

The White-Coat Effect: Physician Attire and Perceived Authority, Friendliness, and Attractiveness

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Although previous studies have evaluated the effects of attire on doctor–patient interaction, the common assumption of a tradeoff between perceptions of medical authority/status versus trustworthiness/openness has not been established. Thirty-eight male and 40 female participants rated their perceptions of same- and opposite-gender models who all were identified as doctors, but who were wearing different attire. The results indicate that authority and trust are not opposing factors and that a white coat and formal attire are clearly superior to casual attire. Additionally, perceptions of attractiveness of same- and opposite-gender doctors were rated, finding gender differences in perceptions different from, but theoretically similar to, prior findings. For females rating male models, perceptions of authority and attractiveness appear to be related.

Since the time of Hippocrates, physicians have been given advice on the way they should dress for functional and hygienic reasons, and because of the supposed influence on the doctor–patient relationship. Hippocrates stated that the physician should “be clean in person, well-dressed, and anointed with sweet-smelling unguents” (Jones, 1923, pp. 311-312). The clean, carefully dressed doctor might give the impression that patient contact is an important event and that it takes time to prepare for it, whereas the unkempt doctor can be perceived as unskilled and uncaring (Gjerdingen, Simpson, & Titus, 1987).

The masters of the School of Salerno in Italy (11th to 12th centuries) stated that if a physician was dressed poorly, he would receive poor fees (Bishop, 1934). The suit was adopted as the physician’s uniform in the 19th century, and the white coat was added more recently. The white coat has become the accepted symbol of the physician and the medical staff in the Western world for almost 100 years (Blumhagen, 1979). The use of the white coat, however, has come under debate, with practitioners questioning whether the white coat has become a threat to patients and if, by dressing differently (i.e., without the white coat), a more equal relationship could be achieved, rather than a paternalistic one.

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Several studies have investigated the influence that a physician's attire has on patient reactions. The overall pattern appears to be that patients prefer physicians to dress formally (e.g., dress shoes, suit, and tie for male physicians; dress shoes, blouse and skirt/dress trousers, and minimal makeup and jewelry for female physicians), rather than casually (e.g., jeans, tennis shoes, T-shirt; delRey & Paul, 1995; Gjerdingen et al., 1987; McKinstry & Wang, 1991; Swift, Zachariah, & Casy, 2000). Formal attire also increases confidence in the doctor's competence (Gledhill, Warner, & King, 1997; Hennessy, Harrison, & Aitkenhead, 1993). At the same time, however, formal dress leads patients to view the doctor as less friendly, approachable, or understanding (Gledhill et al., 1997). This is an important concern, because it presumably affects disclosure to the doctor, which is a critical aspect of general practice (e.g., in obtaining case-history information in order to make accurate diagnoses).

The physician's white coat would seem to be a good solution to this situation: Distinct enough to inspire confidence and a perception of competence, yet also more casual to promote approachability. Previous research, however, has not borne out this idea; patients primarily use white coats (along with nametags) as a means of identifying someone as a doctor, but still want the formal attire as well (Gjerdingen et al., 1987; Gledhill et al., 1997; Hennessy et al., 1993; McKinstry & Wang, 1991).

Furthermore, there are some discrepancies between what people say and think about physicians' white coats and their choices or behaviors. Menahem and Shvartzman (1998) found that 75% of their participants stated that the attire of the doctor had no influence on their decision in choosing a family doctor, but 52% of them preferred the doctor to be dressed in a white coat. Ikusaka et al. (1999) found that more patients felt tense during a consultation with a doctor in a white coat (42%) than with one in casual clothes (33%), even as 71% of the patients in the white-coat condition preferred a physician in a white coat. Finally, McCarthy, McCarthy, and Eilert (1999) found that only 35% of parents preferred their child's physician to wear a white coat, but 54% of children preferred a physician to wear a white coat (contrary to the belief that children are afraid of physicians in white coats).

Through all this previous research there runs an implicit assumption that more formal attire generates greater authority but less patient disclosure, and that more casual attire increases disclosure but undermines authority (i.e., these are two opposing factors). This is an unexamined assumption that this study attempts to investigate. Furthermore, it is also quite possible that physicians' appearance could affect other judgments about their personal and professional traits.

Attire Outside the Doctor's Office

The effects of a person's attire have been studied outside the doctor's office as well, and clothing has been claimed to have some influence over numerous

factors (e.g., Rubinstein, 2001; Solomon, 1986). Most notably, it is fairly clear across a number of contexts that more formal attire generates an impression of status and power (Fortenberry, MacLean, Morris, & O'Connell, 1978; Kwon & Johnson, 1998), but it is less clear to what extent formal attire influences—positively or negatively—traits such as sociability, friendliness, and approachability (Kwon & Johnson, 1998; Lukavsky, Butler, & Harden, 1995). Other than status, one other trait appears to be clearly influenced by attire: attractiveness ratings of males by female judges.

Townsend and Levy (1990) found that male models who were dressed in a way that indicated high socioeconomic status (e.g., suit or other formal dress) were rated by females as significantly more attractive and more appealing as potential relationship partners. Similar effects did not occur with male ratings of female models. Their explanation for this result was that clothes are used as a cue of socioeconomic status, which is a trait valued more highly by women than by men in evaluating a potential mate (Buss, 1989; Feingold, 1992; Sadalla, Kenrick, & Vershure, 1987; Wiederman & Allgeier, 1992).

Previous studies on physicians' attire have not used gender as a variable in their ratings, nor have they considered the effects of formal dress not only on perceptions of status and authority, but possible attendant and perhaps confounding effects on attractiveness. On the other hand, if all the models evaluated are identified clearly as doctors—which would suggest high status in and of itself—will formal attire have any effect on attractiveness? Finally, the white coat used by doctors has become a symbol of authority and status itself, and therefore may have the same effects as formal attire on perceptions of authority, status, friendliness, and attractiveness.

In summary, four separate hypotheses are proposed:

Hypothesis 1. In a factor analysis, discrete factors will emerge for status/authority and disclosure/friendliness, as well as a separate factor for attractiveness.

Hypothesis 2. Formal dress will increase perceived status/authority, although it is not clear if it will decrease disclosure/friendliness.

Hypothesis 3. Wearing a white coat will be more closely related to formal attire than to casual attire, although it is unclear what relationship will exist between all three.

Hypothesis 4. Females will rate doctors in formal attire and in white coats as more attractive than doctors in casual clothes. This difference will be much smaller than the differences found in previous research because all of the models are identified as doctors, and therefore attire is no longer diagnostic of occupation and status.

Method

Participants

Seventy-eight heterosexual participants (38 male, 40 female) were selected by using an opportunity sample from a university campus in northern England. Individuals with an age range of 18 to 30 years were asked to take part.

Materials

Digital photographs were made of three male and three female models, each of whom were photographed dressed in three different outfits: a white coat with a plain white shirt and black dress trousers; a suit with a white shirt/blouse (with a tie for males) and dress shoes; or casual wear consisting of blue jeans, a plain white T-shirt, and trainers. In all conditions, the model held a clipboard, wore a stethoscope around his or her neck, and wore a name badge. Each model was photographed in front of the same neutral backdrop, facing forward, with a neutral expression. The female models used the same amount of cosmetics and wore their hair in the same fashion for each condition.

In addition to basic demographic questions (gender, age, sexual orientation), two questionnaires were developed for participants to complete. The first questionnaire (a pretest) assessed the general suitability of items of attire worn by male and female doctors. Items were rated on a 4-point scale ranging from 1 (*very suitable*) to 4 (*not suitable at all*). The list of items is presented in Table 1. The second questionnaire (in two forms) assessed various impressions of the model doctors in the photographs, using a 4-point scale ranging from 1 (*strongly agree*) to 4 (*strongly disagree*). The two forms of the second questionnaire differed only in that two items for rating an opposite-gender doctor (about interest in dating and marrying them) were omitted in the form for rating a same-gender doctor (Table 2).

Procedure

Prior to viewing any photographs, participants completed the demographic information and the first questionnaire. Copies of the photographs were used alongside the second questionnaire, and each participant was shown pictures of one male model and one female model, both wearing the same attire. Attire was varied between participants, and the presentation order of the models and the use of the different male and female models were counterbalanced to control for order effects and individual differences among the models.

Results

The results are presented and discussed in three sections, corresponding to the pretest for suitability of specific items of attire, factor analyses of ratings

Table 1

Mean Suitability Ratings for Physicians to Wear Specific Items of Attire

Attire	Male physician		Female physician	
	Male rating	Female rating	Male rating	Female rating
Name tag	3.46	3.03	3.46	3.03
Shirt/blouse	3.33	3.40	3.31	3.33
Tie/jewelry	3.28	3.13	1.82	1.83
Dress shoes	3.15	3.33	3.13	3.28
Suit	3.13	3.38	3.13	3.35
White coat	3.03	3.08	3.03	3.15
Stethoscope	2.69	2.80	2.74	2.85
T-shirt	2.13	1.85	1.85	1.73
Jeans	2.10	1.88	1.79	1.75
Trainers	2.00	1.78	1.79	1.70

Note. Items rated on a 4-point scale ranging from 1 (*very suitable*) to 4 (*not suitable at all*).

made of target doctors, and analyses of between-group differences in the ratings of those factors.

Pretest

Omnibus ANOVAs indicate significant or near-significant Attire Item \times Gender interactions for suitability ratings for both male and female physicians: male physicians, $F(9, 711) = 2.36, p = .012, \eta = .03$; female physicians, $F(9, 711) = 1.85, p = .056, \eta = .02$. Subsequent t tests indicate that this effect was a result, in both cases, of a gender difference in the rated suitability of wearing a name tag for physicians of both genders, $t(79) = 2.07, p = .042$. Overall, then, there seems to be little difference in how men and women rate the abstract suitability of various aspects of doctors' attire, with the exception of the use of name tags (Table 1).

Factor Analyses

Reactions to the statements from the second questionnaire were subjected to factor analysis to extract the underlying factors and to determine if they correspond to the factors considered in previous research on physician attire (i.e.,

Table 2

Factor Analyses of Participants' Ratings by Gender of Participant and Gender of Model

	Viewing same-gender physician	Female viewing male physician	Male viewing female physician
I think this person is suitably dressed to be a doctor.	Authority	Authority	Authority
I feel that if this person were my doctor, he or she would be in an authority position.	Authority	Authority	Authority
I feel as though I would be able to confide in and put my trust in this person if he or she were my doctor.	Authority	Authority <i>Attractive</i>	Trust
I think this person is of a high socioeconomic status.	Authority	Authority	Authority
I think that this person looks smart and presentable in these clothes.	Authority	Authority	Authority
I would feel comfortable having this person as my doctor.	Authority	Authority	Trust
I would be happy to have a conversation with this person.	Friendly	Friendly	Friendly
I would feel comfortable around this person.	Friendly	Friendly	Friendly
I would be happy to go for a coffee and a conversation with this person.	Friendly	Attractive	Attractive <i>Friendly</i>
I would like to make friends with this person.	Friendly <i>Attractive</i>	Attractive	Attractive
I think that this person is attractive regarding the way they are dressed.	Attractive	Authority	Trust
I think this person is attractive.	Attractive	Authority <i>Attractive</i>	Attractive <i>Trust</i>
I would like it if this person were my neighbor.	Attractive <i>Authority</i>	Authority <i>Attractive</i>	Attractive <i>Authority</i>

(table continues)

Table 2 (Continued)

	Viewing same-gender physician	Female viewing male physician	Male viewing female physician
I think this person is suitably dressed to be a veterinarian.	Attractive ^a	Authority ^a <i>Friendly</i> ^a	Nonveterinarian ^a
I would be happy to date this person.	—	Attractive <i>Authority</i>	Attractive
I would like to settle down and/or marry a person like this.	—	Attractive <i>Authority</i>	Attractive

Note. Primary factor labels are not italicized; secondary loadings are italicized.

^aNegative factor loading for these items.

authority and friendliness/disclosure) and to the factor of attractiveness. The factor analyses used principal components analysis for extraction and varimax rotation with Kaiser normalization to reach orthogonal factors. Male and female participant ratings of same-gender physicians produced very similar factor analysis results, so a collapsed analysis is presented here (Table 2).² Table 2 presents factor analysis results for female and male ratings of opposite-gender physicians.

In all three cases, three factors emerged that can be labeled perceptions of *authority*, *friendliness*, and *attractiveness*. For same-gender physicians and for male physicians rated by female participants, these were the only three factors identified. For female physicians rated by male participants, however, a fourth factor (trustworthiness) and a fifth factor (nonveterinary) were identified. Whereas the nonveterinarian factor appears to be a result of a single item not loading on any other factors (it is a negative item within factors in the other analyses), the fourth factor of trustworthiness raises an interesting issue: The items that form trustworthiness generally are found in the other analyses under the factor of authority.

One of the more intriguing results from the factor analyses is that the items that would seem to react to perceptions of trust and willingness to confide (“I feel as though I would be able to confide in and put my trust in this person if they were my doctor” and “I would feel comfortable having this person as my doctor”) load under the factor of authority in all situations except males evaluating female physicians. In this latter case, these same perceptions of trust and willingness to confide do not load under authority; but instead they form their

²Separate within-gender factor analyses and the specific loading values for all factor analyses may be obtained from the first author.

own factor, rather than loading under friendliness. It appears that, contrary to much speculation in the prior literature, perceptions of status and authority tend to be related positively to trust and disclosure in most situations, rather than negatively.

Another interesting result within the factor analysis can be gleaned from the secondary loadings. Specifically, female ratings of male physicians show a number of secondary loadings for attractiveness on items that primarily load on authority, as well as vice versa. This indicates that, consonant with prior research (Buss, 1989; Feingold, 1992; Townsend & Levy, 1990; Wiederman & Allgeier, 1992), status/authority and attractiveness are relatively closely related constructs for women's evaluations of men. Certain items, in fact, make the case for this relationship particularly compelling. "I think this person is attractive" loads only secondarily under the factor of attractiveness, falling first under the authority factor. The item "I would be happy to date this person" loads primarily under the attractiveness factor, but it also has a secondary loading under the factor of authority.

Gender and Attire Effects on Factors

Subsequent to the factor analyses, the individual item responses for each participant were collapsed into mean scores for each factor. The only exception to this procedure was the item "I think this person is suitably dressed to be a veterinarian," which was deleted (as it did not appear to contribute clearly to any factor other than one defined essentially in terms of this one item, for males rating female physicians). Table 3 presents the means of the resulting factor scores for same-gender evaluations, females evaluating male physicians, and males evaluating female physicians, with the scores segregated according to the attire of the physician who was viewed by participants.

Three ANOVAs all indicate significant main effects of differences in the ratings for different factors: within-gender ratings, $F(2, 74) = 15.48, p < .001, \eta^2 = .17$; females rating male doctors (with Greenhouse-Geisser correction as a result of significance in Mauchly's test of sphericity), $\chi^2(2, N = 40) = 6.63, p = .036, F(1.88, 63.341) = 8.76, p = .001, \eta^2 = .19$; males rating female doctors, $F(3, 105) = 7.63, p < .001, \eta^2 = .18$. Similarly, all three analyses indicate significant main effects for style of dress: within-gender ratings, $F(2, 74) = 17.05, p < .001, \eta^2 = .31$; females rating male doctors, $F(2, 37) = 3.29, p = .049, \eta^2 = .15$; males rating female doctors, $F(2, 35) = 5.09, p = .012, \eta^2 = .23$.

Scheffé post hoc analyses indicate that casual attire was rated lower than either formal attire or white-coat attire, depending on the gender of the rater (casual vs. formal attire: same gender, $p < .001$; females rating male doctors, $p = .421, ns$; males rating female doctors, $p = .014$; casual vs. white-coat attire: same gender, $p < .001$; females rating male doctors, $p = .049$; males rating female

Table 3

Mean Ratings on Authority, Friendliness, Attractiveness, and Trustworthiness Across Different Conditions of Attire

		Attire		
		White coat	Formal	Casual
Ratings of same-gender physicians	Authority	3.02	2.86	2.10
	Friendly	2.41	2.55	2.19
	Attractive	2.53	2.44	2.11
Female ratings of male physicians	Authority	3.03	2.71	2.21
	Friendly	2.58	2.79	2.65
	Attractive	2.71	2.23	2.25
Male ratings of female physicians	Authority	3.00	2.96	1.96
	Friendly	2.64	2.88	2.79
	Attractive	2.24	2.62	2.15
	Trustworthy	2.79	2.82	2.50

Note. Ratings on a 4-point scale. Higher numbers indicate agreement and greater perception of the factor. Trustworthiness was rated only by males of female physicians.

doctors, $p = .148$, *ns*). Finally, there were interactions for these two factors in all three analyses: within-gender ratings, $F(4, 150) = 6.50$, $p < .001$, $\eta^2 = .15$; females rating male doctors, $F(4, 74) = 8.28$, $p < .001$, $\eta^2 = .31$; males rating female doctors, $F(6, 105) = 5.30$, $p < .001$, $\eta^2 = .23$.

In summary, casual attire appears to be of little benefit for physicians. Although casual attire had a particularly negative impact on ratings of authority, the ratings of friendliness, attractiveness, and trust all were influenced negatively as well by casual dress. There is a more complicated relationship between perceptions of formal attire and white coats. Doctors wearing white coats are perceived as more authoritative than doctors just in formal attire, whereas doctors just in formal attire are perceived as friendlier than those in white coats. There also may be some small increase in trustworthiness for doctors in white coats, as compared to those in formal attire.

To evaluate specifically the predictions about perceived attractiveness, planned-comparison *t* tests were conducted on gender-specific patterns in attractiveness ratings. Females found male doctors wearing white coats to be more attractive than those in either formal or casual attire: white coat vs. formal,

$t(25) = 2.33, p = .028$; white coat vs. casual, $t(24) = 2.49, p = .020$; casual vs. formal, $t(25) = 0.10, p = .919$. On the other hand, males found female doctors wearing formal attire to be more attractive than either those in white coats or in casual attire: white coat vs. formal, $t(25) = 2.70, p = .012$; white coat vs. casual, $t(24) = 2.81, p = .01$; casual vs. formal, $t(25) = 0.15, p = .882$. These results partially support our predictions, in that formal attire and white coats were, for males and females, respectively, seen as more attractive than casual attire, but the interaction with the gender of the rater was not predicted. The effects were, as predicted, much smaller than in previous research (e.g., Townsend & Levy, 1990), presumably because all of the models were identified as doctors and, therefore, their attire was less diagnostic of different levels of social status.

Discussion

The idea that there are different factors (e.g., authority, friendliness) that are affected by doctors' style of dress was supported by factor analyses. Contrary to previous assumptions that doctors' casual dress would promote disclosure from patients, however, items that indicated willingness to disclose loaded more on the factor of authority, rather than on the factor of friendliness.

Overall, this research indicates that casual dress is not likely to be an effective tactic for doctors to increase patient comfort or disclosure. Instead, it is clear that casual dress decreases perceptions of authority, regardless of the gender of the doctor or the patient. Casual dress also decreases perceptions of friendliness (compared to formal attire), trust (for male patients), and attractiveness. What would appear to be the most reasonable sartorial advice for doctors is to dress formally and to wear a white coat, but perhaps to remove the white coat in more socially delicate contexts.

The present research used a sample of undergraduate participants, who may be more homogeneous than the patients typically found in a doctor's waiting room. Although the university from which the participants were drawn is socio-economically diverse (34% of students come from working-class families, defined as social classes III_m-V: skilled manual, semi-skilled, and unskilled employees; Higher Education Funding Council for England, 2002), it still represents a restricted age range. Some previous research (e.g., McKinstry & Wang, 1991) has found that preferences for doctors' formal dress increases with both older age and higher social class, and this suggests that the preferences found here for formal attire actually may become more pronounced in some samples.

In terms of perceived attractiveness, there were clear gender differences, with women perceiving a white coat more positively than either formal or casual attire, but men perceiving formal attire more positively than either a white coat or casual attire. At first, these findings may seem to conflict with those of Townsend and Levy (1990), which established that male models in formal attire were rated

as more desirable by females and that female models' attire had no effect on male ratings. The underlying thesis of Townsend and Levy, however, was that formal attire was used by women as a cue of higher socioeconomic status and that this was the critical factor affecting attractiveness ratings. Given that women (along with men) associated white coats with authority to a greater extent than they did for formal or casual attire, the present results are actually entirely in agreement with the underlying thesis of Townsend and Levy (note also the secondary loadings between attractiveness and authority in the factor analysis of female ratings of male doctors).

What about the attractiveness ratings of women by men? Unlike previous research, there was a significant effect of female model attire on men's perceptions of attractiveness. Specifically, formal attire was rated as more attractive than either a white coat or casual attire. One explanation for this effect is that both the casual attire (jeans and T-shirt) and the white coat are effectively gender-neutral styles of dress. In contrast, the formal attire dress and blouse is specifically feminine. This differential perception of models in the formal attire condition as being more clearly female could account for their greater perceived attractiveness. Another way of viewing this is that female models in blouses and dresses were seen as behaving in a role-appropriate fashion relative to gender norms, and this in turn led them to be perceived as more attractive (Costrich, Feinstein, Kidder, & Pascale, 1975).

Doctors in general practice today typically do not wear white coats any longer. Instead, doctors usually wear shirts and ties, with dress trousers and dress shoes (Rothschild, Mora, & Plotkin, 1989). The addition of a jacket to give a full suit or a white coat may be advised for these doctors, at least in situations where it is important to provide information or instructions authoritatively (e.g., with recalcitrant patients). In hospitals, a doctor typically wears trousers, a casual top, and an identity badge down by the waist, unless wearing scrubs (Rothschild et al., 1989). Again, a more formal style of dress may be advisable under some circumstances.

There are various research issues raised by the present results. Further options exist regarding style of dress (e.g., surgical scrubs) and types of models. For example, physicians are typically older (30s to 50s; McKinstry & Yang, 1994) than were the current models (20s). It should be kept in mind also that the present study is based on ratings of single photographs of models. In the real world, there are many other indicators (e.g., behavior, speech) that may be used to infer traits such as authority, friendliness, and attractiveness.

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