Published in final edited form as:

Health Commun. 2016 April ; 31(4): 425–433. doi:10.1080/10410236.2014.965380.

The Best of Intentions: Patients intentions to request health care workers cleanse hands before examinations

Debbie Treise,

Department of Advertising College of Journalism and Communications University of Florida

Michael F. Weigold,

Department of Advertising College of Journalism and Communications University of Florida

Kristina Birnbrauer [Doctoral Candidate], and

College of Journalism and Communications University of Florida

Denise Schain, M.D.

Division of Infectious Diseases and Global Medicine College of Medicine University of Florida

Abstract

The CDC recommends that patients ask health-care providers to cleanse their hands in the patients' presence for each examination. This study investigates the utility of the recommendation in light of potential challenges stemming from norms in the provider-patient relationship. In addition, we investigate the role of individual differences that may make such a discussion especially difficult (e.g., interaction anxiety) or seem inappropriate (e.g., authoritarianism). We also seek to identify how well-known predictors of behavioral intentions (i.e., attitudes, subjective norms, efficacy, outcome benefits and costs) affect intentions to perform this specific behavior. A total of 250 hospitalized, post-surgical patients were asked about their own likelihood of following the CDC's recommendation. They were also asked to view and respond to video depictions of a doctor and patient interaction that varied the presence of a patient request and a doctor's cleansing. Results of the study suggest the CDC recommendation, without additional considerations, is unlikely to reduce dangers posed by healthcare worker transmission of infectious disease.

Background

Infectious diseases rank fourth in the list of preventable causes of death in the United States. Making the issue even more urgent, these infections are commonly acquired in environments where people seek medical care, specifically, hospitals and doctor's offices. Not surprisingly, an increasing number of studies have focused on public perceptions of healthcare-acquired infections or healthcare-associated infections (HCAIs or HAIs), reflecting a growing consensus about the importance of this issue among governments, policy makers, healthcare organizations and providers, the media and patients worldwide. According to Congressional testimony on behalf of the Infectious Diseases Society of America, infections constitute "a serious public health, patient care and safety, and national

security issue” that results in “tremendous pain, suffering, and disfigurement in adults, children and infants, and have caused millions of deaths worldwide (Spellberg, 2010, p.2)”

Because interventions aimed at changing healthcare workers’ behaviors have frequently been ineffective, the Centers for Disease Control and Prevention recommend that patients take the responsibility for ensuring their health care providers do not spread disease. The CDC's specifically recommends that patients ask health care providers to properly cleanse their hands before every examination involving physical contact.

This study investigates the efficacy of such a recommendation by asking hospitalized patients to indicate their intentions to ask healthcare providers to cleanse. It also seeks to determine whether such intentions vary as a function of video depictions of physicians’ hand cleansing protocol and as a function of two traits theoretically relevant to such a request: interaction anxiety and authoritarianism.

We hypothesize that many patients will have reservations about following the CDC's recommendation because making such a request to a health care provider is a norm violation. Specifically, the patient request may be viewed as a challenge to the expertise and authority of the provider. For a patient to take the lead in “correcting” a health-care provider who fails to cleanse his or her hands could be perceived as a challenge to the professionalism or competence of the provider.

Intentions to make a cleansing request should also be affected by both environmental and intrapersonal factors. Environmental information that suggests such a request would be well-received by healthcare providers should increase intentions to ask, while information that suggests the request will be negatively received should reduce them.

Hospital-acquired infections and hand washing

Hospital-acquired infections (HAI) are a significant healthcare issue. They are among the top five leading causes of death in the U.S., with approximately 4.5 of 100 hospitalized patients contract one (AHRQ, 2011). Trauma patients who develop infections are six times more likely to die than trauma patients without HAIs (AHRQ, 2011). Estimates of the direct costs of treating infections range from \$28.4 to \$45 billion (Scott, 2009). HAI's may have indirect effects on health as well. Some studies suggest that disclosure of these infection rates, sensationalistic media coverage (Perencevich & Treise, 2010) and subsequent misunderstanding of the information may “negatively influence the utilization of hospitals” (McGuckin, Waterman, & Shubin, 2006, p. 342).

The good news is that the prevalence of HAIs can be significantly reduced when healthcare workers perform a simple but highly effective prevention method, hand hygiene. When healthcare providers consistently wash with soap and water or use disinfectant hand rubs, the spread of HAIs is lowered dramatically (Easton, Marwick, Williams, Stringer, McCowan, Davey & Nathwani, 2009; Hamour, O'Bichere, Peters, & McDonald, 2003). Unfortunately, a 2010 meta-analysis of hospital health care worker compliance with hygiene guidelines found an overall compliance rate of just 40% among physicians and nurses, with less compliance among physicians (32%) than nurses (48%). Even more disturbingly, the

study found lower compliance rates in high activity areas such as intensive care units (30-40%) (Erasmus, Dahl, Brug, Richardus, Behrendt, Vos, & van Beeck, 2010).

Recommendations of the CDC

The Centers for Disease Control and Prevention's (CDC) argue that one solution to the prevention of HAI should be enlisting and empowering patients to take responsibility for communicating hand-washing wishes (and thereby stop the spread of infection) to their health care providers. The CDC incorporates a six-minute video on its website (http://www.cdc.gov/handhygiene/Patient_materials.html) teaching patients to remind health care workers to cleanse their hands properly before examining them. This study looks at the efficacy of such a recommendation for hospitalized surgical patients based on environmental factors and personal traits that may make this approach more or less feasible.

Authoritarianism and Social Anxiety

Authoritarianism—The doctor-patient relationship exemplifies an imbalance of power and authority. Patients seek medical advice and treatment from individuals designated by society as experts. When in need of care, patients (to varying degrees) follow the advice and undergo treatments recommended by doctors. A doctor is a high authority (expert) and high power (responsible for patient care) figure and in the context of a doctor-patient relationship can exert relatively high control.

Individuals vary in the extent that they accept or are comfortable with power imbalances in interpersonal relationships. Authoritarianism (Adorno, Frenkel-Brunswick, Levinson, & Sanford, 1950) reflects a tendency to see social relationships from the perspective of respect and obedience. Authoritarians view status and hierarchies as natural and show diminished respect for individuals who do not conform to belief systems or conventions (Adorno et al., 1950; Altemeyer, 2003).

Authoritarianism was first measured with a scale known as the Fascism scale, or F scale, which aimed to tap ethnocentric belief systems of the World War II era (Adorno et al., 1950). A main criticism of the F scale resulted from its orientation to right-wing ideologies. The authoritarian-rebellion scale was later developed to meet this objection, and incorporates left-wing rebellious reversals, which balance extreme attitudes in either direction (Kohn, 1972).

Authoritarianism also has been studied in health care research. Questioning authority, particularly a physician's authority, constitutes a rejection of power (Haug & Lavin, 1979; Haug & Lavin, 1981). Importantly, high authoritarians endorse the idea that doctors should retain authority over patients, despite the fact that this places the authoritarian in the low power position. Thus, the trait is not a desire for power per se, but an acceptance of hierarchies in social life.

In contrast to a view of the doctor-patient relationship as one characterized by a power imbalance, some argue for a perspective that treats the patient as a consumer of medicine and the physician as the service-provider (Beisecker, 1990). The consumerist view is inconsistent with the authoritarian concept that places patients in a submissive role (Haug &

Lavin, 1981). Haug and Lavin (1979) argued that in modern times there has been an erosion of “patient trust, confidence, and obedience” (p. 845), narrowing the power gap between patients and physicians.

Patient participation and patient-centered communication between physicians and patients foster shared decision-making and patient empowerment. Taken as a whole, these concepts are strongly endorsed as the ideal approach to positive patient outcomes (Epstein, Franks, Shields, Meldrum, Miller, Campbell, & Fiscella, 2005; Zandbelt, Smets, Oort, Godfried, & Hanneke, 2007)). However, the authoritarian perspective may still impede a patient's willingness to speak up and participate in their health care. Research confirms that the perception of this power gap is a key obstacle to shared decision-making, and patients report fear of being labeled “difficult and less worthy of attention and high-quality care” (Frosch, May, Rendle, Tietbohl, & Elywn, 2012, p. 1034) if they question their doctor.

Social Anxiety—We have argued that one individual difference, authoritarianism, may affect the likelihood that patients will request cleansing from doctors because such a request violates expectations about social power. But other individual differences may play an important role as well. For example, some people feel quite confident and efficacious in dealing with other people, while others may feel shy, awkward, nervous or even timid in social exchanges. Social anxiety is the perception of being evaluated negatively in a social interaction. It arises from “the prospect or presence of interpersonal evaluation in real or imagined social situations” (Schlenker & Leary, 1982, p. 642). Leary and Kowalski (1997) identified several interaction scenarios that may cause social anxiety, including formal and informal speaking, assertive interactions, and behavior observations. It is the assertive interaction component that lends itself to the current study (“talking to authority figures”) (Leary & Kowalski, 1997, p.5).

Leary (1983) developed a scale to measure interaction anxiousness. The interaction anxiousness scale achieved construct and criterion validity when it was tested against other scales measuring forms of anxiety (Leary and Kowalski, 1993) and was chosen to measure social anxiety in the physician-patient manipulations presented in the current study.

The present study investigates the intentions of hospitalized patients to follow the CDC recommendation: to ask healthcare workers to cleanse in front of the patient each time a worker initiates an examination without doing so. Several other dependent measures that are associated with predicting intentions are also assessed. In turn, these variables are assessed according to how they vary via the influence of two personality constructs (interaction anxiety and authoritarianism) and one manipulated variable. The manipulated variable was intended to affect perceptions of the expected outcomes of a cleansing request. These outcomes were shown in a short video clip that either requests or fails to request that a physician cleanse his hands. This is referred to throughout the paper as modeled interaction.

The modeled interaction variable has five conditions which were randomly assigned. In two control conditions, a doctor enters a room and examines a patient. In the no-wash control, he does so without cleansing. In the wash control he does so after cleansing in front of the patient. In neither condition does the patient request that the doctor cleanse. In the third and

fourth conditions, the patient requests that the doctor cleanse after it is clear that he does not intend to do so before conducting an examination. In condition three he does so agreeably, while in condition four he does so but makes clear he is unhappy with the request. In the final condition, the doctor initially forgets to cleanse, then remembers to do so before the examination, and of his own accord tells the patient it is acceptable to request that a doctor cleanse before an exam.

Resulting hypotheses

H1: Because requesting that a doctor cleanse violates a common patient-doctor norm expectation, we believe that subjects will see themselves as more similar to a patient who does not request the doctor cleanse (conditions 1, 2, and 5) than to a patient who makes a request (conditions 3 and 4).

H₂: An interaction of social anxiety and modeled interaction will reveal that high- as compared to low-anxiety subjects will identify more with the non-requesting patient and less with the requesting patient.

H₃: An interaction of authoritarianism and modeled interaction will reveal that high-authoritarian subjects will identify more with the non-requesting patient and less with the requesting patient than will low-authoritarian patients.

Research questions

RQ 1: How likely is it that hospitalized patients who are informed of the CDC recommendations will intend to ask a doctor to cleanse each time the patient is examined?

RQ 2: What role will attitudes, social norms, efficacy perceptions, and costs and benefits of making a request play in intentions to request a doctor cleanse before an exam?

RQ 3: To what extent, if any, do interaction anxiety and authoritarianism influence intentions, either directly or indirectly through their effects on the predictors specified in RQ 2?

Methods

This study attempted to ascertain the efficacy of a message directing patients to request that their health care providers properly cleanse their hands before an examination, and to investigate the social cues and personality variables that may impact intentions to comply with that message. A 2 (social anxiety: high/low) × 2 (authoritarianism: high/low) × 5 (modeled interaction: no request, doctor doesn't cleanse; no request, doctor cleanses; request, doctor cheerfully complies; request, doctor unhappily complies; no request, doctor cleanses and encourages patient to request) randomized design was employed.

We recruited 250 post-surgical, hospitalized adult surgical patients from the general surgery, cardio, orthopedics, urology, transplant, neurology and vascular surgery floors of a large Southeastern university research hospital. These patients were coherent and able to answer all questions. After reading the informed consent, patients viewed one of five 30-second

realistic modeled interactions. The informed consent included information about the CDC recommendation that all patients ask their doctors to cleanse before an examination. Subjects then completed all dependent and personality variables, were thanked and debriefed.

Procedure and Measures

Patients were randomly assigned to view one of five modeled doctor-patient interactions: 1.) physician greets post-surgical patient, examines patient without cleansing, no further interaction; 2.) physician greets post-surgical patient, cleanses of his own accord, then examines patient with no further interaction; 3.) physician greets post-surgical patient and attempts to examine, patient interrupts and asks physician to wash his hands, physician agreeably complies; 4.) physician greets post-surgical patient and attempts to examine, patient interrupts and asks physician to wash his hands, physician disagreeably complies; 5.) physician greets post-surgical patient, before examining physician remembers to cleanse and tells patient that it is appropriate for patients to request hand washing before an examination. All manipulations were identical in terms of length, hospital room location, professional actor physician and patient and physician introduction. Videos were shown on an iPad held by the researcher. As required by the hospital and medical IRB, the questionnaire then was read orally to prevent potential spread of infection to surgical patients through contact with the questionnaire and to make it easier on these pre-or post-surgical subjects, several of whom were hand and arm-related orthopedic surgical patients.

We also measured two other independent variables through standardized personality scales: Authoritarianism was measured using a subset of Kohn's Authoritarian-Rebellion Scale (1971), Interaction Anxiety was measured using Leary's Interaction Anxiousness Scale (1983).

Dependent variables included two groups: those related to the subjects' own behaviors and cognition, and those related to perceptions subjects had of what transpired in the video they were asked to watch. In the first grouping were measures related to subject intentions to ask caregivers to cleanse, attitude toward making the request, subjective norm toward making the request, perceived efficacy toward making the request, and the costs and benefits that would accrue to subsequent care as a function of making the request. In the second category were measures of identification/similarity with patient in the video and perceptions of the safety and sterility of the examination depicted. All were measured on a 4-point scale from strongly disagree to strongly agree.

Results

Preliminary Analyses

A total of 250 hospitalized surgical patients completed all or part of the questionnaire between November 2012 and March 2013. Approximately 34% were patients in orthopedics, 26% in cardiology, 16% in surgery, and 9% each were in vascular and urology. Fewer than 2% were transplant, and less than 1% each were from general, neurology, and thoracic. Data were missing for 2.4% of the group.

Properties of the measures

To facilitate data collection with patients, all dependent measures were collected using a simplified Likert scale of strongly disagree (1), disagree (2), agree (3), and strongly agree (4). A subscale of Kohn's (1972) authoritarianism scale was considered most relevant to this research: "obedience to authority." The scale had four items, "Obedience and respect for authority are the most important virtues children should learn," "Strong discipline builds moral character," "No principle is more noble or holy than that of true obedience," and "There is hardly anything lower than a person who does not feel a great deal of love, gratitude and respect for his or her parents." The resulting scale had a Cronbach's Alpha of .84, a mean of 13.34, and a standard deviation of 2.45.

Leary's Interaction Anxiousness Scale consisted of 15 items, including "I often feel nervous even in casual get togethers," "I usually feel uncomfortable when I am in a group of people I don't know," "I get nervous when I must talk to a teacher or boss," and "Parties often make me feel anxious and uncomfortable." The scale had an Alpha of .93, a mean of 36.35, and a standard deviation of 6.74. Authoritarianism and anxiousness were unrelated to one another ($r = -.02$, $p > .80$)

Manipulation Checks

To ensure the manipulations were successful several analyses were conducted. All were done by first splitting authoritarianism and interaction anxiety scores at their respective medians and recoding scores into high and low. For all analyses, except where indicated, modeled interaction had five levels. The resulting design was a 2 (authoritarianism: low vs. high) $\times$ 2 (interaction anxiety: low vs. high) $\times$ 5 (modeled interaction: (1) no patient request, doctor examines patient without cleansing, (2) no patient request, doctor cleanses on own initiative and then examines, (3) patient request doctor cleanse, doctor complies and responds agreeably, (4) patient requests, doctor complies but responds disagreeably, and (5), no patient request, doctor remembers to cleanse and tells patient it is ok to request that providers cleanse.

Were subjects sensitive to whether the doctor cleansed in the video?—We wanted to determine whether subjects were sensitive as to whether the doctor in the video had cleansed his hands, irrespective of whether the patient requested he do so. Specifically, subjects were asked the extent to which they agreed or disagreed that, "In the video that I just watched, the physician cleansed his hands before examining the patient."

The analysis revealed the expected main effect of modeled interaction, $F(4, 220) = 76.04$, $p < .001$. As hoped, subjects in conditions where the doctor did not cleanse ($M = 1.52$) were significantly less likely to agree with this statement than were subjects in the other four conditions (control: cleansed, $M = 3.30$; request, agreeable response, $M = 3.00$; request, disagreeable response, $M = 3.03$; doctor cleanses and establishes norm, $M = 3.46$). LSD pairwise comparisons showed that the mean for the no wash condition was significantly different from the others. Additionally, a significant effect of authoritarianism, $F(1, 220) = 8.37$, $p < .004$, suggested individuals high in authoritarianism were more likely ($M = 2.98$) than were those who were low ($M = 2.74$) to agree the doctor cleansed.

Perception that not cleansing is unhealthy—To validate whether patients perceived the control condition in which an examination was depicted without the doctor cleansing (modeled interaction 1) was less healthy than the remaining conditions in which he did cleanse, an analysis of variance was conducted on a scale constructed from two items, “the examination was potentially dangerous for the patient,” and “the examination was unsterile,” ($r = .64$). Responses could range from 2 to 8, with higher numbers indicating an unhealthier exam.

The analysis revealed only the expected main effect of modeled interaction. Those in modeled condition one, the only one in which the doctor proceeded with the exam without cleansing, viewed the exam most unhealthy ($M = 6.40$) followed by those in condition four (patient request, disagreeable physician response) ($M = 5.68$). Means for the other conditions, including condition four (request, agreeable response, $M = 4.72$), two (doctor cleanses without a request, $M = 4.24$) and five (doctor encourages the patient to request, $M = 4.04$) were perceived as relatively more healthy. LSD tests confirmed that the no cleanse condition was viewed as significantly less healthy than the others. The request followed by disagreeable doctor response was also viewed as less healthy than the others, save the no cleanse condition. The other three conditions did not differ significantly.

In conclusion, subjects considered a patient-doctor interaction in which the doctor conducted an exam without cleansing to be relatively unhealthy. However, subjects also felt that the condition in which a request was made of a doctor to cleanse and he responded disagreeably was also somewhat unhealthy, despite his compliance with the request.

Were subjects sensitive to whether the patient in the video requested that the doctor cleanse?—Although the doctor cleansed in modeled interactions two through five, the patient only made a request that he do so in conditions three and four. In the remaining conditions no request was made. The item, “In the video that I just watched, the patient requested that the physician cleanse his hands before the examination” was subjected to an analysis that revealed the anticipated modeled interaction effect, $F(4, 218) = 140.96$, $p < .001$. Means showed that agreement was greater in the two request conditions (M : request, agreeable response = 3.39, M : request, disagreeable response = 3.49) than in the remaining conditions (no wash, no request $M = 1.60$; cleanse, no request $M = 1.81$; doctor cleanses and establishes norm, $M = 1.76$). An unexpected modeled interaction $\times$ authoritarianism interaction, $F(4, 218) = 2.84$, $p < .03$, suggested that high versus low authoritarians tended to be a bit more accurate. That is, high as compared to low authoritarians were somewhat more likely to correctly agree the patient made a request in conditions where she in fact did, and were more likely to correctly disagree that she made a request in conditions where she did not.

Doctor's attitude toward cleansing—Two items, “The physician's attitude toward cleansing his hands before the examination seemed positive,” and “The physician's attitude toward cleansing his hands before the examination seemed resentful,” were summed after rescoring the second item. The analysis, which did not include subjects in the “no request, no cleanse” group (since these subjects did not see the physician perform cleansing behavior), revealed the expected modeled condition main effect, $F(3, 174) = 103.23$, $p < .$

001. The analysis also unexpectedly revealed effects for authoritarianism and interaction anxiety ($p < .001$ and $p = .05$, respectively).

The mean in the request, disagreeable response condition ($M = 3.49$) was significantly lower than those in the remaining cleanse conditions (no request, doctor cleanses, $M = 6.50$; request, agreeable response, $M = 6.23$; doctor cleanses and establishes norm, $M = 6.76$). In sum, subjects believed the disagreeable doctor had a relatively unfavorable attitude to cleansing, while subjects believed the doctor had a relatively favorable attitude in the other cleansing conditions.

The unexpected personality results suggested high as compared with low authoritarians thought the doctor had a more favorable attitude to cleansing (High $M = 6.00$, Low $M = 5.47$) as did subjects low ($M = 5.88$) as compared to high ($M = 5.59$) in interaction anxiousness.

Doctor's attitude to the patient's request to cleanse—Three items were used to determine subjects' perceptions of the physician's response to being asked to cleanse. The items were, “The physician's response to the patient's request that he cleanse his hands seemed positive,” “The physician's response to the patient's request that he cleanse his hands seemed resentful,” and “The physician's seemed upset or angry when the patient asked him to cleanse his hands.” After recoding the second and third items so that higher numbers indicated a more positive physician response, a scale was created by summing the items. Because the physician's reaction to the patient request was shown only in modeled interactions three and four, the questions were only asked of subjects in these conditions. The resulting analysis revealed a main effect of condition, $F(1, 83) = 167.07$, $p < .001$, and a three-way interaction, $F(1, 83) = 3.94$, $p = .05$.

As expected, subjects believed the agreeable doctor had a more favorable attitude toward the request than did the disagreeable doctor, (M : request, agreeable response = 9.42, M , request, disagreeable response = 5.12). The three-way interaction seemed largely driven by the perception that the doctor had an especially negative attitude toward the request by low-authoritarian, high interaction anxiety subjects in the disagreeable doctor condition.

Main Analysis

Prior to assessing intentions, attitudes, subjective norms, and efficacy, all patients were told:

The CDC recommends that caregivers who perform an examination cleanse their hands in front of their patients before conducting the exam. If the caregiver does not do so, the CDC recommends that patients request that caregivers cleanse their hands. So think about this behavior: asking each caregiver (doctor, nurse, staff member) to cleanse his or her hands (if they do not do so on their own) in front of you before they examine you, as you answer the following questions:

To what extent do patients intend to ask their future caregivers to cleanse?—

Research Question 1 asks to what extent to people intend to follow the CDC request. To measure intentions, in response to the paragraph above, respondents were asked to agree or

disagree that, “It is very unlikely that I will ask caregivers in this hospital to do this.” Responses were recoded so that higher numbers indicated higher intentions to ask. Since a fundamental issue is the utility of the CDC recommendation itself, the responses to this item are examined in some detail. The mean for the item was a 2.30, with a median of 2.0 and a standard deviation of .82. Altogether, 54% of patients indicated they were somewhat or very unlikely to make the request. Just 25 people (or 10 percent of all respondents) rated themselves as very likely to request cleansing of their future caregivers.

In sum, even after being told that the CDC recommends patients like themselves make the request of a caregiver to cleanse, most hospitalized patients indicated they did not intend to engage in this behavior. Results in our manipulation checks make clear that patient unwillingness to make the request is not because they failed to understand the risks of infection spread. It would appear that simply making patients aware of the CDC recommendation or suggesting to patients that they should follow such a recommendation is unlikely to produce intentions that can contribute to reducing the spread of infections.

Our hypotheses suggest several variables might moderate intentions. Our subsequent analyses proceeded in three stages. First, we ignored the manipulated variable and sought to determine whether common predictors of intentions predicted subjects’ intentions to request that their caregivers cleanse. Second, we considered how the modeling and personality variables affected intentions. Third, we examined other potentially valuable relationships among our variables, including those related to our hypotheses.

Stage 1 Analysis: Intentions to Comply with CDC Recommendation and Predictors of Intentions to Comply

In Fishbein and Ajzen’s Theory of Planned Behavior (Ajzen, 1985), intentions to perform a behavior are the strongest predictors of actual behavior. In turn, the best predictors of intentions are attitude, subjective norm and personal efficacy. To determine which of these inputs best predicted intention to request cleansing, we ignored our modeling manipulation and simply regressed intentions to ask caregivers to cleanse on measures of attitude, subjective norm, efficacy. We also included in the analysis perceived benefits and costs of making the request. Efficacy was measured with an item that read, “For me to ask caregivers [to cleanse every time they examine me] would be easy.” Our attitude measure read, “For me, asking caregivers [to cleanse every time they examine me] is extremely good.” Social norms (“Most people who are important to me think that I definitely should not ask caregivers to do this”), outcome benefits (“Asking caregivers to do this would significantly reduce or eliminate the possibility I might get an infection during my stay at the hospital”) and outcome costs (“Asking caregivers to do this might reduce the quality of care I receive during my hospital stay”) were all similarly assessed on scales that ranged from 1 (strongly disagree) to 4 (strongly agree).

The two personality variables were then entered as a second step to examine direct effects of interaction anxiety and authoritarianism on intentions, thereby partially addressing Research Question 2. Betas from this analysis are presented in Figure 1. The results showed a significant change in the variance accounted for by the model for each step (R^2 for model

without personality measures = .25, $R = .50$, $p < .001$; R^2 for model with added personality measures = .27, $R = .52$, $p < .04$).

Significant positive relationships were found between intentions and efficacy ($\beta = .32$, $t = 4.2$, $p < .001$) and intentions and attitude ($\beta = .26$, $t = 3.2$, $p < .001$). In addition, a negative relationship was found between intentions and authoritarianism ($\beta = .15$, $t = -2.37$, $p < .02$). No other effects were significant.

Concerning Research Question 2, greater efficacy and more favorable attitudes toward the behavior increase intentions to ask caregivers to cleanse, while higher levels of authoritarianism lower intentions. Social norms, outcome benefits and outcome costs, by contrast, are unrelated to intentions. Concerning one aspect of Research Question 2, interaction anxiety has no direct impact on intentions, while authoritarianism does. The indirect impact of these variables, and thus the remainder of Research Question 2, is addressed in the next stage of the analysis.

Stage 2 Analysis: Effects of the Manipulation and the Personality Variables on Predictors of Intentions to Request that Doctors Cleanse

Since efficacy toward making a request and attitude toward the request were the primary predictors of intentions, these variables were treated as dependent variables and analyzed using the full experimental design.

Request Efficacy—The efficacy measure was subjected to a 5 (modeled interaction) $\times$ 2 (authoritarianism) $\times$ 2 (interaction anxiety) analysis of variance, which revealed main effects of all three independent variables. No interactions were found.

The anxiety effect, $F(1, 229) = 23.91$, $p < .001$, suggested that low anxiety patients ($M = 2.93$) possessed higher efficacy levels than did high anxiety patients ($M = 2.48$). Similarly, the authoritarian effect, $F(1, 229) = 24.28$, $p < .001$, showed that low as compared to high authoritarians had greater efficacy (Low Authoritarian $M = 2.93$, High Authoritarian $M = 2.48$). Means for the modeled interaction main effect are presented in Table 1. The means reveal a surprising pattern: the lowest efficacy ($M = 2.45$) was found in the condition in which the patient requested the doctor cleanse and he responded agreeably. Alternatively, the highest efficacy ratings were found where the doctor cleansed without a patient request, both in the doctor-cleanse control ($M = 2.85$) and the doctor cleanses and encourages the patient to make a request ($M = 2.81$).

Attitude toward making the request—An analysis of variance of the attitude measure revealed significant main effects for both traits and a marginal interaction of anxiety and modeled interaction. No other effects were found.

The means for the anxiety main effect, $F(1, 229) = 7.13$, $p < .001$, suggested that low anxiety patients ($M = 3.03$) had more favorable attitudes toward making the request than did high anxiety patients ($M = 2.83$). The authoritarian main effect, $F(1, 229) = 22.36$, $p < .001$, indicated that low as compared to high authoritarians had more favorable attitudes (Low Authoritarian $M = 3.12$, High Authoritarian $M = 2.75$). Means for the modeled interaction $\times$

anxiety effect $F(1, 229) = 2.09$, $p = .08$, are presented in Table 2. Means in the table suggest that the driver of the interaction is the different responses of high and low anxiety patients in modeled interaction where the doctor responded negatively to a patient request to cleanse. The response of low anxiety patients is to have a more favorable attitude toward making the request, while the response of high anxiety patients is to have a less favorable attitude. Thus modeling a doctor's disagreeable (but compliant) response to a request to cleanse did lead to more negative attitudes toward the behavior, but only among anxious patients.

Summarizing Stage 2 Analyses—The analysis of predictors of intentions to ask caregivers to cleanse suggests that both anxiety and authoritarianism play important indirect roles in influencing intentions, thus addressing the remaining parts of Research Question 2. In other words, in addition to its direct effect on intentions, authoritarianism also influences intentions through its effects on efficacy and attitude. Interaction anxiety affects intentions exclusively through the indirect path of its impact on both attitude and efficacy.

Stage 3 Analysis: Patients' perceptions of the Interaction of the Doctor and the Patient and Tests of the Hypotheses

The three hypotheses dealt with identification with the patient in the video. The first suggested that subjects will rate themselves more similar to a patient who does not request the doctor cleanse (modeled interactions 1, 2, and 5) than the patient that does make such a request (conditions 3 and 4). H2 suggested interaction anxiety and modeled interaction would interact such that the effects predicted in H1 would be more exaggerated for anxious patients. H3 proposed an interaction of authoritarianism and condition such that high authoritarians would identify more with patients to do not request cleansing.

Identification with the patient was created by summing two measures, "The patient in the video acted in a way that is similar to how I would act in the same situation," and "Given the physician's actions, I would have behaved very much as the patient did," ($r = .72$).

Results revealed a main effect for modeled interaction, $F(4, 225) = 8.36$, $p = .001$, a marginal effect of interaction anxiety, $F(1, 225) = 3.15$, $p < .08$, and a modeled interaction $\times$ authoritarianism interaction, $F(4, 225) = 3.77$, $p < .05$. The interaction anxiety effect showed that low anxiety subjects identified more with the patient in the video ($M = 5.64$) than did high anxiety patients ($M = 5.36$). Means for the modeled interaction effect are presented in Table 3 and those for the interaction are presented in Table 4.

The prediction of H1 that most subjects would identify less with the patient that makes a request than with one that does not was, on balance, supported. As can be seen in Table 3, subjects who made the request in the agreeable response ($M = 4.99$) and the disagreeable response ($M = 5.49$) conditions identified less than those in the cleanse control ($M = 6.10$) and the doctor model request ($M = 5.91$) conditions. The exception to our prediction was the control: no cleanse condition, where identification was low ($M = 5.01$). Subjects in this cell appear to be indicating that they would have behaved differently than the patient who did not make a request prior to an examination.

The second hypothesis, which suggested that interaction anxiety and modeled interaction would interact such that anxious respondents would show enhanced effects, was unsupported.

The third hypothesis, which proposed that authoritarianism and modeled interaction would interact such that high authoritarians will identify more with a patient depicted as not requesting cleansing can be examined in Table 4. Means in the table provide qualified support for the hypothesis. Specifically, in the no request control, high authoritarians ($M = 5.59$) are significantly more likely to identify with the patient than are lows ($M = 4.44$). This relationship flips when the patient in the video requests the doctor cleanse and he responds agreeably. In this instance, it is low authoritarians who identify significantly more with the patient ($M = 5.36$) as compared with highs ($M = 4.63$). Unexpectedly however, no significant effect of authoritarianism exists in the request condition where the doctor responds disagreeably. As expected, in the conditions where no request is made and the doctor cleanses of his own initiative (conditions 1 and 5), the groups do not differ.

Summarizing Stage 3 Analyses—The study's hypotheses were supported in part. Subjects tended to see themselves as less similar to a patient depicted as making a cleansing request of a doctor than one who did not make such a request. Although interaction anxiety did not interact with modeled interaction on identification with the patient, authoritarianism did, as predicted. High authoritarians were less likely to identify with a requesting patient than were lows, but only when the doctor responded agreeably. This condition maximized the scenario that high authoritarians should find most troubling – a low-power actor (the patient) makes a demand that a high-power actor (the physician) cheerfully complies with. By contrast, in the disagreeable compliance condition, the physician may be viewed as re-establishing a traditional power hierarchy by showing his disapproval of the request. Perhaps high authoritarians, perceiving that a traditional hierarchy of power is restored in this condition, felt less of a need to decrease their identification with the patient.

Discussion

The purpose of this study was to assess whether the CDC's recommendation that patients request their doctors cleanse in front of them prior to each examination is a practical one, and to further determine whether both individual and environmental factors that might influence such a behavior are in fact significant predictors of intentions to make such a request.

The results are not encouraging with respect to the CDC's goals. The results suggest that most patients, even after being told that the CDC recommends they ask doctors to cleanse, have little intention to do so. In addition, their lack of intentions is not due to ignorance of benefits to their health from their doctors cleansing. We know this because subjects considered the examination in the one condition that showed a doctor failing to cleanse to be potentially unhealthy and unsterile. Therefore, if subjects are unlikely to ask their doctors to cleanse, it is not because they do not see benefits from them doing so. Rather, it is likely that they perceive such a request to violate important doctor-patient norms. This conclusion is bolstered by our findings that high authoritarians are less likely to make such a request.

High authoritarians are less likely to request a doctor cleanse because they value social hierarchies and believe in leaving complex judgments to the experts. Given their greater faith in the judgment of experts, it is quite possible that they believe a doctor who does not wash in front of a patient has already done so out of sight. In contrast, it is likely that people high in interaction anxiety fail to make such a request because of their fears of social interaction. In other words, anxious people lack the ability to confront the doctor, even if he or she is doing something that may be dangerous. This distinction between the two groups, high authoritarians and highly anxious people, is important because the motivations for their identical unwillingness to make a request stems from different sources. As such, different messages or interventions are likely to be important with each group. Authoritarians may need greater exposure to the failures of some healthcare workers to enact the behavior, while anxious individuals may need training in confronting potentially dangerous treatment with effective requests.

A somewhat unexpected finding was that subjects also perceived that a compliant but resentful doctor (a doctor who washed his hands but did so after responding to the request disagreeably) was also associated with a somewhat unhealthy and unsterile exam. This finding raises interesting questions that cannot be answered in the paper. For example, did subjects believe that the exam would be less healthy because the doctor would not examine the patient thoroughly? Or that he would conduct his exam while taking greater risks to the patient's health? Or that he would engage in passive aggressive behaviors toward the patients care after the exam? Or conversely, did patients perceive that the doctor would cleanse less effectively when doing so in front of the patient? It is possible that all of these factors may have influenced subject responses.

At a deeper level, the troubling aspect of this finding is that it demonstrates the “no-win” situation in which subjects may have found themselves. Specifically, not asking posed the immediate risk of an unhealthy exam. But asking created the risk of a doctor becoming resentful, also leading to unhealthy care. Asking also carries the costs of a potentially awkward interaction with someone on whom the patient is highly dependent.

Interestingly, whether the doctor responded disagreeably or agreeably to a request typically did not influence subject responses all that much. While it was expected that patients would respond favorably to the agreeable doctor, they may have instead viewed him as incompetent (was he perhaps agreeable because he forgets to cleanse all the time?). Or perhaps the doctor was seen as duplicitous, such that his agreeable demeanor covered hidden resentment at the request.

Not surprisingly then, patients responded most favorably across a variety of measures to the conditions in which the doctor cleansed of his own accord. Such doctors are likely viewed as competent. For individuals high in authoritarianism, they are doing their job, as experts should. For the highly anxious, they are not creating an uncomfortable environment in which a social response is called for. Of course, it is the failure of real-world healthcare providers to cleanse on a consistent basis that leads to thousands of deaths each year. The conditions in our study in which patients were forced to make a request or be examined in a non-sterile environment are all too common.

While our findings suggest problems for the CDC recommendation considered in isolation, there are reasons for optimism in them as well. Subjects responded favorably to the doctor who encouraged them to request a cleansing from their healthcare providers. This implies one message strategy for healthcare providers might be to actively encourage patients to make the request and to do so on a repeated basis in a friendly, helpful way. Although the doctor in our video did not explain why cleansing is important, he did suggest it was perfectly fine for the patient to make the request. It is likely that additionally sharing information about the dangers of unsterile examinations, along with information about the frequency with which patients are affected by unsterile exams, would further strengthen attitudes toward making the request.

In addition to attitudes, the other important predictor in our study was efficacy. Our findings suggest that increasing patient efficacy to make the request will increase intentions to ask doctors to cleanse. Efficacy training has an extensive literature (cf. Bandura, 1989). To increase the efficacy of patients to make the request, especially those high in interaction anxiety, would be difficult, but not impossible. Hospitals may wish to retain patient advocates who engage in such training and who also actively intercede in settings where healthcare workers do not properly cleanse. Over time the presence of such individuals might do much to change cleansing behaviors.

Future research could investigate, among other variables, age, race and gender of the physician to account for diversity in source credibility effects. This would address a potential weakness of the current study. Additionally, future research could measure behaviors versus intentions, and could incorporate training for pre-surgical patients to provide them the skills to initiate these crucial conversations.

Acknowledgments

This work supported in part by the NIH/NCATS Clinical and Translational Science Award to the University of Florida UL1 TR000064.

(This study was funded via a collaboration with the College of Medicine's Clinical Translational Science Award [CTSA])

References

- Adorno, TW.; Frenkel-Brunswik, E.; Levinson, DJ.; Sanford, RN. The authoritarian personality. Harper; New York, NY: 1950.
- Agency for Healthcare Research and Quality. Hospital-acquired infections dramatically increase trauma patients' risk of in-hospital death and hospital stay. 2011. Retrieved from <http://www.ahrq.gov/news/newsletters/research-activities/aug11/0811RA3.html>
- Ajzen, I. From intentions to actions: A theory of planned behavior.. In: Kuhl, J.; Beckman, J., editors. Action-control: From cognition to behavior. Springer; Heidelberg: 1985. p. 11-39.
- Altemeyer B. What happens when authoritarians inherit the earth? A simulation. Analyses of Social Issues and Public Policy. 2003; 3(1):161–169.
- Bandura A. Human agency in social cognitive theory. American Psychologist. 1989; 44:1175–1184. [PubMed: 2782727]
- Beisecker AE. Patient power in doctor-patient communication: What do we know? Health Communication. 1990; 2:105–122.

- Easton PM, Marwick CA, Williams FL, Stringer K, McCowan C, Davey P, Nathwani D. A survey on public knowledge and perceptions of methicillin-resistant staphylococcus aureus. *Journal of Antimicrobial Chemotherapy*. 2009; 63:209–214. [PubMed: 18984646]
- Epstein R, Franks P, Shields C, Meldrum S, Miller K, Campbell T, Fiscella K. Patient-centered communication and diagnostic testing. *Annals of Family Medicine*. 2005; 3:415–421. [PubMed: 16189057]
- Erasmus V, Daha T, Brug H, Richardus J, Behrendt M, Vos M, van Beeck J. Systematic review of studies on compliance with hand hygiene guidelines in hospital care. *Infection Control and Hospital Epidemiology*. 2010; 31:243–294.
- Frosch DL, May SG, Rendle KAS, Tietbohl C, Elwyn G. Authoritarian physicians and patients' fear of being labeled 'difficult' among key obstacles to shared decision making. *Health Affairs*. 2012; 31:1030–1038. [PubMed: 22566443]
- Hamour SM, O'Bichere A, Peters JL, McDonald PJ. Patient perceptions of MRSA. *Annals of the Royal College of Surgeons of England*. 2003; 85:123–125. [PubMed: 12648346]
- Haug MR, Lavin B. Public challenge of physician authority. *Medical Care*. 1979; 1c:844–858. [PubMed: 470473]
- Haug MR, Lavin B. Practitioner or patient: Who's in charge? *Journal of Health and Social Behavior*. 1981; 22:212–229. [PubMed: 7288129]
- Kohn PM. The authoritarian-rebellion scale: A balanced F scale with left-wing reversals. *Sociometry*. 1972; 35:176–189.
- Leary MR. Social anxiousness: The construct and its measurement. *Journal of Personality Assessment*. 1983; 47:66–75. [PubMed: 6834234]
- Leary MR, Kowalski RM. The interaction anxiousness scale: Construct and criterion-related validity. *Journal of Personality Assessment*. 1993; 61:136–146. [PubMed: 8377098]
- Leary, MR.; Kowalski, RM. *Social anxiety*. Guilford Press; New York, NY: 1997.
- McGuckin M, Waterman R, Shubin A. Consumer attitudes about health-care acquired infections and hand hygiene. *American Journal of Medical Quality*. 2006; 21:342–347. [PubMed: 16973951]
- Perencevich E, Treise D. Methicillin-resistant *Staphylococcus aureus* and the media. *Infection Control and Hospital Epidemiology*. 2010; 31:S48–S50. [PubMed: 20929370]
- Schlenker BR, Leary MR. Social anxiety and self-presentation: A conceptualization and model. *Psychological Bulletin*. 1982; 92:641–669. [PubMed: 7156261]
- Scott, RD. The direct medical costs of healthcare-associated infections in U.S. hospitals and the benefits of prevention. *Centers for Disease Control and Infection*; 2009. Retrieved from <http://www.cdc.gov/HAI/burdedn.html>
- Spellberg, B. Antibiotic resistance: Promoting critically needed antibiotic research and development and appropriate use ("stewardship") of these precious drugs. [Testimony of the Infectious Diseases Society of America (IDSA) Before the House Committee on Energy and Commerce Subcommittee on Health]. 2010. Retrieved from <http://www.idsociety.org/WorkArea/DownloadAsset.aspx?id=16656>
- Zandbelt L, Smets E, Oort F, Godfried M, Hanneke C. Medical specialists' patient-centered communication and patient-reported outcomes. *Medical Care*. 2007; 45:330–339. [PubMed: 17496717]

Figure 1.
 Betas for Predictors of Patient Intentions to Ask Healthcare Workers to Cleanse Each Time they Examine the Patient.

Table 1

Mean Request Efficacy as a Function of Modeled Interaction

Control: No Cleanse	2.74 ^a
Control: Cleanse	2.85 ^a
Request: Agreeable Response	2.45 ^b
Request: Disagreeable Response	2.67 ^{ab}
Doctor Models Request Behavior	2.81 ^a

Note. Means that do not share a superscript differ at $p < .05$ according to LSD test.

Table 2

Attitude toward Requesting Healthcare Providers Cleanse by Modeled Interaction and Patient Anxiety Level

	Anxiety	
	Low	High
Control: No Cleanse	3.02	2.94
Control: Cleanse	2.99	2.85
Request: Agreeable Response	2.98	2.83
Request: Disagreeable Response	3.26 ¹	2.61 ²
Doctor Models Request Behavior	2.89	2.90

Note. Low versus high anxiety means in request, disagreeable response cells differ at $p < .05$ using LSD test.

Table 3

Mean Identification with the Patient as a Function of Modeled Interaction

Control: No Cleanse	5.01 ^a
Control: Cleanse	6.10 ^b
Request: Agreeable Response	4.99 ^{ac}
Request: Disagreeable Response	5.49 ^{cd}
Doctor Models Request Behavior	5.91 ^{bd}

Note. Means that do not share a superscript differ at $p < .05$ according to LSD test.

Table 4

Identification with the Patient depicted in the Video as a Function of Authoritarianism and Modeled Interaction

	Authoritarianism	
	Low	High
Control: No Cleanse	4.44 ¹	5.59 ²
Control: Cleanse	6.07	6.11
Request: Agreeable Response	5.36 ¹	4.63 ²
Request: Disagreeable Response	5.63	5.35
Doctor Models Request Behavior	6.09	5.74

Note. Low versus high authoritarian means with different superscripts differ at $p < .05$ using LSD test.