APPENDIX: SUMMARY OF THE SPECIFIC RESULTS CITED

Methods

All results stated below are obtained via quantitative methods unless specifically noted as qualitative. Some studies have been cited only for descriptive or contextual information, rather than for the studies' results. For those studies, the "Conclusions" section has been relabeled "Relevant Information."

When the numerators and denominators were reported, we provided the reported percentages to 3 digits. Otherwise, reported percentages use the digits as listed in the referenced article. All P-values are reported as they were in the referenced article (e.g., "P <"). No assumptions were made as to the type of correlation (e.g., Spearman or Pearson) if not reported in the referenced article. In quotations, a "0" was added before periods in fractions (e.g., "0.05" rather than ".05"). Interquartile range is abbreviated "IQR" and confidence interval is abbreviated "CI." Any test statistics without a standard American Psychological Association style format, as used in most of the included papers, are reported as they are in the cited article. Degrees of freedom are reported with the test statistics when reported in the referenced article.

Simple punctuation, tense, and spelling discrepancies (British/American) were harmonized. Some vocabulary was changed to insure uniformity. For example, "survey" was changed to "questionnaire" to differentiate it from "interview" which involves interaction between the participant and experimenter/interviewer. "Judge" or "advisee" was changed to "decision-maker." Unless defined, acronyms and abbreviations were spelled out.

Reference 1

Review article

Reference 2

Review article

Reference 3

Review article

Reference 4

Review article

Reference 5

Methods: "Anesthesiologists, operating room nurses, and housekeepers were given nine simulated scenarios (vignettes) involving multiple operating rooms to study their decision-making. Participants were randomized to one of four groups, all with an updated paper operating room schedule: with/without command display and with/without passive status display."

Results: "Participants without command displays answered the scenarios involving over-utilized operating room time less accurately than random chance (P = 0.011, 31 of 84 responses). This result was consistent with the staff using the status displays to increase the clinical work per unit time in each operating room … Command displays significantly increased the correct response rate (P < 0.001). Among all scenarios, simulated status displays with processed information (e.g., expected over-utilized operating room time) had no effect on the accuracy of decision-making versus displays with raw data (i.e., updated paper schedule) (P = 0.40). Command displays increased the accuracy of decision-making (P = 0.010; Mann-Whitney P < 0.001)."

Conclusions: "Anesthesia providers and nursing staff made decisions that increased clinical work per unit time in each operating room, even when doing so resulted in an increase in over-utilized operating room time, higher staffing costs, unpredictable work hours, and/or mandatory overtime."

Reference 6

Methods: In the first study, patients and pediatric patients' families were given pagers upon arrival at the anesthesia clinic for a non-operating room anesthetic. In the second study, "31

anesthesiologists working nights and/or weekends underwent one of six 45 minute training sessions to learn decision-making on the day of surgery." There was "an e-mail after his or her call with quantitative feedback and a list of each patient's and surgeon's waiting, if applicable."

Results: "The anesthesiologists used the pagers mostly when doing so increased their clinical work per unit time. Each increase in the minutes starting earlier than scheduled was associated with an increase in the probability of the patient being paged ($P < 0.001$)." "Decisions on nights and weekends also were consistent with the hypothesis that clinicians used a heuristic of increasing their clinical work per unit time. Education did not change decision-making or reduce the patients' and surgeons' waiting at the hospital ($P = 0.75$)."

Conclusions: "Efforts to work fast cannot be explained as a consequence of efforts to reduce surgeon and patient waiting. Rather, the heuristic followed is consistent with increasing one's personal clinical work per unit time at one's assigned anesthetizing location."

Reference 7

Methods: "Schedulers struggled to understand fasting and arrival times of patients, despite using a web site with statistically generated values in tabular formats." Participants were "20 graduate nursing students or undergraduate nursing students in clinical training … Each was informed that he or she would play the role of a scheduling clerk and make scheduling decisions for patients undergoing surgery … The educational component of training consisted of an introductory web page providing background information on eating and drinking instructions [and] the likelihood of surgery starting early."

Results: "Experimental participants were required to show that they had learned the instructional material." For example, "the participant had to choose the answer '2 hours' when asked: '"A patient is not allowed to have clear liquids for how many hours before surgery?'." "Fewer than half applied this knowledge to even one of the two test questions ($P < 0.0001$), even after having scheduled six patients ($P = 0.021$)."

Conclusions: "Facilities wanting to reduce patient fasting times and/or waiting times to have more patient-centered care while not increasing anesthesia costs should address people's tendency to ignore the fact that anesthetics often start early … A solution is for computers to provide recommendations to people, because even when people are presented with statistical probabilities and have learned their meaning, they do not apply this knowledge to decision-making."

Reference 8

Methods: "In order to judge the personality of an operating room coordinator in relation to risk-taking in planning schedules, we applied the Zuckerman-Kuhlman Personality Questionnaire in our study. Seven anesthesiologists were asked to score every operating-room coordinator on willingness to take risks in planning. To analyze which risk attitude creates more operating room efficiency, the daily prognosis of the operating-room coordinator compared with the actual operating room program outcome was registered during a 5-month period in 2006 and 2007."

Results: "Seven anesthesiologists classified the four operating room coordinators into the risk-averse group (n = 2) and the non-risk-averse group (n = 2) … The non-risk-averse operating room coordinator plans to fill the gaps in more cases in the operating room program than the risk-averse operating room coordinator does. The number of extra cases performed by the non-risk-averse operating room coordinator as compared to a risk-averse operating room coordinator is 188 in 2006 and 174 in 2007." "We analyzed ex-post how many cases the risk-averse group and non-risk-averse group could have planned in the time period from 2:00 PM to 4:00 PM. For the risk-averse group, the numbers were 133 (2006) and 127 (2007). For the non-risk-averse group, the results were 12 and 15."

Conclusions: "A non-risk-averse operating room coordinator creates significantly less unused operating room capacity without a great chance of running operating rooms after regular

working hours or canceling elective cases scheduled for surgery compared to a risk-averse operating room coordinator."

Reference 9

Methods: "We added three scientific questions to a 24-question online, anonymous survey performed before the implementation of a new operating room information system. The 57 respondents cared sufficiently about operating room management at the United States teaching hospital to complete all questions."

Results: "Respondents lacked knowledge about principles in reducing over-utilized operating room time to increase operating room efficiency, based" on lack of rejection of the null hypothesis that they would answer "the relevant question correctly at a rate no different from guessing at random" (P = 0.73). "Those results differed from prior findings of responses at a rate worse than random, resulting from a bias on the day of surgery of making decisions that increase clinical work per unit time. Most respondents falsely believed that a 10 min delay at the start of the day causes subsequent cases to start at least 10 minutes late (P > 0.0001 versus random chance). Most respondents did not know (P = 0.008 versus chance) that most (> 50%) of cases take less time than scheduled. No one who demonstrated knowledge about cases sometimes taking less time than scheduled applied that information to their response to [the preceding finding] regarding cases starting late (P = 0.0002)."

Conclusions: "Knowledge of operating room efficiency was low among the respondents working in operating rooms. Nevertheless, the apparent absence of bias shows that education may influence behavior. In contrast, presence of bias on matters of tardiness of start times shows that education may be of no benefit … Interventions to reduce patient and surgeon waiting from start times may depend principally on the application of automation to guide decision-making."

Reference 10

Review article

Reference 11

Methods: "Frequently, 1 anesthesiologist works in-house and others take call from home, coming in if multiple cases are waiting to be done. The anesthesiologist in-house sometimes does not bring in colleagues from home when the number of operating rooms he can supervise is less than the number specified in the agreement with the hospital (i.e., assignment is less than staffing). Queuing occurs even if managers have selected an appropriate number of operating rooms to be run during evenings and weekends (i.e., the number of cases [jobs] exceeds the number of operating rooms [identical machines] that are actually run)."

Results: "Queuing behavior was found to be homogeneous among the 33 anesthesiologists (P > 0.28 among different statistical models)."

Conclusions: "The result of homogeneity among anesthesiologists implies that monitoring can be done in the aggregate, which is … straightforward statistically."

Reference 12

Methods: "One year of data was collected from a 5-operating room hospital. Allocated operating room time that minimized the inefficiency of use of operating room time was determined first to confirm there was virtually no over-utilized operating room time. A structural equation model was then built to evaluate the relations among variables while controlling for other correlations."

Results: "Each 1-hour decrease in the daily estimated (total) duration of elective cases resulted in a managerially unimportant decrease in the mean turnover times (0.41 ± 0.21 minutes, P = 0.053). Each 1-hour decrease in the estimated (total) duration of elective cases caused the mean first case start tardiness to decrease by 0.2 ± 0.1 minutes (P = 0.008)."

Conclusions: "Clinicians maintained high clinical work per unit time during the hours to which they were assigned" even on the "days with few or many hours of cases. The operating room staff did not slow down, thus filling the time."

Reference 13

Review Article

Reference 14

Review Article

Reference 15

Relevant Information: "Mathematics is the preeminent domain of demonstrability. Given that the incorrect members of a group accept the primitive terms, axioms, and permissible operations of the relevant mathematical system (Condition 1), have sufficient information (Condition 2), and sufficient understanding to recognize a correct answer (Condition 3), a single group member with the necessary ability, motivation, and time should be able to demonstrate a correct solution (Condition 4). The group should then recognize and adopt the correct solution as the collective decision."

Reference 16

Methods: "A course in operations research for surgical services was originally developed for hospital administration students. It satisfies 2 of the Institute of Medicine's core competencies for health professionals: evidence-based practice and work in interdisciplinary teams. The course lasts 3.5 days (e.g., 2 weekends) and consists of 45 cognitive objectives taught using 7 published articles, 10 lectures, and 156 computer-assisted problem-solving exercises based on 17 case studies."

"Standardized terminology was used to define each component of the American College of Graduate Medical Education's systems-based practice competency for the minimum level of knowledge needed. The 8 components of the competency were examined independently."

Results: "Most [of the 45] cognitive objectives contributed to at least 4 of the 8 core components of the systems-based practice competency. Each component of systems-based practice is addressed at the minimum requirement level of exemplify by at least 6 objectives.

There is at least 1 cognitive objective at the level of summarize for each systems-based practice component."

Conclusions: "A curriculum in operating room management can provide the knowledge and problem-solving skills anesthesiologists need for participation in projects that satisfy the systems-based practice competency."

Reference 17

Review Article

Reference 18

Review Article

Reference 19

Methods: In experiment 1, 84 undergraduates interacted in dyads, either through writing or face-to-face communication, regarding either an intellective or a judgmental task. In the dyads, an advisor was assigned to provide advice to the decision-maker. In experiment 2, 162 undergraduates interacted face-to-face in dyads. An advisor gave advice on either a judgmental task (41 dyads) or an intellective task (40 dyads). Advisors had higher expertise on their task in the pre-test than the decision-maker. Therefore, in experiment 2, participants only interacted face-to-face, whereas in experiment 1 some conditions interacted through writing.

Results: In experiment 1, "the decision-makers trust in the advisor (t = 4.42," P < 0.0001) "and the decision-maker's perception" that the advisor had "similar values" as the decision-maker (t = 3.13, P = 0.0032) predicted utilization of advice in the judgmental task. For the intellective task, only advisor confidence predicted utilization of advice (t = 2.80, P = 0.0078).

In experiment 2, the "decision-maker's trust in the advisor" during the judgmental task predicted utilization of advice (t = 3.17, P = 0.0029). The relationship between trust and utilization of advice was mediated by the perception that the advisor shared the same values as the decision-maker (P < 0.05). In the intellective task, the relationship between the decision-

maker's trust in the advisor and utilization of the advice was mediated by the advisor's level of confidence ($P < 0.05$).

Conclusions: For judgmental tasks, "the decision-maker perceiving the advisor as having similar values to the decision-maker led to trusting the advisor more, and having more trust in the advisor led to a greater acceptance of their advice." For intellective tasks, from Experiment 1, confidence predicts "advice acceptance on the mathematics task." From Experiment 2, the effect of confidence on advice acceptance was "mediated by trust in the advisor. Therefore, an advisor having high confidence levels led to an increased trust in that advisor, and decision-makers were more likely to accept advice from advisors they trusted."

Reference 20

Review Article

Reference 21

Methods: A training session was conducted which educated attendees in techniques to deal with e-mail overload as well as general e-mail productivity tips.

"We conducted 16 training sessions in six companies from the sectors of automation engineering, pharmaceutics, travel, and accounting. In total, 162 participants voluntarily attended the training sessions (group sizes varied between 8 and 13 persons). Data were collected during three points in time, and 56% percent of the trainees sent back all questionnaires, resulting in a final sample size of 90 participants."

"The study consisted of a three-wave [questionnaire] within a pre–post design with one follow-up [questionnaire]. We began with the collection of data two weeks before the training. The second questionnaire followed immediately after the training. Finally, we distributed the third questionnaire three to four weeks after the training."

Results: The authors hypothesized "that the participants improve their knowledge of e-mail functions that support an efficient e-mail communication. The participants rated their knowledge of 10 overall functions of e-mail programs at three measurement points … An analysis of

variance for repeated measures revealed a significant change between pretest and … [the follow up questionnaire], $F_{1,89} = 201.72$," $P < 0.0001$, "indicating an increase of knowledge over time."

The authors hypothesized that "a decrease of work impairment [due to e-mail] over time. This hypothesis can be confirmed, work impairment was lower after the training than before, $F_{1,87} = 28.94$," $P < 0.0001$ "(main effect of time). In addition, the decline in work impairment depended on the amount of e-mail, $F_{1,87} = 7.60$," $P = 0.0071$ "(interaction effect of time and the amount of e-mail). Participants reporting a large amount of e-mail experienced a greater decline in work impairment."

Conclusions: "The training intervention we introduced in the current paper was successful. In fact, we found effects on several evaluation criteria: The participants improved their knowledge of e-mail functions and transferred the training contents from the training context to the workplace. Finally, strain declined in three of four dimensions. In particular, the trainees reported fewer problems with media usage and less work impairment. Hence, the training helps to cope with the amount of e-mail received and reduces trainees' feelings of being overwhelmed and disrupted by incoming information."

Reference 22

Methods: 345 employees at IBM had various actions performed in the e-mail client recorded and analyzed by researchers. One of the measurements was what search strategies users engaged in, such as folder-access (looking through folders to find the target message), scrolling (scrolling through messages searching for the target) or using a message search function.

Results: "… folder-access operations took significantly longer than scrolls ($t_{357} = 6.71$," $P < 0.0001$). "Scrolls, in turn, took significantly longer than searches ($t_{357} = 2.87$," $P = 0.0043$).

"We examined the relationship between retrieval behavior and success. Did a reliance on folder-access predict success, or was search a stronger predictor? We found that people who

relied on search were more likely to have successful finding sequences (r = 0.15," P = 0.0046). "None of the other behaviors was correlated with success."

Conclusions: "There are direct technical implications of our results. Search was both efficient and led to more successful retrieval, in part supporting the search-based approach of clients like Gmail."

Reference 23

Methods: 24 users (all academic scholars) of the Technet network and 16 (all academic scholars) users of the Globenet network were interviewed. Quantitative data was gathered from the interviews regarding the type and frequency of contact the users engaged in with one another.

Results: E-mail was found to supplement rather than replace face-to-face communication. E-mail use was significantly correlated with face-to-face communication r = 0.52 (P < 0.01) and phone communication r = 0.61 (P < 0.01) in Technet users. Globenet user correlations for e-mail and face-to-face communication was r = 0.40 (P < 0.01) and telephone communication/e-mail correlation was r = 0.27 (P < 0.01).

Conclusions: "The internet provides a technological basis for new forms of spatially dispersed, loosely bounded networks of scholars who are more connected than the fitful, amorphous anarchies of the past and less physically proximate and bureaucratically structured than contemporary universities. The velocity of communication is more rapid, distant scholars stay in touch more, and e-mail and attachments fill gaps between face-to-face meetings."

Reference 24

Methods: A web-based questionnaire was administered to 583 professional reference librarians. The questionnaire asked about the information seeking activities of the participants as well as requests they have received for information from others in the reference librarian field.

Results: Across all participants, 57.5% of participants have used e-mail to seek assistance from a colleague they do not know at all (defined as a latent tie). 66.7% of participants have used e-mail to seek assistance from a colleague they have interacted with only a few times (defined as a weak tie).

When asked to indicate agreement with the following statement, "Because of e-mail, I am more likely now to directly contact other academic librarians whom I have never met before to ask for help," 75% of participants agreed and 25% disagreed. For the statement, "Because of e-mail I am more likely now to directly contact other academic librarians whom I have communicated with only once or twice before to ask for help," 85% agreed and 15% disagreed.

Conclusions: "University reference librarians are comfortable using e-mail to contact unacquainted or loosely acquainted peers (latent or weak ties)."

Reference 25

Method: The e-mail addresses of 39 gastroenterologists who use a new technology (confocal laser endomicroscopy) were identified from an internet search. Individualized one-time e-mails with the same specific academic question were sent from an institutional email address. The e-mail stated that the sender was a trainee. The e-mail was sent on "the first day of a 3-day weekend in the USA."

"30 of 39 responded, 20 of whom did so during the extended weekend, and 26 by the first working day … Four sent articles or presentation slides, and three provided insights into ongoing studies, unavailable in published literature. Five referred me to others who might help, and three offered to answer questions over the telephone."

Conclusions: "This experience shows that most academicians, irrespective of rank, respond rapidly to e-mail requests for help in their area of expertise. In medical sciences, contacting experts grants access to valuable personal insights and information regarding ongoing trials. This analysis indicates that, when used appropriately, e-mail can serve as an important ancillary educational tool, especially in the acquisition of otherwise inaccessible knowledge."

Reference 26

Methods: Questionnaires received from potential teledermatology programs in the United States were analyzed.

Results: Store-and-forward teledermatology systems allow physicians to upload materials such as case files and photographs and then "forward" these materials to an expert for consultation. Among the 37 identified active teledermatology programs, 81.1% practiced store-and-forward systems. 13.5% used live-interactive only systems.

Conclusions: More physicians are using technology with a store-and-forward functionality than systems that are live (i.e., interactive only).

Reference 27

Methods: 177 individuals of all backgrounds (mainly professional academics in the United Kingdom) completed a web-based questionnaire. "The questionnaire asked about the various activities for which e-mail were used, frequency of usage, control of e-mail, the interweaving of work and personal e-mail communications and recipient perception."

Results: "There were significant negative correlations between self-esteem and both the 'driven' (r = -0.217, P = 0.012) and 'stress' factors (r = -0.192, P = 0.027). However, when both control of general accessibility and control of e-mail were [accounted] for, self-esteem was only negatively correlated with the 'driven' factor (r = -0.248, P = 0.004). Those with low self-esteem felt more pressure to respond promptly to e-mails. While self-esteem is a factor in explaining propensity to feel 'driven' by e-mail it does not adequately explain the 'stressed' factor" (i.e., whether participants perceive e-mail to be a source of stress).

Conclusions: "It was hypothesized that a lack of self-esteem would be related to a perceived lack of control over the working environment, which would further be related to perceptions of e-mail stress. These hypotheses were partly substantiated. Low self-esteem was found to be related to lack of control and lack of control was found to be related to both the driven and the stressed orientations."

Reference 28

Methods: Same as Reference 27

Results: "There was a significant difference in the short-term behavior (immediate replies). Individuals as senders expected a less prompt response than they felt was expected as recipients, (t = 3.48," P = 0.0007). "When asked whether they preferred to send or receive e-mails, 26% preferred sending and only 3% preferred receiving (the rest had no preference)."

Conclusions: "Despite the benefits it is also clear that e-mail does not come without some costs, and these costs are disproportionately loaded onto the recipient." "It seems that the recipient's perception of expectation of a quick response by the sender places demands on the recipient that are more costly than anticipated."

Reference 29

Methods: Employees of an organization that "retails office solutions" had their e-mail use monitored through a purpose-built e-mail client that was capable of tracking time spent on e-mail as well as type of e-mail.

Results: "…the average employee uses e-mail mainly for non-business purposes, for example sending jokes or telling their colleague to make the tea. The reason for such high non-business usage of e-mail could be the ease of use and privacy that e-mail offers. Only 31% of the messages dealt with are business related."

Conclusions: "While the benefits of e-mail are not as good as expected as a result of the lost time through non business use, comparisons could nevertheless show that e-mail is more effective to communicate than other mediums, in terms of costs of" recovering from interruptions.

Reference 30

Methods: In study 1, 152 undergraduates interacted in dyads composed of an advisor and a decision-maker. High-expertise members (based on the results of a computer knowledge questionnaire) were advisors and lower-expertise members were decision makers. The advisor

guided the decision-maker through writing from another room on an intellective task (general computer knowledge questions). In study 2, 110 undergraduates interacted in dyads with a similar procedure, except that dyad members could see one another.

Results: In study 1, there was a significant correlation ($r = 0.35$, $P = 0.0066$) between a decision-maker's trust in the advisor and the advisor's confidence. There was also significant correlation ($r = 0.29$, $P = 0.026$) between the decision-maker's trust in advisor and matching the advisor's advice. In study 2, when dyad members could see one another and knew one another, there was no significant correlation between a decision-maker's trust in the advisor and the advisor's confidence, but there was a significant correlation ($r = 0.32$, $P = 0.017$) between a decision-maker's trust in the advisor and matching the advisor's advice. "Judges matched the Advisors' answers on 80.77% of the questions. When they did match, the advisor's confidence was" greater "than when they did not match … ($P < 0.0001$)."

Conclusions: "Advisor confidence…is important to the establishment of trust." "Decision-maker trust was positively related to matching the advisor."

Reference 31

Review Article

Reference 32

Methods: 82 employees at a Fortune 500 global computer manufacturer sent electronic mail asking for advice on technical questions. Both the sender and the providers of advice answered questionnaires regarding how well they knew each other.

Results: 81% of advice providers reported that they did not know the sender. 10% reported their relationship as "barely acquainted."

Conclusions: "Computer networks can provide a means for leveraging the 'kindness of strangers'."

Reference 33

Review article

Reference 34

Methods: Among the academic staff and postgraduates at an Australian University, participants, who had scholarly communication prior to the introduction of the internet, completed a questionnaire regarding their use of the internet.

Results: 72.8% of the 162 participant responses indicated that the internet has made it more likely that they would "initiate contact with a scholar or research student personally unknown to you." 70.8% of 161 participant responses indicated that the internet has made it more likely that they are "contacted by scholars or research students unknown to you."

Conclusions: "The data collected strongly suggests that the internet has made it easier for researchers to locate, make contact with, and respond to contact from, scholars who were previously unknown to them." The data are "supportive of a conclusion that computer-mediated communication has been a powerful tool for activating ties that might otherwise have remained latent."

Reference 35

Method: "The principal author's e-mail contact details were obtained from all original, review, and best practice articles and case reports published in the *Emergency Medicine Journal* in 2001." Individualized e-mails were sent to these authors asking a brief question about the study.

Results: Replies were received from "73% of those [authors] with valid e-mail addresses. There was no statistical difference between the type of article and the likelihood of a reply (P = 0.197)."

Conclusions: "E-mail is a valid means of contacting authors of previously published articles, particularly within the emergency medicine specialty."

Reference 36

Methods: 1618 questions asked (of specialist physicians) by primary care physicians through an e-mail-based teleconsultation service were analyzed for message content. The responses to the questions also were analyzed.

Results: "Specialist physicians recommended a clinic consultation in answering 9.5% of the [N = 153] questions from family physicians. Second-level generalized linear multilevel modeling analysis indicated that the rate at which specialists recommended a clinic consultation varied widely (P < 0.001). Independent of this variation, however, there was a significant relationship between how family physicians structured their questions and whether specialists recommended a clinic consultation. The presence of an identifiable clinical task (odds ratio [OR] = 0.35, 95% CI: 0.21 to 0.57, P < 0.001), intervention (OR = 0.62, 95% CI: 0.45 to 0.84, P < 0.003) and outcome question (OR=0.48, 95% CI: 0.34 to 0.68, P < 0.001) … separately reduced the likelihood that the specialist would recommend a clinic consultation." There was a monotonic negative association (P < 0.0001) between "no clinical task, no intervention, [and] no outcome," "clinical task, no intervention, [and] no outcome," "clinical task [and] either intervention or outcome," and "clinical task, intervention, [and] outcome."

Conclusions: "When specialists were asked about clinical problems, we found that their desire for a clinic consultation was related to how well family physicians structured their clinical questions. Family physicians were less likely to receive this recommendation when their questions clearly identified the clinical task of concern, the action they proposed to take, and the outcome they desired."

Reference 37

Review article

Reference 38

Review article

Reference 39

Review article

Reference 40

Methods: Participants included 109 psychology students. A likeable or unlikeable source communicated a persuasive message to the participant that the university should switch to a trimester system. The persuasive message was delivered through a written, audiotaped, or videotaped channel. Likeableness of source was manipulated through the source either saying positive things about the participants' university town or disparaging comments about the town.

Results: Likeableness of communicator interacted with channel of communication ($F_{2,99}$ = 3.74, P = 0.027). The "likeable (vs. unlikable) communicator was significantly more persuasive within both videotape (P < 0.001) and audiotape (P < 0.005) conditions, but only negligibly more persuasive within written conditions."

Conclusions: The likeable communicator was significantly more persuasive than the unlikeable communicator when participants viewed videotapes and audiotapes, but not written messages. The researchers suggest that richer communication channels make the source more vivid, so that participants engage in more processing of source cues.

Reference 41

Method: 142 undergraduate students engaged in five weeks of collaborative work using channels that were low/high cue and a/synchronous. High cue asynchronous was asynchronous video. High cue synchronous was video conferencing. Low cue asynchronous was threaded text discussion (i.e., conference "room"). Low cue synchronous was text (i.e., chat). Participants rated their selves, partners, and group on a variety of traits.

Results: "There was a significant interaction between cues and synchronicity, $F_{1,116}$ = 15.32," P = 0.0002. Those using asynchronous low cue media … felt more certain than those using asynchronous high cue technology … This difference was significant (P < 0.001) by … Scheffe test." "There was a significant effect of the number of cues on social attraction" (i.e.,

people feeling "more attracted to others)," "$F_{1,116}$ = 7.54," P = 0.0070. "High cue media …

provided significantly less social attraction than low cue media." "Those using high cue media

perceived less involvement [of their partners] … than those using low cue media … $F_{1,116}$ =

9.48," P = 0.0026. "Those using a" low "cue medium rated their partners as more credible …

than those in a" high "cue medium … $F_{1,116}$ = 8.77," P = 0.0037.

"Those using synchronous media reported higher self-involvement … than those using

asynchronous media," $F_{1,116}$ = 13.30, P = 0.0004.

Conclusions: "Those in low cue media felt the best about their partners. They felt that their

partners were more credible, felt more social attraction for them, felt less uncertainty, and

perceived their partners as more involved in the interactions."

Reference 42

Methods: 182 undergraduates interacted in dyads each with an advice provider who was

either a novice or expert. Expert advisors received training on the task to improve their quality of

advice. The decision-maker either paid the advisor before receiving advice, or paid the advisor

after receiving advice. A third condition had no monetary rewards.

Results: "Advice utilization was higher when decision-makers had expert advisors and

rewards than when either expert Advisors or monetary rewards or both were absent, $F_{1,85}$ =

6.26," P = 0.014." "Utilization of expert advice was higher when decision-makers allocated

rewards pre-task and had expert advisors than in all other scenarios, $F_{1,55}$ = 7.33," P = 0.0090.

Conclusions: Decision makers utilized advice from expert advisors more than novice

advisors, and decision-makers utilized expert advice more when they had pre-paid for it than

when they had not paid before receiving it.

Reference 43

Methods: 333 knowledge providers and 332 knowledge recipients in eight different research

and development departments in Korean companies filled out questionnaires regarding

knowledge transfer between individuals in their firm.

Results: "Perceived expertise of colleagues (path coefficient = 0.30, $p < 0.01$) shows a significant positive influence on knowledge transfer."

Conclusions: "Both the positive evaluation of colleagues' expertise and strong group identification motivate the knowledge recipient to actively seek and adopt other colleagues' knowledge. This shows that the knowledge recipient can be motivated both intrinsically and extrinsically. Thus, if a person evaluates highly the colleagues' expertise, then his or her expected benefit from the knowledge receipt will be high."

Reference 44

Methods: 30 undergraduate students received advice on questions about the dates of historical events and were paid a bonus based on the accuracy of their final estimates.

Results: "Respondents placed a higher weight on their own opinion than on the advisor's opinion." "Whereas a weight of 0.50 for advice implies equal weighting, the actual mean weight of advice (0.27) was significantly lower, $t_{29} = 6.35$," $P < 0.0001$.

Conclusions: "Decision-makers tend to discount advice." "Respondents placed a higher weight on their own" answer "than on the advisor's opinion. This tendency was exhibited by most respondents: 28 of the 30 respondents had a mean weight of advice lower than 0.5."

Reference 45

Methods: 131 graduate and undergraduate students were assigned randomly to the role of advisor or decision-maker. Participants interacted through writing on a task that asked them to identify correct answers to questions about current business facts. The decision-maker received advice from two advisors who either gave the same advice or gave conflicting advice. Further, the decision-maker either made an independent judgment before receiving advice (independent condition), received advice before making an independent judgment (cued condition), or were unable to make a judgment of their own and forced to accept that of an advisor (dependent condition).

Results: "Under conflict, [decision-makers] were expected to employ a 'confidence utilization' strategy. This strategy required decision-makers to select the alternative that was more confidently recommended when [the] two advisors disagreed in their advice" (P < 0.0001). "All three environments exhibited levels of confidence utilization (i.e., a mean proportion of matches with the more confident advisor) in the expected direction." Decision-makers in the dependent condition were more likely to accept advice (94.9%) than decision-makers in the cued condition (88%) ($t_{62} = 2.42$, P = 0.019) or the independent condition (86.5%) ($t_{62} = 3.03$, P = 0.0036).

Conclusions: Decision-makers "were prone to accept the recommendation of the more confident advisor." "In the cued environment, advisors with high confidence were able to convince [decision-makers] to agree with them and not the advisors with low confidence more often than in the independent environment." "If there is disagreement among advisors, the effect of confidence becomes increasingly powerful."

Reference 46

Methods: 147 undergraduates were randomly assigned into groups of three. One group member was randomly assigned to be the decision-maker and the other two randomly assigned to give advice to the decision-maker. One advisor could earn money based on how much advice the decision-maker accepted (persuasive motive), and the other advisor was told to help the decision-maker make the best decision possible (quality motive). Before meeting in a group, participants were asked to rank the performance of technology stocks and rate their confidence in their ranking. Then, the decision-maker discussed the task face-to-face with the advisors who provided their advice and confidence in response to questions from the decision-maker.

Results: The advisor with the persuasive motive reported greater confidence in his/her assessments than the advisor with the quality motive, $F_{2,144} = 5.87$, P = 0.0035. "The effect of the mediator of advisor confidence on the dependent variable of advisor influence, controlling for the independent variable of advisor role, was significant … t = −2.65, P = 0.009. Therefore,

advisors with higher confidence tended to be more influential, even after controlling for what motives they had in the interaction." Confidence significantly ($P < 0.05$) "mediated the relationship between type of advisor and influence on the decision maker."

Conclusions: "The persuasive advisor had significantly higher confidence than the quality advisor on the rankings used to give advice, although not on rankings kept private. The persuasive advisor was more influential than the quality advisor, regardless of whether the decision maker was suspicious or not. Advisors' confidence on these rankings fully mediated their influence on the decision maker."

Reference 47

Methods: 112 undergraduate participants took a pre-test on "computer knowledge and operations." Participants who scored in the top half were assigned to be advisors, and those in the bottom half received computer advice from the advisors. Participants "sat next to one another and worked face-to-face." Advisors read each of 40 questions, and for each indicated their "confidence probability (the probability that the alternative you selected is correct)." Next, each showed "the question to" the decision-maker, the recommended answer, the confidence probability, and provided "any explanations or comments for" the answer.

Results: "The amount that the" decision-maker utilized the advisor's advice "correlated with [the] advisor's confidence level averaged over all items (Pearson $r = 0.35$," $P < 0.009$)." "A stepwise regression was conducted regressing advisor confidence, advisor accuracy, whether the judge had previous social interaction with advisor, … and judge's trust composite onto judge's matching of the advisor's advice." Only advisor confidence was a significant predictor in the model.

Conclusions: "Higher expressions of confidence by" an advisor cause decision-makers "to accept more of the advisor's advice."

Reference 48

Methods: 88 participants recruited via ads participated in the experiment. Participants were given advice on four phases of 15 questions (60 total) asking about the dates of historical events. The advice was either free or participants had to pay for the advice. The phases in which participants received free or paid advice was varied in two sequences.

Results: When sequenced as receiving free advice and then paid advice, the weight of advice per question was greater "in the paid-advice treatment than in the free-advice treatment, $t_{28} = 6.76$," $P < 0.0001$. Similarly, when sequenced as first receiving paid-advice and then free advice, the mean weight of advice per question was greater "in the paid-advice condition than in the free-advice treatment," $t_{28} = 13.59$, $P < 0.0001$.

Conclusions: "The results of the studies show that participants relied more heavily on advice when it cost money than when it was free."

Reference 49

Methods: 26 dermatologists in California, who were not utilizing teledermatology, completed a questionnaire.

Results: On a scale of 1-6 (1=Strongly Disagree, 6=Strongly Agree) the median response to [reasons for not practicing dermatology] "lack of knowledge of reimbursement policies" was 6 ± 1 (quartile deviation) and to "medical-legal risk" also was 6 ± 1. The median response to "[potentially] reduced reimbursements" was 5.5 ± 1.

Conclusions: Reimbursement policies and related legal issues are an obstacle to dermatologists practicing teledermatology.

Reference 50

Relevant Information: "…it would require approximately 8 terabytes of storage per year to store the whole slide image [pathological slides] data from our case material … The estimated storage required for all of Children's Hospital of Philadelphia pathology slide volume, around 55,000 slides per year, would be approximately 27 terabytes per year … These cost

estimates do not account for back-up, redundancy or disaster recovery, which are essential if digital pathology is part of the primary pathology work environment."

Reference 51

Review article

Reference 52

Methods: Employees at a multinational computer and home appliance company underwent e-mail training that covered various e-mail tasks and program features such as "filtering and searching, folder management, archiving, [and] address books." "The e-mail-specific time-management session taught the" participants "how to set goals, how to plan, and how to set priorities for e-mail use; it specifically dealt with interruptions and media selection." 125 participants filled out a baseline questionnaire prior to training and a follow-up questionnaire. 75 participants filled out the same questionnaires (at the same time intervals), but did not receive training.

Results: "We tested for the effects of the training by" analysis of covariance, "with base-line score as the covariate. The results were statistically significant for self-efficacy" [self-efficacy is one's own perception of skill level] $(F = 11.95, P < 0.01),$" perceived control of time over e-mail use $(F = 11.73, P < 0.01)$ and estimated time spent on e-mail $(F = 10.96, P < 0.01)$. It confirmed the training effects for these three variables, because the mean follow-up scores of the experimental group were statistically higher than those of the control group [with controls for baseline and covariates]."

Conclusions: "The major contribution of this study is to demonstrate the effectiveness of e-mail training, and determine which aspect of e-mail training is more effective. The effectiveness is confirmed by the improvements of time control over e-mail use and estimated time spent on e-mail."

Reference 53

Methods: 58 employees at a large telecommunications company filled out questionnaires regarding the use and their attitudes towards e-mail. 10 of the employees in the upper quartile of numbers of daily messages (i.e., identified as "heavy users") were interviewed to discuss their e-mail usage habits.

Results: All 10 participants interviewed about e-mail organization used e-mail organization features such as folders and catalogues. At least one user customized the names of his e-mail folders/organization system.

Conclusions: "Employees explained organizing stored messages was difficult, even when not satisfied with the structure of their folders, employees were not willing to rearrange it, as doing so would take too much time. Giving new employees information and hints regarding structure and organization could help them handle their e-mail messages better."

Reference 54

Methods: 20 e-mail sender/receiver pairs of employees at a large UK technology manufacturing company were given training on how to reduce e-mail defects, such as subject lines that do not contain enough information and e-mail messages that are not "easy to read" or "straight to the point." E-mail receivers' training instructed them on how to evaluate incoming e-mail for defects; e-mail senders' training instructed them on ways to reduce e-mail defects.

Results: "The training has been significantly successful … at improving an employee's ability to write e-mails that are easy to read" ($P = 0.022$) "and that are straight to the point" ($P = 0.023$). "The results also show that the training has been significant … at improving the way that an employee uses the subject line to convey information about the content" ($P = 0.003$) "and the urgency of an e-mail" ($P = 0.005$).

Conclusions: "Training employees on the best practices of e-mail use can help to reduce e-mail defects within an organization."

Reference 55

Methods: "Because obtaining specialist advice is crucial in Antarctica, we decided to evaluate our possibilities for using store-and-forward telemedicine based on e-mail. Two virtual case reports with one question each were prepared for referral. The first clinical report described a rupture of the Achilles tendon with an ultrasound examination in favor of a partial rupture. The second clinical report presented a history of two generalized seizures four months apart. The request for the two cases was focused on the treatment for which the literature is not completely unanimous." The reports were sent to 2 non-governmental organizations, 2 personal physician acquaintances, and 2 university hospital systems that provided telemedicine services.

Relevant Information: "Working on a polar continental station, on the high Antarctic Plateau, we are completely isolated from February to November with no possibility of transferring any patient. We have no regular internet connection, except e-mail facilities four times per day. Telephone calls are restricted because of the cost and the poor satellite signals. Due to the small number of wintering members on our station, the medical workload is quite low, even if unpredictable. For the past few years, a few referrals to specialists have been made by e-mail and by telephone, mainly in ophthalmology, dermatology and orthopedics."

Reference 56

Relevant Information: "The geographic isolation and austere environment of military deployment can drastically limit communication between far forward [ophthalmological] providers and rear echelon medical specialists." "With the advent of e-mail, informal methods to support deployed medical care developed." "An ophthalmologist or optometrist [could be consulted] by e-mailing a single address." "Technological advances allowed more formal consultation programs to begin."

Reference 57

Methods: "The U.S. Army Medical Department has successfully initiated several specialty and subspecialty telemedicine services throughout the world. Since 2004, the U.S. Army

telemedicine program has used a service-wide internet platform, Army Knowledge Online to assist with telemedicine consultations. Army Knowledge Online allows deployed health care providers access to specialty groups through e-mail consultations." The consultants involved in 87 infectious disease specific telemedicine consultations using the Army Knowledge Online database between January 2010 and December 2010 completed questionnaires regarding the nature and outcome of the requests.

Results: Consults were placed most frequently from Afghanistan (58) and Iraq (26); other locations included U.S. Navy ships (5), Qatar (2), and the following countries once: United States, Egypt, Africa, the Philippines, and Kuwait.

Conclusions: The primary users of the infectious disease teleconsultation system during the timeframe studied were in remote locations.

Reference 58

Methods: Qualitative interview with > 40 managers. Also, "analyzed 2 to 3 weeks of incoming and outgoing e-mail for 7 of" the participants "to examine how extensively people conduct task management in e-mail."

Results and Conclusions: "Managers are the most likely to feel overloaded and unable to track the many concurrent processes for which they are responsible." The authors consider "a new philosophy for e-mail: that of a task- or project-management tool."

Reference 59

Methods: 341 undergraduate students in an introductory management class at a university in Singapore were administered a series of three questionnaires one month apart. Social loafing is the phenomenon of people deliberately exerting less effort to achieve a goal when they work in a group than when they work alone. The study authors defined "felt responsibility [as] a subjective feeling of responsibility to engage in helping behavior toward fellow group members".

Results: Felt responsibility was significantly and negatively related to social loafing ($P < 0.01$).

Conclusions: "Felt responsibility plays a significant role in reducing the tendency to engage in social loafing and in inducing both organizational citizenship behavior towards individuals and organizational citizenship behavior towards an organization. Organizations should create work conditions that increase feelings of felt responsibility in work groups, such as fostering a culture of camaraderie that compels employees to fulfill their obligations and responsibilities to fellow workers." It is, thus, important that, when seeking advice, the decision-maker contact an advisor in a way that maximizes felt responsibility for the advisor.

Reference 60

Methods: "Social loafing is the tendency for individuals to expend less effort when working collectively than when working individually." A meta-analysis was conducted of 78 experiments examining social loafing. Several predictors of differences in level of social loafing were examined.

Results: Social loafing was greater when outputs were not being evaluated by the experimenter (i.e., individuals could 'hide in the crowd') ($P < 0.0001$), for tasks that were not intrinsically important ($P < 0.0001$), or their inputs were potentially or completely redundant ($P < 0.001$).

Conclusions: "Individuals are more likely to engage in social loafing when their individual outputs cannot be evaluated collectively, when working on tasks that are perceived as low in meaningfulness or personal involvement, … and when their inputs to the collective outcome are redundant with those of other group members."

Reference 61

Methods: "The personality trait dominance involves the tendency to behave in assertive, forceful, and self-assured ways." 100 undergraduate each filled out a measure of social dominance (personality "trait dominance"). They then worked in four-person groups on a math task. After completing the problems, the group members rated each other on competence and influence.

Results: "… trait dominance predicted putting forth more answers to problems," $r = 0.23$, $P = 0.022$. "This correlation was driven largely by the correlation between trait dominance and providing an answer before any other group member," $r = 0.27$, $P = 0.0072$. "Putting forth first answers" ($t_{97} = 6.17$, $P < 0.0001$) "and providing problem-relevant information" ($t_{97} = 5.02$, $P < 0.0001$) "each predicted peer-rated quantitative skills after controlling for trait dominance."

Conclusions: "Although individuals higher in trait dominance tended to provide more first answers and answers overall, their answers were no more accurate than those provided by other members." They "attain influence because they behave in ways that make them appear competent, even when they actually lack competence."

Reference 62

Methods: 11 professionals from a variety of industries participated in a focus group discussion regarding their use of e-mail.

Results and Conclusions: "E-mail is customarily regarded as an interactive medium, but the participants disagreed with this viewpoint, concluding that it should be regarded as a print medium. Although e-mail systems are capable of providing interactivity, this capability is seldom put to use in the workplace. E-mail is most often used for announcements or document transfers." "As users do not expect to receive an immediate reply, the degree of interactivity is low."

Reference 63

Methods: 63 undergraduates read a written persuasive message while either not distracted or principally paying attention to a video (i.e., multitasking).

Results: Participants without distractions (i.e., multitasking) had greater perceived ($P < 0.0001$) and actual ($P = 0.0004$) comprehension of the written message.

Conclusions: "Multitasking reduced the level of comprehension."

Reference 64

Methods: Participants were 36 eight-year-old children who were asked questions of varying degrees of difficulty either through video link or face-to-face. The amount that participants averted their gaze while thinking about the answer to the question was measured.

Results: "There was a significant effect of question difficulty ($F_{2,66} = 156.04$, $P < 0.0001$). Paired t tests showed that children used significantly more aversion for both hard questions ($t_{35} = 14.31$, $P < 0.0001$) and medium questions ($t_{35} = 14.38$, $P < 0.0001$) than for easy questions and for hard questions than for medium questions ($t_{35} = 4.35$, $P < 0.0001$)." "The children used significantly more aversion when interviewed" face-to-face ($F_{1,33} = 4.58$," $P = 0.040$.

Conclusions: "Even when social factors were greatly reduced [using live video link], the children looked away from their interviewer more when they were trying to process increasingly difficult information. This gives considerable weight to the cognitive load hypothesis." There is a substantial "processing cost of visual communication."

Reference 65

Methods: 60 undergraduate students watched a presentation regarding the operation of car brakes (in experiment 1) or lightning formation (in experiment 2). The amount of information presented at one time and the type of presentation (cognitive load) was manipulated in the presentation. Participants then completed a retention test.

Results: Participants in the group with the least cognitive load significantly outperformed two groups with higher cognitive load on the retention task (i.e., explaining the process of lighting or braking in words) (Experiment 1, $F_{2,57} = 6.90$, $P = 0.002$; Experiment 2, $F_{2,59} = 16.77$, $P < 0.001$).

Conclusions: "These results advance cognitive theory by pinpointing an important condition that supports multimedia learning. Learners are more able to build referential connections between corresponding visual and verbal representations when both are held in working

memory simultaneously" (i.e. when cognitive load on working memory is lower). Thus, when receiving advice, it is ideal for the decision-maker to maximize his/her learning to receive the advice through a communication medium that lessens cognitive load (e.g., e-mail).

Reference 66

Methods: 32 participants evaluated a recorded interaction between a computer avatar assistant and a customer (male or female) in an e-retail environment. The avatar appeared in five different forms: still image, disembodied voice, still image with graphic lip movement to match the voice soundtrack, three-dimensional talking head with lip synchronization, or video of human sales assistants. Each of the five forms appeared either as male or female.

Results: "Between-technology pair-wise comparisons showed similar though not identical patterns for male and female personae. With respect to the male personae, the video and the disembodied voice were rated similarly and both were rated higher than the other three technology types (P < 0.05 in all cases). The still image and still image with lip animation were rated similarly, and both were rated significantly higher than the three-dimensional talking head, both at P < 0.01. Participants' responses to the three-dimensional talking head were poor. This technology was rated the worst of the persona technologies used in this experiment, P < 0.01. The results for the female personae were similar except that the three-dimensional talking head was rated statistically the same as the still image (P = 0.062)." Focus group feedback indicated that participants found the lip synchronization "distracting and annoying."

Conclusions: "If the task is visually demanding, the user may find a picture of the assistant distracting." "If human-like personae do not exhibit natural facial expressions, participants may find them visually distracting."

Reference 67

Review Article

Reference 68

Methods: 47 undergraduate students interacted with computer avatars that varied on a continuum from high levels of human likeness to low on several features. They provided subjective reports of the eeriness of the avatars. The "prototypicality of each model was reduced by simultaneously modifying eye size, mouth height, mouth size, face height, and eye separation." Further, feature atypicality was manipulated by putting non-human, robot-like features onto a human likeness. "The atypical feature hypothesis states that the eeriness of a stimulus might be accounted for as a function of human likeness in combination with the presence of one or more atypical features."

Results: Prototypicality and feature atypicality significantly increased eeriness ($P < 0.0001$). The combined effect of prototypicality and feature atypicality was more eerie than either prototypicality ($P = 0.03$) or feature atypicality ($P < 0.001$) alone.

Conclusions: "Certain kinds of atypical features … elicit a kind of category conflict if they appear to be incoherent with the object to which they belong. For example, if an atypical feature appears on, but cannot realistically be expected to belong to, a human, then the stimulus as a whole is incoherent. This overall stimulus incoherence might elicit cognitive dissonance if the atypical feature belongs to another category of objects (e.g., a robot), or if the stimulus merely appears to be non-human. This idea is reinforced by previous studies which found an uncanny valley given that human–nonhuman category mergers can elicit negative responses."

Reference 69

Method: 144 students were presented with a "series of short statements that emphasized the positive consequences of engaging in healthy eating." The message was delivered to the students by a person expressing neutral facial expressions, a "realistic" 3D animated character with neutral facial expressions (i.e., Greta), voice only and text only. Participants completed pre and post questionnaires regarding their understanding of and intention to engage in healthy eating.

Results: "Post hoc tests showed that the text version of the message was rated as being easier to understand than either the voice (t_{46} = 3.597, P = 0.0008), Greta (t_{45} = 3.871, P = 0.0001), or human (t_{46} = 1.984, P = 0.053) conditions." "Retention of the healthy eating message was poorest for participants assigned to the neutral Greta condition. A one-way analysis of variance revealed a significant difference between the four groups, $F_{3,90}$ = 3.678, P = 0.015. Post hoc tests showed that the difference between the Greta neutral condition was significant in the case of the human (t_{45} = 2.91, P = 0.0056), text (t_{46} = 2.27, P = 0.028), and voice only control (t_{45} = 2.95, P = 0.0050)."

Conclusions: "The text condition in the current study permitted a greater degree of user control than the other conditions in the sense that it was self-paced. This is reflected in the ease of understanding ratings given by users, and could have had the effect of 'canceling out' of any auditory small advantage that was present." "Overall, it was found that although Greta received significantly higher ratings for helpfulness and likability, presenting the message via Greta led to the poorest memory performance among users."

Reference 70

Methods: "The data were obtained from telephone interviews conducted by Princeton Survey Research Associates in April 2002." The 354 adults "used e-mail at work."

Results: "The findings reveal that the number of e-mails directly [positively] influenced work effectiveness (P = 0.005), but it also increased work stress (P < 0.001) and distress (P = 0.014)." The proportion of e-mail messages that were personal did not significantly influence work effectiveness (P = 0.45), work stress (P = 0.72), or work distress (P = 0.80).

Conclusions: "E-mail provides important benefits for the organization and for work performance. This is mainly due to rapid dissemination of information relevant to the tasks that must be accomplished. Work performance is a [positive] function of the number of work-related e-mails." "Work-related e-mail indeed provides information critical to getting a job done. E-mail with personal content neither contributes to work performance, nor is it detrimental."

Reference 71

Method: 265 undergraduate students ranked "four media (face-to-face, e-mail, letter, and telephone) in order of preference across four different communication scenarios designed to pose an interpersonal risk." One scenario with interpersonal risk was asking for a pay raise from your boss. Participants completed a scale measuring self-esteem.

Results: When asking for a pay raise, both low self-esteem and high self-esteem participants preferred face-to-face rather than e-mail, $F(1,259) = 13.19$, $P = 0.0003$. This held regardless of the perceived odds of success.

Conclusions: When "asking for a pay raise, face-to-face was overwhelmingly the preferred media of communication." "Presumably, there are … factors such as social norms and customs, and the symbolic meaning of the communication media, which mean that asking for a pay raise is usually conducted face-to-face rather than by telephone or e-mail."

Reference 72

Methods: 16 general practitioners and 4 dermatologists participated in a clinical concordance study using a teledermatology system. The study procedure allowed the time spent on certain tasks to be measured.

Results: The mean time spent by dermatologists in a consultation with teledermatology was 6 minutes as opposed to 10 minutes for face-to-face consultations. However, the time taken by general practitioners to take clinical images was 12.3 minutes, and their time to fill out the online patient information form and attach the image(s) was 6.7 minutes. As a result, for general practitioners, total time spent in a teledermatology consultation was 19 minutes. In contrast, the mean "time invested by a general practitioner in a normal dermatology consultation" was 10 minutes.

Conclusions: Since "teledermatology consultations are faster than conventional consultations for dermatologists … teledermatology could be effective for speeding up normal consultation and reducing waiting queues. On the other hand, general practitioners invest much

time during the consultation in taking images and then uploading them to the teledermatology system." The "total time invested in primary care centers should be reduced."

Reference 73

Methods: Analytical derivation

Results: "If an experiment produces a correct result with P = 0.01, there is still greater than a one in four chance that a repetition of this experiment will not reach statistical significance at $\alpha = 0.05$. We do not achieve a 95 per cent probability of replication until P = 0.00032." These P-values are over-estimates because they are based on the unrealistic scenario that the true treatment effect is that which was observed during the first experiment.

Reference 74

Review Article

Reference 75

Review Article

Reference 76

Methods: Faculty anesthesiologists and Certified Registered Nurse Anesthetists "were either numerically paged using a standard office telephone or verbally queried using the wireless voice over internet protocol communication device."

Results: For alphanumeric pages, the mean ± standard deviation of observed latencies were 1.968 ± 1.827 minutes, giving a coefficient of variation of 0.928. For Vocera calls, the observed latencies was 0.503 ± 1.252 minutes, giving a coefficient of variation of 2.49.

Conclusions: "Providers found voice over internet protocol to be much less reliable than conventional pager-telephone systems."

Reference 77

Relevant Information: "Anesthesiologists rely on communication over periods of minutes. The analysis of latencies between when messages are sent and responses obtained is an essential component of practical and regulatory assessment of clinical and managerial decision-

support systems. Latency data including times for anesthesia providers to respond to messages have moderate (> n = 20) sample sizes, large coefficients of variation (e.g., 0.60 to 2.50), and heterogeneous coefficients of variation among groups. Highly inaccurate results are obtained both by performing analysis of variance in the time scale or by performing it in the log scale and then taking the exponential of the result. To overcome these difficulties, one can perform calculation of P values and confidence intervals for mean latencies based on log-normal distributions using generalized pivotal methods."

Reference 78

Methods: "We analyzed approximately 48,000 cases at Hospital A for latency of two decision support system prototype events, Surgery Begin and Surgery End. Each latency was measured from 1) the time that the event was recorded in the anesthesia information management system database as having taken place to 2) the time when the first decision support system query would have been executed after the documentation of that event by the provider."

Results: "The longest 5% of latencies exceeded the query interval" of 1, 5, and 10 minutes. "This was not due to providers editing the times of the Begin or End Surgery events, as each occurred in only 0.7% of cases." "The explanation for these findings is that the anesthesia providers often documented the Surgery Begin event several minutes after the event had occurred."

Conclusions: "Decisions support system performance is influenced by the timeliness of documentation."

Reference 79

Methods: "Latencies between message initiation and delivery to 3 alphanumeric paging devices were measured over weeks. Two devices used internet pathways outside the hospital's local network with an external paging vendor (SkyTel). The third device used only the internal hospital network (Zetron)."

Results: "The 2 devices using internet pathways outside the hospital's network demonstrated unacceptable performance, with 1.3% and 33% of latencies exceeding 100 seconds, respectively. The device dependent only on the internal network had a mean latency of 8 seconds, with 100% of 40,200 pages having latencies <100 seconds. The findings suggest that the network used was the deciding factor." "There was substantial correlation among latencies for sequential cell phone text messages when binned by hours ($P < 0.0001$), but not by days ($P = 0.61$)."

Conclusions: "Developers of anesthesia communication systems need to measure latencies of proposed communication pathways and devices used to deliver urgent messages to mobile users. Similar evaluation is relevant for text pagers used on an ad hoc basis for delivery of time-critical notifications. Testing over a period of hours to days is adequate only for disqualification of a candidate paging system, because acceptable results are not necessarily indicative of long-term performance. Rather, weeks of testing are required, with appropriate batching of pages for analysis."

Reference 80

Methods: "The percent of days with ≥ 1 prolonged (> 100 seconds) latency" for Apple Push Notification service was assessed.

Results: "Mean latencies were <1 second for iPad and iPod devices" "via wireless local area network" "and <4 seconds for iPhone" using "cellular pathways." "Among >173,000 iPad and iPod latencies, none were >100 seconds. For iPhone latencies, 0.03% ± 0.01%" (SEM) "were >100 seconds. The 95% upper confidence limits of days with ≥1 prolonged latency were 42% (iPhone) and 5% to 8% (iPad, iPod)."

Conclusions: "The Apple Push Notification service was reliable" for perioperative notifications "for all studied devices over wireless local area network and cellular pathways."