
Users' Socially Desirable Responding with Computer Interviewers

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Abstract

In this paper, we explore how different types of computer interviewers and the amount of self-disclosure from the interviewers affect the quantity of socially desirable responses displayed by interviewees. Online surveys were delivered by computer interviewers. The computer interviewers included a text-based interface and an anthropomorphic character interface. The interviewers' self-disclosure presented their social norm violations. Interview questions were in the form of socially desirable response items representing impression management in this study. The experimental design was a 2 (Interviewers' type) x 2 (Interviewers' self-disclosure versus no self-disclosure) factorial between-subjects experiment. The main dependent variable was whether users' socially desirable responses were affected by the type of interviewer and that amount of self-disclosure provided by the interviewer. The preliminary findings present the potential for self-disclosing anthropomorphic characters to reduce the social desirability bias present in interviewees with high public self-consciousness in their self-disclosure.

Keywords

Impression management; social desirability bias; socially desirable responding; self-disclosure; computer interviewers; anthropomorphic characters; public self-

consciousness; social facilitation; self-administrative survey

ACM Classification Keywords

J.4 Computer Applications: Social and Behavioral Sciences---Psychology.

Introduction

People manage their impressions to meet social norms by responding to their interaction partners in socially desirable ways [3,7]. However, this socially desirable response is often a misrepresentation of the individual because it manipulates how others perceive them in favor of a positive impression [1,8]. This leads us to question whether an interviewee's answers are a reliable metric in any interview interaction. We aim to assess whether interview interactions were successful based on the answer of this inquiry.

Previous studies compared users' socially desirable responses to intimate questions via different types of interview interfaces. For instance, researchers [14,15] found that self-report on intimate information, such as illicit drug use was higher when users answered via a self-administrative survey than when responding to an interviewer's questions. Based on a meta-analysis of existing studies on users' self-disclosure in interview interactions, Weisband and Kiesler [16] reported that users disclosed personal information about themselves more when interacting with a computer interviewer compared to a human interviewer. Tourangeau and Smith [15] argued that self-administration could serve as a measure to decrease interviewees' concern about disclosing embarrassing information about themselves and encourage honesty in their responses. These findings imply that self-administered anonymous

surveys or interactions with a computer interviewer can induce greater self-disclosure on intimate topics, compared to interacting with a real human interviewer.

Regarding the social effects of virtual anthropomorphic characters in particular, Krämer and colleagues [6] reported that users tended to respond with socially desirable answers to a question delivered by an anthropomorphic agent, compared to in a text-only or an audio-only interface, when prompted to choose between an educational documentary and an entertaining program. Social facilitation theory [17], which states that users experience more anxiety and perform worse when virtual characters watch them than when the characters are not presented, supports these results. These findings also demonstrate that people exhibit more intimate self-disclosure and less social-desirability bias in self-administrative and anonymous on-line interactions than in human-to-human interaction settings. Therefore, we decided to employ an anonymous online survey for our study. We propose that this setting will encourage people to respond with fewer socially desirable remarks.

Tourangeau and Smith [15] argue that the presence of an interviewer could help retain an interviewee's motivation. Furthermore, listening to the voice of an interviewer reading the questions rather than having an interviewee read the questions on their own would also reduce their cognitive load. For these reasons, if we want to use human-like characters, it is worth examining how we could prevent users from responding with social desirability bias. It is not clear what type of online survey would be more effective at decreasing the social desirability bias when an anthropomorphic character is used as an interviewer in this setting as no

previous studies explored this subject before. Kang and Gratch [4] discovered that people liked and revealed more personal information with anthropomorphic character interviewers that talked about themselves, compared to interviewers that didn't. In the study, interviewers' self-disclosure was designed to stimulate reciprocal self-disclosure in interviewees' when responding to questions asked by the interviewers. In the self-disclosure condition, interviewers provided a statement of self-disclosure which preceded each question (e.g. "I feel furious when people treat me as if I were just a machine without any thinking or feeling. What are some of the things that make you furious?"). The results of the study imply that interviewers' self-disclosure might have triggered a demand [9] for reciprocal self-disclosure from interviewees. Dell and colleagues [2] argued that it is preferable to utilize demand characteristics to design a study because study participants will try to be "good subjects [9]" by guessing the purpose of the study if they cannot find apparent demand characteristics. In general, people will respond with what they perceive to be socially desirable answers to manage their impressions when they are asked to answer questions regarding social norm violations. However, we expect that people will respond with less social desirability bias when interacting with anthropomorphic characters that share their own social norm violations (e.g. "People lie. I tell lies too if I have to. Do you sometimes lie if you have to?") when disclosing personal information about themselves, compared to interacting anthropomorphic characters that don't. Therefore, in this study we manipulated interviewers' self-disclosure of social norm violations. This manipulation encourages interviewees to feel comfortable disclosing their violations.

Our proposed study explores whether people will opt for providing socially desirable answers, even if it means misrepresenting themselves in their self-disclosure, in order to abide by social norms when asked to answer the questions delivered by the different types of a computer interviewer. We define the computer interviewer as the online survey method used in this study. The computer interviewers include two kinds of medium: A text-based interface that normally displays all the questions at the same time in the form of a traditional paper-and-pencil questionnaire, and an anthropomorphic character interviewer.

We hypothesized that an anthropomorphic character interviewer would increase the amount of social desirability bias based on outcomes from existing studies [6]. However, we go beyond these findings to further hypothesize that people would respond with less social desirability bias if they interact with anthropomorphic characters that admit their misbehaviors in their answers to a question that could cause socially desirable responses, compared to interacting with anthropomorphic characters or text-based interfaces that don't. We additionally investigated how interviewees' personality characteristics, such as public self-consciousness, were associated with their responses to questions regarding social norm violations with the different types of interviewers. Schlenker and Weigold [13] posit that individuals with a high level of public self-consciousness are concerned with how they are perceived by others. Subsequently, they manage their public image by employing deceit and pretention, since they perceive their public demeanor to be a composite of social likelihoods.

Experimental Design

The experiment consists of an anonymous online survey in the form of an interview interaction. The experimental design was a 2 (Interviewers' type) x 2 (Interviewers' self-disclosure versus no self-disclosure) factorial between-subjects experiment involving two factors: i) two types of interviewers – an anthropomorphic character without facial expressions and a text-based interface; ii) two conditions of interviewers' self-disclosure – self-disclosure and no self-disclosure. To compare the two interviewer interfaces, we displayed one question at a time for the anthropomorphic character interface, but placed all of the question items on one page to replicate the form of a traditional paper-and-pencil questionnaire for the text-only interface. For the interviewers' self-disclosure condition, interviewers' self-disclosure preceded each interview question. Socially desirable response items that would be more conducive to impression management [1] were used as the interview questions in this study. The main dependent variable of this study was whether the user's socially desirable responses would be affected by the interview format. In general, Paulhus [10] demonstrated that people achieved higher scores for the measurements of impression management without privacy, compared to with the anonymous condition which granted privacy. There was no time restriction to answer each question, but the total length of user participation was limited to last no longer than 30 minutes. The study consisted of 3 phases: Pre-questionnaire, Questionnaire in the form of an interview, and Post-questionnaire. Qualtrics (Qualtrics.com) was used to create and administer the survey. To control for gender effects, in an anthropomorphic character interviewer condition, the questions were asked by same gender based on a

user's choice for their gender in the pre-questionnaire: male-male and female-female.

Participants. Two hundred and ninety four participants (Text & Self-disclosure: 69, Text & No Self-disclosure: 77, Character & Self-disclosure: 74, Character & No Self-disclosure: 74; 54% women, 46% men; average 31 years old) from the US were recruited using Amazon Mechanical Turk, a crowd sourcing service that allows researchers to conduct an online survey using a registered on-demand workforce. Participation was limited to people with an HIT (Human Intelligence Tasks) approval rate (%) greater than 98 and they were compensated for their time (\$1.02).

Procedure. Participants were randomly assigned to one of four experimental conditions. They interacted with a text-based interface or an anthropomorphic character in the form of an interviewer. Participants were asked to answer questions regarding social norm violations which we believed would potentially elicit a social desirability bias (e.g. "People lie. I tell lies too if I have to. Do you sometimes lie if you have to?"). The question items were created by modifying the Impression Management Scale. The participants also filled out a general demographic survey (Pre-questionnaire) before starting the actual interview interaction (Questionnaire in the form of an interview). Finally, they completed a survey evaluating their experience and their personality characteristics, such as public self-consciousness (Post-questionnaire).

Measurements. The response variable in this study was participants' scores on the questions regarding social norm violations that were the modification of the Impression Management Scale. This scale is comprised of intimate interview questions from an actual interaction and it was utilized to assess socially desirable responses. The Impression Management Scale

consists of 20 items and is a sub-measure of the Balanced Inventory of Desirable Responding [11]. The twenty item Likert-type scale was created with a 7-point metric for items (1 = Never; 7 = Always or 1 = Very Unlikely; 7 = Very Likely). Seven items from the Public Self-consciousness Scale [12] were used to measure overall personality characteristics. In particular, these items assess the degree to which users manage their public image through a 5-point metric for each item (1 = Disagree strongly; 5 = Agree strongly).

Preliminary Findings and Implications

Users' answers in the actual interview interaction represented the degree of their impression management and reflected socially desirable responding. We ran a 2 way ANOVA to analyze the data. Overall, we didn't find statistically significant results for user' socially desirable responses to the interview questions regarding the type of interviewer used (a text-based interface and an anthropomorphic character), amount of self-disclosure from the interviewer, or interaction effect of both these variables. However, we discovered statistically significant results for an ANOVA analysis of user responses to the interview questions regarding public self-consciousness [$F(1;72)=5.342, p<.024, \text{Partial Eta-squared}=.069$] when we looked at the results for each condition. The public self-consciousness level was an explanatory variable created by using a median split ($\text{Median}=4$). When interacting with an anthropomorphic character interviewer that talked about themselves before asking each interview question, users with a high level of public self-consciousness got lower scores on their responses ($M=4.58, SD=.74$) than users with a low level of public self-consciousness ($M=4.95, SD=.65$). This demonstrates that people with a high level of public self-

consciousness respond with more honest answers than people with a low level of public self-consciousness when asked to answer intimate questions delivered by anthropomorphic characters that talk about themselves. In other conditions, there were no statistically significant differences in user responses between users with a high degree of public self-consciousness and users with a low degree of public self-consciousness. Further analysis is required before we can draw conclusions which infer that users with a high level of public self-consciousness would respond with less social desirability bias to intimate interview questions when interacting with an anthropomorphic character, compared to interacting with a text-based interface. Other analyses of the associations between other variables are currently in progress.

Based on previous findings, we hypothesized that an anthropomorphic character interviewer [6] and a high level of public self-consciousness [13] would increase the amount of social desirability bias. However, the outcomes of our study contradict previous findings. We argue that self-disclosure by an anthropomorphic interviewer about their social norm violations will encourage interviewees to respond with less social desirability bias by disclosing their own misbehaviors as well. The findings of our study imply promising results in the application of anthropomorphic character interviewers. For instance, they could help motivate interviewees in an interview interaction [15] and reduce the amount of social desirability bias present in interviewees with a high level of public-consciousness.

At this stage, our aim is to find whether people in general respond with less social desirability bias to intimate questions (e.g. social norm violations) when

asked by anthropomorphic character interviewers employing self-disclosure, compared to interacting with any other type of the interviewers. Previous studies [5] regarding emotionally engaged interactions found that human-like characters could be more effective by delivering facial expressions which convey emotional signals, compared to any interface that doesn't. Thus, we are planning to add more social cues to the anthropomorphic character interviewer which will be used in our next experiment. We speculate that anthropomorphic computer interviewers displaying facial expressions and employing intimate self-disclosure would decrease social desirability bias overall in users' self-disclosure more so than any other type of computer interviewers, whether they provide self-disclosure or not.

References

- [1] Barrick, M. R. & Mount, M. K. Effects of impression management and self-deception on the predictive validity of personality constructs, *Journal of Applied Psychology*, 81 (1996), 261-272.
- [2] Dell, N., Vaidyanathan, V., Medhi, I., Cutrell, E. & Thies, W. "Yours is Better!" Participant response bias in HCI. *Proc. CHI' 2012*, ACM Press (2012), 1321-1330.
- [3] Edinger, J. A. & Patterson, M. L. Nonverbal involvement and social control. *Psychological Bulletin*, Vol. 93, No. 1 (1983), 30-56.
- [4] Kang, S. & Gratch, J. People like virtual counselors that highly-disclose about themselves, *The Annual Review of CyberTherapy and Telemedicine*, Vol. 167 (2011), 143-148.
- [5] Kang, S., Watt, J. H., & Ala, S. Social copresence in anonymous social interactions using a mobile video telephone. *Proc. CHI' 2008*, ACM Press (2008), 1535-1544.
- [6] Krämer, N. C., Bente, G., & Piesk, J. The ghost in the machine. The influence of Embodied Conversational Agents on user expectations and user behavior in a TV/VCR application. In G. Bieber, & T. Kirste (Eds.), *IMC Workshop 2003, Assistance, Mobility, Applications* (2003), 121-128.
- [7] Kraut, R. Verbal and nonverbal cues in the perception of lying. *Journal of Personality and Social Psychology*, Vol. 36, No. 4 (1978), 380-391.
- [8] Kreuter, F., Presser, S., & Tourangeau, R. Social desirability bias in CATI, IVR, and web surveys: The effects of mode and question sensitivity. *The Public Opinion Quarterly*, Vol. 72, No. 5 (2008), 847-865.
- [9] Orne, M. On the Social Psychology of the Psychological Experiment: With Particular Reference to Demand Characteristics and their Implications. *American Psychologist* 17 (1962).
- [10] Paulhus, D. L. Two-component models of socially desirable responding. *Journal of Personality and Social Psychology*, Vol. 46, No. 3 (1984), 598-609.
- [11] Paulhus, D. L. Measurement and control of response bias. In J. P. Robinson, P. Shaver, & L. Wrightsman (Eds.), *Measures of personality and social psychological attitudes*. Vol. 1: 17-60. New York: Academic Press (1988).
- [12] Scheier, M. F., & Carver, C. S. The self-consciousness scale: A revised version for use with general populations. *Journal of Applied Social Psychology*, Vol. 15, No. 8 (1985), 687-699.
- [13] Schlenker, B. R. & Weigold, M. F. Self-consciousness and self-presentation: Being autonomous versus appearing autonomous. *Journal of Personality and Social Psychology*, Vol. 59, No. 4 (1990), 820-828.
- [14] Tourangeau, R., Rips, L. J., & Rasinski, K. *The psychology of survey response*. Cambridge: Cambridge University Press (2000).
- [15] Tourangeau, R. & Smith, T. W. Asking sensitive questions: The impact of data collection mode, question format, and question context. *The Public Opinion Quarterly*, Vol. 60, No. 2 (1996), 275-304.
- [16] Weisband, S., & Kiesler, S. Self-disclosure on computer forms: Meta-analysis and implications. *Proc. CHI' 1996*, ACM Press (1996), 3-10.
- [17] Zajonc, R. B. Social facilitation. *Science*, 149 (1965), 269-274.