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## The Effects of Media Differences and Expertise on Deception Detection Accuracy

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## The Effects of Media Differences and Expertise on Deception Detection Accuracy

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### Abstract

Deception is a common part of everyday communication. Most of the research on deception has focused on face-to-face communication, but today most communication is mediated, taking the form of email, texting, and videoconferencing. We have a limited understanding of the relationship between media and deception detection. Computer-mediated communication is also a staple of many business practices, as is the case for modern human resource management (HRM). Deception in HRM can have long-lasting effects in organizations, if recruiting leads to hiring the wrong people. However, people are not very good at detecting deception, regardless of the media used. Further, individual differences, such as expertise, do not seem to matter in detection efforts. Despite their experience and training, experts are no better than novices at detecting deception. So, what is the role played by media in deception detection success, and does that success vary by experience? Comparing HR experts to students on a deception detection task, we found that experts performed no better than novices. Further, all participants were more successful at detection when viewing audiovisual interview segments than when listening to audio only segments.

**Keywords:** computer-mediated communication, deception, résumé faking, experts vs novices

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## 1. Introduction

Deception and its detection have been the subject of multiple studies, going back decades, as attested to by several meta-analyses (DePaulo, Lindsay, Malone, Muhlenbruck, Charlton & Cooper, 2003; Bond & DePaulo, 2006, 2008). The majority of the research on detection has involved face-to-face interactions or their surrogates, so the nature of the relationship between computer-mediated communication (CMC) and detecting deception is not well understood. Yet today, most communication is mediated, taking such forms as SMS texting, email, and videoconferencing with such tools as Skype and FaceTime. These and other over-the-top applications are projected to account for increasingly large shares of the traditional telecommunications market (Meffert & Mohr, 2017). Despite differences across media in their ability to transmit content, one meta-analysis indicated that differences across media have no explanatory role in deception detection accuracy (Bond & DePaulo, 2008). While some studies have found a link between media and deception detection (e.g., Dunbar, Jensen, Burgoon, Kelley, Harrison, Adame & Bernard, 2015), others have found that the relationship is mediated by some third variable, such as the credibility of the deceiver (e.g., George, Tilley & Giordano, 2014).

Computer-mediated communication is important for both interpersonal communication and many business applications. In software development, CMC is essential for the communication of dispersed project teams. In higher education, CMC facilitates interviewing potential graduate school students from around the world. In some business practices, CMC has become a staple, as in modern human resource management (HRM). Recruiting involves many steps (Doyle, 2018), and communicating via computer-based applications is a central part of the process. Initial interviews, and even subsequent interviews, typically take place via phone or Skype or some other form of videoconferencing. Some companies offer tools that facilitate completely automating videoconferences for the initial interview ([www.sonru.com](http://www.sonru.com)). Increasing reliance on computing to support the recruiting process makes sense, given its ubiquity and cost effectiveness.

One thing the computerization of recruiting does not do, however, is guard against deception. Although two studies found that deceivers preferred to deceive face-to-face (George & Carlson, 2010; Furner & George, 2012), at least one study found that deceivers preferred to deceive via CMC (Rockmann & Northcraft, 2008). One aspect of recruiting that invites deception is résumés. Lying on résumés is actually quite common, estimated to occur from 43 to 58% of the time (Koeppel, 2006; Tarpey, 2014). If an applicant has not been honest on her résumé, it can cause problems for her during an interview. When asked about false items on the résumé, she must fabricate information to cover for her deceptions. Being discovered may cause her to not get the job. On the other hand, if she is not discovered, and she gets the job, she may cause headaches for the hiring company down the road. If she was dishonest about her résumé, what else would she be dishonest about as part of her work for the hiring company?

Unfortunately, people are not very good at detecting deception of any kind (Bond & DePaulo, 2006), being slightly more accurate than chance, at 54%. Surely, however, recruiters who have worked in HRM for years would be better than chance at detecting deception. At the very least, they would be more accurate than novices who had no experience with interviewing job prospects. Unfortunately, there is no support for individual differences playing a role in successful deception detection (Bond & DePaulo, 2008), and that includes differences due to expertise or the lack thereof. These findings tend to be based on the type of expertise that comes from experience in law enforcement or with intelligence agencies, and relatively little is known about the relationship between HRM expertise and deception detection accuracy.

The study described here was designed to investigate the roles of computer-mediated communication and expertise in deception detection success. Our research question is: What are the roles played by communication media and expertise in deception detection success? We attempted to gain some insight into our research question by comparing the detection success of expert recruiters and students, who either viewed segments of, or listened to audio from, interviews based on résumés. The next section contains the theoretical and empirical basis for our study and our hypotheses. This is followed by discussions of our research method, our results, our findings and their implications.

## 2. Theoretical and Empirical Background

### 2.1 Media and Deception Detection

Media are bundles of capabilities (Dennis, Fuller & Valacich, 2008). Dennis and colleagues cite five different media capabilities: transmission velocity, number of symbol sets that can be supported, parallelism, rehearsability, and reprocessability. Transmission velocity is the speed at which a medium can deliver a message to intended recipients. Media high in transmission velocity more readily support synchronous communication. Symbol sets are the number of ways in which a medium allows information to be encoded. Symbols can range from physical to oral/verbal to written to non-verbal. Parallelism reflects the number of simultaneous transmissions that can effectively take place, or “the extent to which signals from multiple senders can be transmitted over the medium simultaneously” (Dennis et al., 2008, p. 585). Rehearsability is the extent to which the medium enables the sender to rehearse a message during encoding, before sending. Rehearsability is more important for the transmission of new or complex information. Reprocessability reflects the extent to which a message can be re-examined during decoding, after sending. While rehearsability may slow the encoding of a message, reprocessability may slow its decoding.

Any medium high in transmission velocity and the number of symbol sets supported, such as videoconferencing, should enable the transmission of a large amount of information, including verbal, non-verbal and paralinguistic aspects. A medium low on these capabilities, such as traditional text email, would not have the capacity to transmit non-verbal and paralinguistic aspects.

The capacity of a communication medium to transmit message content is directly related to the ability to successfully detect deception. Successful detection is difficult, but so is deceiving. Leakage theory holds that deception is difficult, both cognitively and emotionally, as deceivers must control not only the words in the message but also their gestures, body language, nervousness and other aspects of their behavior (Ekman & Friesen, 1969). It is so difficult, in fact, that deceivers inadvertently leak cues to their deceptive activity. Ekman and Friesen wrote that the capacity for leakage was limited with the face, given the deceiver’s keen awareness of facial expressions and ability to monitor and quickly alter them; moderate for the hands; and the highest for the feet and legs. It is these cues, regardless of their area of origin, that allow deception to be detected at all. Consequently, communication researchers have conducted dozens of studies about identifying cues and determining which are the most reliable (Bond & DePaulo, 2008; DePaulo, et al., 2003).

Several meta-analyses of these studies were conducted in order to identify the most reliable cues to deception (e.g., DePaulo et al., 2003; Zuckerman & Driver, 1985). A list of some of the cues identified by Zuckerman and Driver and analyzed by Rao and Lim (2000) illustrates the extent to which cues can be transmitted over full audiovisual and audio only media (Table 1). While paralinguistic and verbal cues are available in both modes of communication, non-verbal cues are available in full audiovisual only. According to Rao and Lim’s analysis, we would expect audiovisual media to transmit 12 types of cues, while audio only media would be capable of transmitting seven types of cues.

If leakage theory is correct, and people are able to detect deception because of the leakage of cues from the deceiver, then it follows that more cues should lead to better detection. We would expect that veracity judges would be better able to detect deception in audiovisual media, compared to audio only. At least one study (George, Gupta, Giordano, Mills, Tennant & Lewis, 2018) has found support for this prediction. Veracity judges were less successful at detecting deception in video only media, compared to full audiovisual, audio only, and text. Video only was capable of conveying the least number of cues to deception, compared to the other communication modes. Therefore, we predict that:

*Hypothesis 1:* Veracity judges should be more successful at deception detection when observing interactions in full audiovisual media than in audio only media.

Cues to Deception	Full Audiovisual	Audio Only	Definition
Non-verbal			
Pupil dilation	Detectable		Pupil size, usually measured by a pupilometer
Blinking	Detectable		Eyes open and close quickly
Facial segmentation	Detectable		The extent to which nonverbal communication emanating from the face can be broken down into meaningful units
Adaptors	Detectable		A broad category of kinesic behaviors including such behaviors as smoothing one's hair, scratching one's arm, and straightening one's clothes
Bodily segmentation	Detectable		The extent to which nonverbal communication emanating from the body can be broken down into meaningful units
Paralinguistic			
Response length	Detectable	Detectable	Length or duration of the speaker's message
Speech errors	Detectable	Detectable	Mistake made during speech, sometimes referred to as a 'slip of the tongue'
Speech hesitations	Detectable	Detectable	Pauses made during speech, typically filled with sounds with no meaning, such as uh, um and er.
Pitch	Detectable	Detectable	Voice pitch sounds high; or, fundamental frequency of the voice
Verbal			
Negative statements	Detectable	Detectable	Degree to which the message seems negative or includes negative comments or complaints
Irrelevant information	Detectable	Detectable	Information provided in a response which is not related to the subject at hand
Immediacy	Detectable	Detectable	Linguistic variations that are indicative of speakers' efforts to distance themselves from their listener

Table 1: Cues to deception transmitted by media

## 2.2 Deception

Deceptive communication has been studied for decades in the communication discipline. Researchers have found that deception is common in everyday discourse (DePaulo, Kashy, Kirkendol, Wyer & Epstein, 1996; George & Robb, 2008). Despite its frequent occurrence, researchers have found that people are not very good at detecting deception, being successful only about 54% of the time (Bond & DePaulo, 2006). Deception is not just common in conversation, it is also common on résumés. Recruiters have reported that anywhere from 43% to 58% of résumés contain intentionally false statements (Koeppel, 2006; Tarpey, 2014). Table 2 lists the deceptions that are most common on résumés and their frequency of occurrence. The categories are not too surprising, but it may be surprising to consider that almost three in five job candidates lie about their skill sets.

Deception	Frequency
Embellished skill set	57%
Embellished responsibilities	55%
Dates of employment	42%
Job title	34%
Academic degree	33%
Companies worked for	26%
Accolades/Awards	18%

Table 2: Most common résumé deceptions (source: Tarpey 2014)

Participants in experiments that investigated deception in résumé creation found that as many as 92% of participants lied on their résumés, from once to as many as eight times (Guillory & Hancock, 2012). Related studies find that as

many as 81% of participants admitted lying in what they believed were actual job interviews (Weiss & Feldman, 2006). Veracity judges who viewed recorded interviews, some of which were honest and some dishonest, were able to successfully detect deception just slightly better than chance (Culbertson, Weyhrauch & Waples, 2016). In comparing the detection abilities of recruiters and students, Wood and colleagues (Wood, Schmidtke & Decker, 2007) found no differences in their abilities. In another study, professional recruiters were better able to detect deception than students, 64% to 47% (Mast, Bangerter, Bulliard & Aerni, 2011).

So what happens when a recruiter discovers a job candidate is lying? One would assume that the discovery of deception on a résumé would immediately disqualify the candidate. Wood and colleagues (2007) found, however, that not only would recruiters be willing to hire a deceiver, they were more likely to hire such an individual than were students who were asked to make the same choice. Kuhn and colleagues (Kuhn, Johnson & Miller, 2013) found that upper-level undergraduate HR students, acting in the role of recruiter, were also willing to hire applicants who had lied on their résumés, but the situation was a bit complicated. The discovery of a minor falsehood – lying about dates of employment – did not affect a favored job candidate's trustworthiness, but a major falsehood – lying about completing a degree program – resulted in a loss of trustworthiness for the most favored job candidate.

### 2.3 Experts vs. Novices

Mast and colleagues (2011) found professional recruiters to be better than students at detecting deception, but in general, the research on differences between experts and novices at detecting deception is not very positive. Past studies have found either no difference (Nysse-Carris, Bottoms & Salerno, 2011; Masip, Alonso, Herrero & Garrido, 2016), or that experts were actually worse than novices (Burgoon, Buller, Ebesu & Rockwell, 1994). Two notable exceptions to these general findings are that expert athletes, who played basketball or rugby, were better than novices at interpreting deceptive movements, based solely on the movements of the people they were observing (Jackson, Warren & Abernethy, 2006; Sebanz & Shiffrar, 2009). In a meta-analysis, however, Bond and DePaulo (2008) found individual differences – including expertise – did not have any effect on successful detection.

A meta-analysis revealed that cues-based training can improve detection performance (Driskell, 2012), but training was more effective for novices than it was for experts. Despite their experience and knowledge, experts' detection success seems to plateau out at some point and not get appreciably better.

Based on these findings, we can expect that:

*Hypothesis 2:* Expertise should have no effect on the deception detection success of veracity judges.

## 3. Research Method

Six experienced recruiters and six undergraduate business students were recruited for the study. There were three male and three female experienced recruiters, with an average age of 36, and two-thirds of them had between six and nine years of recruiting experience. There were five male and one female students, all of whom were born in 1995. Five of them reported little to no experience with interviewing. Each study participant viewed 12 segments of recorded interviews, in which students enhanced their résumés and were then interviewed about them. The interviews were created as part of a different study (Tilley, 2005), where both the interviewers and interviewees were blind to the nature of the original study. These 20 interviews, all in English, were edited into brief segments, based on their honesty or dishonesty. Of the 12 segments used in this study, half were honest and half were dishonest. Similarly, half were in full audiovisual, mimicking a videoconference, and half were audio only, mimicking a VoIP phone call. The segments were compiled in a Qualtrics survey, and the order of the segments was randomized. Each participant accessed a link to the survey from whatever location was convenient, at whatever day and time worked best for them. All of the surveys were completed over a two-week period. After viewing or listening to a segment, the participant was asked to rate its veracity on a seven point scale, from 1 for 'very honest' to 7 for 'very dishonest.' After each response, the survey branched to a new screen, where the participant was asked to explain what she had observed in the segment that led to her judgment. After completing the veracity task, each participant completed questions about their confidence in their judgments (on a 7-point scale, from 1 = strongly satisfied to 7 = strongly dissatisfied), their gender, age, interviewing experience, and their first language (Appendix A). Participants were compensated with cash for their participation.

#### 4. Results

To analyze the relationships between expertise and media on deception detection success, the data were analyzed using repeated measures logistic regression, in SPSS Version 23. The GENLIN command was used, with a binomial distribution and logit as the link function. Repeated measures were used, as each participant answered 12 different questions. The predictive factors were media and expertise. The dependent variable was whether the veracity judgment was correct or incorrect. The seven-point scale on which veracity was originally judged was collapsed into a discrete variable, where scores of 1 to 3 were considered a judgment of truth, and scores of 5 to 7 were considered a judgment of dishonesty. The resulting values were compared to the state of the segment, honest or dishonest, to render a score of correct or incorrect. A total of 8 out of a possible 144 judgments – four for experts and four for novices – were neutral (4) and were not used in the analysis. This left 136 responses for analysis. Logistic regression was used for the analysis because the dependent variable was binomial. The hypotheses were tested in a full factorial model.

Overall, the model was statistically significant (chi-square 31.832, 3 df,  $p < .000$ ). Communication media was statistically significant (chi-square 13.108, 1 df,  $p < .000$ ). All judges were more accurate with full audiovisual (68%) than with audio only (48%). Expertise made no difference in detection success (chi-square 1.252, 1 df,  $p < .263$ ). Experts were successful at detecting deception 63% of the time, while novices were 53% successful. There was also an unhypothesized interaction (chi-square 7.209, 1 df,  $p < .007$ ) (Figure 1). Novices with audio (45% accurate) were statistically significantly worse at detection than they were with audiovisual (71%), and they were worse than experts with either audio (61%) or full audiovisual (66%).

Experts were statistically significantly more confident in their deception judgments (mean = 5.67, s.d. = .516) than were novices (6.50, .548) ( $F(1,10) = 7.353$ ,  $p < .022$ ). Experts were also more confident in their abilities to judge the interviewees (5.17, .753) than were novices (6.17, .753) ( $F(1,10) = 5.294$ ,  $p < .044$ ).

Both hypotheses were supported. All veracity judges were better at detecting deception when observing audiovisual media than when observing audio only media (Hypothesis 1), and there were no differences in deception detection success between expert recruiters and students (Hypothesis 2). It is important to note, however, that the interaction between media and expertise showed that expertise did in fact play a role in accurate deception detection. Experts were relatively consistent in their abilities, regardless of media, and they performed at a reasonably high level, being accurate between 61% and 66% of the time. Novices' performance depended heavily on which medium they observed. Novices performed much better with full audiovisual media (71%) than they did with audio only (45% accuracy).

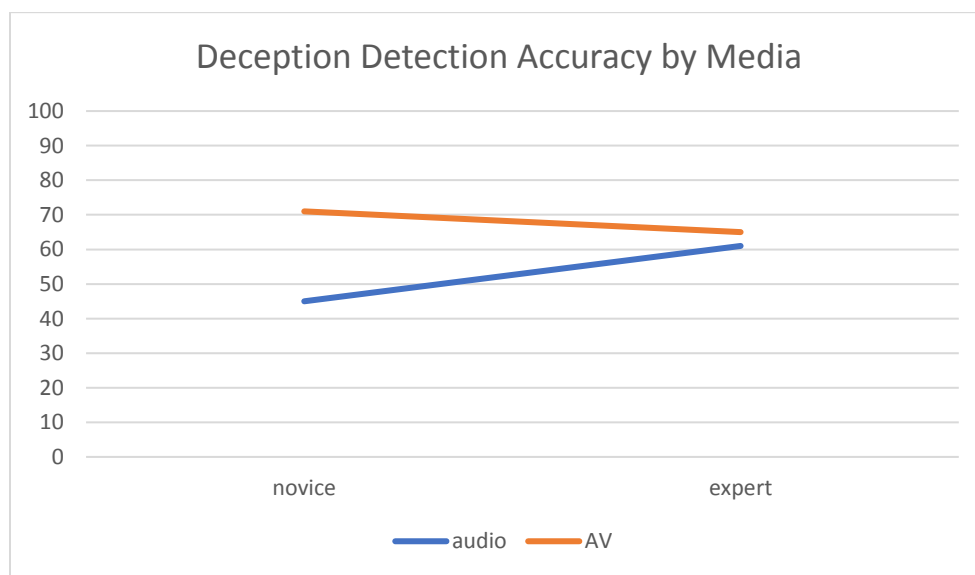


Figure 1: Interaction of media and expertise on deception detection success

## 5. Discussion

We began with the research question: What are the roles played by communication media and expertise in deception detection success? We hypothesized that detection would be more successful when veracity judges observed media that could convey more cues to detection, and that expertise would play no role in detection success. Both hypotheses were supported: Veracity judges were more successful when observing interview segments in full audiovisual, compared to audio only, and experienced recruiters were no better than students at successfully detecting deception. In addition, although we had not hypothesized an interaction between expertise and media, we found that such an interaction existed. Expertise played a role in the interaction, such that student judges, observing audio only interview segments, were the least successful at deception detection, compared to students observing audiovisual and experts regardless of media.

Our results regarding media, where observation of media with the ability to convey the most cues was related to the most successful detection, come against a background of contradictory findings. While a meta-analysis showed that media differences had no discernable effect on detection success (Bond & DePaulo, 2008), some studies have found a direct link between media and detection (Dunbar et al., 2015). Others have found the relationship was mediated by some third variable (George et al., 2015). While Dunbar and colleagues relied on Interpersonal Deception Theory (Buller & Burgoon, 1996), and George and colleagues relied on deceiver credibility and Prominence Interpretation Theory (Fogg, 2003) to predict the relationship between media and detection, few studies have framed the relationship in terms of the capacity of different media to convey cues to deception (George et al., 2018). Though simple, the argument linking the availability of cues and detection success seems to have some merit, as well as empirical support.

In no way do our findings about expertise reflect on the experience and abilities of the professional HRM recruiters, nor do they imply that student novices are somehow experts at interviewing. Instead, the findings underscore the difficulty people have with successfully detecting deception, even in contexts where they have worked for years and where they know the kinds of deception to look for. Cue-based training can improve detection success, but novices benefit more from the training than do experts (Driskell, 2012), and it is not clear how long expertise gained in laboratory experiments endures past the experimental training. In general, as Bond and DePaulo (2008) found, individual differences, even expertise, do not have any significant impact on deception detection success.

Although unhypothesized, the interaction between expertise and media is interesting. While novices with audio only media underperformed all other combinations of expertise and media, what may be most interesting is the huge media-based gap for novices, compared to expert recruiters. The success rates for novices differed by 26 percentage points – 71% correct for audiovisual and only 45% correct for audio only – while the gap for experts was only 5 percentage points – 66% correct for audiovisual and 61% correct for audio only. The implication is that the novices were quite good at detection where they had access to all possible cues, but their performance was substantially lower when non-verbal cues were not available. The types of cues available seemingly did not affect experts. The difference could be due to experience: Four of the six recruiters had up to nine years of experience in HRM, while the students uniformly reported very little interviewing experience. Doubtless, the recruiters had been involved in many phone interviews and had learned what verbal and paralinguistic cues indicated possible deception. In audiovisual mode, which offers more cues, each group could have focused on different sets of cues and still been moderately successful at detection.

## 6. Implications

From a research perspective, our study provided support for leakage theory as a basis for understanding the relationship between media and deception detection. More cues to deception that can be transmitted by a medium seem to assist in detection success. Our findings also provide additional support for the premise that individual differences do not affect detection success. While past research in this area has looked at professionals in law enforcement and intelligence, relatively few studies have looked at the role of expertise in HRM. One other study that we are aware of found that experts were better than novices (Mast et al., 2011), while another study (Wood et al., 2007) found no differences. The former study may be an outlier.

On the other hand, a fuller picture of the relationship between expertise and deception detection comes from examining the interaction of expertise and media. Experts were consistent in detection accuracy across media, while



novices' performance depended heavily on the medium they observed. Focusing on the main effect of expertise on detection accuracy, rather than considering the interaction effect, misses part of the overall story.

From a practical perspective, our findings suggest that experts' confidence in their abilities to detect deception are not congruent with their actual performance. While it was the case that our experts outperformed the standard metric of 54% accuracy, at the end of the day, their performance was no better than novices' performance. Our veracity judges' abilities to detect deception were better when observing audiovisual segments, compared to audio only, which may indicate the profession should rethink its focus on phone interviews. Perhaps initial interviews should be videoconferences, if deception detection is important. If it is consistently found that novice interviewers are less accurate in detection with audio only media, compared to full audiovisual, organizations may want to institute training programs for new employees that focus on detection in audio only media. An alternative would be to limit new interviewers to full audiovisual media initially. As past research showed, however, discovering that a job candidate was not truthful did not in and of itself prevent the candidate from being offered a position.

As is the case with all studies, ours had limitations. We recruited only six recruiters and six students, and the results may have been different with more participants or with a different set of participants. Similarly, in the strictest sense, our findings would apply only to HRM professionals. Future research can test for differences in deception detection between experts and novices in other occupations.

## 7. Conclusion

Deception is a part of everyday communication, so it should not be surprising that people are often dishonest on their résumés. Despite the prevalence of dishonesty, people are not very good at detecting it. Professionals who need to weed out dishonesty as part of their jobs must be better than average at detection, yet the research consistently shows that individual differences alone have little relationship to successful detection, even when individuals differ in expertise. Our findings support this premise for professional recruiters. However, we found professional and novice veracity judges were more successful when viewing full audiovisual interview segments than when listening to audio only segments. Media seems to make a difference. These findings inform both research and practice, and additional research in this area is called for.

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## Appendix A: Research Instrument

For each item viewed, all respondents were asked:

- 1) Please rate the communication media using the scale below, where 1 is honest and 7 is deceptive.
- 2) Specifically, what indicators influenced your evaluation?

Once the experimental task was complete, all respondents were asked to rate their satisfaction on a 7-point scale from 'strongly satisfied' to 'strongly dissatisfied' for the following three questions:

- 1) How satisfied were you with your deception judgments?
- 2) How satisfied were you with your judgments relative to your pre-experimental session expectations?
- 3) How satisfied were you with your ability to judge the interviewees?

Recruiter respondents were then asked to answer the following demographic items:

What is your gender? Male/Female

What is your year of birth?

Do you speak Spanish? Yes/No

Do you speak Hindi? Yes/No

Do you speak Chinese? Yes/No

How many years of recruiting experience do you have?

10 or more/six to nine/five/three to four/one to two

Student respondents were asked to answer the following demographic items: What

is your gender? Male/Female

What is your year of birth?

Do you speak Spanish? Yes/No

Do you speak Hindi? Yes/No

Do you speak Chinese? Yes/No

What choice best describes your experience as an interviewer?

Extensive/Moderate/Little to none

## Author Biographies



**Joey F. George** is Professor of Information Systems, Associate Dean for Research, and the John D. DeVries Endowed Chair in Business in the College of Business at Iowa State University. He previously held endowed chairs at Florida State University and Louisiana State University. His bachelor's degree in English is from Stanford University (1979), and he earned his doctorate in management from the University of California Irvine in 1986. Dr. George's research interests focus on the use of information systems in the workplace, including deceptive computer-mediated communication, computer-based monitoring, and group support systems. He was the Editor-in-Chief of *Communications of the Association for Information Systems* from 2006-2009, Senior Editor for *MIS Quarterly* in 2005, and Senior Editor for *Information Systems Research* from 2009-2013.



**Jie (Jessie) Luo** has over 8 years of experience in IT Project Management, IT Staffing & Consulting, and IT Training Services. She also had two years of experience as a Software Engineer in Enterprise Java application development. Ms. Luo obtained her M.S.c degree in Bioinformatics and Computational Biology from Iowa State University in 2011. She also held her B.S.c degree in Industrial Engineering and Mathematics from Beihang University (Beijing, China) in 2005. She is a CSM certified Scrum Master and Agile Practitioner.