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Effect of attire on client perceptions of veterinarians

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Abstract

This study examined the effect that veterinarian attire and gender had on clients' perceptions of veterinarians in a large academic specialty hospital. Clients volunteered to answer a survey in the small animal waiting area over a 3-month period. The survey consisted of demographic information, information about the nature of their appointment with their pet, and questions regarding clients' levels of comfort with and the perceived trustworthiness of a Caucasian male and Caucasian female model in four different types of attire: surgical scrubs, surgical scrubs with white lab coat, business casual, and business casual with white lab coat. Relevant effects of interest were estimated using linear mixed models.

Five hundred and five clients participated in the survey, yielding a total of 6,217 completed survey questions. Clients perceived veterinarians wearing white lab coats as more competent and reported more comfort with those veterinarians ($P < 0.0001$). When comparing surgical scrubs with no white lab coat to business attire with no white lab coat, surgical scrubs resulted in higher perceived competence and comfort levels ($P < 0.0001$). Wearing a white lab coat over both surgical scrubs and business casual increased clients' perceived competency and comfort levels compared to not wearing a white lab coat.

Keywords

Client attitudes; Competency; Education; Uniform; Veterinarian-client relationship

Introduction

The veterinarian-client relationship is critical in the delivery of care in veterinary medicine, perhaps more so than the physician-patient relationship (Grand et al., 2013; Hughes et al., 2018). Multiple studies show better physician-patient relationships are linked to better

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Conflict of interest statement

None of the authors has any financial or personal relationships that could inappropriately influence or bias the content of the paper.

compliance, increased patient satisfaction, and clinical outcomes (Molassiotis et al., 2007; Grand et al., 2013; Petrilli et al., 2018). Few studies in veterinary medicine have examined factors contributing to the veterinarian-client relationship and its effects on outcomes. However, a couple of studies have suggested that improving the relationship, particularly by increasing trust between the veterinarian and client, can have positive effects (Jansen et al., 2010; Grand et al., 2013).

One factor that influences clients' perceptions of their veterinarian, and therefore the veterinarian-relationship, is the veterinarian's appearance. In physician-based literature, many studies examine the impact of attire on patient attitudes towards doctors, with a variety of results. A comprehensive review of the literature (Petrilli et al., 2015) examining 30 studies in 14 countries found that patients had a preference, or that attire influenced patient perception, in 21 of 30 studies. Patient perceptions most commonly assessed were: confidence in their physician, perceived competence, comfort, and patient satisfaction. In studies in which patients professed a preference, physician wearing a white lab coat or formal attire (definitions vary by study) were almost always preferred. However, patient preferences may vary by setting. Some studies suggest that in the acute care setting, preferences towards a white lab coat decrease, while that preference increases in the inpatient setting (Petrilli et al., 2015). White lab coats have also been associated with higher empathy in doctor-patient relationships (Chung et al., 2012). Interestingly, while not all studies agree on that attire affects patient perceptions, in one report, patients unanimously agreed with the statement 'a surgeon's appearance influences my opinion of my medical care' (Major et al., 2005).

Only three studies have examined veterinarian attire and client perceptions in veterinary medicine. In the first, 154 clients of a 24-h small animal emergency clinic were surveyed about their preferences of dress for veterinarians in a variety of situations: routine physical examination, emergencies, discussion of sensitive information, and which doctor they would trust the most (Sugerman-McGiffm et al., 2018). Clients were also asked about trust, confidence, perceived competence, degree of caring and compassion, and perceived responsibility of the veterinarians. Photos were used to demonstrate business (dress shirt/tie for male, blouse/dress pants for female), professional (business with white lab coat), surgical (scrubs), clinical dress (scrubs and white lab coat) and smart casual (khakis/polo for male, jeans/sweater for female). Interestingly, while most clients indicated no preference regarding attire, 25% of surveyed clients agreed that their opinion of the care given was influenced by what their veterinarian wears. In a second study, 238 clients visiting a small animal specialty clinic were asked to choose which of five outfits they would prefer their doctor to be wearing in a variety of situations, and also asked about trust, confidence, competency, and responsibility (Robb et al., 2019). In this study, male respondents were evenly divided between no preference, clinical (white lab coat over scrubs) and professional (white lab coat over slacks/blouse/shirt with necktie) attire while female respondents did not demonstrate a particular preference. While 70% of respondents in this study stated it was not necessary for veterinarians to wear white lab coats, when viewing photos, veterinarians in white lab coats were most commonly selected, perhaps indicating a subconscious bias towards white lab coats. The third, and largest study, used eight photos each of a male and female model in various combinations of formal (white shirts and black pants/skirt for the female model) and

casual (khaki pants with white polo type shirts) attire, as well as combinations of surgical scrubs with jeans and khakis, with only one option that included a white lab coat. Participants were asked to rate each photo on comfort, trust and confidence (Coe et al., 2020). In this study, attire was the only variable that affected all three questions (comfort, trust, confidence), and surgical scrubs were the most preferred outfit, followed closely by white lab coats. Interestingly, participants were recruited from local dog parks and social media solicitations rather than in the clinic.

The purpose of this study was to do a large-scale survey of the clientele of an academic teaching hospital to determine the influence of attire on client perceptions of veterinarian competence and comfort with veterinarians. A secondary objective was to determine if the gender of the veterinarian influenced these client perceptions.

Materials and methods

The study population

The questionnaire was developed in conjunction with the University of Wisconsin Survey Center using Qualtrics survey software, and the study protocol was approved by the Institutional Review Board of the University of Wisconsin-Madison. Respondents were recruited by signs placed in the University of Wisconsin Veterinary Care (UW Veterinary Care) small animal hospital waiting area. After reading an explanation of the study, respondents anonymously consented to participate in the study administered over an iPad. Respondents were asked to look at a total of eight images of the same Caucasian male and female model, each wearing four different outfits: (1) business casual (male model: shirt, tie, black trousers; female model: brown collar-less top, brown three-quarter sleeve cardigan, light tan pants) with a long white lab coat; (2) same business casual outfit without a lab coat; (3) surgical scrubs with a long white lab coat; and (4) same surgical scrubs without a lab coat (Fig. 1). Respondents then answered a question about comfort during interactions and perceived competence on a 5-point scale ranging from 'not at all' to 'extremely' (Appendix A: Supplementary material). Photos were presented to the respondents in a randomized order using software¹. At the end of the survey, clients were queried about the species of pet they were bringing in for an appointment, whether it was for a surgical or medical appointment, and which service the client was visiting. Finally, respondents were asked to provide demographic data on age, gender, ethnic background, and household income. The survey was administered over a 3-month period from June to September 2017. Clients were asked to respond to the survey only once.

Statistical methods

Prior to the statistical analysis, the respondent's race was categorized as a binary variable (non-Hispanic /Latino white or under represented group, URG) to reduce model complexity. The respondent's pet variable was restructured such that the 'Other' category denoted all animals other than cats or dogs. The 5-point Likert scale administered on the surveys was

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¹See: Qualtrics: randomization at <https://www.qualtrics.com> and <https://www.qualtrics.com/support/surveyplatform/survey-module/block-options/question-randomization/> (Accessed 21 Sept 2020).

converted to numerical values for the statistical analysis, where higher values (5 being the highest) coded for high levels of perceived competence and situational comfort.

To estimate the effect of veterinarian attire on perceived competence and situational comfort, two separate linear mixed models (LMM) were fit to the data using the lme4 package ². The central hypotheses were addressed via modeling the main and interactive effects of white lab coat presence (yes / no) and underlying attire (business casual / surgical scrubs). Both models were further adjusted for respondent gender, income, age, race, respondent pet species and gender of the model veterinarian in the photo. To simplify the statistical models, the respondent income variable was included as a numerical covariate (refitting the models with the variable as both an ordered and unordered factor had no significant impact).

After fitting the models to the data, 95% confidence intervals were estimated via parametric bootstrapping (2,000 iterations) and *P*-values were calculated using the Kenward-Roger approximation as implemented in the pbkrtest package ³. An analysis of the residuals revealed no significant departure from model assumptions and the random effects were found to be approximately normally distributed for both models.

Results

Five hundred and seven clients started the survey, with 505 completing the survey. Those 505 clients generated 8,080 survey responses, 6,217 of which were complete and used in the statistical analysis. The majority of clients brought dogs in for examination (84.3%), while the remainder were cats and other pets (Table 1). Over 60% of clients had household incomes from \$50,000 to \$150,000/year, and female clients made up 75% of respondents. The majority of clients were there for a medical appointment rather than surgical, and 93% were Caucasian. Oncology clients represented the largest group, followed by internal medicine clients (Table 2).

When asked about perceived competence of the pictured veterinarians, overall, veterinarians pictured without a white lab coat were rated approximately 0.32 points (out of a 5-point scale) lower on average (95% CI -0.38 to -0.27; *P* < 0.0001). For the veterinarians pictured with a white lab coat, no significant difference was found if they were wearing surgical scrubs when compared to those wearing business casual, with respect to perceived competence (*P* = 0.738). However, among veterinarians pictured without a white lab coat, those pictured in business casual attire were rated 0.28 points lower on average (95% CI -0.35 to -0.20; *P* < 0.0001) than the veterinarians pictured in surgical scrubs. Both trends can be seen in Fig. 2 and Table 3.

Overall, respondents rated the male veterinarian as slightly more competent, 0.06 points on average, compared to the female veterinarian (95% CI 0.02 to 0.10; *P* = 0.005). Notably, this difference was driven by a decrease in ranking of the female model in business casual attire

²See: lme4 package: linear mixed-effects models using Eigen and S4, version 1.1-13 in R (v. 3.5.1) <https://cran.r-project.org/package=lme4> (Accessed 7 September 2020)

³See: pbkrtest package: parametric bootstrap and Kenward Roger based methods for mixed model comparison version 0.4-7 <https://cran.r-project.org/package=pbkrtest> (Accessed 7 September 2020)

with no white lab coat (Fig. 1, Fig. 3). Interestingly, both respondent age and race affected perceived competency, with older respondents and those from URGs reporting decreases in perceived competency of veterinarians. An increase in respondent age of 10 years was associated with a 0.06 points decrease in competency score (95% CI -0.10 to -0.02 ; $P=0.002$) and non-Hispanic / Latino white respondents rated perceived competence 0.37 points higher on average compared to those from URGs (95% CI 0.116 to 0.60 ; $P=0.002$). There was no statistical difference between pet type (other vs. cats and dogs) for perceived competency scores. Neither gender nor income of the respondents were associated with perceived competence.

When asked how comfortable they would feel interacting with the veterinarian during an appointment overall, veterinarians pictured without a white lab coat were rated 0.23 points lower on average than those pictured with a white lab coat (95% CI -0.29 to -0.18 ; $P<0.0001$). Among veterinarians pictured with a white lab coat, there was no significant difference in perceived comfort level between those wearing surgical scrubs compared to those wearing business casual attire ($P=0.631$). When comparing veterinarians pictured without a white lab coat, once again it was found that respondents rated veterinarians in business casual attire 0.28 points lower, on average, than veterinarians pictured in surgical scrubs (95% CI -0.36 to -0.20 ; $P<0.0001$). These results can be seen in Fig. 3 and Table 4.

Similar to the findings for perceived competence, perceived situational comfort decreased with respondent age where a 10-year increase in respondent age was associated with a 0.07 point decrease in comfort score (95% CI -0.11 to -0.03 ; $P<0.001$); however, neither the pet, gender nor the income of the respondent was associated with perceived comfort. Unlike perceived competence, however, there was no evidence of a difference in a client's perceived comfort between male and female veterinarians ($P=0.632$). Race was not associated with comfort score (non-Hispanic/Latino whites vs. URGs; $P=0.057$).

Discussion

This study assessed the preferences of clients who bring their pets to an academic specialty hospital in a metropolitan area of the midwestern United States of America. Our findings indicate that this population rated both genders of veterinarians significantly higher in terms of competence and comfort level when wearing a white lab coat over either surgical scrubs or business casual attire compared to the same clothing without a lab coat, although the differences in scoring were less than 1 point on a 5-point scale. While the difference was not as large as between presence or absence of lab coat, veterinarians wearing surgical scrubs alone were also given higher competence and comfort ratings than business casual attire alone. The Caucasian male veterinarian model was rated as slightly more competent than the Caucasian female veterinarian model, particularly when comparing scores for business casual attire with no white lab coat. If a white lab coat is not practical, our results suggest wearing surgical scrubs rather than business casual attire may result in higher levels of perceived competency and client comfort. It is important to note that the parameters and preferences assessed in this study were limited to the use of a Caucasian male and female veterinarian models wearing four different 'professional uniforms'. Further, the population

surveyed was animal owners who choose to bring their pets to an academic specialty hospital.

Our results differ from those of Sugerman-McGiffm et al. (Sugerman-McGiffm et al., 2018) and Robb et al. ((Robb et al., 2019) in which clients stated no preference for attire, and from the Coe et al. (2020) study in which surgical scrubs were preferred. Possible reasons for these different results include the geographic location and the type of practice. Our practice is in a midsized Midwestern town (Madison, WI), as opposed to a rural location in the Sugerman-McGiffm et al. (Sugerman-McGiffm et al., 2018) study or a suburban setting (Irvine, CA) as in the Robb et al. ((Robb et al., 2019) study. Our practice is also a primarily referral practice in an academic setting, rather than a private specialty practice or private emergency clinic. The Coe et al. (2020) study surveyed a very different population, recruiting from dog parks and via social media, which may have contributed to their differing results. The setting and type of care provided have been shown to affect attire preferences in the physician setting, with patients receiving acute care or surgery demonstrating less preference for white lab coats (Petrilli et al., 2015), which could explain the preference for lab coats in our study versus the Sugerman-McGiffm et al. (Sugerman-McGiffm et al., 2018) and Coe et al. (2020) studies. Additionally, our survey queried clients about each individual picture and required ranking for each picture, while the Sugerman-McGiffm et al. (Sugerman-McGiffm et al., 2018) and Robb et al. ((Robb et al., 2019) studies were both more complex surveys that asked clients to rank various outfits related to questions about procedures and client-doctor relationship attributes. These different methodologies may have influenced client responses. Interestingly, the Coe et al. (2020) study was the most similar to our study, in that clients were shown individual photos, and their results were closer to ours, with surgical scrubs and lab coats ranked the highest. However, out of the eight outfits each model wore in the Coe et al. (2020) study, only one involved a lab coat, which may have contributed to the differences between their study and ours, along with their different population. Asking people how they will respond in a hypothetical situation, as these studies did, can result in less valid answers as people are typically not good at predicting their behavior or feelings in the future (Fowler and Cosenza, 2008). This is demonstrated in the Robb et al. (2019) study, in which 70% of respondents stated they did not have a preference for a white lab coat, yet the outfits most commonly selected were those in which models wore white lab coats. Lastly, our study had 505 respondents, compared to 154 and 238 in the Sugarman-McGiffm et al. (Sugerman-McGiffm et al., 2018) and Robb et al. (2019) studies, respectively, which may also explain our differing results.

Some practitioners are hesitant to wear white lab coats because of the so called ‘white coat syndrome’ associated with hypertension documented in both veterinary and human patients (Belew et al., 1999; Marino et al., 2011; Cohen et al., 2019). ‘White coat syndrome’, however, is not actually attributed to the white lab coat itself, but rather the setting, with patients exhibiting increased blood pressure or other parameter abnormalities in the clinic setting versus a home setting (Pioli et al., 2018). The increased level of trust and increased perceived competence shown in this study should not be diminished by a fear of inducing ‘white coat syndrome’. Rather, veterinarians should focus on making the overall experience

a positive one for pets to avoid conditioning them to fear whatever attire the veterinarian is wearing, since the white lab coat is a neutral marker for a negative experience.

White lab coats may have originally been adopted in the nineteenth century as a symbol of goodness, healing, cleanliness and increased science in the practice of medicine, compared to the black coats physicians originally wore (Tse et al., 2015). More recently, white lab coats have been considered as source of nosocomial infections in multiple studies (Treacle et al., 2009; Banu et al., 2012; Qaday et al., 2015), so much so that in 2007 the UK's Department of Health announced a 'bare below the elbows' policy, meaning healthcare staff must wear short sleeves, no wristwatches, no jewelry and no neckties (Mahida, 2015). While it has been difficult to assess the exact effect of this policy as multiple other policies were simultaneously implemented (Mahida, 2015), some have felt that the loss of the white lab coat degraded the doctor-patient relationship, resulting in increased complaints and decreased status and respect (Dancer and Duerden, 2014; Tse et al., 2015). One study addressed this by having patients assess doctors' attire, followed by having them read a statement about infection control, and then re-assessing doctors' attire (Shelton et al., 2010). This study found that after hearing an explanation of attire recommendations based on infection control, patient preference for white lab coats diminished, with ratings for surgical scrubs and smart-casual (trousers and short sleeved shirts) increasing. Patients also expressed a desire to have physicians clearly identifiable in some manner (Shelton et al., 2010), which has been reported in other studies (Bearman et al., 2014). A prospective, controlled trial negated the concern about the white lab coat as a source of nosocomial infection by reporting that there was no difference in degree of bacterial contamination of newly-laundered short sleeve uniforms and infrequently-laundered white lab coats by the end of an 8-h day (Burden et al., 2011). This same study found no difference in bacterial or methicillin-resistant *Staphylococcal aureus* (MRSA) contamination of the wrists of physicians wearing short sleeve shirts versus white lab coats, and other publications cite conflicting information on transmission from staff to patients (Burden et al., 2011; Bearman et al., 2014; Haun et al., 2016). While more frequent laundering might allow for both client preference for white lab coats and infection control (Munoz-Price et al., 2013), the study by Burden et al. (2011) suggests clothing should be changed several times daily to truly effective in decreasing bacterial contamination of those items. Additionally, other fomites such as digital devices and stethoscopes have been found to be contaminated with bacterial pathogens, and yet these will likely continue to be used in the clinical setting (Haun et al., 2016), although disinfectant protocols are being to be developed for these items. Given the known benefits of stringent hand hygiene practices, instituting hand hygiene measures in veterinary medicine will likely be much more beneficial than dress codes to decrease infection transmission (McCalla et al., 2018; Price et al., 2018).

Clients in this study perceived the male veterinarian model as slightly more competent than the female veterinarian model, particularly when the female model wore business casual attire with no lab coat. Nearly 75% of the participating clients were female, and half of practicing veterinarians are women (Irvine and Vermilya, 2010). These findings are may be due to pervasive beliefs about gender roles and inherent bias, which can result in devaluation of women's work and competency (Cohen and Huffman, 2003). However, a large meta-analysis found nearly no differences between male and female physicians in care satisfaction

(Hall et al., 2011), despite studies showing female physicians demonstrate more aspects of patient-centered care that are associated with higher patient satisfaction. This discrepancy may exist because patients may appreciate female physician patient-centeredness; however, it is perceived as normal female behavior and not associated with competence (Roter and Hall, 2015). One particular limitation of the difference in reaction to genders is the lack of consensus on what constitutes ‘business casual’ attire for women. In the study by Coe et al. (2020), when queried on the appropriateness of a skirt, 55% of respondents ranked it as least preferred. The Coe et al. (2020) study, which utilized more standardized outfits, found no difference in confidence between male and female veterinarian models, although female models were ranked slightly higher in the categories of trust and comfort. Clients likely have individual responses to different outfits based on their prior experiences, and the difference noted between genders may reflect differences in individual opinions about the clothing rather than the gender. This lack of uniformity in women’s attire may be why the difference between genders was most notable between the female model in business casual attire with no lab coat compared to surgical scrubs with no lab coat. Additionally, in our study, the slacks worn by the female model appeared to be chinos in the photos, which may have been rated as less formal by respondents, and the clothes were not perfectly matched between models. Future studies with strictly standardized outfits between male and female models may also have somewhat different results.

The findings that older clients perceived less comfort and less competency, whilst clients in URGs tended perceived less competency, of veterinarians is important to consider in clinical practice. Both the male and female veterinarian models were less than 50 years of age; although the blocking of models’ faces may have made age determination difficult, it is possible that older clients would have perceived older models as more comfortable and more competent. Implicit bias may have caused URGs to attribute lower levels of competency to the models used than non-Hispanic white respondents. Understanding why these perceptions were present is beyond the capability of this study, based on the data gathered, the small numbers of URG respondents, and the lack of models reflecting URG veterinarians.

A further challenge in questionnaire-based studies such as this is the analysis, and subsequent interpretation, of Likert data. By construction, Likert scales have limited variability and subjective scoring, which may be sensitive to personal interpretation. Moreover, the translation from statistical significance to clinical significance, via the analysis and interpretation of Likert data, is not entirely clear. Although one veterinarian may be scored 0.5 points lower than another veterinarian with respect to perceived competence/confidence, translating that to a clinical outcome (e.g. a client switching practices or seeking second opinions) is left for future study.

Using photos may not be directly applicable to client responses in real-life interactions. Some studies assigned certain attire to physicians and assessed patient responses post-visit, and in these studies, the preference for white lab coats or surgical scrubs was typically less pronounced (Petrilli et al., 2015; Traeger et al., 2017). No such study has been performed in veterinary medicine, and a study assessing client responses after a clinical interaction could have differing results. Geographic variation in client expectations may also affect client

responses and preferences, as well as the academic setting. As discussed above, differences in opinion about the level of dress likely also exist, which may alter clients' responses.

Conclusions

Clients in an academic specialty practice perceive veterinarians wearing white coats over both casual business and surgical attire as more competent and have higher comfort levels.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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References

- Banu A, Anand M, Nagi N, 2012 White coats as a vehicle for bacterial dissemination. *Journal of Clinical and Diagnostic Research* 6, 1381–1384. [PubMed: 23205352]
- Bearman G, K B, Leekha S, Mayer J, Munoz-Price L, Murthy R, Palmore T, Rupp M, White J, 2014 Expert guidance: Healthcare personnel attire in non-operating room settings. *Infection Control and Hospital Epidemiology* 35, 107–121. [PubMed: 24442071]
- Belew AM, Barlett T, Brown SA, 1999 Evaluation of the white-coat effect in cats. *Journal of Veterinary Internal Medicine* 13, 134–142. [PubMed: 10225603]
- Burden M, Cervantes L, Weed D, Keniston A, Price CS, Albert RK, 2011 Newly cleaned physician uniforms and infrequently washed white coats have similar rates of bacterial contamination after an 8-hour workday: A randomized controlled trial. *Journal of Hospital Medicine* 6, 177–182. [PubMed: 21312328]
- Chung H, Lee H, Chang DS, Kim HS, Lee H, Park HJ, Chae Y, 2012 Doctor's attire influences perceived empathy in the patient-doctor relationship. *Patient Education and Counseling* 89, 387–391. [PubMed: 22445730]
- Coe JB, O'Connor R, Pizzolon CN, Hester KA, Nogueira Borden LJ, Haley D, 2020 Investigation of the effects of veterinarians' attire on ratings of trust, confidence, and comfort in a sample of pet owners in Canada. *Journal of the American Veterinary Medical Association* 256, 1268–1276. [PubMed: 32412872]
- Cohen JB, Lotito MJ, Trivedi UK, Denker MG, Cohen DL, Townsend RR, 2019 Cardiovascular events and mortality in white coat hypertension: A Systematic review and meta-analysis. *Annals of Internal Medicine* 170, 853–862. [PubMed: 31181575]
- Cohen P, Huffman M, 2003 Occupational segregation and the devaluation of women's work across U.S. labor markets. *Social Forces* 81, 881–908.
- Dancer SG, Duerden BI, 2014 Changes to clinician attire have done more harm than good. *Journal of the Royal College of Physicians of Edinburgh* 44, 293–298. [PubMed: 25516900]
- Fowler F, Cosenza C, 2008 Design and evaluation of survey questions, In: *The SAGE Handbook of Applied Social Research Methods*, 2nd ed. SAGE Publications, Los Angeles, pp. 375–412.
- Grand JA, Lloyd JW, Ilgen DR, Abood S, Sonea IM, 2013 A measure of and predictors for veterinarian trust developed with veterinary students in a simulated companion animal practice. *Journal of the American Veterinary Medical Association* 242, 322–334. [PubMed: 23327174]
- Hall JA, Blanch-Hartigan D, Roter DL, 2011 Patients' satisfaction with male versus female physicians: A meta-analysis. *Medical Care* 49, 611–617. [PubMed: 21478782]

- Haun N, Hooper-Lane C, Safdar N, 2016 Healthcare personnel attire and devices as fomites: A systematic review. *Infection Control and Hospital Epidemiology* 37, 1367–1373. [PubMed: 27609491]
- Hughes K, Rhind SM, Mossop L, Cobb K, Morley E, Kerrin M, Morton C, Cake M, 2018 ‘Care about my animal, know your stuff and take me seriously’: United Kingdom and Australian clients’ views on the capabilities most important in their veterinarians. *Veterinary Record* 183, 534. [PubMed: 30181131]
- Irvine L, Vermilya J, 2010 Gender work in a feminized profession. *Gender and Society* 24, 56–82.
- Jansen J, Steuten CD, Renes RJ, Aarts N, Lam TJ, 2010 Debunking the myth of the hard-to-reach farmer: Effective communication on udder health. *Journal of Dairy Science* 93, 1296–1306. [PubMed: 20172249]
- Mahida N, 2015 The white coat, microbiology service centralization, and combined infection training: What is happening to infection prevention and control? *J Hosp Infect* 91, 289–291. [PubMed: 26520591]
- Major K, Hayase Y, Balderrama D, Lefor AT, 2005 Attitudes regarding surgeons’ attire. *American Journal of Surgery* 190, 103–106. [PubMed: 15972180]
- Marino CL, Cober RE, Iazbik MC, Couto CG, 2011 White-coat effect on systemic blood pressure in retired racing Greyhounds. *Journal of Veterinary Internal Medicine* 25, 861–865. [PubMed: 21615497]
- McCalla S, Reilly M, Thomas R, McSpeldon-Rai D, McMahon LA, Palumbo M, 2018 An automated hand hygiene compliance system is associated with decreased rates of health care-associated infections. *American Journal of Infection Control* 46, 1381–1386.
- Molassiotis A, Morris K, Trueman I, 2007 The importance of the patient-clinician relationship in adherence to antiretroviral medication. *International Journal of Nursing Practice* 13, 370–376. [PubMed: 18021166]
- Munoz-Price LS, Arheart KL, Lubarsky DA, Birnbach DJ, 2013 Differential laundering practices of white coats and scrubs among health care professionals. *American Journal of Infection Control* 41, 565–567. [PubMed: 23219673]
- Petrilli CM, Mack M, Petrilli JJ, Hickner A, Saint S, Chopra V, 2015 Understanding the role of physician attire on patient perceptions: A systematic review of the literature - Targeting Attire to Improve Likelihood Of Rapport (TAILOR) investigators. *British Medical Journal Open* 5, e006578.
- Petrilli CM, Saint S, Jennings JJ, Caruso A, Kuhn L, Snyder A, Chopra V, 2018 Understanding patient preference for physician attire: A cross-sectional observational study of 10 academic medical centres in the USA. *British Medical Journal Open* 8, e021239.
- Pioli MR, Ritter AM, de Faria AP, Modolo R, 2018 White coat syndrome and its variations: Differences and clinical impact. *Integrated Blood Pressure Control* 11, 73–79. [PubMed: 30519088]
- Price L, MacDonald J, Gozdzielewska L, Howe T, Flowers P, Shepherd L, Watt Y, Reilly J, 2018 Interventions to improve healthcare workers’ hand hygiene compliance: A systematic review of systematic reviews. *Infection Control and Hospital Epidemiology* 39, 1449–1456. [PubMed: 30526716]
- Qaday J, Sariko M, Mwakyoma A, Kifaro E, Mosha D, Tarimo R, Nyombi B, Shao E, 2015 Bacterial Contamination of Medical Doctors and Students White Coats at Kilimanjaro Christian Medical Centre, Moshi, Tanzania. *International Journal of Bacteriology* 2015, 507890. [PubMed: 26904746]
- Robb K, Rossi T, Tansey C, Hybki G, Murphy L, Nakamura R, Chen D, 2019 Evaluation of owners’ attitudes towards veterinarian attire in the small animal specialty setting in North America. *Veterinary Medicine and Science* 5, 48–60. [PubMed: 30394693]
- Roter DL, Hall JA, 2015 Women doctors don’t get the credit they deserve. *Journal of General Internal Medicine* 30, 273–274. [PubMed: 25361687]
- Shelton CL, Raistrick C, Warburton K, Siddiqui KH, 2010 Can changes in clinical attire reduce likelihood of cross-infection without jeopardising the doctor-patient relationship? *Journal of Hospital Infection* 74, 22–29. [PubMed: 19914736]

- Sugerman-McGiffin T, Hybki G, Castro J, Murphy L, Tansey C, Patlogar J, Chen D, 2018 Clients' attitudes toward veterinarians' attire in the small animal emergency setting. *Journal of the American Veterinary Medical Association* 253, 355–359. [PubMed: 30020007]
- Traeger AC, Skinner IW, Hubscher M, Henschke N, Moseley GL, McAuley JH, 2017 What you wear does not affect the credibility of your treatment: A blinded randomized controlled study. *Patient Education and Counseling* 100, 104–111. [PubMed: 27522250]
- Treacle AM, Thom KA, Furuno JP, Strauss SM, Harris AD, Perencevich EN, 2009 Bacterial contamination of health care workers' white coats. *American Journal of Infection Control* 37, 101–105. [PubMed: 18834751]
- Tse G, Withey S, Yeo JM, Chang C, Burd A, 2015 Bare below the elbows: Was the target the white coat? *Journal of Hospital Infection* 91, 299–301. [PubMed: 26364208]

Highlights

- Wearing a lab coat increased veterinary clients' perceived competency and comfort
- Surgical scrubs increased perceived competency compared to business casual
- Surgical scrubs increased comfort of clients compared to business casual

Fig. 1.

Photos presented to clients in randomized order demonstrating business casual attire with and without white lab coat and surgical scrubs with and without lab coat.

Fig. 2.

Plot showing the variability in respondent perceived competence scores, combined for male and female models, between the four different attire combinations. Each point represents the observed mean for that attire group and the error bar spans the 95% confidence interval about the mean.

Fig. 3.

Plot showing the variability in respondent perceived competence scores between the male and female models in the four different attire combinations. Each point represents the observed mean for that attire group and the error bar spans the 95% confidence interval about the mean.

Fig. 4. Plot showing the variability in respondent perceived comfort scores between the four different attire combinations. Each point represents the observed mean for that attire group and the error bar spans the 95% confidence interval about the mean.

Table 1

Demographic data of survey respondents.

Variable	<i>n</i> (%)
Species of pet	
Cat	47 (10.4%)
Dog	382 (84.3%)
Other	24 (5.3%)
Income	
Less than \$35,000	37 (8.7%)
\$35,000 to \$50,000	46 (10.8%)
\$50,001 to \$75,000	85 (20.0%)
\$75,001 to \$100,000	89 (20.9%)
\$100,001 to \$150,000	87 (20.5%)
\$150,001 to \$200,000	41 (9.6%)
More than \$200,000	40 (9.4%)
Gender	
Female	330 (74.5%)
Male	113 (25.5%)
Race	
URG	29 (6.6%)
White	408 (93.4%)
Age: Mean (standard deviation)	50.6 years (± 15.0 years)
Type of appointment	
Medical service	385 (85.6%)
Surgical service	65 (14.4%)

URG, Under-represented groups (all groups except non-Hispanic/Latino white respondents).

Table 2

Distribution of services used by respondents. Not every client responded to this question. All services other than Surgery and Dentistry were classified as a medical service.

Service	<i>n</i>
Cardiology	30
Emergency	56
Dentistry and oral surgery	21
Dermatology	17
Internal medicine	64
Neurology	35
Oncology	94
Ophthalmology	18
Physical therapy	4
Primary care	58
Special species	10
Surgery (soft tissue and orthopedic)	34
Other (radiology, pharmacy, billing services)	8
Not recorded	56

URG, Under-represented groups (all groups except non-Hispanic/Latino white respondents).

Table 3

Summary for linear mixed model fit to perceived competence scores.

Variable	Estimated regression coefficient (difference in rankings)	Standard error	95% confidence interval	P
Male vs. female model	0.06	0.02	(0.02, 0.10)	0.005
No lab coat vs. with white lab coat	−0.32	0.03	(−0.38, −0.27)	0.000
Surgical scrubs vs. business casual (with white lab coat)	0.01	0.03	(−0.05, 0.07)	0.723
Surgical scrubs vs. business casual (no lab coat)	−0.28	0.04	(−0.35, −0.20)	0.000
Male vs. female respondent	−0.09	0.06	(−0.22, 0.05)	0.200
Respondent income	0.03	0.02	(−0.01, 0.07)	0.111
Age of respondent (10-year increase)	−0.06	0.02	(−0.10, −0.02)	0.002
Caucasian vs. URG respondent	0.37	0.12	(0.12, 0.60)	0.002
Dog vs. cat as pet	−0.14	0.09	(−0.33, 0.04)	0.133
Other type of pet vs. dog/cat as pet	−0.26	0.17	(−0.58, 0.06)	0.122

URG, Under-represented groups (all groups except non-Hispanic/Latino white respondents).

Table 4

Summary for linear mixed model fit to perceived comfort scores.

Variable	Estimated regression coefficient (difference in rankings)	Standard error	95% confidence interval	P
Male vs. female model	0.01	0.02	(−0.03, 0.05)	0.63
No lab coat vs. with white lab coat	−0.23	0.03	(−0.30, −0.18)	<0.0001
Surgical scrubs vs. business casual (with white lab coat)	0.01	0.03	(0.04, 0.07)	0.63
Business casual vs. surgical scrubs (with no lab coat)	−0.28	0.04	(−0.36, −0.20)	<0.0001
Male vs female respondent	−0.06	0.07	(−0.19, 0.07)	0.38
Respondent income	0.03	0.02	(−0.01, 0.06)	0.12
Age of respondent (10-yr increase)	−0.07	0.02	(−0.11, −0.03)	0.0007
Caucasian vs URG respondent	0.23	0.12	(−0.01, 0.46)	0.06
Dog vs. cat as pet	−0.08	0.09	(−0.26, 0.11)	0.41
Other type of pet vs. dog/cat as pet	−0.29	0.16	(−0.60, 0.02)	0.08

URG, Under-represented groups (all groups except non-Hispanic/Latino white respondents).