The Impact of Individual Differences on Investigative Interviewing Performance: A Test of the
Police Interviewing Competencies Inventory and the Five Factor Model

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Abstract

We examined whether and how individual differences impact investigative interviewing performance by using the Police Interviewing Competencies Inventory (PICI) and the Five Factor Model (FFM) in a two-step research design. In Study 1, the structure of a modified version of the PICI was assessed using a general population sample (N = 300) and a four-dimensional aptitudes scale was created. In Study 2, student participants (N = 154) completed the aptitudes and the FFM scales, and then interviewed witnesses who watched a mock robbery crime video. Interviewer performance was assessed based on the amount of details they could elicit, the perception of the witness, and researcher ratings of behaviours and question usage. Three dimensions of the FFM were correlated with the success measures: Agreeableness with witness perception and appropriate questioning, Extraversion with researcher ratings and inappropriate questioning, and Openness with researcher ratings. Only the Communicative-Insisting dimension of the aptitudes scale predicted high researcher ratings. Findings might help police departments to identify potential successful interviewers.

Keywords: investigative interviewing, aptitudes, personality, Big Five, interview success.

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Introduction

Investigative interviewing is one of the most fundamental features of criminal investigations, and the ability to interview victims, witnesses, and suspects effectively is a key skill for law enforcement officials (Baldwin, 1992; Milne & Bull, 1999; Snook, Eastwood, Stinson, Tedeschini, & House, 2010). Real-world analyses of police interviewers from around the world, however, have observed consistently poor interviewing practices (Baldwin, 1993; Fisher, Ross, & Cahill, 2010; Milne & Bull 1999; Smets, 2009, Snook et al., 2010). The majority of recommendations for rectifying this issue to-date have focused on improving the skills of interviewers through evidence-based interview training. However, little attention has been paid to the relationship between the personality characteristics of interviewers and their effectiveness in conducting investigative interviews. In the current research, the aptitudes and personality traits which may affect the success in investigative interviewing were examined using an experimental research design.

An investigative interview is a dynamic social interaction between the interviewer and the interviewee, and it is a challenging task because interviewees might not be willing to share information for different reasons (e.g. embarrassment, guilt; Griffiths, Milne, & Cherryman, 2011; Yeschke, 2003). To overcome these challenges and obtain the most extensive amount of accurate and reliable information from suspects, victims, and witnesses, interviewers require variety of specialised skills (Schollum, 2005). The research conducted to-date suggests that the majority of police interviewers do not follow best practices that would allow for the maximum amount of information to be generated from interviewees (Baldwin, 1993; Clarke & Milne, 2001; Griffiths

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& Milne, 2006; Meissner et al., 2014; Snook, & Keating, 2011; Snook et al., 2010; Soukara, Bull, Vrij, Turner, & Cherryman, 2009). The frequently observed behaviours of interviewers in those studies such as assumption of guilt, asking leading questions, interrupting the interviewee, lack of confidence, failing to control the interview, acting aggressively and talking more than the interviewee do not result in complete, accurate, and reliable information being obtained (Milne & Bull, 1999). In addition, such an interviewing style is associated with false confessions, miscarriages of justice and wrongful convictions (Meissner et al., 2014; St-Yves 2009).

Considering the poor interviewing practices observed, training efforts have focused on increasing the interviewing skills of police officers and enabling them to obtain truthful information through the use of non-suggestive and non-coercive interview methods (Milne & Bull, 1999; Schollum, 2005; Smets, 2009). The basic assumption behind these efforts was that most officers can learn to be effective interviewers with the right instruction (Baldwin, 1993; Memon, Holley, Milne, Koehnken, & Bull, 1994; Williamson, 1994). However, research has found that the impact of interview-training on skills such as effective communication and building rapport has been limited (Aldridge & Cameron, 1999; Clarke, Milne & Bull, 2011). One potential explanation for the relative lack of training effectiveness is that there may be some innate differences among individuals related to the ability to conduct successful interviews (St-Yves, 2009). If that is the case, the impact of training courses might vary among police officers based on their personality characteristics. Smets (2009) suggests, for example, a non-empathetic police officer is less open to learn to build rapport with interviewees than an empathetic police officer. Therefore, it is important to identify the aptitudes and personality traits that predict success in investigative interviewing in order to identify which individuals are more likely to be effective in this specific task.

Background

Research has shown that personality traits and the general job performance of police officers are significantly related (Forero, Gallardo-Pujol, Maydeu-Olivares, & Andrés-Pueyo, 2009; Goldberg, 1993; Tormini 1997). A meta-analysis of 78 studies examining the personality-performance relationship in law enforcement settings revealed that personality traits assessed based on the Minnesota Multiphasic Personality Inventory (MMPI), California Psychological Inventory (CPI), or Inwald Personality Inventory (IPI) are significantly related to job performance and/or training performance (Varela, Boccaccini, Scogin, Stump, & Caputo, 2004). Despite the substantial literature on job performance in policing, however, the specific relationship between personality and interviewing performance of police officers has received limited attention from researchers. Sear and Stephenson (1997) examined how Five Factor Model personality dimensions were correlated with the interviewing performance of nineteen police officers across four different real-life interviews that they conducted. The performance of the officers were rated based on thirteen interviewing skills (i.e. engage, legal requirements, reason for interview, routines, first account, topic selection, probing, questioning, summarizing and linking, listening and conversation, challenging, resistance, and closure). The analysis showed that there was not a significant relationship between personality factors and the interviewing performance scores. They concluded that the results of the study might have been influenced by the fact that the participants were highly homogeneous group of police officers who hold “a cold, calculating, and dominating approach to others” (p.32). Despite these results, Sear and Stephenson (1997) insisted that research should continue to identify “good interviewers, assess their characteristics, attitudes, and policing styles”, and emphasized the need for reliable measures of job-related personality traits in the field of investigative interviewing (p.33).

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DeFruyt, Bockstaele, Taris, and Van Hiel (2006) were the first researchers who attempted to create an inventory of interviewing competencies of police officers and examine the underlying structure of these competencies. A list of 66 competencies which were likely to be related to interviewing success were created by the authors through literature review and by asking the views of experienced police interviewers. In the study, two hundred and thirty experienced interviewers, who were attending a course, rated their own estimated performance in 20 different interviewing vignettes. Participants then evaluated their characteristics based on the 66 interviewing competencies. The principal component analysis conducted based on the self-rated competencies revealed a five-dimensional, forty-item inventory which explained 44.43% of the variance among the participants. The dimensions were named 'Careful-tenacious', 'Controlled-non-reactive', 'Dominant-insisting', 'Communicative' and 'Benevolent'. Each dimension refers to a certain set of competencies and describes a different type of interviewing approach. The final product of the analysis was called Police Interview Competencies Inventory (PICI) and consisted of forty competencies of interviewing. This instrument was created to enable police officers to assess their own values, skills, personal features, and personality traits that are necessary to conduct effective investigative interviews (Smets, 2009). The second analysis run by DeFruyt et al (2006) was to examine the association between self-rated competencies and self-estimated performance of the police officers. The results demonstrated that each of the five dimensions were significantly associated with the self-estimated performance of the police officers in interviewing.

The reliability and validity of the PICI inventory was challenged and tested by Smets (2009) by adding nine more competencies and almost doubling the size of the tested sample. The additional competencies were "being creative, being business like (factual and formal), being alert, being clear, being non-judgemental, being objective, being friendly, being stern, and being

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reserved. However, Smets (2009) found that the additional items did not make any substantive contribution to the previous list and the PICI instrument created by DeFruyt et al. (2006) was stable. Smets (2009) concluded that the nomological interview competency network which was defined in the PICI instrument is capable of profiling interview competencies quantitatively and it is a useful tool to identify differences among investigative interviewers.

The relationship between the five dimensions of PICI and Five Factor Model (FFM) personality traits was also analysed by DeFruyt et al. (2006), and the results showed that each of the five interviewing dimensions were associated with at least one of the five personality dimensions. FFM is one of the most prominent models in personality psychology and is used to classify personality traits into five major groups as following: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience (Costa & McCrae, 1992). The comprehensiveness and applicability of the model across observers and cultures has been supported through research studies in which natural language adjectives and theoretically based personality questionnaires were used to identify the personality traits of participants (Costa & McCrae, 1992). The model provides a common framework for researchers to study and summarize the personal characteristics of people in the five basic dimensions mentioned above.

Although an important first step in the area, the PICI research cited above has two important limitations that might have affected the findings. First, the researchers measured only the self-estimated interviewing performance of police officers. Such a measurement can be misleading, because self-ratings of interviewing performance may not reflect the reality given the limitations of the self-report questionnaires (Walsh, King, & Griffiths, 2017). When people are asked to rate their own performance in a given task, they might be affected by a kind of self-serving bias, which refers to one's attribution of positive events to their own character and while blaming

external factors for negative events (Cucina, Vasilopoulos, & Sehgal, 2005). Second, the interviewers rated their estimated performance based on the vignettes which were fictional cases previously designed by the researchers. Therefore, the officers did not actually perform the interviewing task, but imagined that they did so. This imaginary performance might not have sufficiently reflected the real interviewing skill levels of the officers.

Current Study

In the current research, the impact of interviewer aptitudes¹ and personality characteristics on performance in investigative interviewing was examined across two studies. In Study 1, a large general public sample was given a modified version of the PICI to test the validity of the instrument, and a four-dimension scale was created using principal components analysis based on the survey results. In Study 2, participants conducted a mock witness interview and the correlation between the interview performance of the participants and their scores in the PICI and FFM scales was analyzed. The research design in this study helped us address the methodological limitations of the PICI study. Specifically, the performance of the interviewer in an interview with the witness of a mock robbery crime was assessed by the researcher and witness instead of the self-evaluation technique used in the study of DeFruyt et al. (2006). Moreover, our study examined the real performances of the interviewers within the context of a designed laboratory paradigm rather than the self-estimated performance based on fictitious vignettes. Through this new research design, three research questions were investigated: (1) Are there certain aptitudes and/or personality characteristics of people that predict their success in investigative interviewing? (2) Is the PICI

¹ The term 'aptitude' is preferred in this study to refer the innate characteristics of the interviewers instead of 'competency' which was used by DeFruyt et al. (2006). Although these two concepts are sometimes used interchangeably in the literature, 'aptitude' is preferred more often to refer to innate abilities and the ability to learn, whereas 'competency' is frequently used in reference to the abilities that can be developed through education or training (Hoekstra & Van Sluijs, 2003; Kurke & Gettys, 1995; Tracey, 2016).

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inventory and its five dimensions still valid and reliable with the new research design used in this study? (3) What is the nature of the relationship between these aptitudes and Five Factor Model personality traits?

The findings of this study might have significant implications for law enforcement policy and future research on investigative interviewing. Finding the personality characteristics that predict the success in investigative interviewing will help to identify the officers who are more prone to be successful in interviewing.

Study 1

Participants

The participants for the online survey were gathered from Canada and the United States through the Qualtrics panels service, which is an online aggregator of research samples for survey-based studies. The final sample consisted of 300 adult general population members, 158 (53%) male participants and 142 (47%) female participants. The mean age of the participants was 46 ($SD = 16.65$, $Range = 18 - 84$). In terms of ethnicity, 219 (73%) of participants self-reported as Caucasian, 29 (10%) as Black or African American, 25 (8%) as Asian, 7 (2%) as Latin American, 14 (5%) as Other, and one participant as Middle Eastern.

Materials

A scale was created to examine the interviewing-related aptitudes to use in Study 2. The scale used in this study is an extended version of the PICI instrument created by DeFruyt et al. (2006), and it consists of fifty questions—each question asking the participant to rate himself or herself about a different aptitude. Ten new aptitudes which were derived from the literature were added on the forty items in the PICI list and a fifty-item scale was created. The new items added

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were being honest, being sincere, being flexible, being confident, being open-minded, being polite, being even-tempered, having a firm tone of voice, being tactful, and being tenacious (Moston, Stephenson, & Williamson, 1992; O'Neill & Milne, 2014; Swanson, Chamelin, & Territo, 2002; Wicklander & Zulawski, 2003). At the beginning of the survey, the participants were presented the consent form, a demographics questionnaire (i.e. gender, age, ethnicity, country, income level, and whether English is their first language) and a question asking if they commit to providing their thoughtful and honest answers to the questions. Then, the participants were advised that they were going to be presented 50 different aptitudes. They were asked to think of their behavior across a variety of situations in their daily lives and rate how characteristic their usual behavior is in each of the aptitudes on the scale. The scale ranges as following: very uncharacteristic, somewhat uncharacteristic, neither characteristic nor uncharacteristic, somewhat characteristic, very characteristic. The responses for each question were scored from one to five respectively and these self-rated scores indicated to what extent those specific aptitudes characterize the participants.

Procedure

The participants were reached using Qualtrics' panels service. A sample of adults living in Canada or the United States were invited to complete the study via an invitation email from Qualtrics. The email contained a link where the survey was hosted.

Data Analysis

The aim of the Study 1 was to examine the underlying structure and dimensions of the aptitudes scale. To this end, a principal component analysis and reliability test were conducted based on the responses of the 300 participants. Principal component analysis helps to group highly correlated aptitudes together and examine which combination of items best measure the components of the aptitudes scale (Comrey & Lee, 1992). Orthogonal rotation was applied to

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create maximum distinctness among the factors as we did not expect any correlation among the factors.

Results

The result of Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (.939) and Bartlett's Test of Sphericity ($\text{sig} = .000$) tests allowed us to proceed with conducting the principal components analysis. The cut off score for the factor loadings was determined as 0.4 and items having a value greater than 0.4 were considered loading the related factor. Based on the eigenvalues greater than 1.0 and the analysis of the scree plot, the principal components analysis revealed a four-dimensional structure. To confirm this factor structure, a parallel analysis was conducted and we found that only four components had eigenvalues greater than that of the randomly generated dataset. The four dimensions found were named as Humane (13 items), Communicative-Insisting (13 items), Self-controlled (9 items), and Careful-Tenacious (10 items; see Table 1). Forty-five aptitudes in the scale explained 52.4 % of the variance among participants. Five items were removed from the scale because they cross-loaded in several dimensions or loaded relatively little. The removed items were Thick-skinned, Quiet, Rigid, Complaisant, and Tongue-tied. Among the 10 new items we added on the PICI list, polite, sincere, open-minded, and honest loaded under Humane dimension; having a firm tone of voice, tenacious, and confident loaded under Communicative-Insisting dimension; even-tempered and flexible loaded under Self-Controlled dimension; and tactful loaded under Careful-Tenacious dimension.

[TABLE 1 ABOUT HERE]

To test the internal consistency of the aptitude dimensions, a reliability test was conducted. Cronbach's alpha value for each dimension was higher than 0.87, which means that all four dimensions are internally consistent (see Table 2). This allowed us to create composite scores of these dimensions for each participant.

[TABLE 2 ABOUT HERE]

Discussion

Our analysis revealed a four-dimensional structure for the aptitudes scale. Each dimension refers to a certain number of aptitudes and a specific approach to investigative interviewing. We named these dimensions according to the nature of the items that loaded on them: Humane, Communicative-Insisting, Self-Controlled, and Careful-Tenacious. These results differ from those found by DeFruyt et al. (2006). They found a five-dimensional structure for their PICI inventory named: 'Careful-tenacious', 'Controlled-non-reactive', 'Dominant-insisting', 'Communicative' and 'Benevolent'. Our scale explained a greater amount of variance (52.4% vs. 44.4%) among participants than the PICI in terms of interviewing-related personality characteristics and suggested a four-dimensional structure rather than a five-dimensional one as the PICI did.

Those who score higher in the Humane dimension are expected to show more empathetic and humanistic behaviors during interviews and to build rapport with interviewees more easily. They are also open-minded which might help them to have an unbiased attitude and elicit an objective account from interviewees. Being able to calm others is another advantage of this type of interviewers as they will be able to deescalate heated debates or situations during interviews and create a calm atmosphere that can help interviewees to remember more details about the criminal event. The Humane dimension of the aptitudes scale have similar items with the

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Benevolent dimension of DeFruyt et al. (2006)'s PICI which refers to eight competencies. The additional aptitudes that the Humane dimension has are sensitive, sincere, polite, open-minded, and honest.

The Communicative-Insisting dimension of the aptitudes scale has both positive and negative aspects in terms of a successful interview. Some aptitudes in this dimension such as being fluent in social contexts, confident, and communicative might help interviewers to engage interviewees more easily and keep rapport during the interview; while others such as being authoritative, offensive, talkative, and speaking one's own mind might lead interviewees to keep quiet and to give less details about the incident as the interviewer talks more than him or her, or tend to confirm the interviewer's version of the story. In the PICI study, however, similar characteristics loaded under two separate dimensions, Dominant-insisting and Communicative. The latter group of aptitudes in the Communicative-insisting dimension, which has negative effects on interviewing performance, have much more factor loading than the former group. Therefore, high scorers in the Communicative-insisting dimension might have a coercive interviewing style as the high scorers in the Dominant-insisting dimension of the PICI. They might act dominantly during the interview, hold a tense approach, use direct-confrontation, and interrupt the interviewee more frequently than low scorers. In contrast, low scorers might enable interviewees to give their account freely and do most of the talking, interrupt them less, and hold a non-coercive approach.

The Self-controlled dimension of the aptitudes scale refers to a set of behaviors which help interviewers to control their reactions and emotions throughout interviews even if they are provoked verbally or physically by interviewees. They can cope with stressful interview atmospheres and maintain their patience during long interviews. This dimension has almost the same items with the Controlled-non-reactive dimension of the PICI. The fourth dimension of the

aptitudes scale was Careful-Tenacious which involves the same items with the first dimension of the PICI that holds the same name. Being able to put things in perspective was under the Controlled-non-reactive factor of the PICI while it appeared under Careful-Tenacious dimension of our aptitudes scale, which makes more sense when we examine the other items in this dimension. Overall, Careful-Tenacious interviewers are expected to have a systematic and thorough approach when they are interviewing, and they examine and scan all details step-by-step by focusing on details (DeFruyt et al., 2006). At the end of Study 1, we found a similar structure with DeFruyt et al. (2006), except that we found a four-dimensional model instead of five as two of the original factors in the PICI (i.e. Dominant-Insisting and Communicative) were collapsed into single dimension (i.e. Communicative-Insisting) in our analysis.

Study 2

In Study 1, the underlying structure of the aptitudes scale was established and the initial 50-item scale was reduced to four aptitude dimensions. In Study 2, the goal was to examine the correlation between the aptitude dimensions found in Study 1 and actual interview performance. In addition, the correlation between the Big Five personality factors and interview performance was analyzed in Study 2. We hypothesized that high scorers in the four aptitude dimensions (i.e. Humane, Communicative-Insisting, Self-Controlled, and Careful-Tenacious) would perform better than low scorers in interviews. More specifically, high scorers in these dimensions would be rated more positively by the interviewees and researchers than low scorers, and they would elicit more details during interviews than low scores do. The one predicted exception was for the questioning style of the Communicative-Insisting participants as they might ask more leading questions and talk more than the interviewee due to their insisting characteristics, which is

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considered inappropriate in investigative interviewing. We also hypothesized that those who score higher in Conscientiousness, Openness, and Agreeableness dimensions of the FFM would receive higher scores in all success measures, Extraverts and Agreeable interviewers would be rated more positively by the interviewees and researchers, while high scorers in Neuroticism would perform worse than low scorers. We expected correlations between aptitudes dimensions and FFM dimensions (i.e. Humane and Agreeableness, Careful-Tenacious and Conscientiousness, Communicative-Insisting and Extraversion, Self-Controlled and Neuroticism [negatively]).

Participants

The sample consisted of 308 students enrolled in an introductory psychology course at a [redacted] University who were compensated with extra credit upon their participation. The participants were randomly assigned either as an interviewer or as a witness. Among those who were assigned as interviewer, there were 70 (45.5%) male participants and 84 (54.5%) female participants. The mean age of the interviewers was 20.01 ($SD = 2.93$, $Range = 17 - 42$). In terms of ethnicity, 52 (33.8%) of the interviewers self-reported as Caucasian, 34 (22.1%) as Asian, 38 (24.7%) as from other ethnicities, 13 (8.4%) as Black, 13 (8.4%) as Middle Eastern, 3 (1.9%) as Latin American, 1 (0.6%) as Indigenous. The majority of the interviewers (74%) identified English as their first language.

The demographics of witness participants were similar to those of interviewers. Their mean age was 19.90 ($SD = 2.93$ $Range = 18 - 38$). Ninety-seven (63%) of the witnesses were female, while 57 (37%) of them were male participants. The ethnicity of the witnesses had a similar variation with those reported by interviewers: White – 48 (31.2%), Asian – 42 (27.3%), Other – 29 (18.8%), Black – 20 (13%), Middle Eastern – 9 (5.8%), Latin American – 5 (3.2%), Indigenous

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– 1 (0.6%). Four participants failed to follow directions and therefore were excluded from the study analyses.

The usage of student participants as investigative interviewers might be considered as a concern in terms of external validity of the research design, as they do not have any experience and they had not received any training on investigative interviewing. However, the primary goal of this study was to understand the specific unique impact of personality characteristics on investigative behaviours and outcomes. Therefore, using non-expert participants allowed us to evaluate the pure impact of personality on interviewing behaviours independent of training and real-world experience. In addition, the need for a larger sample in research studies that include personality-related measures (Tett et al., 2009) made our sample preferable and convenient to gather in a limited time.

Materials

Mock crime video

The target video used in this study consisted of a mock robbery crime which happened in a bowling alley. The video was 2 minutes in length and showed the crime from the perspective of security cameras in the bowling alley.

Five Factor Model Questionnaire

The FFM inventory was originally created by Costa and McCrae (1992). The version of the FFM that was used in this study was adopted from the Big Five Aspects Scale (BSAS) of DeYoung, Quilty, and Peterson (2007). BSAS consists of one hundred questions asking about some statements which were considered as the indicators of certain personality traits (e.g. I seldom feel blue, I get angry easily). The choices range as following: strongly disagree, disagree, neither

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agree nor disagree, agree, strongly agree. As agreed upon in the literature, there are five dimensions of this scale: Neuroticism, Agreeableness, Conscientiousness, Extraversion, Openness/Intellect.

Witness Perceptions Questionnaire

A questionnaire was created to assess the interviewees' perception of the performance of the interviewer. Consisting of 44 questions, the questionnaire was created based on Duke's (2013) rapport scale for investigative interviews and the scale used in Villalba's (2014) study to measure the effect of rapport building in police interrogations (see appendix). Common questions existing in both scales were removed and four new questions were added that ask about the performance of the interviewer (e.g. the interviewer was successful in accessing all the information about the event that was in my memory). The responses were provided using a 5-point scale: strongly disagree, somewhat disagree, neither agree nor disagree, somewhat agree, and strongly agree.

Procedure

Participants were invited to the lab as pairs and they were assigned randomly to one of the two roles: interviewer or witness. In each session, the witness was invited to watch the short video of a mock robbery crime on a wide screen with a headphone while the interviewer was waiting in a separate room. Before the interview, the participants in the interviewer role were informed that they would conduct an interview with the other participant about a robbery crime which he or she witnessed recently. They were also told that the main objective was to elicit as much information as possible from the witness during the interview. The key reminder to the interviewers was that there was not a certain procedure that they had to follow during the interview and they just needed to do the task – elicit information about the crime from the witness – as effectively as possible. After the instructions, both participants were asked to complete the questionnaires which are described in the materials section in detail below. After completing the questionnaires, participants

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were invited to the interview room and the interviews were videotaped. The videotapes were transcribed to use when coding and rating the data.

Data Coding and Reliability

Measures of Success

The success of the interviewer was assessed based on three different measures:

a) The perception of the interviewee: Previous research has shown that successful interviewers are rated highly by interviewees especially when they are shown empathy, understanding, and respect, and communicated in a non-threatening and non-judgmental way (Bull, 2013; Kebbell et al., 2006; O'Connor & Carson, 2005). The perception of the interviewee was measured in the current study through the interviewee perception questionnaire explained above. The responses for each question were scored from one to five respectively and total score based on the forty-four questions was computed ($\alpha = .83$).

b) The amount of information elicited: The main purpose of investigative interviewing is to elicit as much information as possible from the interviewee regarding the crime being investigated (Schollum, 2005; Clarke et al., 2011). The amount of accurate information that the interviewer could elicit during the interview was counted based on a coding scheme. Each detail given by the interviewee was coded by two coders and the total amount of accurate details was recorded for each interviewer. The maximum number of details that could be elicited was 288. The inter-coder agreement analysis revealed a high agreement between the coders (Kappa= 0.734)

c) Researcher ratings: The score that was given by the researchers was identified according to a scale that was created by Clarke et al. (2011). This scale includes certain tasks which the interviewer should accomplish to elicit the desired amount of information from the interviewees. Specifically, the scale inquires about rapport building skills, communication skills,

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types of questions asked (i.e. open-ended, probing, closed-ended), whether a free narrative was requested etc. Based on these measures, a total score for each interviewer was given based on the 22 items in the scale ($\alpha = .93$). An independent research assistant was hired to assess the rating agreement of the items in the researcher rating scale. The research assistant rated 20% of the sample, which was selected randomly among 154 interviews. The inter-rater reliability for the items in the scale was analyzed through Weighted Kappa, which ranged from 0.35 to 1.00 for the items in the scale (see Table 3 for individual Kappa weightings for all items in the scale). Weighted Kappa is preferred when the rated items are ordinal variables as it allows assigning different weights to the different levels (Mandrekar, 2011). The overall Weighted Kappa value was 0.60, which means a substantial level of agreement between the two raters (Landis & Koch, 1977).

[TABLE 3 ABOUT HERE]

d) Appropriateness of questioning: Whether the personality characteristics are associated with the appropriateness of questioning was also analyzed. Open-ended and closed questions were considered appropriate questions, and leading, multiple, long and complex questions were considered as inappropriate questions. The appropriateness of the questioning was measured with a simple equation. The number of appropriate questions was divided by the total number of questions asked by the interviewer (appropriateness of the questioning = appropriate questions / [appropriate questions + inappropriate questions]). The inter-coder agreement analysis revealed a high agreement between the two coders in coding the type of questions (Kappa= 0.881)

Personality measures

To test the internal consistency of the aptitude dimensions and Big Five dimensions, reliability tests were conducted. Cronbach's alpha value for each aptitude dimension was higher than 0.77 and that for each Big Five dimension was higher than .97, which means that all four dimensions of the aptitude scale and the dimensions of the Big Five scale are internally consistent (see Table 4). This allowed us to create composite scores of these dimensions for each participant.

[TABLE 4 ABOUT HERE]

Data Analysis

To examine the relationship between the personality characteristics and the interview success, a series of Pearson's correlation tests were conducted. Before the analysis, the data were screened to test for outliers, normality, linearity, and the homogeneity of variance-covariance. The data of six participants were removed as they were found as multivariate outliers based on the Mahalanobis distance calculation. Normality, linearity, and the homogeneity of variance-covariance of the data were assumed based on scatterplot and standardized residual tests. The four success measures and their correlations with each other were also screened (see Table 5 and Table 6). The number of details and the researcher ratings were highly correlated ($r = .609$, $p < .01$).

[TABLE 5 ABOUT HERE]

[TABLE 6 ABOUT HERE]

After the data screening, the correlation between the aptitude dimensions and the success measures (i.e. number of details elicited, witness perception score, researcher rating score, and the appropriateness of questioning), and the correlations between Five Factor Model personality traits and the success measures were analyzed. To test whether the FFM and aptitudes scales predicted each of the dependent variables, multiple regressions analyses were conducted separately. Finally, the correlations between the aptitudes dimensions and five factor model dimensions were analyzed through Pearson's correlation test.

Results

The correlation analysis between the aptitudes dimensions and Big Five dimensions showed that each aptitude dimension was significantly related to at least one of the FFM dimensions in parallel with DeFruyt et al. (2006; see Table 7). In accordance with our hypothesis, the highest correlations were found between Humane and Agreeableness dimensions, Communicative-Insisting and Extraversion dimensions, Self-Controlled and Neuroticism dimensions (negatively), and Careful-Tenacious and Conscientiousness dimensions.

[TABLE 7 ABOUT HERE]

The correlation analysis between the dimensions of FFM (Big Five) and interview success showed that the participants who scored higher on Agreeableness dimension were rated significantly higher ($p < 0.05$, $r = .20$) by the witnesses (see Table 8). Those who scored higher on Extraversion ($p < 0.05$, $r = .21$) and Openness ($p < 0.05$, $r = .19$) were rated more positively by the researchers. Agreeableness dimension was positively correlated with the appropriateness of

questioning ($p < 0.05$, $r = .17$), while extraverts scored significantly lower than the other participants ($p < 0.05$, $r = -.18$) in the appropriateness index.

[TABLE 8 ABOUT HERE]

The analysis revealed that two of the individual success measures showed significant correlation with only one of the aptitude dimensions. Those who scored higher in Communicative-Insisting dimension were rated by the researchers significantly higher ($p < 0.01$, $r = .23$) than low scorers although the Communicative-Insisting participants scored less in the appropriateness index than the others did ($p < 0.05$, $r = -.19$) (see Table 8).

Multiple regression analyses were conducted to test whether the FFM and aptitudes scales predict each of the dependent variables. The only significant model found was when the Big Five dimensions were regressed on the appropriateness of questioning measure (see Table 9). The five dimensions of the FFM explained 11.1% of the variance ($R^2 = .111$, $F(5, 146) = 3.64$, $p < .01$). It was found that Agreeableness ($\beta = .23$, $p < .01$) and Extraversion ($\beta = -.35$, $p < .01$) significantly predicted appropriate questioning.

[TABLE 9 ABOUT HERE]

In further analyses, age, gender, and ethnicity of the interviewers were added in both models as control variables in a hierarchical multiple regression method. The new models did not

significantly predict any of the success measures and control variables did not make a meaningful contribution to the predictive value of the models.

Discussion

In Study 2, we experimentally assessed the association between personality characteristics and interview performance. Our findings suggested that the four-dimensional aptitudes scale, which was an extended version of the DeFruyt et al.'s (2006) PICI scale, explained a very small portion of the success in investigative interviewing. Specifically, only the Communicative-Insisting dimension of the scale was significantly correlated with two out of four success measures, which are researcher ratings and appropriateness of questioning (negatively). The communicative characteristics of the high scorers in this dimension might have led the researchers to rate them more positively, while their insisting sides might have diminished the appropriateness of their questioning style as we hypothesized. On the other hand, Five Factor Model personality traits performed better than the aptitudes scale in predicting interview performance. Agreeableness, Extraversion, and Openness were associated with one or two of the success measures, while Neuroticism and Conscientiousness did not predict any of them. Similar to the Communicative-Insisting dimension of the aptitudes scale, Extraversion was also negatively correlated with appropriateness of questioning. Extraverts are known as talkative and sociable individuals (DeYoung et al., 2007), which might have led those scored higher on this dimension talk more than the interviewees and ask more inappropriate questions (e.g. leading, complex and multiple questions).

Despite the difference between the aptitude dimensions and Big Five dimensions, each aptitude dimension was significantly correlated with at least one of the Big Five dimensions. Interestingly, the number of details elicited was not associated with any of the aptitude dimensions

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or Big Five Dimensions. The multiple regression analyses indicated that the Big Five dimensions as a model accounted for more of the variance in all success measures as compared to the aptitudes dimensions. Adding the age, gender, and ethnicity of the interviewers as control variables did not lead to a meaningful increase in the amount of variance accounted for by each of the personality scales.

In this two-step study we found that Big Five personality traits are better predictors of interview success than the aptitudes dimensions which was an extended version of the PICI scale created by DeFruyt et al (2006). The most important finding of the current study was the correlations between three of the FFM dimensions and the interview success measures. High scorers in Agreeableness were found more successful by the interviewees and they performed better in appropriate questioning. The success of Agreeable participants can be attributed to their rapport building skills, courteous, flexible, trusting, and tolerant natures (Ono, Sachau, Deal, Englert, & Taylor, 2011), and their ability to easily adopt an empathetic attitude towards the interviewee (Smets, 2009).

Extraverts and high scorers on Openness were rated more positively by the researchers. Agreeableness, Openness/Intellect, and Extraversion personality dimensions might explain various requirements for being successful at investigative interviewing. In a study examining the impact of listening and verbal expression skills on interpersonal influence, Ames, Maisse, and Brockner (2012) found that Agreeableness and Openness mediates the relationship between listening skills and influence. They also found that Extraversion is a mediator in the association between verbal expression and interpersonal influence. Listening skills and verbal expression are two important skills required for effective investigative interviewing (Bull, 2013; Russano & Narchet, 2013). The better performance of high scorers on Openness might be relevant to their

creativeness and originality (Judge et al., 2013), and characteristics such as being imaginative, cultured, curious, broadminded, and artistically sensitive (Barrick & Mount, 1991) as these traits might be helpful to overcome the challenges of interviewing such as unwillingness of interviewees to speak (St-Yves, 2009). One surprising result was the irrelevance of Conscientiousness with any of the performance measures although it has been shown as the best predictor of job performance among the Big Five traits in general (Judge, Rodell, Klinger, Simon, & Crawford, 2013) including law enforcement professionals (Barrick, Mount, & Judge, 2003; Detrick & Chibnall, 2006; Ono et al., 2011).

To our knowledge, the only attempt in the literature that assessed the relationship between FFM dimensions and interview performance before the current study found no significant relationship between personality factors and the interviewing scores based on the thirteen interview-related skills (Sear & Stephenson, 1997). In contrary to their finding, we found moderate correlation between three FFM dimensions and interview performance. The difference in the findings can be explained through the homogenous characteristics and the small size of the police officer sample used by Sear and Stephenson (1997) as they mentioned this aspect as a limitation of their study. Our study, however, used a demographically more heterogeneous and significantly larger sample than the one used by Sear and Stephenson (1997).

Although the four-dimensional aptitude scale was found as an internally consistent and valid measure of interview-related personality characteristics in Study 1 and the responses explained 52% variance among participants, only one dimension of the scale, Communicative-Insisting, was found to be significantly correlated with interview success in Study 2. DeFruyt et al. (2006), however, found that some of the PICI dimensions are important to be successful in certain interview types based on the self-rated imaginary performance of interviewers. For

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example, those who scored higher in Careful-Tenacious considered themselves as more competent in suspect and witness interviews, while Controlled-Nonreactive interviewers viewed themselves more successful in victim interviews and Communicative participants scored themselves higher in all types of interviews. In addition, DeFruyt et al. (2006) found that being Dominant-insisting is important to be successful at interrogations and having a Benevolent approach is related to self-estimated success for interviewing victims and witnesses. The type of the interviews in our research design was witness interviews, and DeFruyt et al. (2006) found correlations between witness interview success and three dimensions of the PICI which were Careful-Tenacious, Communicative, and Benevolent. However, we found that interview success is correlated only one dimension of our scale which is Communicative-Insisting.

The difference between the findings of the current study and DeFruyt et al.'s (2006) can be attributed to the differences in research designs and the samples. First, the interview success was measured in the current study through four different objective tools (i.e. witness perception, researcher rating, number of details elicited in interview, appropriateness of questioning) instead of self-estimated performance which was used by DeFruyt et al. (2006). Secondly, in the current study, the interviewers conducted actual interviews with the witnesses of a mock robbery crime as opposed to the imaginary performance based on vignettes read by the participants in DeFruyt et al.'s (2006) research. It can be argued that watching a crime video cannot replace witnessing an actual crime scene. However, when compared with fictitious vignettes that were used in DeFruyt et al.'s (2006) study, a video footage of a crime can be considered more realistic and more likely to enable external validity.

There is an agreement between the current study and DeFruyt et al.'s (2006) in terms of high correlations between aptitude dimensions and Big Five traits. Despite this correlation found

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in both studies, the aptitude dimensions could not predict interview success while three FFM dimensions did in our analysis. One explanation for the irrelevance of the aptitude dimensions with interview performance, which is contrary to DeFruyt et al.'s (2006) findings, might be the lack of external validity of the sample used in our study. While DeFruyt et al. (2006) used a police sample, our study was conducted with undergraduate students from various programs. Future research might replicate our study with a police sample or analyze real-life interview videos of police officers to examine the impact of the aptitude dimensions on the interview performance. Another reason might be the difficulty for the students in understanding the wording of some of the aptitudes such as relentless zeal, perseverance, thick-skinned, rigid, complaisant, and tongue-tied. The culture and language difference between the samples in the two studies might also be a reason for inconsistency. That is to say, Canadian and Belgian participant might have understood some adjectives used in the scale in different ways. Therefore, more research is needed to conclude the discussion on whether the aptitudes scale or PICI inventory are valid predictors of interview performance.

The literature suggests using narrow traits to assess the performance in specific tasks of a job because broad personality measurement tools such as the Big Five traits may disregard the situational factors that influence the performance in those tasks (Murphy & Dzieweczynski, 2005). It is also suggested to develop specific personality measurement tools for each task based on job-related criteria through examining the necessities of specific tasks (Barrick & Mount, 2005; Schmidt & Hunter, 2004). However, the aptitudes scale that we used in this study was not as efficient as the Big Five scale when predicting the performance in investigative interviewing - despite the aptitudes scale including the items that are specifically related to investigative interviewing. There are several potential explanations for this finding. First, the items in the

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aptitudes scale were not created through a personality-oriented job analysis as recommended by Tett, Jackson and Rothstein (1991). Forty of the items in the scale were listed in the PICI scale of DeFruyt et al. (2006) and the rest of the items were gathered from the previous studies and literature on investigative interviewing. The forty items in the PICI were compiled by asking the views of experienced police interviewers on which characteristics make a successful interviewer and reviewing the literature on this topic. A job analysis “is the process of gathering, analyzing, and structuring information about a job's components, characteristics, and job requirements” (Sanchez & Levine, 2000, p. 809). In personality-oriented job analysis, analytic methods such as interrater reliability agreement on the traits by the subject matter experts (SMEs) are frequently used to test the accuracy of measurement scales (Prien, Prien, & Wooten, 2003). The aptitudes scale used in this study and the PICI were not created through such an analytical method.

The second explanation for the difference between the findings in the current research and the literature is that the assumption that narrow personality measures are superior to broad traits in predicting job performance may not be supported in all contexts. Singh (2008) draws a framework of strategic job analysis that addresses the needs for changing workplaces and stresses the importance of using “general and broad traits instead of specific skills and behaviours” (p. 97). He suggests that today’s professional organizations change very rapidly, therefore, broader definitions of work-related skills and traits can serve as better measures of “the flexibility and adaptability of employees” and how they can fit the changing environments and strategies of the workplace (Singh, 2008, p. 97). Policing in general and investigative interviewing in particular are among the most rapidly changing and evolving tasks today as new crime types and criminal justice policies continue to emerge. Thus, it can be argued that Big Five personality dimensions can predict the success in investigative interviewing thanks to their ability to foresee the dynamic and subjective

nature of this task. Finally, the comprehensiveness of the Big Five scale and its applicability to a variety of contexts that have been well evidenced for decades (Costa & McCrae, 1992; Ozer & Benet-Martínez, 2005) can also explain its superiority to the aptitudes scale in predicting interview performance in this study.

Conclusion

This two-step study aimed to examine if there are certain personality characteristics that affect the success in investigative interviewing by using a new experimental research design. Those who scored higher in the Agreeableness, Openness/Intellect, and Extraversion dimensions of the FFM scale and high scorers in the Communicative-Insisting dimension of the aptitudes scale were found more successful in the interview task in our research design than the low scorers in these dimensions.

There are some limitations of our study that can be addressed in the future research. First, the performance of the participants in a laboratory-based interview might not have represented the whole picture of their skills and personality. Therefore, an analysis of the real-life interview videotapes might have more external validity. Second, using self-rated personality traits and aptitudes might suffer from self-serving bias. However, by using a large enough sample size in this study, such a self-serving bias was diminished (Cucina, Vasilopoulos, & Sehgal, 2005). Third, the variation in the ability to recall across 154 witness participants might have affected the interview outcome in this study. However, having the same witness participate in all session would have been meaningless as their memory would change in every session that they are interviewed. Fourth, the participants were not actual police officers or investigative interviewers. The same research design can be replicated with an externally valid sample in future research. Finally, one limitation of the data analysis was the low weighted kappa scores in three of the items in the

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interrater agreement analysis of the 22-item researcher rating scale (i.e. appropriate structure/witness led sequencing, being open-minded, inviting interviewee to add/alter or correct).

The key contribution of the current study to the literature on investigative interviewing is a better understanding of the impact of personality on the interviewing performance in crime investigations through an objective, internally valid, and realistic research design. Police departments can consider the findings of this study when they are assigning interviewers in criminal investigations. Specifically, FFM inventory can be used when assigning interviewers. The officers who score high in Openness, Agreeableness, and Extraversion can be selected as investigative interviewers. More research is needed to understand the nature of the correlation between personality and interview performance, especially through the analysis of real-life police interviews.

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Appendix

Witness Perception Questionnaire						
(Adopted from Duke (2013) and Villalba (2014))						
Read the following statements and mark the appropriate choice by putting (X). (1=Strongly disagree 5=Strongly agree)		1	2	3	4	5
1	The interviewer seems like a good-natured person.					
2	The interviewer seems to have a compassionate attitude towards people.					
3	The interviewer seems to be generally sincere.					
4	The interviewer was friendly towards me.					
5	The interviewer treated me with respect					
6	The interviewer paid careful attention to what I had to say.					
7	I felt obliged to answer the interviewer's question.					
8	The interviewer acted with calmness.					
9	The interviewer showed a personal interest and tried to create a personal conversation.					
10	The interviewer was attentive to me.					
11	The interviewer thinks highly of me.					
12	The interviewer thinks that I am a good person.					
13	The interviewer values my opinion.					
14	The interviewer respects my intelligence.					
15	The interviewer was honest with me.					
16	The interviewer was impatient.					
17	The interviewer had good intentions towards me.					
18	The interviewer has empathy.					

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19	The interviewer doesn't care about what happens to me.					
20	The interviewer showed a formal and non-accessible attitude					
21	I can't trust the interviewer to tell me the truth.					
22	The interviewer acted as a trouble-shooter.					
23	The interviewer showed a condemning attitude against me.					
24	During the interview I felt like the interviewer and I understood each other well.					
25	I would be willing to do another interview with the interviewer.					
26	The interviewer helped me to feel comfortable enough to share information during the interview.					
27	The interviewer and I got along well during the interview.					
28	Communication went smoothly between the interviewer and me.					
29	I connected with the interviewer in a positive way.					
30	I was motivated to help the interviewer.					
31	I was cooperative during the interview.					
32	I was honest with the interviewer					
33	I became frightened.					
34	I became aggressive.					
35	I became paralysed.					
36	I was under stress.					
37	I felt confident during the interview?					
38	I felt insulted as a human being.					
39	I became obliging.					
40	I felt acknowledged as a human being.					

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41	The interviewer allowed me to provide all the information about the criminal event					
42	The interviewer gave me time to fully answer the questions.					
43	The interviewer was thorough with his/her questioning.					
44	The interviewer was successful in accessing all the information about the event that was in my memory					