are younger, more urban, and more technologically savvy than the general adult population. While our samples produced average ages that were similar to the general adult population in the United States, future researchers should replicate our findings in alternative contexts. They should test the psychometric properties and validity of our measure in alternative countries, and translation efforts should be undertaken to enable the application of our measure in other languages ([Cha et al., 2007](#)). These efforts and similar others could

provide significant support for the robustness of our measure, and they could also provide nuanced insights into the reasons that people may not attend preventive veterinarian consultations in contexts around the world.

The items in our measure specifically refer to yearly vet appointments. We chose this language based on our pilot testing. Participants readily understood the meaning of yearly vet appointments, whereas they expressed confusion regarding preventive veterinary consultations or regular veterinary consultations; however, future researchers may aim to modify our measure to specially assess perceived barriers to regular veterinary consultations, and these researchers should investigate the psychometric properties of our measure with any modifications. While we expect a modified measure to produce similarly superb psychometric properties, this reinvestigation could nevertheless support the robustness of our created measure.

## Conclusion

Prior research has demonstrated a significant interest in the study of perceived barriers to understand why people do not regularly attend preventive veterinary consultations; however, a tension evident in this literature is the investigation of specific barriers rather than the holistic assessment of multiple barriers, causing doubts about the actual effect of perceived barriers on relevant outcomes. The current article resolved this tension by creating the PBPVC, which is an eight-dimensional measure that represents the most commonly expressed barriers that people perceive regarding preventive veterinary consultations. Our results strongly supported the psychometric properties and validity of the PBPVC, indicating that future researchers can reliably apply the measure. Our results also demonstrated that Cost and Unneeded produced the most consistent relations with outcomes, and we recommended specific theories may be apt for future investigations on these two perceived barriers to preventive veterinary consultations. Given these findings, the current article provides not only a useful tool for future research to advance in a more accurate manner, but we also provide novel theoretical insights that expands directions for future research. Therefore, the present article may be the first of many on the multidimensional investigation of perceived barriers to preventive veterinary consultations.

## CRedit authorship contribution statement

**Matt Howard:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

## Declaration of Competing Interest

The authors have no competing interest to declare.

## Appendix A

### *Perceived Barriers to Preventive Veterinary Consultations Scale*

Please indicate the extent that you disagree to agree that each item below represents a reason that you may not take your pet for a yearly checkup at a veterinarian.

- 1 – Strongly Disagree
- 2 – Disagree
- 3 – Slightly Disagree
- 4 – Neither Disagree or Agree
- 5 – Slightly Agree
- 6 – Agree
- 7 – Strongly Agree

In the items below, the word “vet” refers to veterinarians. Answer

each of the following items as if it began with, “When I do not take my pet for a yearly checkup at a veterinarian, it is because...”

### *Healthy*

- 1) My pet is too healthy to need yearly vet appointments.
- 2) The only reason to take a pet to the vet is if they are injured or sick.
- 3) The well-being of my pet is too good to need yearly vet appointments.
- 4) I only take my pet to the vet if there is something wrong with them.

### *Cost*

- 1) I do not have the financial resources for yearly vet visits.
- 2) I do not make enough money to take my pet to the vet every year.
- 3) Yearly vet appointments cost too much money.
- 4) The costs of yearly vet appointments are too high.

### *Busy*

- 1) I am too busy to go to the vet every year.
- 2) It is difficult to fit a yearly vet visit into my schedule.
- 3) I do not have the time to take my pet to the vet each year.
- 4) Due to my other commitments, I cannot go to a yearly vet appointment.

### *Transportation*

- 1) I do not have transportation to take my pet to the vet each year.
- 2) It is difficult to manage transportation for yearly vet checkups.
- 3) Getting transportation to take my pet to the vet each year is too difficult.
- 4) I do not have a reliable form of transportation for yearly vet appointments.

### *Unneeded*

- 1) Pets do not need to go to the vet every year.
- 2) Yearly vet appointments are not needed.
- 3) There is no reason to schedule yearly vet appointments.
- 4) Yearly appointments with a vet do not improve the health of pets.

### *Unavailable*

- 1) There are no vets close to me for a yearly checkup.
- 2) I do not have any vets in my area for a yearly appointment.
- 3) The closest vet is too far away for a yearly checkup.
- 4) It is very difficult to find a vet for a yearly appointment.

### *Unknowledgeable*

- 1) I do not know what a vet would do for a pet in a yearly appointment.
- 2) I am generally unknowledgeable of yearly vet appointments.
- 3) I have never talked to anyone about taking my pet to the vet each year.
- 4) I was not aware that taking pets to a vet every year is a practice.

### *Uncaring*

- 1) I do not care about my pet enough to take them to the vet each year.
- 2) I am generally not attached to my pet enough to go to yearly vet appointments.
- 3) I do not take my pet to yearly vet visits because I am relatively unattached to them.
- 4) I value other activities more than yearly vet appointments.

**Note.** When administering the scale, remove the dimensional labels.

## Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.tvjl.2026.106714.

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