

IMPROVING FIELD INTERVIEWER PERFORMANCE: THE EFFECTS OF SHADOWING

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Introduction

In its June 2001 field interviewer training session, the Dallas Heart Disease Prevention Project introduced a new training module designed to help trainees better understand the logistics and art of contacting residents and obtaining their cooperation in the study. Trainees who participated in this module spent a half day "shadowing" an experienced field interviewer (FI) to observe normal field operations. Following their participation in the module, the trainees reported that it was the most valuable module of the entire training session. This paper presents the results of our evaluation of the shadowing experience on trainees' subsequent field performance.

The intent of the Shadowing Module is to shorten the FIs' learning curve, bringing new interviewers up to peak performance earlier in their data collection period and thus increasing the FIs' overall productivity and efficiency. Anecdotal evidence suggests that immediately after training new interviewers typically complete fewer interviews and have higher costs per case than average. As they gain experience and confidence, however, interviewer's productivity and efficiency often improves. Groves and Cooper (1998) found that response rates also increase as interviewers gain experience. Early failures, however, appear to contribute to lower self-efficacy and higher anxiety which may contribute to higher attrition among field staff.

The Context

This research was conducted by RTI International in partnership with the Donald W. Reynolds Cardiovascular Clinical Research Center at the University of Texas Southwestern Medical Center at Dallas. RTI International was responsible for conducting the field survey in Dallas County, Texas that created a population cohort for the project. Data collection took place between June 2000 and February 2002. Some 6,110 randomly selected residents were interviewed for the study. FIs were assigned cases based on their geographical proximity to the selected addresses and, where possible, on their demographic and cultural compatibility with the neighborhood.

The field interviewer's tasks were fairly complex. First, they were required to locate and screen the residents at the selected addresses, obtain the cooperation and in-

formed consent of the selected respondent, and conduct the interview. The 1 1/2 hour interview was administered via a computer-assisted personal interview (CAPI) application on a laptop computer. Interviewers also took the respondent's medical measurements (pulse, blood pressure, and weight) and recorded details about the respondent's prescription and non-prescription medications and herbal remedies. Finally, the interviewers explained and scheduled visits for the next two phases of the study, which involved an in-home phlebotomy and a full battery of cardiovascular tests at the Reynolds Clinic. Altogether, these various tasks required the FI to organize and operate equipment (the Welch-Allyn® Vital Signs Monitor, the project laptop, and the digital scales) and remember and make appropriate use of multiple forms (including those for informed consent, incentive payments, medications, pulse and blood pressure results, medical care, and materials related to the phlebotomy and clinic visits, as well as a number of administrative forms).

The Shadowing Module was introduced in the fourth of the five training sessions conducted during the project. High staff attrition, higher than expected cost per case, and a lower than expected rate of field production had plagued the project from the beginning. A major contributing factor was the inexperience of the FIs. During the first year of the project, the protocol called for field staff who resided in the study area. During this period, however, competition for experienced field staff from the 2000 U.S. Census and other ongoing field surveys in the area required that we hire a larger than usual proportion of inexperienced staff.

The Shadowing Experience

Field interviewer training took place in Dallas and consisted of large and small group sessions that featured a combination of lectures, films, mock exercises, and role playing. Trainees were offered additional chances to practice and learn during evening study halls. Trainees were required to pass a series of tests before being certified to work on the project. The training sessions lasted 7 to 8 days, depending on the number of trainees.

The Shadowing Module was inserted into the regular training schedule toward the end of the regular training session. It took place on a Saturday to give trainees a higher chance of observing both a screening and an interview, since weekend hours tended to be the most likely times for the interviews to be completed.

Shadowing consisted of four hours of field observations. Two to three trainees were paired with a veteran FI, and spent the four hours following and observing the veteran during normal data collection operations. The trainees later reported that while driving to selected addresses, the veterans talked to them about the job, explained what they were doing, and analyzed various situations they faced. At the selected addresses, the trainees were introduced to the resident following an informed consent process, and then remained silent throughout the screening and interview process. The trainees did not perform any data collection functions during the shadowing experience; they only observed.

Methods

At the time of the June 2001 training, there were 30 veteran field interviewers already working for the project and 38 trainees. To participate as mentors in the Shadowing Module, we selected only those veterans whom we felt would serve as good role models. The veterans were selected in consultation with the field supervisors. Seven veterans were selected.

Not all the trainees were given the opportunity to participate in the shadowing module. Due to time constraints, altogether these seven veterans were able to work with only 28 of the 38 trainees. It is important to note that although no specific criteria were consciously used to match the trainees to the veterans, the 28 trainees selected to participate in the shadowing module were not randomly selected. Nevertheless, the different training "treatments" these trainees received offers conditions for a quasi-experimental design. The "experimental" group

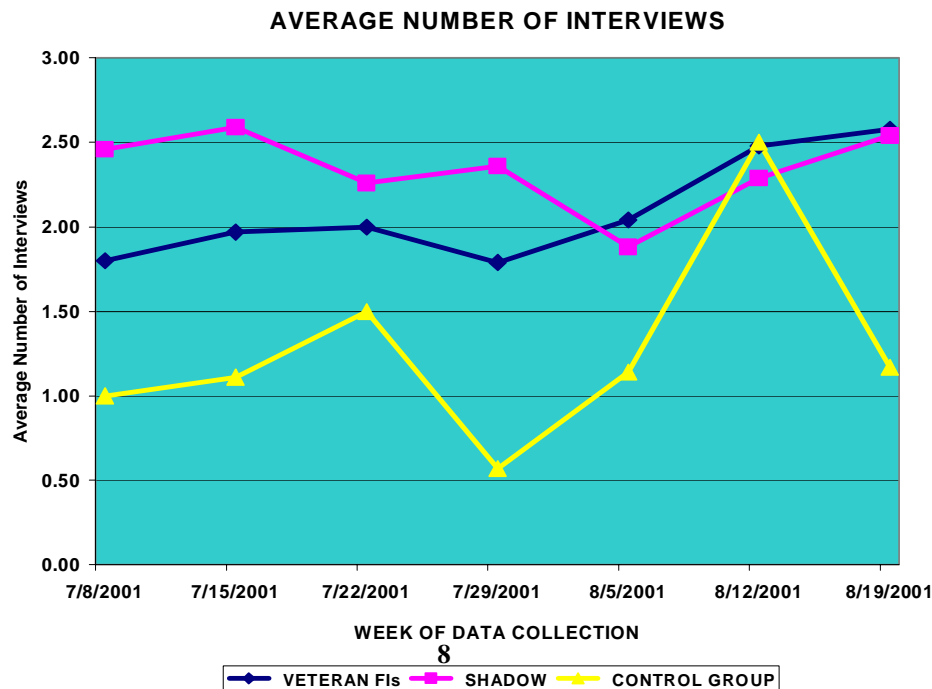
consists of the 28 trainees who participated in the shadowing module (below we refer to this training group as the "Shadowers"). The "control" group consists of the 10 trainees who did not participate (the "Non-Shadowers").

Three hypotheses governed this analysis. Because we expected shadowing to shorten the trainees' learning curve, we expected that the experience would improve production: on average, the Shadowers would complete more interviews during the first few weeks of data collection than the Non-Shadowers. The time period examined was July 3rd through August 25th, 2001, which covers the first eight weeks after training. Production is defined as the number of interviews the FI completed divided by the number of FIs in the training group during that time period.

We also expected that the Shadowers would work more efficiently, that is, that they would spend fewer hours per completed interview and thus would have lower cost per interview than the Non-Shadowers. The relevant time period was again July 3 - August 25, 2001. Efficiency is operationalized as the interviewers' total labor costs and expenses divided by the number of interviews completed.

Finally, we expected that this early success in the field (in the form of higher production and lower cost) would reduce attrition, both voluntary and involuntary. Because attrition takes longer to manifest than production and efficiency, the time period for this analysis was lengthened to five months, July 3rd through November

Figure 1



31st, 2001. Attrition is defined as the number of FIs who left the project during this period divided by the total number of FIs as of July 3, 2001, at the beginning of data collection.

For all three hypotheses the level of analysis was the training group: the Shadowers and the Non-Shadowers. Because FIs did not all work each week of the analysis period, we adjusted the production and efficiency averages for individual FIs by the number of weeks worked by the FI and before calculating the average for all FIs in the treatment group.

Two different analyses were performed to test the first hypothesis. The first analysis investigates the average weekly number of completed interviews per training group. Production is defined as the weekly number of interviews completed by all the FIs in a given training group (Shadowing or Non-Shadowing) divided by the number of FIs in their respective group. The second analysis examines whether significantly different production rates between the two treatment groups exist, regardless of weekly trends. In this second analysis, therefore, production is defined as the overall average number of completed interviews (across all weeks worked by an individual FI) for an individual FI.

The second and third hypotheses were investigated in the same manner as described in the first analysis of hypotheses one.

Results

Does Shadowing Increase FI Production? The average number of interviews conducted each week by FIs in the two treatment groups is illustrated in Figure 1. For comparison purposes, the weekly averages for the 30 veteran FIs who had been collecting data prior to the June 2001 training session is also included in the graph.

Overall, the weekly averages range from about 0.5 to over 2.5 per FI. The Non-Shadowers have the lowest level of production. With one exception, FIs who did not participate in the Shadowing Module average between 0.5 and 1.5 interviews per week. (The exception came on the next to the last week of the analysis period, when a very experienced travelling FI returned to Dallas to complete a number of interviews, some of which had been previously scheduled.) The Shadowers, in contrast, average between almost 2 interviews per week to over 2.5. The first two weeks of data collection are particularly illustrative. In both weeks, Shadowers average about 2.5 interviews each while Non-Shadowers average about 1.0 interview. The Shadowers even surpassed the level of production of the veterans, who average fewer than 2.0 interviews per week during the first two weeks of this eight week period.

We conducted linear regression analyses to test the significance of the training group variable on the rate of production. The full regression model included the

Table 1
Average Interviews Per Week

	Adjusted Mean			Median
	Full Model	Model w/race	No adjustment	No adjustment
Control Group (Non Shadowers)	0.6668	0.752	0.837	0.75
Shadowers	1.778	1.7943	1.915	1.6875
Difference	-1.112	-1.0423	-1.078	-0.9375
Training Grp. p value	0.05	0.049	0.0477	0.038

training group as the variable of interest and four demographic characteristics of the FIs as covariates. The four covariates were age, race, sex, and years of experience. Overall, the model was not significant. The training group variable was significant at $p=0.05$ (see Table 1), but the overall F-test is not significant ($p=0.20$). Since the next most significant variable in the full regression model was race ($p=0.26$), we also ran a regression model that included only race and training group as explanatory variables.

In this reduced regression model the race variable was borderline significant ($p=0.08$) and the training group variable remained significant ($p\text{-value} = 0.05$). Since race was borderline significant in the second regression model, a third regression model including only training group was tested. As before, the training group variable was significant with $p\text{-value} = 0.05$.

Using the results of the three regression models, we calculated the adjusted mean number of weekly interviews (according to the covariates in the model) completed by the two different training groups. These means are listed for comparison purposes in Table 1. Because of the unequal variances between the two training groups (Shadowers had more variance than the Non-Shadowers) we also analyzed the median differences using the non-parametric Kruskal-Wallis test. These results are shown and the time period spans five months rather than eight

in the row labelled "Difference" in Table 1. The difference between the Shadowers and the Non-Shadowers was roughly the same for all four analyses. Shadowers averaged about one interview more per week than the Non-Shadowers. In each case, training group was the only significant variable.

Does Shadowing Increase Efficiency?

The average cost per completed interview for the two training groups is illustrated in Figure 2. The Non-Shadowers had the higher cost, and thus lower efficiency of the two training groups. Average costs range from about \$200 per completed interview to as high as \$400 during their first eight weeks of data collection. FIs who had participated in the Shadowing Module maintain an average cost between \$150 and \$200 during the same time period, roughly the same cost range as the veteran FIs. We conducted regression analysis to test this hypothesis, but failed to reach firm conclusions. Although no significant differences were detected between the two training groups, the small sample sizes and the high number of FIs who worked but completed no interviews makes the interpretation uncertain.

Does Shadowing Reduce Attrition?

The rates of attrition for the two training groups and the group of veteran FIs are illustrated in Figure 3. In this analysis, the unit of time is a month rather than a week, weeks. The difference between the three groups is strik-

Figure 2

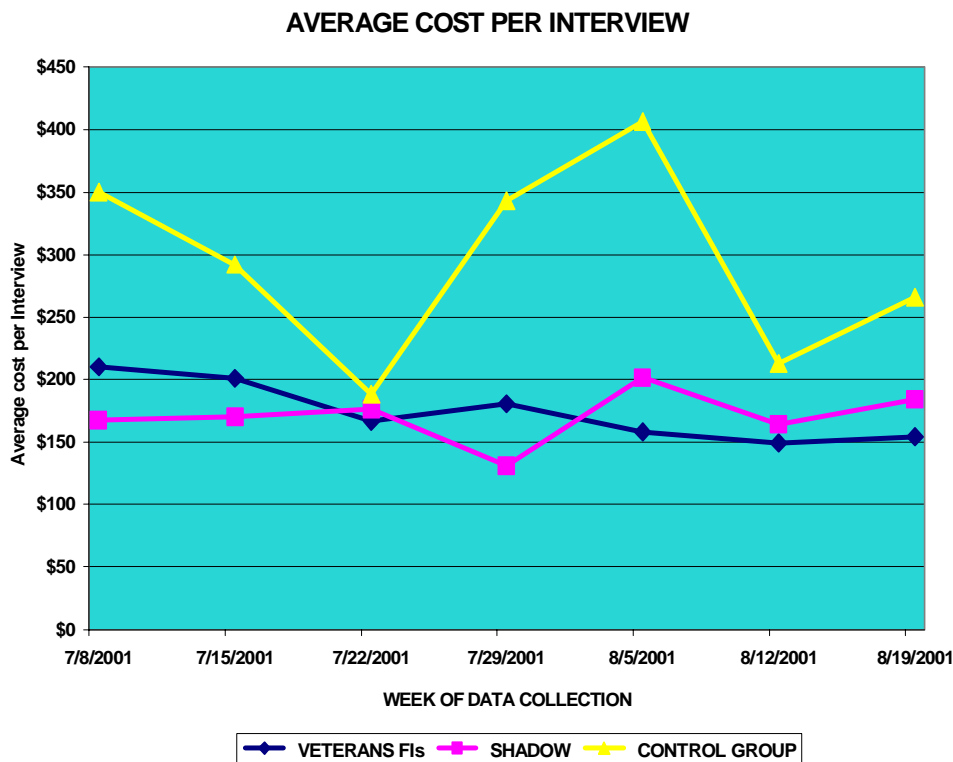
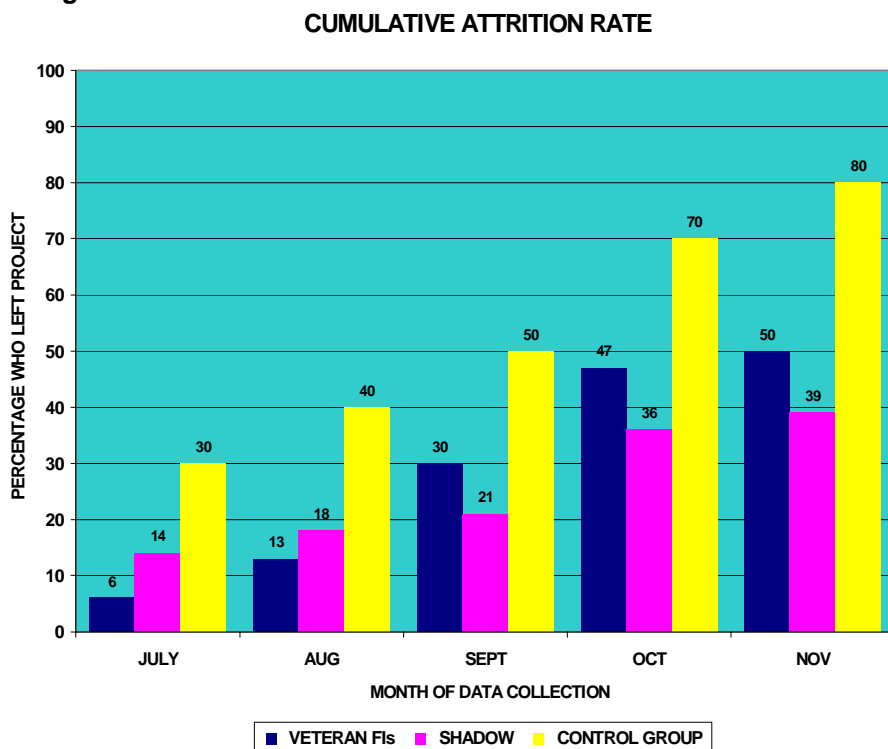


Figure 3



ing. In the first month of data collection, 30 percent of the Non-Shadows left the project, compared with only 14 percent of the Shadows (the veterans, who had been working on the project for at least six months, have a 6 percent attrition rate that month). This two-to-one ratio between Shadows and Non-Shadows is maintained throughout the five month data collection period. By the end of the five month period, 80 percent of the Non-Shadows had left the project, compared to 39 percent of the Shadows.

Practical Considerations

The circumstances of the Dallas Heart Disease Prevention Project in June 2001 were ideal for the Shadowing Module. The project was midway through the year-and-a-half data collection period, so there were many field interviewers already on board with significant experience on the project that could benefit the trainees. Clearly, this technique could not easily be employed during the first training session of a new project since there would be no veterans to shadow.

Another factor in the project's favor was geography and staffing protocol. Since the study area was limited to a single county and since June 2001 most veteran interviewers in were residents of Dallas, there were a number of staff readily available to serve as mentors for the

Shadowing Module. Had more staff been travelling FIs or had the study area been much larger, the logistics and cost of pairing trainees with veterans would have been prohibitive.

Summary and Discussion

This evaluation examined the effect of a new Shadowing Module on field interviewer's initial level of production, field efficiency, and attrition. Of 38 trainees in June 2001, 28 participated in the Shadowing Module and 10 did not. Although the sample sizes are small, the graphical evidence suggests that the shadowing experience had a pronounced effect on all three dependent variables, and is thus a valuable addition to the field training repertoire. The statistical evidence presented here reinforces this impression with respect to the effect on production, though clearly other explanatory variables are needed to provide a full explanation of the differences between these two groups.

Earlier efforts by the Dallas Heart Disease Prevention Project to impart veterans' wisdom consisted of taped interviews and presentations of FIs that were shown during training and guest appearances of veterans at the training site, but neither of these methods appears to have had the impact that shadowing did.

Other projects have used field observations to support new field interviewers during their first data collection experiences. With field observations, however, the roles are reversed from those of shadowing. The new FI conducts all the data collection operations while a veteran (often the supervisor) observes. Mentoring and advice are provided only after the field observation. Moreover, the focus of field observations is on quality assurance, whereas the focus of shadowing is on teaching.

Another consideration for implementing the Shadowing Module in field staff training is quality control. Future uses of this training technique should include a post-shadowing report by the trainee to determine if the procedures modelled during training were consistent with project protocol. Veterans should also be certified as mentors prior to their involvement in the Shadowing Module.

One aspect of field production that was not evaluated in this study is response rates. Future research should compare the response rates of Shadowers and Non-Shadowers during the first few weeks of their data collection experience. Given the findings reported here, we would expect that Shadowers would have much higher response rates than the Non-Shadowers.

A final caution is in order. The results reported here are based on the experience of a single project and on very small sample sizes. Additional research should determine if these findings are stable across a broader range of projects and among larger groups of trainees. With larger sample sizes, time series designs and, for the attrition variable, survival analysis would improve the confidence we can have in these results.

REFERENCE:

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