Research Articles

Exploring the Relationship between Telephone Interviewers' Psychological Traits and Performance*

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ABSTRACT

Psychological traits are critical to job performance. Among the traits, both personality characteristics and attributional styles are closely related to career success. However, similar studies in the field of survey research are at most rare and fruitless. In this paper, we borrow from research results on salespersons and hypothesize interviewers who score higher on the Conscientiousness and Extraversion factors and who are less likely to make permanent and pervasive

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attributions for unfavorable experiences have better performance. We collected data from 52 telephone interviewers, who later participated in at least one and at most three, of three survey projects, obtaining a total of 98 observations. We used both response/cooperation rates and supervisor evaluations as the objective and subjective indicators, respectively. Results indicate that those who tend more to give temporary rather than permanent reasons for unfavorable events have better performance on all the measures. The Extraversion dimension of personality has a significant relationship with the cooperation rate. We discuss the limitations and implications of the study.

Keywords: NEO-FFI, attributional style, five-factor personality model, telephone interviewer, interviewer performance

電訪員心理特質與訪問表現的關係

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摘要

既有研究指出，個人的心理素質對其工作表現影響甚鉅。其中人格特質及個人對經驗的歸因型態，都跟個人的事業成就有密切的關係。然而，在調查研究領域，相關的研究不僅極為稀少，也找不到跟訪問品質相關的心理素質。由於銷售員與訪員的工作性質相近，我們借助銷售員相關研究的發現，假設人格特質中的審慎性及外向性較高的訪員，會有較佳的工作表現；在歸因型態方面則假設，對不愉快的經驗較不會做永久性、普遍性歸因的訪員，亦會有較佳的工作表現。我們蒐集 52 位電訪員的人格及歸因特質資料，並觀察這些人後續在三個電話訪問調查中的表現。由於訪員參訪的調查數目不等，實際用於分析的計有 98 筆人次資料。我們以訪員的完訪率／合作率與督導評量分數，分別作為其客觀與主觀的工作表現指標。研究結果顯示，愈會對不愉快經驗做暫時性而非永久性歸因的訪員，在各類指標上都有愈好的表現。而較外向的訪員，則傾向有較高的訪問合作率。對於本文的意涵與可能的限制，在文末也做了討論。

關鍵字：NEO-FFI人格量表、歸因型態、五大人格模型、電話訪問員、訪員表現

I. Introduction

Interviewers are crucial to survey outcomes. However, research on the relationship between interviewer characteristics and their performance has not obtained consistent results. For example, interviewer education was positively associated with data quality in Van Tilburg (1998), not associated in some other studies (e.g., Berk and Bernstein, 1988) and even negatively associated in Yang and Yu (2008). Even research on interviewer experience is inconclusive. In some studies, interviewer experience exhibited a positive relationship with response rates (e.g., Durbin and Stuart, 1951; Groves and Fultz, 1985; Groves and Couper, 1998: Chap.7) or with data quality (e.g., Cleary et al., 1981; O'Muircheartaigh and Campanelli, 1998; Singer et al., 1983). In other studies, nonetheless, it was negatively related to data quality (e.g., Bailar et al., 1977; Chromy et al., 2005; Hughes et al., 2002; Turner et al., 1992).

Research on the association between interviewers' personality and their performance suffer from several problems, also. Such research is rare and fruitless (e.g., Axelrod and Cannell, 1959; Groves and Couper, 1998; Hyman, 1954; Johnson and Price, 1988). The personality measures used in the existent studies were not based on rigorous theories. Moreover, most of these studies were exploratory in nature and used only correlations without controlling for other relevant factors such as interviewing experience. A systematic study is necessary on the importance that personality traits play

in survey outcomes.

In fact, since the last decade, a lot of research has tried to identify the key personality traits for various occupations and has obtained promising results. Specifically, the five-factor personality model (Costa and McCrae, 1992) has been adopted worldwide to examine the relationship between employees' personality and their job performance in the fields of personnel psychology, personality psychology, personnel management and labor economics. Another strand of psychology—the attributional style approach (e.g., Badovick, 1990; Corr and Gray, 1996; Schulman, 1995; Silvester et al., 2003; Weiner, 1985) —has been used to understand how one's attributional style might affect her/his job performance.[1] Although these two approaches might be weakly related in some aspects, they each look at different traits.[2]

Among all the occupations studied, the relation between salespersons' traits and their job performance has obtained a lot of attention. Studies usually found that, among the five personality factors, Extraversion and/or Conscientiousness matter for sales performance (e.g., Barrick and Mount, 1991, Mount and Barrick, 1995; Barrick et al., 1993; Barrick et al., 2002;

1. Both models shall be discussed in details in the next section.
2. A careful examination of the contents of the five-factor personality model reveals that only two facets of two personality factors (the depression facet of the Neuroticism and the modesty facet of the Agreeableness factor) might be related to some aspects of the attributional style, but these two facets cannot encompass the attributional style. First, the depression facet might be related to how one explains failures, as depressed people are more likely to blame themselves. Yet, people who tend to explain failures or success with unstable factors or with specific reasons are not necessarily more depressed. Second, likewise, although modest people tend not to attribute their success to themselves, it is hard to predict whether they would attribute success to stable or general factors or how such people would attribute failures.

Hurtz and Donovan, 2000; Vinchur et al., 1998). The attributional style research found that how a salesperson attributes a failure is an important predictor for her/his sales performance (Seligman and Schulman, 1986; Weiner, 1985; Badovick, 1990).

The relationship between traits of survey interviewers and their job performance has obtained little attention. Yet, the job contents of this occupation are similar to those of salespersons. For example, both occupations require the individual to constantly obtain strangers' attention and trust, so that s/he may persuade the stranger to make purchases or agree to an interview. Thus, s/he needs to be good at dealing with potential customers/respondents in a pleasant way. Besides, because s/he encounters rejections frequently, s/he needs to be especially good at leaving frustrations behind quickly, and plucking up the courage again to solicit purchases/interview from the next person with a friendly tone.

Moreover, two other aspects of the tasks of an interviewer require also the traits of Extraversion and Conscientiousness, which are predictive of the job performance of salespersons. First, an interviewer should strive for the quality of the interviews data. Hence, in order for high quality, a good interviewer needs to be assertive enough to probe for clear answers from a reluctant respondent. This is one of the characteristics of an extrovert (Costa and McCrae, 1992). Second, a strong sense of dutifulness is especially important since survey organizations cannot constantly monitor the interviewer's behaviors during the interview. A conscientious interviewer, because of her/his sense of dutifulness (Costa and McCrae, 1992), is more likely to do what s/he is supposed to do even if s/he is not monitored.

The high similarity between the two occupations in the traits required for satisfactory job performance suggests the usefulness of borrowing the

literature on salespersons to explore the relation between survey interviewers' traits and their job performance. In this paper, we use both the five-factor personality model and the attributional style model to investigate the relation between telephone interviewers' traits and their job performance. For analysis, we use data from three telephone surveys conducted by Center for Survey Research, Academia Sinica. The next section is divided into two parts. In the first part, we introduce the five-factor personality model and review the relevant literature. Review of the attributional style literature is given in the second part. We summarize our hypotheses following the review. Then we lay out our sample, instrumentation, variables and analytical methods in the third section. Finally, we present findings and discuss the implications.

II. Literature Review

A. Five-factor Model

The five-factor model (or the "Big Five" model) has become one of the dominant perspectives in personality psychology (Goldberg, 1993; John et al., 2008). The five dimensions are Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C). As noted in John et al. (2008: 116), the five-factor model does not represent a particular theoretical perspective but was derived from analyses of natural-language terms people use to describe themselves and others.[3] The first relevant personality questionnaire, the NEO Personality Inventory, devel-

3. See, for example, Norman (1963) and Goldberg (1981) for the studies on personality lexicons.

oped by Costa and McCrae (1985), measured only three dimensions, Neuroticism, Extraversion and Openness. Later Costa and McCrae extended their model by adding the Agreeableness and Conscientiousness dimensions. They also demonstrated that their five scales converged with lexically based measures of the Big Five (McCrae and Costa, 1985, 1987).

The 240-item NEO Personality Inventory Revised (NEO-PI-R) was published in the early 1990s (Costa and McCrae, 1992). In this most complete version, there are 6 facets in each dimension and every facet of a dimension is measured with 8 questions.[4] Since the NEO-PI-R was too lengthy for many research applications, Costa and McCrae (1992) also developed an abbreviated version of 60 items (NEO Five-factor Inventory, NEO-FFI). Even though other researchers have developed different questionnaires for Big-Five,[5] NEO-PI-R and NEO-FFI are the most commonly used measures (Scandell, 2000).

The relationship between the five-factor model of personality and job performance was established by meta analyses in the 1990's (Barrick and Mount, 1991; Tett et al., 1991; Mount and Barrick, 1995; Salgado, 1997; Vinchur et al., 1998). Further meta analyses distinguished either the characteristics of job performance or the personality factors. Some tested the match between characteristics of the job and the personality dimensions

4. The facets of Neuroticism are anxiety, angry hostility, depression, self-consciousness, impulsiveness, and vulnerability. Facets of Extraversion are warmth, gregariousness, assertiveness, activity, excitement-seeking, and positive emotions. Those of Openness are fantasy, aesthetics, feelings, actions, ideas, and values. Trust, straightforwardness, altruism, compliance, modesty, and tender-mindedness are the facets of Agreeableness; of Conscientiousness, the facets are competence, order, dutifulness, achievement striving, self-discipline, and deliberation.
5. For the development of questionnaire-based Big Five research, see John et al. (2008) for detailed discussion.

(e.g., Hurtz and Donovan, 2000; Hogan and Holland, 2003; Judge et al., 2002). For example, Hurtz and Donovan (2000) distinguished two dimensions of job performance—contextual performance and task performance and investigated the relationship of factors of personality with the two dimensions. Hogan and Holland (2003) aligned performance criteria with personality factors by applying the socioanalytic theory. Judge et al. (2002) looked at the relationship between leadership and personality. Some tested the relationship between job performance and the interaction of two personality factors (e.g. Witt, 2002; Witt et al., 2002; Warr et al., 2005). For example, Witt (2002) and Warr et al. (2005) both examined the effect of the interaction between Conscientiousness and Agreeableness on job performance.

Among the five factors, Conscientiousness was considered the most critical predictor (e.g., Behling, 1998; Dunn et al., 1995). Many studies (e.g., Mount and Barrick, 1995; Salgado, 1997; Hurtz and Donovan, 2000; Barrick et al., 2001) consistently found a relation between Conscientiousness and job performance across all jobs. In fact, Hogan and Holland (2003) called Conscientiousness one of the two "generalizable predictors," the other being low Neuroticism. A person with higher Conscientiousness is more likely to exercise self-control, follow the dictates of her/his conscience (Costa and McCrae, 1992), and thus to fulfill the obligations. Conscientiousness was also related to salespersons' job performance (Barrick and Mount, 1991; Vinchur et al., 1998). Hurtz and Donovan (2000) found Conscientiousness to be related to sales and to performance on customer service jobs.

Extraversion is also predictive of sales performance; actually, it is related to job performance in occupations where interaction with others

constitutes a significant part of the job (Barrick and Mount, 1991; Mount et al., 1998). Extroverts are social, assertive, active, bold, energetic and adventurous (Costa and McCrae, 1992; Goldberg, 1992). Many studies that found Conscientiousness important to sales performance also found Extraversion important. These include Barrick and Mount (1991), Barrick et al. (2002), Hurtz and Donovan (2000) and Vinchur et al. (1998). Furnham and Miller (1997) found extroverted telephone salespersons received higher supervisor ratings on performance than introverts, but did not find any association between Conscientiousness and supervisor rating.

Although emotional stability (low Neuroticism) is considered one of the two generalizable predictors, positively correlated with job performance in virtually all jobs (Barrick and Mount, 1991; Salgado, 1997; Tett et al., 1991; Barrick et al., 2001), it was not particularly related to sales performance (Barrick and Mount, 1991). The other dimensions, Openness and Agreeableness were not related to salespersons' performance, either.

Based on the above review, we hypothesize that Conscientiousness and Extraversion are significantly and positively related to interviewers' job performance.

B. Attributional Style

The attributional style is introduced to explain why some individuals give up under adversity while others persist and overcome. It is guided by the reformulated learned helplessness theory (Abramson et al., 1978). The reformulated learned helplessness theory suggests that how a person interprets a given failure influences his expectations about future outcomes and thereby determines his reactions to outcomes. There are three dimensions of the attributions—stable (the cause is going to last a long time) versus

unstable, and global (the cause is going to undermine many areas of my life) versus specific, and internal (or personalization, it is my own fault) versus external. Those who attribute setbacks or failures to stable or to pervasive reasons are considered pessimistic. They are more likely to lose motivation, have lower expectations for future success, and fail again (Anderson, 1983; Schulman et al., 1987; Seligman et al., 1979). Those who attribute unfavorable events to internal causes are considered to have low self-confidence.

Research has found that those who explain failures pessimistically are more prone to illness (Peterson, 1988; Peterson and Seligman, 1987; Peterson et al., 1988), depression (Peterson and Seligman, 1984; for a review, see Sweeney et al., 1986), and more likely to have worse performance in sports (Seligman et al., 1990), lower college grades and higher drop out rates (Peterson and Barrett, 1987). Research in the business world also found that insurance salespersons with optimistic explanations were less likely to quit and sold more insurance policies than those who made pessimistic attributions (Seligman and Schulman, 1986; Weiner, 1985; Badovick, 1990). Pilot research with salespeople in various industries, such as telecommunications, real estate, office products, auto sales, and banking, have obtained similar results (Schulman, 1995). Strutton and Lumpkin (1992, 1993) concluded that optimists are superior job performers. Schulman (1999: 34) emphasized, “optimism has an impact on sales productivity regardless of the industry, whenever persistence is required to overcome adversity.”

It seems that research that only considered attributional styles for unfavorable events obtained consistent results. However, Seligman (1991) defined optimists not only as those who are likely to regard negative

events as due to unstable, specific and/or external factors, but also as those who regard positive events as due to permanent, pervasive and internal factors. Yet, relatively few studies have investigated which of the two types of optimists is more likely to succeed in jobs. Moreover, these few studies reveal that the evidence in the UK is different from that in the US. Silvester et al. (2003), Corr and Gray (1995, 1996), Brewin and Shapiro (1984) and Furnham et al. (1992) all found that in UK, experienced salespeople who have internal, stable and global explanations for favorable events were more successful in selling insurance than those who had external, unstable and specific explanations for unfavorable events. They used composite scores for the research. The composite score in the three dimensions for positive events was labeled "CoPos," whereas the composite score in the three dimensions for negative events, "CoNeg." In the U.S., however, Seligman and Schulman (1986) found the contrary, that those who had external, unstable and specific explanations for unfavorable events (CoNeg) had better performance in sales.

The above research assumed that the three dimensions (stable/unstable, global/specific, and external/internal) were similar enough to warrant direct summation. There is no research, however, on whether the three dimensions are of equal importance to the performance of sales agents. This is probably due to the small number of questions used in earlier surveys (e.g., 12 items in Seligman and Schulman, 1986, and Corr and Gary, 1996). The small number of items has resulted in only moderate internal consistencies for the CoPos and CoNeg (e.g., Hilsman and Garber, 1995; Reijntjes et al., 2008), and rendered it difficult to explore the relationship between the subscales and task performance. Yet, considering that only the first two dimensions—permanence and pervasiveness—control how one

behaves (Seligman, 1991: 71), the third dimension (personalization) implying level of self-confidence, the three dimensions might have differential impacts on interviewer performance.

Especially, the question of whether the personalization dimension actually relates to optimism is a concern in the context of Chinese culture, which shapes the upbringing of every Taiwanese. Traditionally, we Taiwanese are taught to be humble, usually evaluating ourselves lower than others' perceptions of us (e.g., Yik et al., 1998). We are likely to blame ourselves for failures, and to avoid taking the credit for a success even if we indeed deserve the credit. While it might be common to hold oneself responsible for a negative event, it may not be a common behavior in our society to attribute a positive event to an internal reason—oneself.

Hence, it may be expected that our interviewers will score low on the dimension of personalization for favorable events, lower than scores on permanent or pervasive attributions for favorable events. Yet, lower scores on the former dimension do not mean pessimism or even lower self-confidence in our cultural context. In contrast, to attribute a positive event to a permanent or pervasive reason does not have so much to do with the virtue of modesty/humility in our culture. Thus, the interviewers' scores on the permanence and pervasiveness dimensions for favorable events likely indicate optimism but scores on personalization for favorable or even unfavorable events do not necessarily reveal extents of self-confidence or optimism. Consequently, we think it inappropriate to use only the composite scores, and that it is necessary to look at the six separate styles.

Based on the above review and reasoning, we hypothesize that interviewers who make fewer permanent and pervasive attributions for negative events will have significantly better performance. The relationship

will possibly apply to CoNeg, as the two attributional styles constitute a big portion (two thirds) of it. Yet, the significance of CoNeg is meaningful only if the effects of all of its three components are at least in the right direction. It is hard to make predictions for the personalization dimension, however, as this relates to self-confidence/humility but not optimism. Moreover, research results of attributional styles for positive events are inconsistent between UK and US. Especially, the meaning of personalization for positive events may be different in the cultural context of Taiwan than in western societies. As a result, we cannot make any prediction for the relationship between the attributional styles for positive events and interviewers' performance.

We summarize our hypotheses concerning the above two models as follows:

1. Interviewers who score higher on the Extraversion factor will have better job performance.
2. Interviewers who score higher on the Conscientiousness factor will have better job performance.
3. Interviewers who score lower/higher on the permanence dimension for unfavorable/favorable events will have better job performance.
4. Interviewers who score lower/higher on the pervasiveness dimension for unfavorable/favorable events will have better job performance.

III. Method

A. Sample

Both NEO-FFI (Costa and McCrae, 1992) and the attributional style

questionnaire (ASQ) (translated from Seligman, 1991) were administered at the same time to telephone interviewers of the Center for Survey Research (CSR) at Academia Sinica before the surveys used for this analysis were conducted. The interviewers were paid $300 NT dollars for participation. All together, 54 interviewers participated.

The CSR conducts telephone surveys at night from 6:30 to 9:30 at its call center. In every shift, the CSR supervisors randomly monitor any parts of any interviewer's interview conversation and, based on the impression collected from the monitoring, evaluate how satisfactory the interviewer's performance is in 8 aspects (will be specified later). Each interviewer is evaluated by several supervisors in a shift. However, because supervisors do not monitor an interview from beginning to end, they do not necessarily give evaluations on all eight aspects at a time. After the survey is over, CSR uses a weighted average of the scores plus the response rate and refusal rate to decide if an interviewer is going to be paid more or less per shift than his/her base payments.

We obtained interviewers' dialing records and supervisors' evaluations for three surveys as the objective and subjective indicators of performance, respectively. The three surveys included one general social survey (SS), one survey related to the law (Law), and a third concerning the effects of the "consumption coupon" (CC), which was issued by the government to all Taiwanese citizens in January 2009. The surveys were conducted successively from March to May 2009. All of them required the interviewers to do sampling within the household. Among the surveys, the CC survey was the most complicated. Not only did it require many logical checks among items but interviewers needed to use information from previous items for further questioning. The SS survey required 1,200 com-

plete cases and the Law survey required 1,500, whereas the CC survey required 4,000 cases.

Among the interviewers that participated in this study, two were in only one survey and made only one or two shifts. Lest these observations might distort results of statistical analyses, we dropped them from analysis. This resulted in 52 interviewers, of whom 45 were females (86.54%). The left panel of Table 1 shows the number of interviewers in each of the surveys. The right panel indicates the numbers of interviewers that participated in one, two, or three surveys. Table 2 provides the demographic variables of the interviewers. These variables were used as control variables in later models. Overall, we have 52 interviewers with 98 observations for analysis.[6]

Table 1 *Number of Interviewers Each Survey and Number of Surveys Participated*

Survey name	# Interviewers	# Surveys participated	# Interviewers
SS	34	1	22
Law	27	2	14
CC	37	3	16
Total	98	—	52

Note: SS refers to the social survey; Law refers to the survey related to laws; CC refers to the survey on consumption coupon.

6. In Table 2, the minimum value for interviewing experience with CSR is 0. This indicates that some of the interviewers were new recruits of CSR when the surveys were launched; the projects were their first experience with CSR. Interviewer data were collected before an interviewer had participated in any of the three projects.

Table 2 *Control Variables: Descriptive Statistics of Interviewers*

	Mean	Std. Dev.	Min	Max
Female (1=yes)	0.87	0.35	0	1
Age (in years)	38.25	9.12	21	58
Education (in years)	14.85	1.78	12	18
Any other interviewing experience (1=yes)	0.48	0.51	0	1
Interviewing experience with CSR (in years)	1.62	2.33	0	13
Interviewing experience outside (in years)	0.32	0.89	0	5

B. Instrumentation

(A) The Five-Factor Model

We used the FFI to measure the five factors of personality in the Five-Factor Model. The FFI has 60 questions, with each factor measured with 12 questions. Each question is a description of a characteristic starting with "I" (e.g., "I am not a worrier"). The test taker is to indicate on a 5-point scale whether s/he agrees or disagrees that the description describes her/him well. The middle point of the scale is "hard to decide." Following the manual of Costa and McCrae (1992), we computed the scores for each personality factor by reversely coding some of the questions first, so that higher scores implying a stronger tendency in that factor. Then we summed up all items of the same factor. In the completed questionnaires, three interviewers did not respond to one item. We inserted a "3" for these missing items, following the instruction of the manual. Table 3 gives the internal consistency (Cronbach alpha) of each factor and their basic descriptive statistics. The alphas are acceptable or good. The mean score of Conscientiousness is the highest, while that of Neuroticism is the lowest. Agreeableness has the second highest mean but lowest standard

Table 3 *Reliabilities and Descriptive Statistics of the Big-Five Five Subscales*

	N	E	O	A	C
Alpha	0.876	0.789	0.668	0.664	0.868
Mean	30.096	41.038	40.788	44.442	46.981
Standard Deviation	6.935	6.797	5.672	4.763	6.924
Minimum	16	27	25	30	27
Maximum	46	56	52	56	60

Note: N＝Neuroticism; E＝Extraversion; O＝Openness; A＝Agreeableness; C＝Conscientiousness.

deviation. The rank orders of the means of our sample are the same as the information provided in the manual (Costa and McCrae, 1992) but the means are much higher. The standard deviations are reasonably close to those in the manual.

(B) Attributional Style Measure

Interviewers' attributional styles were measured with the 48 items in Seligman (1991). The attributional style questionnaire (ASQ) asked for the test takers' attributions for favorable and unfavorable events. The ASQ comprises 6 sets with each set having 8 questions. The six sets are attributional styles along the three dimensions (permanence, pervasiveness, and personalization) for positive and negative events (3×2). Each question gives a scenario and two alternatives as causes for the scenario. Test takers are to choose the alternative most like their own interpretation for the scenario. The question is scored 1 if the chosen interpretation is in the directions of permanence (PM), pervasiveness (PV), or personalization (PS), and 0 otherwise. As such, lower scores in negative scenarios indicate

higher levels of optimism/self-confidence, while higher scores in positive scenarios also indicate higher levels of optimism/self-confidence. Items that test if a "good" event is regarded as due to a permanent reason is labeled "PMG," while items that test if a "bad" experience is considered due to a permanent reason is labeled "PMB." The same rule goes for both "PV" and "PS." Then we summed up scores for positive experience and obtained the CoPos (that is, CoPos=PMG + PVG + PSG), and likewise for negative experiences and obtained CoNeg (=PMB + PVB + PSB). Higher scores in CoPos and lower scores in CoNeg both suggest optimism according to Seligman (1991).

Table 4 provides the reliabilities and basic statistics of the above components of ASQ. The reliabilities of the subscales are quite low, and the composite scores, CoPos and CoNeg, are barely acceptable but similar to

Table 4 *Reliabilities and Descriptive Statistics for the Attributional Style Scale*

	PMB	PMG	PVB	PVG	PSB	PSG	CoNeg	CoPos
Alpha	0.297	0.253	0.260	0.355	0.369	0.381	0.512	0.586
Mean	3.578	5.038	3.154	5.250	4.981	2.846	11.712	13.135
Standard Deviation	1.391	1.171	1.289	1.412	1.515	1.195	2.703	2.489
Minimum	0	3	1	2	2	0	6	6
Maximum	6	7	6	8	8	5	18	17

Note 1: The abbreviations for the six styles follow the following rules: PM=permanent; PV=pervasive; PS=personal; B=bad events; G=good experience. For example, PMB means to attribute bad experiences to permanent reasons. CoNeg=composite scores for bad (negative) experiences; CoPos=composite scores for good (positive) experiences.

2: One item is dropped from the computation of the alphas of PMG and thus CoPos because all the interviewers' choice for the item is identical. Since the total scores are used as dependent variables in the regression analysis, this will not have any effect for our regression results.

those in other empirical studies (Corr and Gray, 1996). Note that, as expected based on the effect of the cultural background, the interviewers seemed especially likely to blame themselves for negative events (high PSB scores) but unlikely to give themselves the credit for positive events (low PSG scores). In sharp contrast, they are more likely to attribute favorable events to permanent (higher PMG scores than PMB scores) and pervasive (higher PVG than PVB) reasons and less likely to attribute unfavorable events the same way. The score patterns suggest the inappropriateness to use the composite scores in our culture.

To have a preliminary understanding of the relationships among the attributional styles and the personality factors, we present the correlation coefficients in Table 5. The correlations among the six attributional styles are rather low. The correlations of CoPos and CoNeg with styles that are not their components are low too. This allows us to enter the six styles into an analysis simultaneously but enter the CoPos and CoNeg separately from the six styles. Most of the correlations of the attributional styles with the personality factors are also low, except for the medium correlations of PMG with Neuroticism (–0.47), and CoPos with Neuroticism (–0.42) and with Conscientiousness (0.31). Yet, some personality factors are pretty highly correlated. Neuroticism is highly negatively correlated with Extraversion, Agreeableness, and Conscientiousness, all the coefficients around –0.60. Conscientiousness is also highly positively correlated with Extraversion (0.60) and Agreeableness (0.49). The high correlations among the five personality factors imply that we must enter the personality factors into the model separately; otherwise, the multicollinearity among the factors may distort the coefficients. We will adopt this analytical strategy in the analysis section.

Table 5 *Correlations among the Attributional Styles and Personality Factors (N=52)*

	CoNeg	CoPos	PMB	PMG	PVB	PVG	PSB	PSG	N	E	O	A
CoPos	–0.14	1.00										
PMB	0.68	0.10	1.00									
PMG	–0.06	0.64	0.21	1.00								
PVB	0.59	–0.05	0.18	–0.03	1.00							
PVG	–0.25	0.67	–0.21	0.09	–0.04	1.00						
PSB	0.65	–0.29	0.15	–0.29	0.04	–0.22	1.00					
PSG	0.08	0.67	0.24	0.26	–0.02	0.12	–0.07	1.00				
N	–0.15	–0.42	–0.23	–0.47	0.05	–0.13	–0.09	–0.26	1.00			
E	0.06	0.29	0.02	0.21	–0.03	0.18	0.11	0.18	–0.60	1.00		
O	0.15	–0.01	0.02	0.12	0.06	–0.15	0.21	0.04	–0.07	0.17	1.00	
A	0.12	0.27	0.06	0.32	0.06	0.08	0.11	0.17	–0.59	0.27	0.10	1.00
C	–0.02	0.31	–0.07	0.24	0.06	0.21	–0.03	0.16	–0.61	0.60	0.17	0.49

Note: The abbreviations for the six styles follow the following rules: PM=permanent; PV=pervasive; PS=personal; B=bad events; G=good experience. For example, PMB means to attribute bad experiences to permanent reasons. CoNeg=composite scores for bad (negative) experiences; CoPos=composite scores for good (positive) experiences. The abbreviation for the five personality factors are N=Neuroticism; E=Extraversion; O=Openness; A=Agreeableness; C=Conscientiousness.

(C) Performance Data

For the three survey projects, we constructed both objective and subjective indicators of performance for each interviewer. The objective indicators were constructed using the interviewing records from the field. The subjective indicator was supervisor evaluation results.

1. Objective indicators

The objective indicators are the interviewer's response rates (RR) and

the cooperation rates (CR). Each interviewer had a score on each rate for each of the three projects. Based on the standard definitions of AAPOR (2009), we adopted four measures including RR1, RR5, CR1, and CR3. All the four rates have the number of complete interviews for the numerator, but have different compositions for the denominator. The difference between response rates and cooperation rates is that the latter includes only cases that are eligible and successfully contacted. RR1 has the largest number of cases in the denominator. It is the ratio of complete interviews to all but ineligible cases. Ineligible cases include situations where the reached numbers belong to nonresidences/institutions, or where telephone numbers are not working or are dedicated to fax, etc. RR5 excludes cases from the denominator where it is not clear if the number is eligible. CR1 further excludes non-contact cases from the denominator, with non-contact cases being those where the number is confirmed as an eligible household (by answering devices or by others in the household) but no (selected) person is reached. CR3 further excludes the "other" cases and considers only interviews, partial interviews and refusals in the denominator. These "other" cases are those where the sample persons do not refuse the interview but no interview is obtainable because of other difficulties, such as language barriers or bad sound quality, etc. We do not consider partial interviews (respondents refused to continue before interviews were completed) in the numerators of these measures since partial interviews were few in these surveys.

2. Subjective indicator

The subjective indicator is the weighted average of the supervisors' evaluations on eight aspects of the interviewers' interviewing techniques.

These aspects are (1) making appropriate opening remarks (S1); (2) correctly conducting sampling within the household (S2); (3) keeping a pleasant tone and attitudes (S3); (4) correctly conveying the survey questions (S4); (5) clarifying answers in an appropriate way (e.g., no leading questions) (S5); (6) dealing with refusals appropriately (S6); (7) keying in answers correctly (S7); and (8) responding to questions appropriately (S8). Although all items are evaluated on a 10-point scale, when CSR decides on an interviewer's payment, S1 and S7 each comprise 5% of the total score and all the others comprise 10% each. The rule simply reflects the judgment of CSR concerning the importance or error-proneness of behaviors in the eight aspects; i.e., the errors on S1/S7 are usually less severe than the others are. We applied the same rule to calculate our dependent variable of subjective indicator of performance (TotalS).

Table 6 lists the descriptive statistics of the subjective and objective indicators of performance. Table 7 presents the correlations of the objective and subjective indicators for the three projects. Within each project, the correlations among the RR5, CR1 and CR3 are very high, mostly higher than 0.95 and at least 0.90, while the correlations between RR1 with the other three are a little lower, in the range of 0.70 to 0.80. The correlations between the subjective indicator and the objective indicators are around 0.3 and 0.4, with CR's having higher correlations with the TotalS. The CC survey, however, has very low correlations between the subjective and objective indicators. In this survey, there is barely any association between the RR's and the TotalS. Thus, it may be expected that the analysis results will be very similar across the four types of objective indicators but probably different for the subjective indicator.

Table 6 *Descriptive Statistics of the Objective and Subjective Indicators*

	RR1	RR5	CR1	CR3	TotalS
SS					
Mean	0.188	0.324	0.375	0.458	55.441
Standard Deviation	0.052	0.091	0.106	0.104	2.042
Minimum	0.097	0.153	0.191	0.273	50.450
Maximum	0.279	0.567	0.610	0.720	59.250
Law					
Mean	0.149	0.344	0.382	0.454	57.025
Standard Deviation	0.038	0.093	0.101	0.103	2.265
Minimum	0.074	0.171	0.194	0.277	52.981
Maximum	0.221	0.554	0.634	0.692	60.750
CC					
Mean	0.164	0.390	0.443	0.528	55.794
Standard Deviation	0.042	0.077	0.082	0.078	1.512
Minimum	0.094	0.241	0.283	0.382	52.628
Maximum	0.310	0.648	0.695	0.750	58.665

Note: SS refers to the social survey; Law refers to the survey related to laws; CC refers to the survey on consumption coupon.

C. Analytical Method

Not all interviewers in this study had multiple observations and the number of the interviewers was not large enough for a complex model such as a multilevel analysis. To put all the data into utilization, we used the random effects model to accommodate the situation.[7] A random effects

7. See, for example, Hsiao (2003) for a detailed discussion of random effects model.

Table 7 *Correlations between Subjective and Objective Indicators for the Survey Projects*

	RR1	RR5	CR1	CR3
SS				
RR5	0.825			
CR1	0.817	0.965	1	
CR3	0.764	0.901	0.963	1
TotalS	0.316	0.309	0.359	0.331
Law				
RR5	0.811	1		
CR1	0.787	0.977	1	
CR3	0.749	0.958	0.966	1
TotalS	0.403	0.354	0.434	0.460
CC				
RR5	0.884	1		
CR1	0.832	0.971	1	
CR3	0.750	0.936	0.961	1
TotalS	–0.008	0.082	0.137	0.155

Note: SS refers to the social survey; Law refers to the survey related to laws; CC refers to the survey on consumption coupon. TotalS is the weighted sum, based on the rules of CSR, of the supervisors' evaluation on the eight aspects.

model takes into account the structure of the data (that is, some observations are correlated) by allowing both within-group variation and between-group variation. For interviewer j in survey i, the random effects model is specified:

$$Y_{ij}=\beta_0+\sum_k \beta_k X_{kj}+\sum_m \beta_m X_{mj}+\sum_p \beta_p I_{pij}+\varepsilon_j+e_{ij}.$$

As all our performance measures are continuous variables, we use the linear random effects model. Y_{ij} is the performance indicator, subjective or

objective, for interviewer j in the ith survey. X_{kj} is the kth trait measure of interviewer j; $k=1, 2, \ldots, 6$ if the subscales of the attributional style measures are used, or $k=1, 2$ if the composite scores are used. For the personality factors, we enter each factor at a time, so $k=1$. X_{mj}'s are the control variables for interviewer j, including gender, age, education, and interviewing experiences with CSR and with other organizations. I_{pij} is a dummy variable indicating the survey project in which the performance of interviewer j is observed, $p=1, 2$. β_0 is the intercept of the model. β_k, β_m and β_p are the coefficients associated with the explanatory variables. ε_j is the random term of interviewer j and $\varepsilon_j \sim N(0, \sigma^2)$, where σ^2 is the "between-interviewer" variance. e_{ij} is the error term of the model, $e_{ij} \sim N(0, \tau)$.

IV. Preliminary Results

Before presenting the results of the random effects model, we first take a glimpse at the correlations between the performance indicators and the personality measures. To avoid redundancy and to save space, we select only performance indicators that are as different as possible. This leads us to choose RR1, CR3 and TotalS. The results are in Table 8.

Results in Table 8 are a little surprising to us at several points. First, according to studies conducted in UK, those who score higher on positive experience (CoPos) should perform better. Table 8 indicates the opposite: interviewers with higher scorers on the attributional style for positive events (CoPos) generally have worse performance, although the correlations are low; No subscales for favorable events (PVG, PMG and PSG) have significant results, either. Second, the correlations of the attribu-

Table 8 *Correlations between Three Performance Indicators and Personality Measures*

	SS			CC			Law		
	RR1	CR3	TotalS	RR1	CR3	TotalS	RR1	CR3	TotalS
CoNeg	**–0.311**	–0.195	–0.151	**–0.284**	**–0.298**	–0.025	**–0.211**	**–0.391**	0.026
CoPos	–0.121	–0.067	–0.041	–0.187	–0.181	–0.236	–0.369	–0.243	–0.439
PMG	–0.053	0.099	0.034	–0.057	–0.173	–0.185	–0.281	–0.068	–0.217
PMB	**–0.471**	**–0.398**	**–0.373**	**–0.355**	**–0.511**	**–0.485**	**–0.266**	**–0.480**	**–0.387**
PVG	–0.033	–0.103	0.081	–0.067	–0.014	–0.032	–0.253	–0.155	–0.061
PVB	–0.039	0.063	–0.136	–0.128	–0.071	0.100	0.004	–0.157	0.155
PSG	–0.190	–0.127	–0.239	–0.259	–0.190	–0.274	–0.117	–0.217	–0.530
PSB	–0.096	–0.027	0.170	–0.017	0.059	**0.350**	–0.129	–0.098	0.254
N	0.138	–0.075	–0.087	–0.275	–0.194	**0.323**	0.122	–0.000	0.145
E	0.095	**0.237**	–0.124	0.194	**0.352**	0.058	–0.163	**0.251**	–0.068
O	–0.060	0.002	–0.021	0.099	0.082	**0.202**	–0.044	–0.136	0.151
A	–0.157	–0.108	0.018	**0.251**	**0.209**	–0.101	0.163	0.050	0.197
C	0.018	0.140	0.167	**0.341**	0.173	–0.008	–0.189	–0.078	–0.060

Note 1: The abbreviations for the six styles follow the following rules: PM=permanent; PV=pervasive; PS=personal; B=bad experience; G=good experience. For example, PMB means to attribute bad experiences to permanent reasons. CoNeg=composite scores for bad (negative) experiences; CoPos=composite scores for good (positive) experiences. SS refers to the social survey; Law refers to the survey related to laws; CC refers to the survey on consumption coupon. TotalS is the weighted sum, based on the rules of CSR, of the supervisors' evaluation on the seven aspects. The abbreviation for the five personality factors are N=Neuroticism; E=Extraversion; O=Openness; A=Agreeableness; C=Conscientiousness.

2: Correlations in the right direction and of absolute values larger than 0.20 are highlighted for ease of reading.

tional styles in negative events (CoNeg) with the performance indicators are not always in the right (negative) direction. The two subscales (PSB and PVB) do not have a clear pattern, either. Although such results are

expected for PSB, we are a little surprised at the performance of PVB. Third, the directions of the correlations between PMB and all the performance indicators are as predicted and the sizes relatively large, which strongly suggests that PMB is a good and consistent predictor. The five dimensions of Big-Five do not have any consistent and clear relationship with the performance indicators. Only the dimension of Extraversion always has a medium positive correlation with CR3, an objective indicator.

V. Results of Random Effects Models

As we have five outcome variables (4 objective and 1 subjective performance indicators) and two sets of independent variables (five personality factors, and attributional style measures), there are a lot of results to be shown. To make the results easier to understand, we do not present the estimates of the controls and survey dummies in the tables. In effect, all controls but the interviewing experience with CSR (Experience_CSR) are insignificant.[8] The findings for the five personality factors are presented in Table 9. Because of the high correlations among the five personality factors, we look at each factor one at a time (see columns 4–8 of Tables 9). To make a comparison, the basic model (including controls and survey dummies only) for each dependent variable is also listed (columns 3). There-

8. Experience_CSR consistently has a significant effect across the objective indicators. Moreover, its effects become smaller, though continuing to be significant, when the attributional styles are considered; but it becomes insignificant when the five personalities are considered. In the subjective model, the effect of Experience_CSR falls into insignificance both when the six attributional styles are entered and when the five personalities are, but it maintains its significance when the CoNeg and CoPos are entered.

Table 9 *Results of the Five Personality Factors from Separate Random Effects Models*

		Basic Model	N	E	O	A	C
RR1	Coefficient		.001 (.001)	.000 (.001)	.000 (.001)	–.001 (.001)	–.000 (.001)
	R^2-between	0.320	**0.340**	0.320	0.320	0.323	0.319
	σ	0.027	0.026	0.027	0.027	0.027	0.027
RR5	Coefficient		.000 (.002)	.002 (.001)	–.000 (.002)	.000 (.002)	–.001 (.001)
	R^2-between	0.380	0.381	**0.400**	0.379	0.379	0.388
	σ	0.043	0.044	0.043	0.044	0.044	0.044
CR1	Coefficient		.000 (.002)	.002 (.002)	.000 (.002)	.000 (.003)	.001 (.002)
	R^2-between	0.400	0.400	**0.416**	0.397	0.396	0.402
	σ	0.056	0.057	0.055	0.057	0.057	0.056
CR3	Coefficient		–.001 (.002)	.003*(.002)	–.000 (.002)	.002 (.003)	.001 (.002)
	R^2-between	0.335	0.335	**0.385**	0.335	0.338	0.340
	σ	0.058	0.059	0.055	0.059	0.059	0.058
TotalS	Coefficient		–.009 (.040)	–.008 (.037)	.030 (.044)	.092 (.063)	.046 (.039)
	R^2-between	0.281	0.282	0.282	0.291	**0.315**	0.307
	σ	1.520	1.543	1.543	1.521	1.492	1.505

Note: The basic models include only the survey dummies and control variables (gender, employment status, years of education received, age, experience with CSR, and experience outside CSR). The statistics for each personality factor are from a separate random effects model that is the basic model plus the specific personality factor. σ is the standard deviation of the between-interviewer errors. Highlighted R^2-between's are the highest R^2-between among the five models of the personality factors for the same dependent variable. * denotes $p < 0.05$.

fore, there are 30 ($=5\times(1+5)$) models in total. The results for the five performance indicators can be read row-wisely. For each model, R^2-between and σ are listed along with the coefficient of the corresponding personality factor.[9]

9. R^2-between is an index for the goodness of fit of the model. Higher R^2-between indicates better fit.

Among all the models, only Extraversion is a significant predictor of CR3. The other personality factors are not related to any of the performance indicators, and the inclusion of an individual personality factor into the model does not have much impact on the R^2-between. This result hardly supports our hypothesis that both Conscientiousness and Extraversion should be significantly positively related to the performance.

Tables 10 and 11 consider the attributional styles. Table 10 looks at

Table 10 *Results of Random Effects Models on RR1 and RR5*

	RR1		RR5	
CoNeg	–0.005*(0.002)		–0.009*(0.004)	
CoPos	–0.002 (0.002)		–0.001 (0.004)	
PMB		–0.010*(0.004)		–0.024**(0.007)
PVB		0.001 (0.004)		0.000 (0.007)
PSB		–0.005 (0.004)		–0.003 (0.006)
PMG		–0.001 (0.005)		0.000 (0.008)
PVG		–0.005 (0.004)		–0.004 (0.007)
PSG		–0.001 (0.005)		0.006 (0.008)
R^2-between	0.409 (0.324)	0.457 (0.324)	0.459 (0.381)	0.529 (0.381)
σ	0.024 (0.027)	0.024 (0.027)	0.039 (0.043)	0.034 (0.043)

Note 1: The results are from models with survey dummies and control variables included. The controls are gender, employment status, years of education received, age, experience with CSR, and experience outside CSR.

2: For coefficients, figures in the parentheses are the standard errors. The goodness of fit statistics are in the last two rows. σ is the standard deviation of the between-interviewer errors. The numbers in the parentheses in the last two rows are corresponding figures when only controls are in the model. These may be used as the baseline for comparison. *$p<0.05$, **$p<0.01$.

3: The abbreviations for the six styles follow the following rules: PM=permanent; PV=pervasive; PS=personal; B=bad experience; G=good experience. For example, PMB means to attribute bad experiences to permanent reasons. CoNeg=composite scores for bad (negative) experiences; CoPos=composite scores for good (positive) experiences.

the two response rates while Table 11 looks at the two cooperation rates and the supervisor evaluation. The two tables tell the same story. That is, the PMB attributional style is the best and only significant predictor among the 6 attributional styles. The CoNeg is also significant for the prediction of RR1, RR5 and CR1 but not CR3. For the subjective indicator TotalS, CoNeg loses its predictive power while PMB retains a significant effect. The directions of the PMB are as hypothesized; that is, interviewers who are less likely to attribute unfavorable events to permanent causes are more likely to have better performance. The results do not support the hypotheses concerning PVB, as could have been foreseen from the correlations in Table 8.

VI. Discussion

The past efforts of survey research to find personality characteristics that are crucial to being successful interviewers were pretty much scattered and in vain. In this paper, we assume the commonalities in the job requirements of salespersons and interviewers are sufficiently large while at the same time we take into account the cultural context that may affect the meaning of one of the attributional styles. So, we borrow from research on salespersons, and, after making some modifications, hypothesize that two personality factors, Conscientiousness and Extraversion, are positively related to interviewers' job performance, and that making permanent and pervasive attributions for unfavorable events is negatively related to the performance.

However, our findings barely support hypotheses concerning the personality factors. Only Extraversion is significantly positively related to one

Table 11 *Results of the Random Effects Models on CR1, CR3 and TotalS*

	CR1				CR3				TotalS			
CoNeg	–0.009*	(0.004)			–0.007	(0.004)			–0.079	(0.098)		
CoPos	–0.002	(0.005)			–0.002	(0.005)			0.005	(0.112)		
PMB			–0.030***	(0.009)			–0.027**	(0.009)			–0.486*	(0.209)
PVB			0.002	(0.008)			0.004	(0.008)			0.078	(0.193)
PSB			0.000	(0.007)			0.000	(0.008)			0.215	(0.173)
PMG			0.003	(0.010)			0.007	(0.010)			0.322	(0.235)
PVG			–0.007	(0.008)			–0.007	(0.008)			0.107	(0.195)
PSG			0.004	(0.009)			0.001	(0.01)			–0.224	(0.221)
R^2-between	0.455	(0.396)	0.545	(0.396)	0.377	(0.334)	0.469	(0.334)	0.291	(0.279)	0.415	(0.279)
σ	0.053	(0.056)	0.048	(0.056)	0.058	(0.059)	0.053	(0.059)	1.554	(1.523)	1.473	(1.523)

Note 1: The results are from models with survey dummies and control variables included. The controls are gender, employment status, years of education received, age, experience with CSR and experience outside CSR.

2: For coefficients, figures in the parentheses are the standard errors. Goodness of fit statistics are in the last two rows. σ is the standard deviation of the between-interviewer errors. The numbers in the parentheses in the last two rows are corresponding figures when only controls are in the model. These may be used as the baseline for comparison. *$p<0.05$, ** $p<0.01$, ***$p<0.001$.

3: The abbreviations for the six styles follow the following rules: PM=permanent; PV=pervasive; PS=personal; B=bad experience; G=good experience. For example, PMB means to attribute bad experiences to permanent reasons. CoNeg=composite scores for bad (negative) experiences; CoPos=composite scores for good (positive) experiences.

of the cooperation rates (CR3). Because it is not significantly related to the other performance indicators, subjective or objective, we cannot confidently conclude that Extraversion is related to interviewers' performance. Conscientiousness is not even related to any of the performance indicators. Yet, two descriptive statistics concerning the five-factor personality model suggest that something else (i.e., social desirability) might have spoiled the relationships. These include the much higher means than reported in the manual (Costa and McCrae, 1992) and the high correlations among some of the factors. The high correlations are quite different from the research that shows a clear five-factor structure or low correlations among the factors (see Costa and McCrae, 1992). Costa and McCrae (1992) did suggest that even though NEO-PI-R are not markedly distorted by socially desirable responding, social desirability might still become a problem in settings where the respondent is strongly motivated to make a favorable or unfavorable impression. This might be the reason for the current finding. Future research that wishes to use the five-factor model in interviewer research like ours may need to assure the interviewers that their responses to the questionnaire will not be used for any purpose other than research.

As for the attributional styles, only PMB acts as hypothesized. Notwithstanding the low reliability, PMB reliably predicts the objective and subjective indicators of performance. In contrast, PVB is not a good predictor. This seems to make sense: as interviewers need to actively contact strangers and receive corrections from the CSR supervisors when they commit errors, regarding frustrations and failures on the job as temporary events is highly beneficial to the spirit on the job; otherwise, the constant frustrations would easily exhaust the enthusiasm. In contrary, making specific attributions for unfavorable events does not seem as relevant to the

job requirements of an interviewer. Past research on salespersons did not look at PVB separately from PMB. Our finding may suggest the possibility of a further differentiation between PVB and PMB when different occupations are considered. Especially, for the survey research field, the finding is not only helpful in understanding the important traits for a successful telephone interviewer, it is also useful in the fieldwork to screen interviewers in recruitment.

CoNeg, on the other hand, is significant in the models for RR1, RR5 and CR1, but not for CR3 or the supervisor evaluation. However, because neither of the other two components of CoNeg (that is, PVB and PSB) is a consistent and significant predictor, we must discredit its usefulness in predicting interviewers' job performance.

Compared with the research findings for salespersons, fewer predictors are significant in our interviewer research. The difference might have arisen because of differences in the sample sizes, in job contents, or because of other implicit reasons, such as cultural differences in the shaping of personalities or even social desirability. Further research on similar occupations (e.g., face-to-face interviewers) or in different societies may help provide some clarifications. Increasing the sample size (and the number of survey projects) is important. In addition, applying the NEO PI-R 240-item questionnaire in future studies is worthwhile. By adopting the 240-item questionnaire, the effects of certain facets within a personality factor can be further analyzed.

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