



PATIENT REACTIONS TO COMPUTER INTERVIEWS

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An important question to address regarding computer interviews is how well they are received by patients. Do patients feel put off by giving information to a machine? Do they prefer being interviewed by humans? Are they less forthright with a computer as opposed to a clinician, particularly in sensitive areas? Honaker (1988) discusses the concept of *experiential* equivalence, i.e., the way that the test-taking process is experienced by the test taker. This includes the patient's emotional reactions and attitudes toward the assessment experience, and may affect the patient's willingness to participate in further assessment sessions. What follows is a brief summary of the findings from other researchers on patient reaction to our computer interviews, followed by a review of studies we have conducted on this topic.

Research on Patient Reaction to Computer Interviews

Research on patient reaction to computer interviews dates back to the early applications of computer administration of paper-and-pencil tests. For example, several studies involving both clinical and non-clinical populations have found that patients prefer the computer over the traditional administration of the MMPI, finding it more enjoyable, interesting, time-efficient, and less difficult (Honaker et al., 1988; White et al., 1985; Russell et al., 1986; Rozensky et al., 1986; Bresollin, 1984). In Slack's (1966) pioneering work with automated medical history taking, 36% preferred the computer, 24% preferred the clinician, and 40% had no preference.

In sensitive areas, patients often find it easier to provide information to the computer, are often more honest with the computer, and often prefer the computer over the clinician. For example, in the area of suicide assessment, Petrie & Abell (1994) studied 150 consecutive hospitalized parasuicides who were given a computer interview evaluating suicidal ideation, depression, and self-esteem. They found 52.3% preferred giving this type of information to the computer, 17.4% preferred a doctor, and 30.2% had no preference (Petrie & Abell, 1994). Ninety-two percent rated the interview as "very easy" or "easy." No demographic variables were found that differentiated those who preferred the computer over a clinician, but those preferring the computer had significantly higher levels of hopelessness, suicidal ideation, and lower self-esteem. Similarly, Greist et al. (1973) found that 51% of patients with suicidal ideation preferred giving this type of information to the computer rather than to clinician.

In the area of alcohol and drug use, Lucas et al. (1977) found that patients reported significantly higher levels of alcohol consumption to the computer than to a clinician, and 50% of the patients rated the computer more positively than the physician on semantic differential ratings. Skinner and Allen (1983) found that patients evaluated for alcohol, drug and tobacco use at an addiction treatment center rated the computer more favorably than either face-to-face or self report (i.e., paper-pencil) format on several dimensions (e.g., more relaxing, interesting, fast, light, and short). No differences were found between the three methods in rates of consumption reported. Similarly, Greist and Klein (1980) found that 69% of high school students assessed for drug and alcohol abuse by both computer and paper-pencil questionnaire preferred the computer, 18% had no preference, 10% preferred the questionnaire and 2% preferred some alternative method. Subjects found the computer interview significantly more interesting. However, kappas on agreement for alcohol use (.28) were somewhat lower than for cigarette use (.82) and marijuana use (.82), the lower kappas a result of higher disclosure on the paper questionnaire (Erdman, et al., 1983). More recently, Kobak et al., (1997) found primary care patients reported twice the rates of alcohol abuse to the computer-administered version of a diagnostic interview (PRIME MD) than to the clinician-administered version of the same interview.

In the area of sexual functioning, Greist and Klein (1980) found that respondents (i.e., randomly selected medical patients and their families waiting for appointments at a clinic) were significantly more likely to disclose sexual problems to a computer than to a psychiatrist interviewer. This finding held true even when the patient and the psychiatrist were of the same gender.

Locke and colleagues (1992) compared a computer-based interview to the standard American Red Cross procedures for assessment of HIV-related risk factors in 272 potential blood donors. The computer identified 12 donors with either high risk behaviors or symptoms compatible with Acquired Immune Deficiency Syndrome; none of these 12 was identified by standard procedures. Only one of the 12 used the confidential unit exclusion procedure to prevent the use of his donated blood. Only one patient was identified as high risk by traditional methods (this patient was not identified by the computer). None of the 272 patients tested positive for HIV. Sixty-four percent of the subjects felt that donors would be more honest with the computer, compared to 12% who believed donors would be more honest with a human interviewer. Thirty-nine percent felt the computer interview was more private, compared to 7% who felt the human interview was more private.

In psychiatric settings, Carr et al. (1983) found that psychiatric inpatients reported an average of five and one-half *more* items per patient on a computerized psychiatric history than on a clinician interview, including having a criminal record (26%), blackouts from drinking (23%), impotence (20%), being fired (17%), and suicide attempts (17%). Most patients (88%) found the computer no more demanding than a clinician interview, and 33% found it easier. When asked what they preferred about the computer, almost all referred to the ability to stop and think when answering questions, and felt more able to answer questions accurately when they did not have to keep a clinician waiting. All but 2 patients (95%) felt satisfied that they were able to give a thorough account of themselves to the computer.

In other studies, Moore et al. (1984) found that of 59 new mothers being evaluated for psychological state, only one reported objections to using the computer. Erdman, et al. (1992) found no significant difference in preference for computer or clinician administered versions of the Diagnostic Interview Schedule (DIS; Helzer, et al., 1981) in subjects who took both versions. Of those expressing a preference, significantly more reported being more embarrassed being interviewed by the clinician (26%) than by the computer (7%), with most expressing no difference in embarrassment between versions (68%). In a study of a computer-administered health screening of 1,937 employees of an urban teaching hospital (Slack et al., 1995), 85% found the screening worthwhile, and 66% found the experience interesting. Thirty-nine percent preferred the computer for this type of health screening, compared to 12% preferring a nurse or doctor, with 46% expressing no preference (3% gave no answer, using a “skip it” option).

There is some research indicating that patient reactions to computer interviews may vary by disorder. For example, a pharmacological trial with socially phobic individuals (Katzelnick et al., 1995) confirmed our findings (see Study 4 below), in that 64% preferred being interviewed about their symptoms by computer, compared to 9% who preferred the clinician, with 28% expressing no preference. In contrast, Study 1 found the majority of persons with affective disorders and other anxiety disorders preferred the clinician, while the majority of control subjects had no preference.

In summary, patient reaction to computer interviews has generally been positive. Patients find computer interviews easy to understand and complete, and often prefer them for disclosing certain types of sensitive information. While more psychiatric patients preferred the clinician, almost all found the computer an acceptable method for gathering information.

HTS Studies on Patient Reactions to Computer Interviews

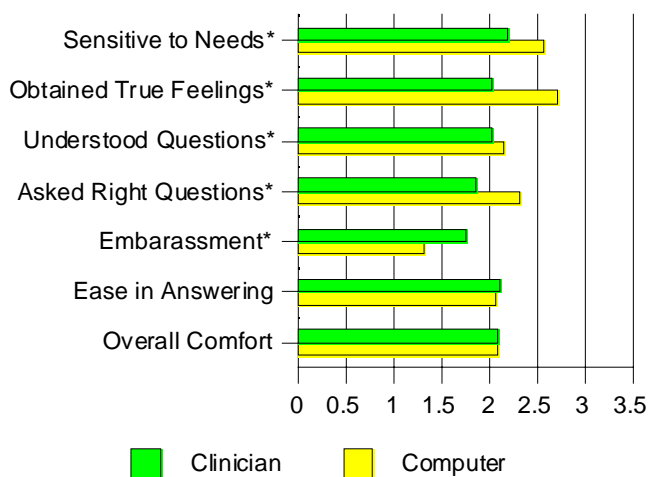
Study 1

Methodology. Subjects were 256 adults participating in a ongoing validation study of the desktop HAMD. Subjects had a DSM-III-R diagnosed affective disorder (n=121), anxiety disorder (n=52), other psychiatric disorder (n=7), or were community controls (n=76). Following administration of both computer and clinician interviews in counter-balanced order, subjects completed a 7-item paper-and-pencil questionnaire evaluating the following dimensions: overall comfort level, level of embarrassment, asking pertinent questions, ease in answering, comprehension of questions, ability to assess true feelings, and sensitivity/insensitivity to the subjects' needs. Each item was rated on a 5-point scale ranging from 1 (positive) to 5 (negative). The response format anchors varied according to the questions (e.g., *not at all embarrassed to extremely embarrassed*). Subjects were also asked if they would rather give the information to a computer or a clinician.

Results. No significant difference was found between the computer and clinician in the areas of overall comfort with interview format and ease in answering questions. Paired t-tests found significant differences in the areas of embarrassment during the interview (more embarrassed with clinician), asking pertinent questions (clinician rated more positive), how well the questions

were understood (clinician rated more positive), how well the interview allowed the person to answer how they really felt (clinician rated more positive), and how sensitive each version was to the subjects' needs, (clinician rated higher). No order effects were found.

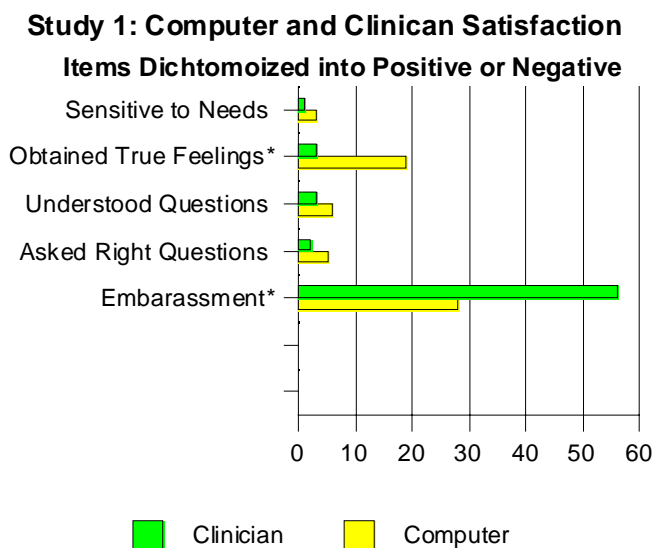
Study 1: Computer and Clinician Satisfaction



Note: Items were rated on a 5-point scale and scored from (1) positive to (5) negative

* $p < .001$

The data were also collapsed into dichotomous (versus continuous) variables. Examined from this perspective, the percentage of subjects who were “a little embarrassed” or greater was 28% for computer and 56% for clinician, $p < .0001$; the percent who responded “poor” or “very poor” to “asking pertinent questions” was 5% for computer and 2% for clinician, $p = .08$; the percent who answered “somewhat” or “not at all” to “how well questions were understood” was 6% for computer and 3% for clinician, $p = .09$; the percent who answered “somewhat” or “not at all” to “how well the interview allowed the person to answer how they really felt” was 19% for computer and 3% for clinician, $p < .0001$; and the percent who answered “insensitive” or “very insensitive” to “how sensitive each version was to the subjects' needs” was 3% for computer and 1% for clinician, $p = .09$. Thus, while there were significant differences between the computer and clinician when the patient reaction questions are examined as continuous variables, in most areas only a small percentage of patients rated the computer unfavorably.



Note: Higher rating = more negative

In terms of overall preference, 46% preferred the clinician, 10% preferred the computer, and 44% had no preference, $p < .001$. Significant differences in preference were found between psychiatric and control groups, $p < .011$, with 53% of psychiatric subjects preferring the clinician (40% had no preference and 7% preferred the computer), and 51% of control subjects showed no strong preference (32% preferred the clinician and 17% preferred the computer). Significant differences in preference were also found between college and non-college educated subjects, $p < .05$, with 49% of college educated subjects preferring the clinician, and 61% of non-college educated subjects indicating no strong preference. There were no significant age or gender differences in preference for interview format. Finally, subjects who preferred the computer had significantly more prior experience with computers than subjects who showed no preference, $p < .05$. Taken as a whole, the data suggest that while patients may prefer the clinician to the computer, patients find the computer an acceptable method for obtaining information. No subject refused either computer or clinician interview. Patient preference may vary as a function of diagnosis, as will be shown in the next study (#2).

cite: (Kobak, K. A., Reynolds, W. M., & Greist, J. H. (1994). Computerized and clinician assessment of depression and anxiety: Respondent evaluation and satisfaction. Journal of Personality Assessment, 63, 173-180.)

Study 2

Methodology. Subjects were 44 socially phobic adult participants in a study comparing an SSRI vs placebo. All subjects completed both desktop and clinician administered versions of all outcome measures, including the Liebowitz Social Anxiety Scale, Brief Social Phobia Scale,

HAMA, HAMD, and Fear Questionnaire. Subjects were asked by the computer after each assessment the following two questions: 1) “To what extent did you feel that the computer interfered during the visit?” (response options were “none,” “a little,” “somewhat,” “quite a bit,” and “very much”), and 2) “You have just been given a series of interviews by the computer. Would you prefer to give the information gathered during these interviews to: (response options) a computer, a person, no preference?”

Results: At baseline, 77% felt the computer did not interfere with the visit, 9% answered a little, and 14% said “somewhat.” Nobody answered “quite a bit” or “very much.” A plurality of these socially phobic patients (36%) preferred the computer, 34% had no preference, and 30% preferred the clinician. Interestingly, by the end of the study, a plurality (41%) had no preference, 32% preferred the clinician, and 27% preferred the computer. One can speculate whether the effect of successful treatment or simply the inadvertent “exposure therapy” obtained during the clinical interactions over the course of the trial affected choice of interview format (both placebo and drug groups showed significant change during the trial). At the end of treatment, the percent of patients reporting the computer did not interfere at all with their visit rose to 85%; however 6% of patients now felt it interfered “quite a bit,” with 6% answering “a little,” and 3% “somewhat.”

Cite: Kobak, K. A., Schaettle, S. C., Greist, J. H., Jefferson, J. W., Katzelnick, D. J., Dottl, S. L. (1998). Computer Interview Assessment of Social Phobia in a Clinical Drug Trial. Depression. & Anxiety. 7, 97-104.

Study 3

Methodology. This was a validation study of the IVR HAMD. The sample consisted of 113 subjects aged 19 to 77 (mean=43.6, SD=14.9) with a DSM-IV diagnosis of Major Depression (n=44), other mood disorder (n=20), anxiety disorders (n=12), and community controls with no diagnosed disorder (n=37). Following completion of both the computer and clinician interviews, all 113 subjects were given a modified version of the questionnaire described in study 1. The questionnaire evaluated the following 5 domains: how much they liked being interviewed, overall comfort level, comprehension of questions, ability to assess true feelings, level of embarrassment, and interview preference.

Results. No significant difference was found between the computer and clinician in the areas of overall comfort with interview format and how well the questions were understood. Paired t-tests found significant differences in the areas of embarrassment during the interview, $t(110)=6.53$, $p<.001$, (more embarrassed with clinician), how well the interview allowed the person to answer how they really felt, $t(110)=7.54$, $p<.001$, (clinician rated more positive) and how much they liked being interviewed by each version, $t(109)=3.09$, $p=.003$, (clinician rated higher).

When the data were collapsed into dichotomous (versus continuous) variables, the percentage of subjects who were “a little embarrassed” or greater was 11% for computer and 48% for clinician,

$\chi^2(1) = 35.13, p < .0001$; the percent who answered “somewhat” or “not at all” to ‘how well the interview allowed the person to answer how they really felt’ was 14% for computer and 2% for clinician, $\chi^2(1) = 10.77, p < .001$; and the percent who answered “didn’t like” or “didn’t like at all”

to the question ‘how much did you like being interviewed by each version’ was 7% for computer and 3% for clinician, $\chi^2(1) = 2.44, p = .11$. Thus, similar to the results in study 2, while there were significant differences between the computer and clinician in some areas when the scale is examined as a continuous measure, only a small percentage of patients rated the computer unfavorably.

Cite: Kobak, K. A., Greist, J. H., Jefferson, J. W., Mundt, J. C., & Katzelnick, D.J. (in press). Computerized assessment of depression and anxiety over the telephone using interactive voice response. MD Computing.

Study 4

Methodology. Seventy-one patients were administered the clinician HAMD and the IVR HAMD as part of a 14-day, single-site trial evaluating a novel antidepressant versus placebo. Following the baseline, day 4, and day 14 computer interviews, subjects were asked the following two questions by the computer: “How easy was it for you to use this telephone assessment?” (response options were “very easy”, “easy”, “neither easy nor difficult”, “difficult” and “very difficult”) and “How well did you understand the questions and answers in the Hamilton Depression Scale?” (response options were “not at all”, “a little”, “moderately well”, “quite a bit”, and “extremely well”).

Results. At baseline (n = 71), 77% responded “easy”, 17% “neither easy nor difficult”, and 6% “difficult” to the question “How easy was it for you to use this telephone assessment?”. These percentages changed to 80% “easy”, 16% “neither easy nor difficult”, and 3% “difficult” at day 4 (with 1% reporting “very difficult”)(n = 71). By the end of the study (day 14; n = 57) the figure rose to 81% responding “easy”, 17% “neither easy nor difficult”, and only 2% “difficult”. Thus, patients as a whole found the IVR easy to use, with relatively few patients having any difficulty.

In terms of responses to “how well did you understand the questions...?”, nobody answered “not at all” or “a little” at baseline, with 8% responding “moderately”, 48% “quite a bit” and 44% “extremely well”. These figures remained high at the end of the study, although overall ratings dropped slightly: 3% responded “a little”, 11% “moderately”, 45% “quite a bit” and 41% “extremely well”. This slight drop may have been a function of wording changes in the time frame used by the patient in making ratings at subsequent visits. Being a “variable interval” HAMD, the number of days since the last visit varied depending on scheduling, and this may have resulted in the slight drop in this area at endpoint. Finally, one may speculate whether respondents would have been as candid if the evaluation questions had been asked by a human interviewer (see review of other research on patient reaction below).

Cite: Kobak, K. A., Greist, J. H., Jefferson, J. W., Mundt, J. C., & Katzelnick. (1997). Unpublished data.

Study 5

Methodology. Four-hundred and forty nine subjects were administered both IVR and clinician versions of the HAMD in this 4-week multicenter antidepressant trial. Subjects were asked (by the computer) the same two questions administered in Study 4, “How easy was it for you to use this telephone assessment?” and “How well did you understand the questions and answers in the Hamilton Depression Scale?”. The evaluation questions were asked at four time points: baseline and at days 4, 14, and 28.

In addition, one of the sites independently developed a paper-and-pencil evaluation questionnaire of the IVR system, and administered it to participants at its site at the final study visit. Neither the pharmaceutical sponsor nor the authors of the IVR software were involved in the development of this evaluation questionnaire or its administration.

Results. At baseline (n = 442), 77% found the IVR “very easy”, 15% “easy”, 7% “neither easy nor difficult”, and only 1% (n = 5) “difficult” (no subject rated the IVR as “very difficult). At the end of the study, 75% found the IVR “very easy”, 22% “easy”, 2% “neither easy nor difficult”, none “difficult”, and less than 1% (n = 1) “very difficult”.

In answer to the question “How well did you understand the HAMD questions”, at baseline 42% responded “extremely well”, 48% “quite a bit”, 7% “moderately”, 2% “a little”, and 1% (n = 4) “not at all”. At the end of the study, 39% responded “extremely well”, 39% “quite a bit”, 18% “moderately”, 4% “a little”, and less than 1% (n = 1) “not at all”. As a whole, the results indicate that subjects found the IVR easy to complete and that the questions were not difficult to understand.

The results of the survey independently initiated by one of the trial sites are reported below. As can be seen, patients in general responded favorably to the IVR. Consistent with our previous research, depressed psychiatric patients preferred the clinician, although most patients found the computer an acceptable method for obtaining information, with no patients refusing to take the computer interview.

| | STRONGLY AGREE | AGREE | NEUTRAL | DISAGREE | STRONGLY DISAGREE |
|--|-------------------|-------|---------|----------|----------------------|
| 1. The directions on how to complete the telephone program were clear and concise. | 45% | 54% | 0% | 0% | 1% |
| 2. The questions were clearly stated and understandable. | 27% | 49% | 12% | 9% | 3% |
| 3. The tone and speed of the speaker’s | | | | | |

voice was appropriate. 27% 39% 24% 5% 4%

| | STRONGLY AGREE | AGREE | NEUTRAL | DISAGREE | STRONGLY DISAGREE |
|--|---------------------------|--------------|----------------|-----------------|------------------------------|
| 4. The telephone program was easy to complete. | 38% | 55% | 4% | 1% | 1% |
| 5. The process of completing the telephone sessions was convenient. | 36% | 43% | 12% | 4% | 4% |
| 6. There were enough choices available to correctly answer the questions. | 11% | 46% | 20% | 15% | 8% |
| 7. The questions elicited answers that were a true reflection of how I was feeling | 7% | 41% | 30% | 18% | 5% |
| 8. I found the telephone program to be a helpful process to go through. | 8% | 31% | 46% | 9% | 5% |
| 9. I preferred answering the questions through the telephone program than speaking with the physician. | 0% | 3% | 22% | 43% | 32% |

Cites: Kobak, K. A., Greist, J. H., Jefferson, J. W., & Katzelnick, D. J. (June, 1998). The Utility of the IVR Hamilton Depression Rating Scale in a Multi-Site Depression Trial: A Feasibility Study. National Institute of Mental Health, New Clinical Drug Evaluation Unit, 38th Annual Meeting, Boca Raton, FL.

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