

## **The Professor's Office as a Source of Non-Verbal Communication to Students**

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### **Abstract**

*This study explores the premise that the collection and arrangement of objects in a professor's office signals personality and teaching characteristics of the occupant to students. Findings suggest that the Myers-Briggs personality dimensions of judging/perceiving and sensing/intuitive are well communicated through viewing an office environment while thinking/feeling is poorly communicated. Professors believed to be extroverts are perceived as teaching classes that are more fun and less strictly graded. Faculty perceived as having a judging lifestyle are viewed as more likely to be well prepared for class, more likely to return exams and assignments in a timely manner, but less fun in class. Student inferences (expectations) of teaching behavior from viewing a professor's office might influence subsequent interaction with the teacher and evaluation of instruction.*

**Keywords:** impression formation, lens model, Myers-Briggs types, student perception

### **Introduction**

Verbal communication from teachers to students is a major communication channel in higher education settings. However, teachers also communicate by other means. For example, teachers who express appropriate non-verbal behavior in the classroom are judged significantly better on student ratings of teacher effectiveness (Ambady & Rosenthal, 1993). Additionally, teachers send signals to students through the organization and level of detail of their course syllabi (Saville, Zinn, Brown, & Marchuk, 2010). The later study found that students viewing a detailed syllabus from a hypothetical teacher rated that teacher as more effective (prepared, possessed of current information, and promoting critical thinking) than a teacher constructing a less detailed syllabus.

The purpose of the present study is to examine an additional source of non-verbal communication – the teacher's office. Specifically, this study focuses on what a professor's office signals to students. That is, what does the particular collection of objects in the office (and their arrangement) say about the occupant? The teacher's office is an interesting potential source of communication because it becomes personalized, expressing the identity (traits, values, and interests) of the occupant. Before encountering a certain professor, a student may walk by that faculty member's unoccupied office, viewing a nameplate and the office environment through an open door. In such a circumstance, the student might look at the office and wonder about the professor's teaching behavior were the student to enroll in that professor's classes. What inferences would the student make from the collection and arrangement of objects in the office?

A study in the psychology literature (Gosling, Ko, Mannarelli, & Morris, 2002) suggests that people are able to observe spaces personalized by others and make inferences of the unseen and unknown occupant's personality that are rather accurate. The goal of the present study is to extend this research approach to an education setting context. In the current study, student subjects view a single photo of an unknown professor's office and infer gender, personality, and teaching characteristics of the unseen office occupant. Results suggest that students are rather adept in judging personality traits from the appearance of an office environment, and these judgments appear to be the basis for estimating teaching behavior.

Different office photos led to significant differences in inferred teaching characteristics of the occupants. Also, multiple significant associations between personality traits and teaching characteristics were found.

The present study contributes to the literature by demonstrating that students may develop expectations of teaching behavior from viewing a space personalized by the teacher rather than direct observation of the professor. Such expectations may impact student interpretation of actual teacher behavior, subsequent interaction with the teacher, and evaluation of the teacher.

### ***Non-Verbal Communication***

In broad terms, non-verbal communication (NVC) refers to the sending and receiving of information between people without the use of words (Dyrel, 2011). The cited author offers a list of NVC channels: kinesics (body posture, gestures, facial expression, and eye gaze), vocalics (also called paralanguage, the non-word aspects of speech such as pitch, tone, and accent), physical appearance (clothing and hairstyle), proxemics (physical distance between two communicating people), haptics (a specialized gesture in which one communicator touches another), olfactics (fragrance), chronemics (time spent in communication), and artifacts (objects manipulated by communicators that play a role in the sending of a signal). The current study will focus on the last named NVC channel, specifically, the collection and arrangement of objects in a personalized environment.

### ***NVC and Impression Formation***

The “lens” model of Brunswik (1952) has been used to explain the process by which people observe non-verbal signals from another and form an impression of that person. According to the model, underlying personality dispositions and values held by a person are encoded into the kinesics, vocalics, and physical appearance of the person. Observers note this evidence, infer the behavior that created the evidence, and then infer the disposition behind the behavior (a decoding process). Any incompleteness in personality inference is filled-in with stereotypes or by using the perceived presence of one personality trait to infer another. The latter mechanism is referred to as implicit personality theory (Ebbesen & Allen, 1979). The “lens” in the name of Brunswik’s model of the perception process is a metaphor for how people select and mesh together information cues to develop an impression of the person, analogous to the way an optical lens gathers and focuses light to form an image

It is important to note that the “lens” model has generally been restricted to evidence based on direct observation of people giving non-verbal signals (Gifford, 1994). However, Gosling et al. (2002) have expanded the model to personality inference from behavioral residue in the environment (without direct observation of the person). Behavioral residue refers to physical traces of past activity, equating to the artifacts dimension in the taxonomy of NVC given earlier. As used here, environment refers to “personal” space, an office, home, automobile, or the person’s body – a space over which the person has an ownership claim and which may be altered by their behavior.

An example of behavioral residue would be finding a poster on a wall in an office (photo of a turtle with a quote by Gandhi, ‘there is more to life than increasing its speed’). The presence of the poster is a personal (value) statement, suggesting that the occupant of the office may not identify with the Western concept of time (which states that time is a resource to be divided up and allocated, stressing punctuality and productivity per time unit – as opposed to the Eastern, cyclic view of time which does not treat time as being scarce). Further inferences are possible. Perhaps the office occupant practices meditation or is a vegan, but anything more is not fully clear at this time. If the poster clue were combined with others then the inference process might be more developed.

Another example would be the finding in an office of stacks of collated papers on a shelf, all neatly arranged at right angles to each other. The precision of the placement of the objects suggests that the occupant of the office is very organized (a dispositional trait). Other inferences are possible. Organized people are usually punctual and work ahead to meet deadlines on time. It would be difficult to image such a person driving with an expired license or failing to file their tax returns on time. Other inferences are possible, but the point to be made from these examples is that behavioral residue in the environment may serve as a clue to the dispositions and values of the occupant.

The objectives of the study by Gosling et al. (2002) were straightforward. The authors wanted to know if observers studying behavioral residue in a personal environment and inferring the personality of the unseen and unknown occupant would: a) reach consensus, and b) be correct in their inferences.

In Part 1 of their study, eight observers inspected the offices of workers in service organizations (real estate firm, advertising agency, a school, an architectural firm, and a bank) to infer personality of the occupant. In Part 2, seven observers examined the personal living space of university students (private houses, apartments, dorms, and fraternities) to infer the personality of the occupant. For both parts, personality assessments were then compared among observers and to self and peer-reported assessments of the occupants. Across both parts of their study, the authors report that observer impressions were remarkably consistent and often accurate.

The goal of the current study is to expand the research approach of Gosling et al. (2002) to an education context. The working premise of the investigation is that students will be able to view photographs of the office of a professor (absent the professor) and infer personality traits of the occupant. Further, it is believed that students will be able to infer teaching characteristics of the occupants from the office photos. Both personality and teaching behavior is believed to be signaled through the artifacts dimension of NVC. The next section explains why student inference of teacher personality might be important.

### ***Teacher Personality***

There is a body of research linking teacher personality with student evaluation of instruction (Hart & Driver, 1978; Patrick, 2011; Sherman & Blackburn, 1975). In general, students award better instruction evaluation marks to teachers who are outgoing, imaginative, and conscientious, and this occurs regardless of the personality of the student rating the instructor (Hart & Driver, 1978).

A dramatic example of how student perception of teacher personality may alter evaluation of instruction is given by Widmeyer and Loy (1988). In an experiment that expands on an earlier study by Kelley (1950), the authors manipulated student expectations of a guest lecturer's personality ("warm" versus "cold") followed by the same 40-minute lecture to both groups of students and the filling-out of student evaluations of instruction. Subjects led to believe the lecturer was "warm" rather than "cold" rated him significantly more favorably on certain personality characteristics (pleasantness, sociability, good-naturedness, and level of humor) as well as certain teaching characteristics (knowledge of material, considerate of others, and being an interesting speaker). Since both groups of students evaluated the same person giving the same lecture at the same time, the conclusion is that expectations of personality may strongly influence student perception of teaching ability.

### ***The Present Study***

The objective of the current study is to extend a previous line of social perception research (Gosling et al., 2002) to a teaching context. The cited authors were apparently the first to investigate inference of personality based on behavioral residue in personal environments rather than direct observation of the person of interest. The present study extends this line of investigation to focus on the professor's office as the personalized environment giving non-verbal signals of personality as well as teaching characteristics.

The present study adopts an exploratory approach to the topic, framing inquiry as research questions rather than formal hypotheses. Given student subjects viewing a photograph of an unknown and unseen professor's office and making inferences of that professor's personality and teaching characteristics:

RQ1. What will be the level of agreement among subjects on each of the four Myers-Briggs dimensions of personality?

RQ2. What will be the level of accuracy of prediction among subjects for each of the four Myers-Briggs dimensions of personality?

RQ3. What associations will subjects make between predicted personality dimensions and predicted teaching behavior?

### ***Pretest***

The objective of the pretest was to select photo stimuli for the main study. A group of 14 university students enrolled in a class that would not be tapped for the main study was used as subjects. Each student was given a set of 8 color photos of different professors' offices and a questionnaire that addressed whether they recognized any of the offices, could guess the name of the occupant, could guess which were occupied by women, extroverts, practical (versus theoretical) minded people, analytical (versus emotional) people, structured (versus spontaneous) people, professors who would be "well-prepared" for class, professors who would conduct a "fun" class, professors who would be "strict" in awarding grades, professors who would be "timely" in returning assignments and reporting grades, and professors who would "challenge you to learn" in their class.

Each office photo was assigned a number, and students were asked to write any photo numbers they deemed a match in response to each of the above questions. Analysis consisted of computing frequency counts for the number of times each office photo was listed for each question. Based on the results, 4 photos were chosen for the main study.

### ***Questionnaire***

The questionnaire for the main study consisted of 5 pages of categorical, scalar, and open-ended response items stapled to the inside right side of a manila folder. A single color print of an office photo measuring 5 and 7/8 by 4 and 3/4 inches was stapled to the inside left of the manila folder. This arrangement allowed subjects to read questionnaire items and respond while maintaining visual contact with the photo.

Initial questionnaire items addressed whether the subject recognized having seen the office before, whether they could guess the name of the professor occupant of the office, and their level of confidence in being able to infer characteristics of an unseen office occupant based only on viewing a photo of the office (on a -4 to +4 scale). Subsequent items asked the respondent to guess the gender and personality characteristics of the occupant. Each of these latter items offered the subject three categories to choose from with the first being an “I am not sure” option.

Personality categorization was based on the four Myers-Briggs dimensions (Myers & Myers, 1980) and category options were similar to the polar opposite anchors for each dimension (extrovert-introvert, sensing-intuitive, thinking-feeling, judging-perceiving). Extroverts are energized by being around people and action while introverts find such activities to be an energy draining experience. Sensors rely on their five senses to gather information and focus on facts and practical matters while intuitives prefer to look for possibilities, meanings and relationships among things. Thinkers make decisions in a detached, analytical, objective way while feelers decide issues based on their personal involvement in the matter and how the decision affects other people. Finally, judges want their life to be structured, ordered, planned and controlled while perceivers prefer an environment that is flexible, spontaneous and adaptive. Importantly, after each personality trait item, respondents encountered an open-ended question asking them to list what they viewed in the photo that led them to the category they chose.

Inference of teaching characteristics was tapped with a numerical scale (-4 to +4) for each characteristic, with the positive end of the scale representing more of the characteristic being addressed. Characteristics included being “well-prepared” for class, conducting a “fun” class, being “strict” in awarding grades, handing back assignments and exams in a “timely” manner, and being a professor that would “challenge you to learn” in their class. The last section of the questionnaire contained demographic items and a space for any open-ended comments.

### ***Photo Stimuli***

Office photos used in this study were obtained by evaluating offices at the authors’ university with open doors to see if the office might fit test criteria, obtaining permission from the faculty occupant to photograph the office and participate in the study, asking the occupant to exit the office, and snapping a digital photo from a perspective near the entrance door. None of the photos were staged, and all photos were screened to ensure that the name of the occupant was not readable on any nameplate or diploma. While the questionnaire was the same for all respondents, there were four variations of the accompanying office photo, the four photos selected in the pre-test. Each respondent only viewed one photo and filled-out one questionnaire.

Photo #1 was the office of a female faculty member in the College of Education. It shows what appear to be framed diplomas above a desk filled with folders and papers, a ‘riser’ shelf with multiple family photographs and post-it notes, a turned-off overhead light but two lit lamps (and a third unlit lamp), a large green plant atop a filled bookshelf, and two readable posters on the side of a file cabinet (“our differences make us stronger” and “OBX”). The latter refers to the outer bank islands of North Carolina. An empty chair sits to the side of the desk, and the chair at the desk has a small pillow and what appears to be a shawl with multiple images of a cat.

Photo #2 was the office of a male faculty member in the Department of Political Science. It contains a number of political posters (both Republican and Democrat), a desk with a few loose papers and two bowling trophies, a ‘riser’ shelf over the desk with some family photos, a small green plant at a window ledge, a collection of miniature NFL helmets pinned to the wall, an empty chair opposite the desk chair, and light coming both from the window as well as an unseen overhead fluorescent fixture.

Photo #3 is the office of a female faculty member in the Department of Biology. It is notable for the deep stacks of haphazardly arranged papers that cover the desk (with some stacks seemingly about to slide off onto the floor). A number of items, including some papers, are oddly arranged on the floor. Framed diplomas rest on a hutch above the desk, and family photos appear on the hutch doors. A bucket containing what appears to be a bouquet of cut flowers sits on the floor next to an empty chair while another chair contains a jacket. Several posters are visible, including one about forest fires. A filled bookcase is along a back wall. Office lighting is from a window as well as an unseen overhead fluorescent fixture.

Photo #4 is the office of a male faculty member in the Department of Biology. A “got science” poster appears on a bookcase and there is an apparent abstract painting on the back wall. One entire wall is lined with bookcases, which appear mostly full. The desk area is mostly vacant except for a framed sketch and a few personal items on the top of a hutch above the desk and a few family photos on the doors of the hutch. A chair for visitors is only partially seen opposite the desk and desk chair. Along the back wall is a low table which, in contrast to the desk, is not well organized. A key rack (imitation fish with fish hooks as key holders) is mounted on the wall above the low table.

**Data Collection and Coding**

A convenience sample of university students was used for data collection. Questionnaires were distributed in undergraduate classes taught by the authors. All data were entered into a SPSS data matrix using either codes or, in the case of open-ended items, the actual words of the respondent entered as a string variable. The -4 to +4 scale responses were re-coded 1 through 9 to avoid dealing with negative numbers.

**Sample**

A total of 138 usable questionnaires were received from students and this constituted the final sample. For completed questionnaires to be usable, respondents had to indicate in the screening questions that they did not recognize having seen the office in the photo and could not guess the name of the faculty occupant. The sample consisted of 90 men and 48 women with an overall average age of 20.31 years and a standard deviation of 1.48 years.

One of the initial questions asked respondents to indicate their level of “confidence” in their ability to infer characteristics about the unseen occupant of the office (on a -4 to +4 scale). Recoded 1 through 9, the sample average on this item was 6.62 with a standard deviation of 1.51. A one-sample t-test comparing this average to the scale mid-point of 5 is significant ( $t = 12.57, df = 137, p < .001$ ), and this is interpreted as evidence that subjects in the study were generally able to ‘buy into’ the idea of making inferences from behavioral residue.

**Table 1: Crosstabs of Picture Stimulus and Respondent Inference of Gender and Personality Traits**

Characteristic	Category	Picture			
		1	2	3	4
Gender	Not Sure	1	0	2	3
	Male	0	<u>30</u>	2	<u>22</u>
	Female	<u>35</u>	3	<u>29</u>	11
Extroversion	Not Sure	<u>4</u>	4	4	<u>9</u>
	Extroverted	18	24	<u>24</u>	8
	Introverted	14	<u>5</u>	5	19
Practical	Not Sure	4	3	5	5
	Practical	<u>22</u>	<u>28</u>	7	<u>27</u>
	Head-in-Clouds	10	2	<u>21</u>	4
Analytical	Not Sure	9	5	11	13
	Analytical	19	<u>27</u>	10	<u>20</u>
	Emotional	<u>8</u>	1	<u>12</u>	3
Structure	Not Sure	5	5	1	<u>0</u>
	Structured	15	<u>18</u>	3	29
	Spontaneous	<u>16</u>	10	<u>29</u>	7

Notes: Each picture was viewed by a different subject group (total n = 138). For each trait and picture stimulus, the underlined cell entry is the number of subjects correctly guessing the characteristic.

**Table 2: Summary of Inference Agreement and Accuracy (Percent) by Characteristic for All Four Photo Stimuli**

Inferred Characteristic	Agreement <sup>a</sup>	Accuracy <sup>b</sup>	lambda <sup>c</sup> and p-value
Gender	.84	.84	.633 p < .001
Extroversion	.62	.30	.172 p = .031
Practicality	.71	.71	.259 p = .007
Analytical	.57	.49	.032 p = .670
Structured life	.67	.46	.370 p < .001

Notes: <sup>a</sup>Uncorrected for chance agreement.

<sup>b</sup>Based on self-report of personality characteristic.

<sup>c</sup>Asymmetric lambda with picture as the independent variable and inferred characteristic as the dependent variable. The lambda coefficient is the percentage reduction in error of prediction of the dependent variable by using the independent variable.

### ***Categorizing Gender and Personality***

A summary of inferred gender and personality traits by photo stimulus is shown in Table 1. For each picture and characteristic, the correct response (based on self-report by the faculty member) is the underlined entry. The level of consensus (agreement) and accuracy in the inference of each characteristic is indicated in Table 2. Agreement was computed by summing the modal cells across all four photo stimuli for each characteristic and dividing by the grand total of 138 subjects. This raw agreement is unadjusted for chance agreement. Accuracy was computed for each characteristic by summing the underlined entries (correct inferences) across all four photo stimuli for each characteristic and dividing by 138.

The last column in Table 2 is lambda, a measure of nominal association (Adeyemi, 2011) available in SPSS. In the present context, asymmetric lambda is the reduction in error of prediction achieved when using the independent variable (picture in this case) to predict the dependent variable (categorization of the characteristic in this case). A significant lambda suggests that encoding of the characteristic into behavioral residue took place and decoding was sufficient to achieve some consensus of categorization. It may be noted that lambda varies for the characteristics, suggesting that some characteristics are encoded/decoded better than others. Specifically, gender and practical (versus intuitive) are two characteristics that appear to have significant lambda coefficients as well as high levels of agreement and accuracy.

### ***Basis for Inferences***

For each inference of gender or personality trait, respondents were asked to list what they viewed in the photo that led them to the inference. These open-ended responses provide the links between behavioral residue and respondent inferences. More specifically, these links are a clue into the process by which the characteristic is encoded and decoded.

For Photo #1, respondents focused on the cat design on the shawl draped over the office chair and the pillow on that chair. This appeared to signal 'female' to respondents. In evaluating introversion/extroversion, subjects noted the pictures on the desk and the diversity poster (perhaps signaling extroversion), but also mentioned a lot of papers on the desk and books on the shelf (suggesting introversion), and so they were split on this characteristic. In assessing practical versus intuitive, respondents remarked about the number of post-it notes on the desk and an organized bookcase, and so they mostly categorized the occupant as practical. For the next characteristic, analytical versus emotional, subjects interpreted the family pictures on the desk and the cat image on the shawl to signal an emotional quality. However, the abundance of books and papers in the office signaled an analytical tone as well.

Overall, respondents were divided on this characteristic, but the majority indicated analytical. For the last characteristic, structure versus spontaneity, subjects interpreted the office to be both organized and messy, and they were about equally divided in their inferences.

Turning to Photo #2, subjects found the bowling trophies and the collection of miniature NFL football helmets to strongly signal ‘male’ gender. Respondents believed that someone who had so many political posters would want to share their opinions, and so they characterized the occupant as extroverted. Similarly, the campaign posters were interpreted as suggesting an occupant who is practical rather than intuitive and analytical rather than emotional. Subjects found elements of both organization as well as mess in the office, and so they were divided in their inferences, although most chose structure instead of spontaneity.

For Photo #3, the overwhelming write-in response was the presence of flowers, suggesting a female occupant. Respondents interpreted the presence of family pictures and clutter in the office to indicate an extroverted person. Apparently, clutter suggested that the occupant might be interrupted a lot, indicating a lot of interpersonal activity. Also, the messy office was interpreted to signal an occupant who had their head in the clouds and was not very practical. The number of books in the office was interpreted to signal an analytical mind, but the presence of family pictures suggested an emotional tone; overall, subjects were split in assessing this characteristic. Finally, the messy “free-flow” arrangement of the office was strongly interpreted as evidence of a spontaneous personality trait.

The fish ornament on the wall in Photo #4 was interpreted as a ‘male’ signal, but subjects also noticed the cleanliness of the office and the artwork on the wall, and so they were somewhat split in their inference of occupant gender. In assessing extroversion, subjects interpreted fishing as a relatively solitary activity and perceived the office as not particularly welcoming. Although there was some difference of opinion, the majority inferred the occupant to be introverted. The clean office (lack of distractions) and “got science” poster were interpreted to suggest a practical and analytical mind. Finally, the tidy, organized office (except for the back table) was interpreted to signal a person whose life was more structured than spontaneous.

***Inferences of Teaching Characteristics***

Respondents were asked to infer teaching characteristics using -4 to +4 scales (re-coded 1 through 9). The original intent was to compare the four photo stimuli for their ability to elicit significant differences in inferred teaching characteristics using one-way ANOVA and post-hoc multiple means comparisons. However, due to unequal group sizes and a lack of homogeneity of variance, the assumptions for one-way ANOVA were not met. To deal with this issue, it was decided to compare data for the four photo stimuli using the Kruskal-Wallis H test, a non-parametric analogue of one-way ANOVA. This change avoids restrictive assumptions and easily accommodates the original interval level data. To determine which group mean ranks differ, the Mann-Whitney U test is used, a non-parametric analogue to the t-test (with Bonferroni adjustment for number of planned comparisons). The results of these tests are shown in Table 3.

**Table 3: Mean Rank and Test of Group Differences on Inferred Teaching Characteristics (Overall N = 138)**

Variable	Picture				Pairwise Comparisons at p < .05
	1	2	3	4	
Well-prepared for class	71.56	71.82	30.74	100.85	3 < 1,2 < 4
Conduct a fun class	74.60	64.53	91.00	49.25	4,2 < 3
Strict grading	71.38	76.41	47.61	81.36	3 < 2,4
Timely report of grades	70.60	74.56	33.56	96.71	3 < 1,2,4
Challenge to learn	70.39	72.30	56.24	78.19	None

Notes: Cell entries are mean rank as reported in SPSS output for Kruskal-Wallis H test; pairwise comparisons are Mann-Whitney U tests between groups. Since original data were 9-point scales, higher numbers in cell entries indicate more of the characteristic being measured.

Significant ( $p \leq .002$ ) group differences were found for all inferred teaching characteristics except the one suggesting that the professor would “challenge you to learn” in their class. Photo #3 is notable for giving rise to inferences that its occupant is the least well-prepared for class, the least strict in grading, the least likely to return exams and assignments in a timely manner, and the most likely to conduct a “fun” class. Conversely, Photo #4 is interpreted as having a faculty occupant who is most well-prepared for class, most timely in returning exams and assignments, and least likely to conduct a “fun” class.

### ***Personality and Teaching Characteristics***

The last data analysis was an examination of inferred teacher personality and inferred teaching characteristics for any associations between the two. Since inferred personality traits were based on three response categories and inferred teaching characteristics were scaled on 9-point items, it was decided to re-code the latter data into three (low, medium, high) categories for analysis in crosstabs. This was done by re-coding scores of 1 through 3 into low, scores of 4 through 6 into medium, and scores of 7 through 9 into high. This resulted in multiple crosstabs, each with a total of 138 subjects. Although the re-coded inferred teaching characteristic data is, technically, ordinal level data, it is treated as nominal for the purpose of examining the relationship between personality and teaching.

A crosstabs of extroversion-introversion and conducting a “fun” class revealed a highly significant relationship between the variables ( $\chi^2 = 15.12$ ,  $df = 4$ ,  $p = .004$ ). Extroverts were perceived as much more likely than introverts to conduct a fun class. Also, extroverts were perceived as being significantly less strict in grading than introverts ( $\chi^2 = 13.55$ ,  $df = 4$ ,  $p = .009$ ).

Crosstabs analysis of the trait of living a structured (versus spontaneous) life and teaching characteristics revealed several findings. Faculty perceived as spontaneous were significantly more likely ( $\chi^2 = 16.25$ ,  $df = 4$ ,  $p = .003$ ) to be perceived as holding a fun class than structured faculty. However, structured faculty were perceived as significantly more likely to be well prepared for class ( $\chi^2 = 40.33$ ,  $df = 4$ ,  $p < .001$ ) and significantly more likely to return exams and assignments in a timely manner ( $\chi^2 = 64.97$ ,  $df = 4$ ,  $p < .001$ ) than spontaneous faculty.

Other personality traits were also significantly related to teaching characteristics. Analytical-minded faculty were perceived as more likely to grade strictly than emotional faculty ( $\chi^2 = 24.05$ ,  $df = 4$ ,  $p < .001$ ). Similarly, practical-minded faculty were perceived to grade more strictly than faculty perceived as heads-in-clouds ( $\chi^2 = 17.13$ ,  $df = 4$ ,  $p = .002$ ).

### ***Discussion***

Findings in the current study strongly support the working premise for the investigation, the idea that behavioral residue in the office of an unseen and unmet professor may communicate personality traits and teaching characteristics of the occupant to students. Teachers need to be aware that the collection and arrangement of objects in their office is sending non-verbal signals to visitors and students may develop expectations of future teacher behavior from observing artifacts in the office. The results support an earlier study (Gosling et al., 2002) which found that physical artifacts in a personal environment could communicate personality traits, and the present study extends this approach to inference of teaching characteristics.

Of the four Myers-Briggs personality dimensions, living one's life in a structured versus spontaneous way (judging versus perceiving) was the dimension best communicated by behavioral residue. This makes intuitive sense because subjects thought-listed office organization as their basis for this perception and that would be easily communicated visually. Conversely, the dimension least well communicated through the photo was analytical versus emotional (thinking versus feeling). This dimension has to do with how a person evaluates information, thinking with your head or your heart (Myers & Myers, 1980). Thought-listing by subjects revealed conflicting evidence for this dimension in most photos (family photos suggested an emotional tone while books were interpreted as analytical) and this led to it being the only dimension with an insignificant p-value for the lambda coefficient (Table 2) suggesting an absence of association between photo and perception of the trait.

While inference of personality from behavioral residue has been the subject of a previous investigation (Gosling et al., 2002), the current study was an extension of this approach to inference of teaching behavior. Results suggest that student subjects are able to draw clear inferences of teaching style and these inferences significantly differ among photographs of offices of different professors (Table 3). However, the mechanism of the intuitive leap from office photo to inference of teaching behavior of the occupant remains uncertain.

Unlike the personality dimension of living a structured versus spontaneous life, there would seem to be little visual evidence in an office to conclude whether, for example, the faculty occupant is a strict or lenient grader. Subjects likely inferred personality of the office occupant first then estimated teaching characteristics based on personality stereotype and/or extrapolation from past experience with teachers.

Since personality inference seemed to be the source of inferred teaching behavior, crosstabs of traits and teaching characteristics were examined for significant associations. A number of significant associations were found, most notably for the Myers-Briggs dimensions of extroversion-introversion and judging-perceiving (labeled here as structured-spontaneous). Extroverts (versus introverts) were perceived as conducting a more “fun” class and grading more leniently. Structured (versus spontaneous) faculty were viewed as being more prepared for class, returning exams and assignments in a timely manner, but holding a less “fun” class.

### ***Practical Implications***

The present study finds that students may develop inferences (expectations) of teacher personality as well as teaching behavior from observing a professor’s office. The development of expectations suggests implications. Widmeyer and Loy (1988) demonstrated that expectations of the personality of an experimental guest lecturer significantly biased subsequent student evaluation of teaching ability. Students told that the guest lecturer was a “warm” person rated him more favorably than students told the guest lecturer was a “cold” person (despite both groups of students attending the same lecture). This finding, plus results of the present study, suggests that observation of a professor’s office could bias expectations and affect subsequent evaluation of that professor. The psychological phenomenon underlying this suggestion, and which may also explain the findings of Widmeyer and Loy (1988), is *confirmation bias*, a tendency to select or distort new information to support a pre-existing belief. This error in judgment is stated to be the most prevalent and powerful of all psychological phenomena affecting inference (Nickerson, 1998).

### ***Limitations***

The current study has a number of limitations. First, the sample of photos used as stimuli is too small to adequately represent the spectrum of all faculty offices. This is a limitation of representation. Second, having subjects infer personality and teaching characteristics from a single office photo is not the same as viewing an actual, three-dimensional office. The quality of observations is likely to differ in the two environments. This is an issue of laboratory conditions not being the same as real-world conditions (giving rise to a question of external validity). The last limitation, the narrow age range of the sample in this study (18-24), is also a question of generalizability. Older (non-traditional) students are not represented in the sample. For all of these reasons, the conclusions to be drawn from this study are limited.

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