



Structured Interview Questionnaire: Examining Convergent and Predictive Validity in a Sample of Privates

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Abstract

The present study investigated the utility of using the Structured Interview Questionnaire (SIQ) as a part of the Canadian Forces (CF) selection system to assess personality of CF candidates. The convergent and predictive validity of the SIQ was assessed. The convergent validity of the SIQ was examined by comparing the measure to established measures of personality. The results of the study demonstrated that the SIQ is not consistent with the relevant factors of the comparison measures. In addition, the ability of the SIQ to predict basic training performance for privates was examined. Some of the structured interview questions were associated with better training performance. Specifically, work ethic and stress management were associated with greater performance on four training domains, dependability was associated with greater performance on three training domains, and organizational citizenship and openness to novel experiences were each associated with greater training performance on one training domain. However, the SIQ overall did not significantly predict performance in basic training. Therefore, there was no evidence for the convergent or predictive validity of the SIQ in this study. It is recommended that the SIQ be replaced with the Trait Self-Descriptive Personality Inventory (TSD-PI), which was previously found to be a good measure of personality and a good predictor of basic training performance in the CF.

Résumé

Dans la présente étude, on a voulu déterminer si l'utilisation du Questionnaire d'entrevues dirigées dans le processus de sélection des Forces canadiennes (FC) était valable pour l'évaluation de la personnalité des candidats et on a mesuré la validité de convergence et la validité prédictive de ce questionnaire. Pour la validité de convergence, on a comparé les mesures obtenues aux mesures établies de la personnalité. Les résultats de l'étude ont mis en évidence que le Questionnaire ne cadre pas avec les facteurs pertinents des mesures de comparaison. On a aussi évalué la capacité du Questionnaire de prévoir le rendement des soldats à l'instruction de base. Quelques-unes des questions de l'entrevue dirigée ont été associées à un meilleur rendement à l'instruction. Plus précisément, les questions portant sur l'éthique du travail et celles sur la gestion du stress ont été associées à un meilleur rendement dans quatre domaines de l'instruction, celles sur la fiabilité, à un meilleur rendement dans trois domaines, et finalement, celles sur la citoyenneté organisationnelle et celles sur l'ouverture aux nouvelles expériences, à un meilleur rendement dans l'un des domaines. Cependant, dans l'ensemble, le Questionnaire n'a pas permis de prévoir de façon significative le rendement à l'instruction de base. Par conséquent, rien dans cette étude ne permet de conclure que ce questionnaire présente une validité de convergence ou une validité prédictive. Il est donc recommandé de remplacer le Questionnaire d'entrevues dirigées par l'Inventaire de la personnalité par auto-description des traits de caractère (IP-ADTC), lequel s'est avéré par le passé une bonne mesure de la personnalité et un bon indicateur du rendement des soldats à l'instruction de base dans les FC.

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Executive summary

Structured Interview Questionnaire: Examining Convergent and Predictive Validity in a Sample of Privates:

Alla Skomorovsky; DGMPRA TM 2009-004; Defence R&D Canada – DGMPRA; May 2009.

Previous research suggests that assessment of personality during recruitment improves the selection system, especially among occupations involving high levels of stress. Incorporating personality measures into the selection systems of high stress military occupations could reduce attrition and course failures, save the organization large amounts of monetary and training resources, and avoid negative personal consequences for individuals (Scholtz, 2003). Realization of the need for psychological screening among high stress military occupations has led to the incorporation of personality measures in the selection of some high-stress occupations in the CF, such as snipers (Girard and Scholtz, 2005; Scholtz and Girard, 2004). Similarly, it may be important to incorporate personality measures into the selection system for other military occupations that are high in stress.

Realization of the need to assess personality of CF applicants has led to the development of the Structured Interview Questionnaire (SIQ). The SIQ was developed to improve the predictive ability of the selection system in three domains: 1) success on military courses, 2) job performance, and 3) length of service or tenure (pursuit of a long-term career) (PPD 102, 2006).

The first goal of this study was to examine the convergent validity of the SIQ using established personality inventories, the Trait-Self Descriptive Personality Inventory (TSD-PI), the Neuroticism-Extraversion-Openness to Experience Personality Inventory (NEO-PI-R), and the Honesty-Emotionality-Extraversion-Agreeableness-Conscientiousness-Openness to Experience Personality Inventory (HEXACO-PI), as ‘gold standard’ measures of comparison.

The second goal of this study was to examine the predictive validity of the SIQ with training performance among new applicants. Furthermore, in order to examine the unique predictive validity of the SIQ, the ability of the SIQ to predict training performance among applicants, statistically controlling for cognitive ability was examined.

Personality questionnaires (TSD-PI, NEO-PI-R, and HEXACO-PI) were administered to new NCM recruits ($N = 334$) at CFB Borden in the winter of 2007. There were 252 males and 82 females. The data were collected from applicants who just finished their basic training, but the basic training marks were sent to the researcher after the personality data collection was completed. The SIQ and a test of cognitive ability (Canadian Forces Aptitude Test, CFAT) were taken by applicants prior to recruitment, as a requirement to be selected into the CF.

The results of the study demonstrated that the SIQ was not consistent with the established measures of personality. The SIQ was not significantly correlated with any of the relevant factors of the comparison measures. This evidence suggested the lack of the convergent validity for the SIQ.

It was found that some of the structured interview questions were associated with better training performance, but the SIQ overall did not predict performance. Specifically, work ethic and stress management were associated with greater training performance on four of the training performance domains; dependability was associated with three of the training performance domains, and, finally, openness to novel experiences and organizational citizenship were each associated with greater training performance in one of the training performance domains. However, it seems that the SIQ was not consistently associated with greater training performance. Furthermore, the SIQ overall did not predict training performance in any of the continuous or categorical domains. Although the proposed analyses included examining the unique ability of the SIQ to predict training performance over and above the CFAT, given the lack of predictive validity, the unique validity analyses could not be conducted. Therefore, the evidence suggests a lack of predictive validity of the SIQ in this study.

Sommaire

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Alla Skomorovsky; DGMPRA TM 2009-004; R & D pour la défense Canada – DRASPM; Mai 2009.

Des études antérieures semblent indiquer que l'évaluation de la personnalité pendant le recrutement améliore le processus de sélection, plus particulièrement pour les professions comportant un niveau de stress élevé. L'intégration de mesures de la personnalité dans les processus de sélection pour des postes militaires générateurs de grands stress pourrait entraîner une réduction de l'attrition et des échecs à l'instruction, ainsi que d'importantes économies pour l'organisation en termes d'argent et de ressources aux fins de la formation, et pourrait prévenir les conséquences personnelles négatives pour les candidats (Scholtz, 2003). Après avoir réalisé la nécessité de soumettre à un examen psychologique les candidats aux postes militaires très stressants, on a intégré des mesures de la personnalité dans le processus de sélection pour certaines professions des FC comportant beaucoup de stress, notamment celle de tireur d'élite (Girard et Scholtz, 2005; Scholtz et Girard, 2004). Dans le même ordre d'idées, il peut être important d'intégrer des mesures de la personnalité dans le processus de sélection des candidats à d'autres postes militaires dont la dose de stress est forte.

La prise conscience de la nécessité d'évaluer la personnalité des postulants des FC a conduit au développement du Questionnaire d'entrevues dirigées. Ce questionnaire fut développé afin d'améliorer la capacité prédictive du système de sélection dans trois domaines : 1) le succès dans les cours militaires, 2) la performance à l'emploi, et 3) la durée du service ou du maintien en fonction (poursuite d'une carrière à long terme) (PPD 102, 2006).

Dans cette étude, le premier but a été de mesurer la validité de convergence du Questionnaire d'entrevues dirigées à l'aide d'inventaires de la personnalité établis, en l'occurrence l'Inventaire de la personnalité par auto-description des traits de caractère (IP-ADTC), l'Inventaire de personnalité – névrosisme, extraversion, ouverture à l'expérience (NEO-PI-R) et l'Inventaire de personnalité – honnêteté, émotionnalité, extraversion, agréabilité, caractère consciencieux, ouverture à l'expérience (HEXACO-PI), qui ont servi d'étalon pour la comparaison.

Le deuxième but de l'étude a été de mesurer la validité prédictive du Questionnaire d'entrevues dirigées à l'égard du rendement des recrues à l'instruction. De plus, en vue de mesurer sa validité prédictive particulière, on a évalué la capacité du Questionnaire de prévoir le rendement des postulants à l'instruction en tenant compte de la variable de la capacité cognitive.

On a administré les trois questionnaires de personnalité (IP-ADTC, NEO-PI-R et HEXACO-PI) aux nouvelles recrues militaires du rang (N = 334) à la base des Forces canadiennes de Borden à l'hiver 2007. L'échantillon était composé de 252 hommes et de 82 femmes. On a recueilli les données des postulants ayant tout juste terminé leur instruction de base; cependant, leurs notes n'ont été transmises au chercheur qu'après la cueillette des données sur la personnalité. On a soumis ces postulants au Questionnaire d'entrevues dirigées et à un test de la capacité cognitive

(Test d'aptitude des Forces canadiennes, ou T AFC) avant le recrutement, comme critère obligatoire de sélection dans les FC.

Les résultats de l'étude ont indiqué que le Questionnaire d'entrevues dirigées ne cadrait pas avec les mesures établies de la personnalité. Le Questionnaire n'était en corrélation significative avec aucun des facteurs pertinents des mesures de comparaison. Ce constat tend à indiquer que le Questionnaire manque de validité de convergence.

Par contre, on a noté que certaines des questions de l'entrevue dirigée étaient associées à un meilleur rendement à l'instruction. Plus particulièrement, les questions portant sur l'éthique du travail et celles sur la gestion du stress étaient associées à un meilleur rendement à l'instruction dans quatre domaines, celles sur la fiabilité, à un meilleur rendement dans trois domaines et, en dernier lieu, celles sur l'ouverture aux nouvelles expériences et celles sur la citoyenneté organisationnelle, à un meilleur rendement dans l'un des domaines. Bien que le Questionnaire d'entrevues dirigées ait été en corrélation avec le rendement dans certains des domaines d'instruction, il n'a permis de prévoir de façon appréciable le rendement dans aucun des domaines de l'instruction de base. Par conséquent, les résultats tendent à indiquer que le Questionnaire manque de validité prédictive.

Il est donc recommandé de ne pas utiliser le Questionnaire d'entrevues dirigées pour la sélection des nouvelles recrues des FC. Comme les résultats obtenus dans une étude antérieure ont mis en évidence que l'Inventaire de la personnalité par auto-description des traits de caractère (IP-ADTC; Boyes, 2006; O'Keefe, 1998; Skomorovsky, 2008) présentait de bonnes propriétés psychométriques, ainsi qu'une validité de convergence et une validité prédictive correctes, on a pensé qu'il pourrait constituer une solution de rechange valable au Questionnaire d'entrevues dirigées. Par conséquent, il est conseillé de remplacer ce questionnaire par l'IP-ADTC pour évaluer la personnalité des candidats des FC.

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1 Introduction

There is a general consensus in scientific research that selecting individuals who are psychologically fit for military service is an important task. For instance, Scholtz (2003) noted that it is crucial to select emotionally stable, conscientious individuals for high stress military occupations. He proposed that assessment of personality as a part of a selection process could reduce attrition and course failures, save the organization large amounts of money and training resources, and avoid negative personal consequences for the individual (e.g., developing depression under stress or as a result of a training failure). Previous research has indicated that personality significantly predicted training performance among Canadian Forces (CF) non-commissioned members (NCMs) (O’Keefe, 1998; Skomorovsky, 2008) and officers (O’Keefe, 1998). Psychologists conducting research studies in both military (Skomorovsky, 2008) and civilian (Barrick, Mount and Judge, 2001; Hurtz and Donovan, 2000; Ones and Viswesvaran, 1996; Salgado, 2003) environments recommend assessing personality at the recruitment stage of the selection process.

Selection measures currently utilized in the Canadian Forces (CF) include preliminary screening using basic eligibility criteria (e.g., minimum age, citizenship, security check, medical exam, and fitness test), a test of cognitive ability (the Canadian Forces Aptitude Test [CFAT]), and a structured interview questionnaire (SIQ) that result in the assignment of a Military Potential (MP) score. There is an assumption that these selection measures are substantially predictive of the likelihood of successful training performance.

Based on the description provided in the Personnel Psychology Directive (PPD) 102 (2006), interview questions are designed to obtain information on six personality dimensions: degree of work ethic, organizational citizenship, openness to novel experiences, dependability, achievement orientation, and stress management. These dimensions are defined in the PPD 102 (2006) as follows:

- a. **Degree of work ethic** refers to behaviours that demonstrate a concern for doing a job well, and respecting standards of high quality;
- b. **Organizational citizenship** refers to concerns for the general/overall functioning of the organization beyond individual responsibilities, taking into account the organization’s views and undertaking actions, which provide no personal gain with respect to usual tasks and responsibilities;
- c. **Openness to novel experiences** refers to willingness to embrace change, openness to experiences and new ideas outside normal frame of reference, and willingness to learn about recent innovations;
- d. **Dependability** refers to behaviours that lead to respecting/fulfilling own personal and professional commitments; someone that earns trust of superiors and peers;
- e. **Achievement orientation** refers to effort shown in mobilizing personal resources to succeed, accomplish, and overcome difficulties/obstacles. Achievement orientation

could also be seen as perseverance at a task as well as a factor that measures mental and physical exertion required to complete work; and

- f. **Stress management** refers to the ability to function competently when placed in extreme and continuous adverse mental and physical conditions. Stress management could also be seen as a calm approach to situations and events, or tendency to emotionally control responses when facing change.

Scores on each dimension obtained from the interview are obtained and then summed across dimensions to provide a total score of personality for each applicant. Personality, assessed by the SIQ as part of the CF recruiting process, contributes about 33% of the applicant's total assessment of suitability and competitiveness for entry into the CF (PPD102, 2006).

Given the growing body of literature demonstrating that the Five Factor Model (FFM) of personality is a strong predictor of job performance, the SIQ was developed to assess the FFM of personality (Martineau, personal communication, 2008). Although there is a theoretical rationale behind the development of the SIQ, there has been no empirical evidence to support the use of this particular SIQ to assess personality. Specifically, the association between the SIQ and the five factors has not been examined. In other words, evidence of the convergent validity of the SIQ with the FFM of personality is lacking. Furthermore, although the rationale for the incorporation of the SIQ was to improve the prediction of training success and job performance by CF members, there has been no empirical research demonstrating the proportion of variance the SIQ can explain in training or job performance. This paper examines the convergent and predictive validity of the SIQ.

1.1 The Five Factor Model of Personality and Performance

Numerous researchers have demonstrated that an individual's personality can be separated into five distinct dimensions, or factors, in what is now known as the Five Factor Model (FFM) of personality (Costa and McCrae, 1992). The factors of the FFM are most commonly labelled: Conscientiousness, Agreeableness, Neuroticism, Openness to Experience, and Extraversion. Conscientiousness is related to the organizational domain of personality (Abram and Elshaw, 1997). High scores on this dimension reflect such traits as motivation in goal-directed behaviour, persistence, dependability, conformity to rules, and attention to details (Bateman and Crant, 1993). Kickul and Neuman (2000) proposed that individuals high in conscientiousness are high achievers, dependable, persistent, capable of self-control, and regularly take initiative – traits that positively influence group or organizational effectiveness and benefit the career of the individual.

Judge *et al.* (1999) demonstrated that conscientiousness was a single unique predictor of job satisfaction when other personality traits and general mental ability were controlled for. Other research has demonstrated that conscientiousness predicts the effectiveness of the working team (Kickul and Neuman, 2000) and overall performance in both civilian (Barrick and Mount, 1991) and military jobs (McHenry, Hough, Toquam, Hanson, and Ashworth, 1990). Several researchers further argued that conscientiousness is a major predictor of success at work and is related to productive working behaviours such as attendance (Barrick and Mount, 1991; Judge, Martocchio, and Thoresen, 1997; Saldago, 1997). Importantly, given the low correlation between conscientiousness and cognitive ability (McCrae, 1989), Barrick and Mount (1991) suggested that

conscientiousness is a unique predictor of job performance over and above that accounted for by cognitive ability. Based on this empirical evidence, Judge *et al.* (1999) concluded that, all things being equal, organizations should select individuals with higher scores on the conscientiousness dimension.

Agreeableness is related to the moral domain of personality, given that it deals with the empathetic abilities of individuals. This trait is represented by a compassionate rather than antagonistic interpersonal orientation (Bateman and Crant, 1993). High scores on this dimension reflect such traits as being flexible, cooperative, tolerant, and able to trust others. Judge *et al.* (1999) proposed that this trait is important in occupations involving teamwork. Howard and Bray (1988) found that agreeableness was negatively related to management potential suggesting that individuals with this trait would have a tendency to follow rather than lead. More recently however, Judge and Bono (2000) found that this trait was the strongest predictor of an overall transformational type of leadership ($r = .32$). Based on these results, it seems that while agreeableness, and especially such traits as trust, compassion, and empathy, is important for the transformational type of leadership, high scores on agreeableness may interfere with other, more autocratic styles of leadership.

Neuroticism is related to the emotional domain of personality. This trait is comprised of two dimensions: anxiety (instability and stress proneness) and overall mental health (the feeling of insecurity and depression) (Costa and McCrae, 1988). The major facets of neuroticism include anxiety, hostility, depression, self-consciousness, vulnerability, and impulsiveness (Costa and McCrae, 1992). High scores on this dimension reflect heightened anxiety, depression, anger and insecurity, while low scores reflect better adjustment (Bateman and Crant, 1993). Judge *et al.* (1999) found that individuals with high neuroticism scores were significantly more likely to be dissatisfied with their jobs. Hertz and Donovan (2000) proposed that emotionally stable individuals would be able to perform better at their jobs. Consistent with this suggestion, neuroticism (or the reverse construct of Emotional Stability) was also a significant predictor of job performance (Barrick and Mount, 1991; Saldago, 1997). In addition, there is evidence that individuals with higher neuroticism scores are less able to cope with stressful events and are more prone to depression under stress (Skomorovsky, Nisbet, Westmacott, Matheson, and Anisman, 2004). Based on their findings, Stanley, Crawford, and Fiedler (1991) suggested that individuals low in emotional stability would not do well at basic military training and would be poor candidates for the military. This evidence suggests that high stress occupations, such as the military, should select individuals who are low in neuroticism (i.e., emotionally stable).

Openness to new experiences (openness) is related to the intellectual domain of personality. High scores on this dimension suggest imagination, curiosity, broad-mindedness, creativity, and intellectual interest. Judge *et al.* (1999) suggested that this trait might be involved in job success. However, while individuals with greater scores on the openness domain had greater rates of success at training, this personality trait was not related to job proficiency (Barrick and Mount, 1991). The researchers concluded that openness is associated with motivation and ability to learn. Furthermore, Kickul and Neuman (2000) found that this trait, incorporating reflective broad-mindedness, creativity, analytical ability, and imaginative skills, was a reliable predictor of emergent leadership behaviours. However, when extraversion and agreeableness were controlled for, its correlation with transformational leadership disappeared (Judge and Bono, 2000), suggesting that the role of openness in transformational leadership is not necessarily

unique. Overall, it seems that individuals with this personality trait would do better at training and in occupations that require the emergence of leadership behaviours.

Extraversion is a social domain of personality and is described as a need for stimulation. High scores on this dimension reflect such traits as being sociable, energetic, talkative, assertive, and outgoing. Extraversion is generally associated with more experiences of positive emotions (Watson and Clark, 1997) and may serve as a buffer against the development of depression (Skomorovsky *et al.*, 2004). Furthermore, Barrick and Mount (1991) found that extraversion was a valid predictor of job performance when occupations involved social interactions such as management and sales. In addition, given that individuals who are high in extraversion are more communication-orientated and sociable, McCaulley (1990) proposed that extraversion is an important trait for leaders. Indeed, there is evidence that extraverts are more likely to take leadership roles (Watson and Clark, 1997) and be engaged in transformational leadership behaviours (Judge and Bono, 2000). Kickul and Neuman (2000) found that the trait of extraversion not only predicted the emergence of leadership, but also successfully distinguished leaders from followers. To conclude, the evidence suggests that an ideal applicant to the CF should be high in conscientiousness, extraversion, openness to new experiences, and agreeableness, and low in neuroticism.

1.1.1 The SIQ and the FFM of Personality

Although previous evidence suggests that an ideal applicant to the CF should be high in conscientiousness, extraversion, openness to new experiences, and agreeableness, and low in neuroticism, the SIQ used in the CF cannot be unequivocally mapped onto these five factors of personality. Based on their description (PPD 102, 2006), it seems that four of the six structured interview questions (degree of work ethic, organizational citizenship, dependability, and achievement orientation) map onto the conscientiousness factor; openness to novel experiences maps onto the openness to new experiences factor; and, finally, stress management maps onto the neuroticism factor of the FFM of personality. Thus, it seems that while one of the five factors of personality (openness to new experiences) is represented by only one structured interview question, other factors of the FFM of personality are either over- or under-represented in the SIQ. For example, it is not clear whether conscientiousness should be over-represented by four out of six questions of the SIQ. In addition, it is not clear whether work ethic and organizational citizenship should be representing the conscientiousness factor, as previous research does not categorize them under conscientiousness. Furthermore, neuroticism is underrepresented in the SIQ, as only one aspect of neuroticism (stress management ability) is assessed. Finally, agreeableness and extraversion are not assessed by the SIQ at all. It is evident that the FFM of personality is not well represented in the SIQ and the interpretation of the results obtained in the interview process is, therefore, questionable. Thus, it is important to examine the links between the SIQ and the FFM of personality measured by valid assessment techniques, such as widely used self-report measures of personality. Furthermore, various researchers have found that the FFM of personality is predictive of training and job performance (Mount and Barrick, 1995; Schmidt and Hunter, 1998). However, there has been no research examining the predictive ability of the SIQ to explain variance in the job or training performance. Therefore, it is important to examine the ability of the SIQ to predict performance in the CF.

1.2 Aim of the Study

The present study examined the role of the SIQ in the CF selection system. For this purpose, the convergent validity of the SIQ was examined by comparing it with other established measures of the FFM of personality: TSD-PI (Boyes, 2006), NEO-PI-R (Costa and McCrae, 1988, 1992, 1995), and HEXACO (Lee and Ashton, 2004). In addition, the predictive validity of the SIQ in explaining training performance among NCMs was examined. Specifically, the unique role of the SIQ in explaining performance among NCMs, controlling for cognitive ability, was assessed.

2 METHOD

2.1 Participants and Procedure

Personality questionnaires were administered to NCM recruits (N = 334) in multiple sessions in CFB Borden in the winter of 2007. There were 252 males and 82 females. However, some of the participants completed only one or two of the personality questionnaires administered. Furthermore, for some of the study participants, basic training performance data could not be retrieved. Therefore, the sample sizes varied across different statistical analyses. It was explained to the participants that the data would be anonymous and would have no impact on their military careers. The personality data were collected from privates who had just finished their basic training. Recruits' CFAT and SIQ scores were obtained from the CF recruitment centre records.

2.2 Measures

2.2.1 The Structured Interview Questionnaire (SIQ)

Currently, the SIQ consists of six questions that are used as a part of the selection process for the CF. The first question refers to work ethics and assesses behaviours that demonstrate a concern for doing a job well and respect for high quality standards. The second question refers to organizational citizenship and assesses candidates' concerns for the overall functioning of the organization beyond individual responsibilities and candidates' willingness to support organizational interests with no personal gain. The third question refers to openness to novel experiences and assesses candidates' willingness to embrace change, openness to experiences or new ideas outside the normal frame of reference, and willingness to familiarize themselves with innovation. The fourth question refers to dependability and assesses candidates' behaviours that encourage them to respect/fulfill their own personal and professional commitments. The fifth question refers to achievement orientation and assesses candidates' efforts in mobilizing personal resources to succeed, accomplish and overcome obstacles as well as assessing their perseverance at a task. This question also measures the mental and physical exertion required to complete work. Finally, the sixth question refers to stress management ability and assesses the ability to function competently when placed in extreme and continuously adverse mental and physical conditions. The question also measures an ability to remain calm in situations and events, or a tendency to emotionally control responses when facing change.

Scores for the six questions range from 1 (procrastinates, hesitant to accept new ideas, lacks concern for getting the job done, rationalizes giving up, unable to control emotions) to 5 (proactive, willing to look at things differently, efficient, focused on the goal, always maintains composure). There has been no prior research examining the psychometric properties of the questions. In this study, participants' scores ranged between 2.0 and 5.0. The six questions were significantly correlated with each other. The strength of the correlations ranged between mild (for stress management and achievement orientation; $r=.21$, $p<.05$) and moderate (for dependability and work ethic; $r=.53$, $p<.01$). Although the intercorrelations were higher than those expected for personality domains, they were not high enough to indicate

multicollinearity. Descriptive statistics for the SIQ are provided in Table 1. The skewness coefficients were close to zero (<1) and the values of kurtosis were within the -2 to +2 range, suggesting that the SIQ scores were normally distributed¹ (Table 1).

Table 1: Descriptive Statistics for the SIQ

	Mean (SD)	Skewness	Standard Error of Skewness	Kurtosis	Standard Error of Kurtosis
SIQ Work ethic	3.6 (0.5)	0.12	0.22	-0.26	0.43
SIQ Organizational citizenship	3.3 (0.7)	0.11	0.22	-0.33	0.43
SIQ Openness to novel experiences	3.5 (0.6)	-0.08	0.22	-0.31	0.43
SIQ Dependability	3.5 (0.6)	0.13	0.22	-0.15	0.43
SIQ Achievement orientation	3.6 (0.6)	-0.33	0.22	0.08	0.43
SIQ Stress management	3.4 (0.7)	0.26	0.22	0.03	0.43

2.2.2 Trait-Self Descriptive Inventory Personality Inventory

The TSD-PI is a 75-item paper-and-pencil measure of personality based on the full version of the TSD (Boyes, 2006). The TSD-PI was chosen to determine the convergent validity of the SIQ because it is a measure of the FFM of personality that will be implemented into the CF selection system. The TSD-PI scale has five subscales representing five factors of personality. Each subscale is comprised of 15 items, both adjectives and statements. The scores on each subscale range between 1 ('extremely uncharacteristic of me') and 7 ('extremely characteristic of me'). The reverse-coded items were recoded before the responses were averaged for each subscale. The Cronbach's alpha or internal reliability was high for each subscale (neuroticism alpha = .91, extraversion, alpha = .88, openness to new experiences alpha = .90, agreeableness alpha = .88, and conscientiousness alpha = .89). The strength of the alpha coefficients is consistent with previous research (Boyes, 2006; O'Keefe, 1998; Schwartz, 1999; Jones *et al.*, 2000). While neuroticism, extraversion and openness to new experiences did not characterize this sample of privates (the average response for these factors was 'neither uncharacteristic nor characteristic'), agreeableness and conscientiousness were higher than other personality traits ('slightly characteristic' and 'strongly characteristic', respectively), and higher than in previous research (Boyes, 2006; O'Keefe, 1998). The skewness coefficients were close to zero (<1) and the values of kurtosis were within the -2 to +2 range, suggesting that the scores of the TSD-PI subscales were normally distributed (Table 2).

¹ Normal distribution is a frequency distribution, where observations are distributed symmetrically around the mean. When the distribution is normal, about 68% of the values are within 1 standard deviation of the mean, about 95% of the values are within 2 standard deviations, and about 99.7% lie within 3 standard deviations.

Table 2: Descriptive Statistics for TSD-PI Subscales

	Mean (SD)	Skewness	Standard Error of Skewness	Kurtosis	Standard Error of Kurtosis
TSD-PI Neuroticism	3.0 (1.0)	0.4	0.1	-0.48	0.38
TSD-PI Extraversion	4.5 (1.0)	-0.2	0.1	0.87	0.38
TSD-PI Openness to new experiences	4.2 (1.1)	0.0	0.1	-0.34	0.38
TSD-PI Agreeableness	5.7 (0.6)	-0.4	0.1	0.65	0.38
TSD-PI Conscientiousness	5.4 (0.7)	-0.5	0.1	-0.31	0.38

2.2.3 Neuroticism-Extraversion-Openness Personality Inventory Revised (NEO-PI-R)

The Neuroticism-Extraversion-Openness Personality Inventory Revised (NEO-PI-R; Costa and McCrae, 1988, 1992, 1995) was chosen to determine the convergent validity of the SIQ because it is a well-established measure of the FFM of personality. The NEO-PI-R consists of 240 personality items and measures the interpersonal, motivational, emotional, and attitudinal styles of individuals. Form S of the NEO-PI-R is a self-report measure of the FFM of personality that measures both factors and facets using 240 statements. Respondents rate the degree to which each statement describes them using a 5-point Likert-type scale (1 = Strongly Disagree; 5 = Strongly Agree). The reverse-coded items were recoded before the responses were averaged for each subscale. The reliability and validity of the NEO-PI-R have been established in previous research, ranging between .86 and .95 (Costa and McCrae, 1992, 1995). In the current study, Cronbach's alpha values for the factor scales ranged from .96 (Openness and Agreeableness) to .97 (Neuroticism), which is consistent with previous research (Costa and McCrae, 1992). Descriptive statistics for the NEO-PI-R factors are provided in Table 3. The skewness coefficients were close to zero (<1) and the values of kurtosis were within the -2 to +2 range, suggesting that the scores of the NEO-PI subscales were normally distributed (Table 3).

Table 3: Descriptive Statistics for the NEO-PI Subscales

	Mean (SD)	Skewness	Standard Error of Skewness	Kurtosis	Standard Error of Kurtosis
NEO-PI Neuroticism	2.5 (0.5)	0.00	0.1	-0.49	0.50
NEO-PI Extraversion	3.5 (0.4)	-0.02	0.1	-0.12	0.50
NEO-PI Openness to new experiences	3.3 (0.4)	-0.04	0.1	-0.24	0.52
NEO-PI Agreeableness	3.4 (0.4)	-0.05	0.1	1.44	0.50
NEO-PI Conscientiousness	3.6 (0.4)	-0.01	0.1	0.11	0.50

2.2.4 Honesty-Emotionality-Extraversion-Agreeableness-Conscientiousness-Openness to Experience Personality Inventory (HEXACO-PI)

The HEXACO-PI (Lee and Ashton, 2004) was chosen to determine the convergent validity of the SIQ because it is an established measure of personality that also adds a sixth factor to the FFM of personality. “A factor that is typically defined by honesty, fairness, sincerity, modesty, and lack of greed has been observed as either the fifth or the sixth largest factor in several lexical studies of personality structure” (Lee and Ashton, 2004, p. 332)², suggesting that this factor should be added to the model of personality, constituting the sixth factor. The authors conceptualized the HEXACO-PI Honesty-Humility dimension in terms of four distinct facets: Sincerity, Fairness, Greed Avoidance, and Modesty (see Lee and Ashton, 2004 for the list of detailed definitions). Thus, the HEXACO-PI consists of 24 facet-level personality trait scales that define six personality factors, Honesty-Humility (H), Emotionality (E), Extraversion (X), Agreeableness (A), Conscientiousness (C), and Openness to Experience (O). Responses were averaged for each subscale. The reliability and validity of the NEO-PI-R have been established in previous research, ranging from .89 (Conscientiousness) to .92 (Honesty-Humility) (Lee & Ashton, 2004). Descriptive statistics for the HEXACO factors are provided in Table 4. The skewness coefficients were close to zero (<1) and the values of kurtosis for five factors out of six were within the -2 to +2 range, suggesting that the scores of the HEXACO subscales were normally distributed (Table 4). Kurtosis for the sixth factor H was slightly above 2, suggesting a slight leptokurtosis³. Given such a slight deviation from normality and a common acceptance of -3 to +3 range in research, no transformations were conducted.

Table 4: Descriptive Statistics for the HEXACO Subscales

	Mean (SD)	Skewness	Standard Error of Skewness	Kurtosis	Standard Error of Kurtosis
HEXACO Emotionality	2.8 (0.5)	-0.2	0.1	0.36	0.48
HEXACO Extraversion	3.4 (0.4)	-0.6	0.1	-0.21	0.48
HEXACO Openness to new experiences	3.3 (0.6)	-0.0	0.1	0.29	0.48
HEXACO Agreeableness	3.2 (0.5)	-0.1	0.1	0.33	0.48
HEXACO Conscientiousness	3.7 (0.5)	0.0	0.1	-0.21	0.48
HEXACO Honesty-Humility	3.6 (0.5)	-0.1	0.1	2.33	0.48

² For the purpose of this study, to examine the convergent validity of the SIQ with the five factors of personality, the associations between the sixth factor of personality and the SIQ were not examined.

³ Positive kurtosis, or leptokurtosis, indicates too few cases in the tails of distribution.

2.2.5 Canadian Forces Aptitude Test (CFAT)

The CFAT is a 60-item standardized test of general cognitive ability. It is a timed test arranged in ascending order of difficulty within subscales. It is comprised of three subscales: verbal skills (15 items), spatial ability (15 items), and problem solving ability (30 items). The Verbal Skills scale assesses a candidate's ability to comprehend text and understand the use of words.

The Spatial Ability scale is a non-verbal measure that evaluates a candidate's ability to deal with complex geometrical figures. Finally, the Problem-Solving scale measures a candidate's ability to use mathematical skills in solving problems (Vanderpool, 2003). To be selected into the military, non-commissioned members and officer applicants must achieve a minimum cut-off score. Furthermore, to be classified into a given military occupation, non-commissioned member applicants must achieve a specific minimum score for a particular occupation. Raw scores for CFAT subscales were used in the analyses. The subscales of the test were found to have moderate to high internal reliability in previous studies, where verbal skills Cronbach's alpha ranged between .78 and .87, spatial abilities alpha ranged between .64 and .88, and problem-solving abilities alpha ranged between .88 and .91 (Black, 1999; Vanderpool, 2003). Descriptive statistics for the CFAT scales are provided in Table 5. The results demonstrated that the verbal skills and spatial ability scales were slightly negatively skewed, while the problem-solving scale and the overall CFAT were slightly positively skewed. However, the skewness coefficients were close to zero (<1) and the values of kurtosis were within the -2 to +2 range, suggesting that the CFAT scores did not violate the assumption of normality (Table 5).

Table 5: Descriptive Statistics for CFAT Scales

	Mean (SD)	Skewness	Standard Error of Skewness	Kurtosis	Standard Error of Kurtosis
Verbal skills scale	9.7 (2.6)	-0.14	0.22	-0.27	0.44
Spatial ability scale	9.9 (2.4)	-0.22	0.22	-0.21	0.44
Problem-solving scale	18.3 (5.4)	0.10	0.22	-0.67	0.44
Overall CFAT	37.9 (8.0)	0.16	0.22	-0.52	0.44

2.2.6 Basic Recruit Training (BRT)⁴

All new NCM recruits must take a BRT course in St. Jean-sur-Richelieu, Quebec (Canada). This training provides the basic core skills and knowledge common to all military jobs, consisting of several independent courses. Of the 18 courses, nine have continuous grades and nine have categorical grades (i.e., pass or fail):

- a. Military Knowledge (continuous);
- b. Military Regulations (continuous);

⁴ Basic Recruit Training is currently referred to as Basic Military Qualification course.

- c. Inspection (categorical);
- d. Weapons Safety (categorical);
- e. Negligent Discharge (categorical);
- f. Handling Test (categorical);
- g. Personal Weapon Test (continuous; part 1);
- h. Personal Weapon Test (continuous; part 2);
- i. Drill (categorical);
- j. First Aid Theory (continuous);
- k. First Aid Practical (categorical);
- l. Force Protection Operations (continuous; theory);
- m. Chemical Biological Radioactive Nuclear (continuous; CBRN; theory);
- n. CBRN (practical; categorical);
- o. General Safety (continuous; theory);
- p. General Safety (practical; categorical);
- q. Memorandum (categorical); and
- r. Educational Objectives (continuous; theory).

Examination of the continuous domains of performance demonstrated that all the variables were normally distributed (see Table 6), and the First Aid theory variable was only slightly negatively skewed. The ratio of the skewness coefficient to its standard error was close to zero, suggesting that the score of the First Aid theory did not significantly violate the assumption of normality. The kurtosis values were in the -2 to +2 range, with an exception for personal weapons part 1 test. Its positive kurtosis value indicates a leptokurtotic distribution of the scores on the personal weapons part 1 test⁵. Given that the transformations did not result in a normal distribution of scores, the original scores were used. Therefore, the results for this test should be treated with greater caution. Examination of the distribution of scores on the categorical performance variables demonstrated that most individuals received a pass on the BRT courses, whereas only about 20% of individuals failed (see Table 7)⁶.

⁵ Positive kurtosis, or leptokurtosis, indicates too few cases in the tails of distribution.

⁶ Some of the continuous variables were significantly correlated, however, the correlation coefficients were moderate at the most ($r=.55, p<.01$).

Table 6: Descriptive Statistics for the Course Grades: Continuous Variables

	M (SD)	Skewness	Standard Error of Skewness	Kurtosis	Standard Error of Kurtosis
Military knowledge	82.4 (8.6)	-0.39	0.15	-0.78	0.45
Military regulations	80.2 (9.3)	-0.22	0.15	-0.49	0.48
Personal weapons part 1	21.6 (5.6)	0.60	0.15	9.9	0.45
Personal weapons part 2	45.7 (31.2)	-0.84	0.15	0.66	0.46
First aid theory	90.8 (7.1)	-1.1	0.15	1.9	0.45
Force protection operations	83.4 (7.1)	-0.62	0.15	1.4	0.48
CBRN theory	83.7 (9.0)	-0.73	0.15	0.70	0.45
General safety theory	85.6 (8.7)	-0.75	0.15	1.1	0.45
Educational objectives	78.5 (9.0)	-0.28	0.15	0.05	0.48

Table 7: Descriptive Statistics for the Course Grades: Categorical Variables

Categorical Grade Performance Domains	Pass	Fail	N
Inspection	206 (58.0%)	63 (17.7%)	269
Weapons	214 (60.3%)	58 (16.3%)	272
Discharge	194 (54.6%)	64 (18.0%)	258
Handling	195 (54.9%)	78 (22.0%)	273
Drill	209 (58.9%)	63 (17.7%)	272
First aid practical	206 (58.0%)	65 (18.3%)	271
CBRN practical	216 (60.8%)	56 (15.8%)	272
General safety practical	215 (79.0%)	57 (21.0%)	272
Memorandum	202 (56.9%)	56 (15.8%)	258

3 RESULTS

3.1 Convergent Validity

To examine whether the SIQ measures the FFM of personality in the new recruit population, convergent validity was investigated. Convergent validity refers to the degree to which scores on a test correlate with (or are related to) scores on other tests that are designed to assess the same construct (Garson, 2008). Convergent validity was assessed by examining the inter-correlations between the SIQ and three personality measures: the TSD-PI (the personality measure that has been developed for use in the CF) and two well-established measures of personality, the NEO-PI-R and the HEXACO-PI. If the SIQ scores are positively correlated with scores on the relevant factors of the three personality tests (TSD-PI, NEO-PI-R, and HEXACO-PI), there is evidence for convergent validity. The correlation coefficients delineating the relationships between the SIQ and the TSD-PI factors are outlined in Table 8, correlation coefficients delineating the relationships between the SIQ and the NEO-PI-R factors are outlined in Table 9, while correlation coefficients delineating the relationships between the SIQ and the HEXACO-PI factors are outlined in Table 10.

As can be seen from the results presented in Tables 8-10, the SIQ scores were not significantly correlated with the relevant factors of the three personality measures. Specifically, SIQ scores were not significantly correlated with any of the TSD-PI factors nor with any of the relevant NEO-PI-R or HEXACO-PI factors. Although the stress management domain of the SIQ was found to be significantly and positively correlated with both the NEO-PI and HEXACO-PI openness to new experiences factor, this finding was not expected. Stress management refers to the ability to function competently when placed in extreme and continuous adverse mental and physical conditions and remain calm under stress (PPD 102, 2006). Therefore, this construct should be consistent with the neuroticism (or lack of emotional stability) domain, rather than openness to new experiences. These findings demonstrate lack of convergent validity of the SIQ, as the scores are inconsistent with those of the three established measures of personality.

Table 8: Pearson Correlations between SIQ and TSD-PI Factors

	Work Ethic	Organization Citizenship	Dependability	Achievement Orientation	Openness to Novel Experiences	Stress Management
Neuroticism (TSD-PI)	-0.02	0.03	0.02	-0.01	-0.04	-0.07
Extraversion (TSD-PI)	-0.04	-0.09	-0.04	0.07	0.01	-0.01
Openness (TSD-PI)	-0.04	-0.02	0.09	0.16	0.03	0.10
Agreeableness (TSD-PI)	0.07	0.01	0.10	-0.03	0.08	0.13
Conscientiousness (TSD-PI)	0.11	0.12	0.17	-0.03	0.09	-0.00

Table 9: Pearson Correlations between SIQ and NEO-PI-R Factors

	Work Ethic	Organization Citizenship	Dependability	Achievement Orientation	Openness to Novel Experiences	Stress Management
Neuroticism (NEO-PI-R)	-0.04	-0.09	-0.10	0.08	0.05	-0.08
Extraversion (NEO-PI-R)	0.16	0.02	0.05	0.01	0.03	0.10
Openness (NEO-PI-R)	0.19	0.17	0.16	0.13	0.10	0.42**
Agreeableness (NEO-PI-R)	-0.03	-0.11	0.13	-0.13	0.05	0.01
Conscientiousness (NEO-PI-R)	0.04	0.03	0.04	-0.21	-0.03	0.17

**p < .01

Table 10: Pearson Correlations between SIQ and HEXACO Factors

	Work Ethic	Organization Citizenship	Dependability	Achievement Orientation	Openness to Novel Experiences	Stress Management
Neuroticism (HEXACO-PI)	0.00	-0.05	0.01	0.04	0.05	-0.14
Extraversion (HEXACO-PI)	0.06	0.07	0.01	0.12	0.02	0.22
Openness (HEXACO-PI)	0.07	0.01	0.12	0.17	0.03	0.31**
Agreeableness (HEXACO-PI)	-0.19	-0.26*	-0.03	-0.18	-0.17	-0.11
Conscientiousness (HEXACO-PI)	0.09	0.02	0.11	-0.10	0.01	0.14
Honesty (HEXACO-PI)	0.12	0.02	0.13	-0.10	0.18	0.07

**p < .01

3.2 Predictive Validity

Predictive validity refers to the relationship between test scores and later performance on a domain of interest (Garson, 2008). In order to examine the utility of the SIQ in the selection of new recruits, the ability of the SIQ to predict training performance of private recruits was examined. For these purposes, each domain of performance was regressed onto the SIQ. The use of the SIQ for selection purposes in the CF is appropriate only if it provides incremental predictive ability beyond the selection instrument currently in use (i.e., CFAT). Therefore, for the training performance domains that were significantly predicted by the SIQ, the incremental predictive ability of the SIQ when the CFAT scores were already taken into account was examined. For these purposes, a series of hierarchical multiple regression analyses were conducted, wherein each domain of performance was regressed onto both CFAT scores and SIQ scores. For the performance domains that were not significantly predicted by the SIQ, the incremental predictive ability of the SIQ was not examined (the CFAT was not statistically controlled).

3.2.1 Continuous Performance Variables

First, the correlations of each of the SIQ items with the performance domains were examined in a sample of privates. Next, in order to examine the predictive ability of the SIQ, a series of multiple regression analyses were conducted, wherein each domain of performance was regressed onto six SIQ scores. Finally, for the performance domains that were significantly predicted by the SIQ, the unique predictive ability of the SIQ, over and above the CFAT, was examined. For the performance domains that were not significantly predicted by the SIQ, the CFAT was not statistically controlled for.

3.2.1.1 Military Knowledge

Two structured interview questions, specifically, work ethic and stress management, were significantly and positively correlated with military knowledge performance. However, overall, the SIQ did not significantly predict performance on the military knowledge test, $R^2 = .072$, $F(6, 87) = 1.12$, ns (see Table 11).

Table 11: Multiple Regression Analyses Assessing the Relationships between the SI and Military Knowledge

	<i>Pearson r</i>	β	R^2
SIQ			.072
Work ethic	0.21*	0.19	
Organizational citizenship	0.16	0.09	
Openness to novel experiences	0.07	0.01	
Dependability	0.02	-0.14	
Achievement orientation	0.04	-0.03	
Stress management	0.18*	0.12	

* $p < .05$

3.2.1.2 Military Regulations

Openness to new experiences and dependability were significantly and positively correlated with performance in the military regulations domain. The contribution of achievement orientation to military regulations was found to be significant over and above the other structured questions. However, given that the zero-order correlation of achievement orientation and the military regulations was not significant, it seems to be a suppressor rather than a predictor of performance in this domain. A suppressor effect occurs when a predictor has a stronger correlation with the other predictors in the equation than with the criterion variable. Therefore, the achievement orientation should not be treated as predictor of performance in this equation. Overall, the SIQ did not significantly predict performance in the military regulations domain, $R^2 = .145$, $F(6, 75) = 2.12$, ns (see Table 12).

Table 12: Multiple Regression Analyses Assessing the Relationships between the SIQ and Military Regulations

	<i>Pearson r</i>	β	R^2
SIQ			.145
Work ethic	0.18	0.11	
Organizational citizenship	0.16	0.06	
Openness to novel experiences	0.24*	0.23	
Dependability	0.23*	0.12	
Achievement orientation	-0.13	-0.29*	
Stress management	0.10	-0.01	

*p<.05

3.2.1.3 Personal Weapon Test Part 1

The SIQ was not associated with personal weapon test part 1 performance. In addition, the SIQ overall did not significantly predict performance on the personal weapon test part 1, $R^2 = .025$, $F < 1$, ns (see Table 13).

Table 13: Multiple Regression Analyses Assessing the Relationships between the SIQ and Personal Weapons Part 1

	<i>Pearson r</i>	β	R^2
SIQ			.025
Work ethic	-0.10	-0.10	
Organizational citizenship	-0.09	-0.06	
Openness to novel experiences	-0.09	-0.07	
Dependability	-0.00	0.09	
Achievement orientation	-0.09	-0.05	
Stress management	-0.00	0.06	

3.2.1.4 Personal Weapon Test Part 2

Openness to novel experiences was significantly and negatively correlated with performance on the personal weapon test part 2 domain. This finding was not expected, as this construct was found to be associated with better performance in training (e.g., Skomorovsky, 2008). However, it is possible that a highly structured course, such as personal weapons, requires obedience rather than openness to new experiences. Consistent with this, it was found that performance at the air space controller training was negatively associated with the openness to new experiences (Smith, 2009). The SIQ overall did not significantly predict performance in the personal weapon test part 2, $R^2 = .105$, $F(6, 84) = 1.64$, ns (see Table 14).

Table 14: Multiple Regression Analyses Assessing the Relationships between the SIQ and Personal Weapons Part 2

	<i>Pearson r</i>	β	R^2
SIQ			.105
Work ethic	-0.09	-0.03	
Organizational citizenship	-0.15	-0.07	
Openness to novel experiences	-0.26**	-0.31**	
Dependability	-0.08	0.07	
Achievement orientation	0.05	0.19	
Stress management	-0.12	-0.07	

** p<.01

3.2.1.5 First Aid Theory

Two structured interview questions, specifically, work ethic and stress management, were significantly and positively correlated with first aid theory performance. However, the SIQ overall did not significantly predict performance on the first aid theory test, $R^2 = .066$, $F(6, 87) = 1.02$, ns (see Table 15).

Table 15: Multiple Regression Analyses Assessing the Relationships between the SIQ and First Aid Theory

	<i>Pearson r</i>	β	R^2
SIQ			.066
Work ethic	0.22*	0.16	
Organizational citizenship	0.15	0.03	
Openness to novel experiences	0.06	-0.05	
Dependability	0.13	0.03	
Achievement orientation	0.05	-0.01	
Stress management	0.20*	0.13	

* p<.05

3.2.1.6 Force Protection Operations (Theory)

Work ethic, dependability, and stress management were significantly and positively correlated with force protection operations (theory) performance. However, the overall SIQ did not significantly predict performance on the force protection operations (theory) test, $R^2 = .104$, $F(6, 74) = 1.43$, ns (see Table 16).

Table 16: Multiple Regression Analyses Assessing the Relationships between the SIQ and Force Protection Operations (Theory)

	<i>Pearson r</i>	β	R^2
SIQ			.104
Work ethic	0.23*	0.15	
Organizational citizenship	0.13	-0.03	
Openness to novel experiences	0.12	0.01	
Dependability	0.27**	0.19	
Achievement orientation	-0.01	-0.12	
Stress management	0.19*	0.10	

* p<.05; ** p<.01

3.2.1.7 Chemical Biological Radioactive Nuclear (Theory)

The SIQ was not associated with chemical biological radioactive nuclear (theory) performance. In addition, the SIQ did not significantly predict performance on biological radioactive nuclear (theory), $R^2 = .066$, $F(6, 87) = 1.02$, ns (see Table 17).

Table 17: Multiple Regression Analyses Assessing the Relationships between the SIQ and CBRN Theory

	<i>Pearson r</i>	β	R^2
SIQ			.066
Work ethic	0.14	0.19	
Organizational citizenship	-0.03	-0.18	
Openness to novel experiences	-0.03	-0.09	
Dependability	0.01	-0.02	
Achievement orientation	0.13	0.17	
Stress management	0.09	0.09	

* p<.05; ** p<.01

3.2.1.8 General Safety (Theory)

Stress management was significantly and positively correlated with general safety (theory) performance. However, the overall SIQ did not significantly predict performance on general safety (theory), $R^2 = .069$, $F(6, 86) = 1.06$, ns (see Table 18).

Table 18: Multiple Regression Analyses Assessing the Relationships between the SIQ and General Safety Theory

	<i>Pearson r</i>	β	R^2
SIQ			.069
Work ethic	0.16	0.11	
Organizational citizenship	0.11	0.01	
Openness to novel experiences	-0.02	-0.10	
Dependability	0.08	0.01	
Achievement orientation	0.03	0.01	
Stress management	0.23*	0.21	

* $p < .05$

3.2.1.9 Educational Objectives (Theory)

Work ethic, organizational citizenship, and stress management were significantly and positively correlated with educational objectives (theory). However, the overall SIQ did not significantly predict performance in the educational objectives (theory) domain, $R^2 = .112$, $F(6, 75) = 1.58$, ns (see Table 19).

Table 19: Multiple Regression Analyses Assessing the Relationships between the SIQ and Educational Objectives

	<i>Pearson r</i>	β	R^2
SIQ			.112
Work ethic	0.25*	0.14	
Organizational citizenship	0.27**	0.19	
Openness to novel experiences	0.17	0.04	
Dependability	0.23*	0.10	
Achievement orientation	0.02	-0.13	
Stress management	0.12	-0.03	

* $p < .05$; ** $p < .01$

3.2.1.10 Continuous Variables: Summary

Some structured interview questions were associated with better training performance. Specifically, work ethic and stress management were associated with greater training performance on four domains: military knowledge, first aid theory, force protection operations, general safety (stress management only), and educational objectives (work ethic only). In addition, dependability was associated with greater training performance on three domains: regulations, force protection operations, and educational objectives. Finally, organizational

citizenship and openness to novel experiences⁷ were each associated with greater training performance on one domain: educational objectives and regulations respectively. The SIQ overall scores did not significantly predict performance in any of the continuous variable domains. Therefore, there was no need to examine the unique predictive ability of the SIQ controlling for cognitive ability. This evidence suggests a lack of predictive validity of the SIQ for training courses that have continuous scores.

3.2.2 Categorical Performance Variables

For the categorical variables, eight logistic regression analyses were conducted, in which the SIQ was entered as a predictor of training performance. At the next stage, for the performance domains that were significantly predicted by the SIQ, logistic regression analyses were conducted to examine the unique predictive ability of the SIQ. For these purposes, both the SIQ and the CFAT scores would be entered as covariates predicting performance in each domain. The CFAT scores were entered in the first block of the equation and the SIQ scores - in the second block, to examine the unique predictive ability of the SIQ when cognitive ability was already taken into account. For the performance domains that were not significantly predicted by the SIQ, the unique predictive ability of the SIQ was not examined (the CFAT was not statistically controlled for).

3.2.2.1 Inspection

Wald's t tests demonstrated that none of the structured interview questions uniquely predicted performance on the inspection performance domain (Table 20). In addition, the overall block of the SIQ was not significant in predicting success at the inspection test, $\chi^2(6) = 11.49$, $-2LL = 87.86$, ns.

Table 20: Logistic Regression Assessing the Relationships between the SIQ and Inspection

	B	Exp (B)	Wald's T Test	χ^2
SIQ				11.49
Work ethic	0.13	1.14	0.15	
Organizational citizenship	0.32	1.38	0.73	
Openness to novel experiences	0.61	1.83	3.27	
Dependability	-0.10	0.91	0.09	
Achievement orientation	0.04	1.04	0.02	
Stress management	0.19	1.21	0.31	

⁷ Openness to novel experiences was also significantly and negatively associated with personal weapons part 2 test. However, as discussed earlier in this paper, this finding is inconsistent with the openness to novel experiences concept, and should be treated with caution.

3.2.2.2 Weapons Safety

Wald's t tests demonstrated that none of the structured interview questions uniquely predicted performance on the weapons safety performance domain (Table 21). In addition, the overall block of the SIQ was not significant in predicting success at the weapons safety test, $\chi^2(6) = 8.45$, $-2LL = 85.73$, ns.

Table 21: Logistic Regression Assessing the Relationships between the SIQ and Weapons Safety

	B	Exp (B)	Wald's T Test	χ^2
SIQ				8.45
Work ethic	-0.09	0.91	0.07	
Organizational citizenship	-0.25	0.78	0.42	
Openness to novel experiences	-0.55	0.58	2.6	
Dependability	0.08	1.1	0.06	
Achievement orientation	-0.12	0.89	0.13	
Stress management	-0.11	0.90	0.11	

3.2.2.3 Negligent Discharge

Wald's t tests demonstrated that openness to novel experiences was negatively correlated with success on the negligent discharge test, when other SIQ was statistically taken into account (Table 22). However, the overall block of the SIQ was not significant in predicting success at negligent discharge test, $\chi^2(6) = 9.85$, $-2LL = 81.26$, ns.

Table 22: Logistic Regression Assessing the Relationships between the SIQ and Negligent Discharge

	B	Exp (B)	Wald's T Test	χ^2
SIQ				9.85
Work ethic	-0.18	0.84	0.29	
Organizational citizenship	-0.14	0.87	0.13	
Openness to novel experiences	-0.74*	0.48*	4.0*	
Dependability	0.03	1.0	0.01	
Achievement orientation	0.04	1.0	0.01	
Stress management	-0.09	0.92	0.06	

* $p < .05$

3.2.2.4 Handling Test

Wald's t tests demonstrated that none of the structured interview questions uniquely predicted performance on the handling performance domain (Table 23). In addition, the overall block of the SIQ was not significant in predicting success at the handling test, $\chi^2(6) = 12.29$, $-2LL = 102.21$, ns.

Table 23: Logistic Regression Assessing the Relationships between the SIQ and Handling Test

	B	Exp (B)	Wald's T Test	χ^2
SIQ				12.29
Work ethic	-0.28	0.76	0.23	
Organizational citizenship	-0.30	0.74	0.33	
Openness to novel experiences	-0.66	0.52	1.9	
Dependability	-0.19	0.82	0.12	
Achievement orientation	-0.07	0.94	0.02	
Stress management	-0.54	0.59	1.3	

3.2.2.5 Drill

Wald's t tests demonstrated that none of the structured interview questions uniquely predicted performance on the drill performance domain (see Table 24). In addition, the overall block of the SIQ was not significant in predicting success at the drill test, $\chi^2(6) = 5.51$, $-2LL = 96.79$, ns.

Table 24: Logistic Regression Assessing the Relationships between the SIQ and Drill

	B	Exp (B)	Wald's T Test	χ^2
SIQ				5.51
Work ethic	-0.36	0.70	0.36	
Organizational citizenship	-0.32	0.73	0.35	
Openness to novel experiences	-0.56	0.57	1.3	
Dependability	0.03	1.0	0.00	
Achievement orientation	0.01	1.0	0.00	
Stress management	-0.05	0.95	0.01	

3.2.2.6 First Aid (Practical)

Wald's t tests demonstrated that openness to novel experiences was correlated with success at the first aid (practical) test, when the other SIQ items were statistically taken into account (see Table 25). However, the overall block of the SIQ just failed to reach significance in predicting success at the first aid test (practical), $\chi^2(6) = 12.61$, $-2LL = 94.20$, ns.

Table 25: Logistic Regression Assessing the Relationships between the SIQ and First Aids (Practical)

	B	Exp (B)	Wald's T Test	χ^2
SIQ				12.61+
Work ethic	-0.53	0.59	0.77	
Organizational citizenship	-0.02	0.98	0.00	
Openness to novel experiences	-1.3*	0.26*	6.1*	
Dependability	0.26	1.3	0.20	
Achievement orientation	0.38	1.5	0.55	
Stress management	-0.38	0.69	0.61	

+p=.05; *p<.05

3.2.2.7 CBRN (Practical)

Wald's t tests demonstrated that none of the structured interview questions uniquely predicted performance on the CBRN (practical) performance domain (see Table 26). In addition, the overall block of the SIQ was not significant in predicting success at the CBRN (practical) test, $\chi^2(6) = 7.63$, $-2LL = 89.68$, ns.

Table 26: Logistic Regression Assessing the Relationships between the SIQ and CBRN

	B	Exp (B)	Wald's T Test	χ^2
SIQ				7.63
Work ethic	-0.19	0.83	0.09	
Organizational citizenship	-0.32	0.72	0.33	
Openness to novel experiences	-0.76	0.47	2.1	
Dependability	0.10	1.1	0.03	
Achievement orientation	-0.09	0.91	0.03	
Stress management	-0.30	0.74	0.36	

3.2.2.8 General Safety (Practical)

Wald's t tests demonstrated that none of the structured interview questions uniquely predicted performance on the general safety performance domain (see Table 27). In addition, the overall block of the SIQ was not significant in predicting success at the general safety test, $\chi^2(6) = 5.66$, $-2LL = 88.51$, ns.

Table 27: Logistic Regression Assessing the Relationships between the SIQ and General Safety

	B	Exp (B)	Wald's T Test	χ^2
SIQ				5.66
Work ethic	-0.11	0.89	0.03	
Organizational citizenship	-0.40	0.67	0.50	
Openness to novel experiences	-0.59	0.56	1.1	
Dependability	-0.08	0.92	0.02	
Achievement orientation	-0.07	0.93	0.02	
Stress management	-0.17	0.85	0.10	

3.2.2.9 Memorandum

Wald's t tests demonstrated that none of the structured interview questions uniquely predicted performance on the memorandum performance domain (see Table 28). In addition, the overall block of the SIQ was not significant in predicting success at the memorandum test, $\chi^2(6) = 6.50$, $-2LL = 84.60$, ns.

Table 28: Logistic Regression Assessing the Relationships between the SIQ and Memorandum

	B	Exp (B)	Wald's T Test	χ^2
SIQ				6.50
Work ethic	0.00	1.0	0.00	
Organizational citizenship	-0.46	0.63	0.73	
Openness to novel experiences	-0.59	0.56	1.2	
Dependability	0.12	1.1	0.04	
Achievement orientation	-0.35	0.70	0.44	
Stress management	-0.19	0.82	0.14	

3.2.2.10 Categorical Variables: Summary

Overall, for the pass or fail grade courses, the SIQ did not predict training performance of new recruits. Although openness to novel experiences predicted success in some of the training domains when other structured interview questions were statistically controlled for, the SIQ overall did not predict performance in any training domain. Therefore, the unique predictive ability of the SIQ (over and above the CFAT) was not examined. This evidence suggests that the SIQ lacks predictive validity for the training courses with pass or fail grades.

4 CONCLUSION

Various researchers have found that the FFM of personality is predictive of training and job performance (Mount and Barrick, 1995; Schmidt and Hunter, 1998). Conscientiousness and neuroticism are particularly strong predictors of work and training performance (Mount and Barrick, 1995; O'Keefe, 1999, 1998; Schmidt and Hunter, 1998). People high in conscientiousness typically perform well on training and at work, while those high in neuroticism generally find it difficult to perform well in training and work environments (Mount and Barrick, 1995). In general, personality accounts for incremental variance in global job performance beyond that explained by general intelligence and previous job experience (Barrick and Mount, 1991; Barrick, Mount, and Judge, 2001; Ones and Viswesvaran, 1996). In addition, personality demonstrates significant incremental predictive ability when used in conjunction with more traditional selection tools such as cognitive ability tests, unstructured interviews, and structured interviews (Schmidt and Hunter, 1998). The evidence suggests that an ideal job applicant should be high in conscientiousness, extraversion, openness to new experiences, and agreeableness, and low in neuroticism.

Previous research has indicated that personality testing could be used advantageously in the selection of military personnel (Black, Skomorovsky, and Johnston, 2006; O'Keefe, 1998; 1999). For instance, TSD personality inventory scores significantly predicted training performance among CF NCMs and officers (Grandmaison, 2007; O'Keefe, 1998; Skomorovsky, 2008). This complements research in the civilian sector that supports the use of personality measures to predict various aspects of job performance (Barrick, Mount and Judge, 2001; Hurtz and Donovan, 2000; Ones and Viswesvaran, 1996; Salgado, 2003). Research suggests that assessment of personality during recruitment improves the selection system, especially among occupations involving higher levels of stress. For example, Scholtz (2003) notes that incorporating personality measures into the selection systems of high stress military occupations could reduce attrition and course failures, save the organization large amounts of monetary and training resources, and avoid negative personal consequences for individuals.

Realization of the need for psychological screening among high stress military occupations has led to the incorporation of personality measures in the selection of some high-stress occupations in the CF, such as snipers (Girard and Scholtz, 2005; Scholtz and Girard, 2004). Moreover, implementation of a personality measure into the general CF selection process may increase performance in training and on the job, as well as decrease job dissatisfaction and attrition across a wide range of occupations (e.g., Skomorovsky, 2008). Consistent with these arguments, the SIQ was developed to assess personality of CF candidates (PPD 102, 2006). The SIQ was developed based on the FFM of personality (Martineau, personal communication, 2008). However, there has been no prior research examining the psychometric properties of the questions, the convergent validity with validated measures of personality, or the predictive validity with desirable outcome measures, such as job and training performance.

In light of the gaps in the research, the present study was conducted to examine the utility of using the SIQ to assess personality. First, convergent validity of the SIQ was assessed using established personality inventories, the TSD-PI, NEO-PI-R, and HEXACO, as 'gold standard' measures of comparison. The results of the study demonstrated that the SIQ was not consistent with any of the relevant factors of the comparison measures. Therefore, in order to use SIQ

method for selection, alternative questions should be developed to map better onto the FFM of personality. Furthermore, it is important to take into account that some facets of the five factors are more important to organizational settings and work related outcomes than others (Darr, 2008). For example, it was found that dutifulness, achievement striving and self discipline facets of conscientiousness were more relevant to work environment than deliberation, whereas tendermindedness, trust, and straightforwardness facets of agreeableness were found to be more relevant to work related outcomes than altruism (for review, see Darr, 2008). Similarly, gregariousness and activity facets of extraversion were found to be more relevant to the work environment than excitement seeking (Chamorro-Premuzic and Furnham, 2003). Among neuroticism facets, vulnerability and impulsiveness were found to be the key predictors of job outcomes (Schouwenburg and Lay, 1995), whereas among openness to new experiences facets, the facet of ideas was the most relevant to the work and training performance (Blickle, 1996). Thus, the facets that are more relevant to the work environment should provide the base for the development of the new structured interview questions.

Second, the ability of the SIQ to predict performance on Basic Training among privates was examined. Results demonstrated that some structured interview questions were correlated with some performance domains. Specifically, work ethic and stress management were associated with greater training performance on four domains: military knowledge, first aid theory, force protection operations, general safety (stress management only), and educational objectives (work ethic only). In addition, dependability was associated with greater training performance on three domains: regulations, force protection operations, and educational objectives. Finally, organizational citizenship was associated with greater performance on the educational objectives course and openness to novel experiences⁸ was associated with greater training performance on the military regulations course. However, it seems that the SIQ overall was not consistently associated with greater training performance. Furthermore, the SIQ overall did not predict training performance in any of the continuous or categorical domains. Although the proposed analyses included examining the unique ability of the SIQ to predict training performance over and above the CFAT, given the lack of predictive validity, the unique validity analyses could not be conducted.

The data demonstrated that the SIQ did not predict basic training performance. It is possible that basic training performance is not the best criterion to demonstrate the ability of personality to explain variance in job or training performance. Kierstead (1998) stated that personality assessment is much more useful in predicting 'contextual job performance' as opposed to technical aspects of job performance, where the contextual refers to the interpersonal relationships, personal effectiveness, and person-organization fit. Although personality may better explain variance in more advanced levels of training and more complex organizational behaviours than in more basic training courses, it is important to take into account that the same basic training performance outcome was significantly predicted by an established personality measure, the TSD-PI, in the same sample of privates (Skomorovsky, 2008). Therefore, it seems that while personality is an important predictor of training performance, the currently used SIQ lacks both convergent and predictive validity and should not be used for the selection of CF candidates. Given the evidence on both convergent and predictive validity (see Skomorovsky,

⁸ Openness to novel experiences was also significantly and negatively associated with personal weapons part 2 test. However, as discussed earlier in this paper, this finding is inconsistent with the openness to novel experiences concept, and should be treated with caution.

2008 for a comprehensive review), the TSD-PI seems to be a better alternative for personality assessment among new CF recruits.

While this study suggests replacing the SIQ with the TSD-PI, future research should consider follow-up options for the individuals who fail to obtain the minimum scores required. When important selection decisions are based on a personality test, it is advisable to use multiple forms of assessment when assessing personality (e.g., Fredette, 2008). When an individual fails to reach the minimum score on the TSD-PI, a follow-up option can be considered to confirm that the individual is not psychologically fit for the CF in general or for a particular CF occupation. Failure on the self-report personality scale can be due to the potential susceptibility to mood-state effects or misunderstanding of the questions or concepts (Widiger & Sanderson, 1995; Zimmerman, 1994). In this case, a validated structured interview might be the best option, because it would provide additional validity to the selection process, allowing additional probes, clarifying answers, and asking for specific examples of each trait (Stepp, Trull, Burr, Wolfenstein, and Vieth, 2005; Zimmerman, 1994). For example, the Structured Interview for the Five Factor Model of Personality (SIFFM) was developed by Trull and Widiger (1997) to assess the five factors of personality and assess adaptive and maladaptive personality traits. Demonstrating internal consistency, reliability over time (Stepp, Trull, Burr, Wolfenstein, and Vieth, 2005), and a strong convergent validity with the NEO-PI-R (Costa & McCrae, 1992; Trull *et al.*, 1998), this structured interview questionnaire can be a good option for the TSD-PI follow-up.

4.1 Limitations

It is important to note that methodological constraints of the current study may negatively impact the generalizability of the results. In an ideal research situation, all applicants to the CF would be hired and assessed with the measure under investigation (the SIQ). This would allow an examination of the personality traits of all CF applicants. In this study, given that personality data was available only for individuals who passed the CFAT, the individuals were partly pre-selected based on cognitive ability. Furthermore, it is possible that the individuals were also pre-selected on the SIQ, as individuals who failed the SIQ were not selected into the CF. Therefore, the SIQ might have been an effective pre-screening tool but not an effective tool to predict basic training performance for individuals who have already been selected. Given that all CF recruits are pre-screened on the CFAT and the SIQ, it is not possible to avoid this limitation in the research design. It is important to consider these limitations when examining the results of this study.

Most of the courses had pass or failure scores reducing the power to detect significant differences on the SIQ between individuals who passed and those who did not pass the training. Furthermore, due to the low difficulty level of the courses, most of the candidates passed the courses, resulting in a lack of range in scores. Thus, NCMs' basic training is not a good criterion to assess performance in the military. Moreover, in this study only the English version of the personality questionnaires was used, which might have limited the sample of respondents to anglophones. In order to ensure the relationships between the SIQ and basic training performance are the same among francophones, another study should be conducted with the French version of the SIQ and the personality questionnaires. Finally, although recent research demonstrated that personality is an important predictor of volunteer withdrawal of new privates

(e.g., Skomorovsky, 2009), the links between SIQ and volunteer withdrawal was not examined in this study. Therefore, future research should examine the roles of SIQ and self-report personality questionnaires in the decision to voluntarily withdraw from the CF after Basic Training.

4.2 Recommendations

In the current analysis, the SIQ was found to lack both convergent and predictive validity. Therefore, it is recommended to not use the SIQ as a personality assessment in the selection of new recruits in the present form. Development of new questions for the structured interview, mapping onto the five factors of personality, is required.

An alternative method to assess personality of CF candidates is a standardized personality inventory. Previous research demonstrated that the TSD-PI could predict variance in training performance among both Officers and NCMs (e.g., O’Keefe, 1998; Skomorovsky, 2008). Furthermore, previous research demonstrated that the 75-item factor-level version of the TSD inventory is consistent with well-established measures of personality, such as the NEO-PI-R and the HEXACO-PI. It is therefore recommended that the current proxy for personality assessment, the SIQ, be replaced with the TSD-PI, which was found to have good psychometric properties, as well as to have good convergent and predictive validity (O’Keefe, 1998; Skomorovsky, 2008). The TSD-PI should be further investigated as a potential selection measure for CF occupations. Specifically, it is important to examine the ability of the 75-item version of the TSD-PI to predict variance in performance when more advanced training courses and more complex job-related behaviours are considered as criteria. In addition, future research should be conducted to determine the norms for the five factors of the TSD-PI.

While this study suggests replacing the SIQ with the TSD-PI, which was previously found to have both convergent and predictive validity and demonstrated utility in the selection of the new recruits (e.g., Skomorovsky, 2008), it is important to examine follow-up options for the individuals who fail to obtain the minimum scores required. A validated structured interview might be the best follow-up option.

References

- [1] Abram, C.M. and Elshaw, C.C. (1997), *Predicting voluntary withdrawal from the Royal Military Academy Sandhurst*. DERA/CHS/HS3/CR97071/1.0, November 1997. Farnborough, Hampshire: Defence Evaluation and Research Agency.
- [2] Barrick, M.R. and Mount, M.K. (1991), The big five personality dimensions and job performance: A meta- analysis. *Personnel Psychology*, 44, 1-26.
- [3] Barrick, M.R., Mount, M.K. and Judge, T.A. (2001), Personality and performance at the beginning of a new millennium: What do we know and where do we go next? *Personality and Performance*, 9, 9-30.
- [4] Bateman, T.S. and Crant, J.M. (1993). The proactive component or organizational behaviour: A measure and correlates. *Journal of Organizational Behavior*, 14, 103-118.
- [5] Black, M.S. (1999). *The Efficacy of Personality and Interest Measures as a Supplement to Cognitive Measures in the Prediction of Military Training Performance*. Master's thesis, Saint Mary's University, Halifax, Nova Scotia, Canada.
- [6] Black, L.E., Skomorovsky, A., and Johnston, P.J. (2007). *The Prediction of Aerospace Controller Training Performance Using the Trait-Self Descriptive Inventory*. Technical Report 2007-12, (in press). Director Personnel Applied Research, National Defence Headquarters, Ottawa, Ontario, Canada.
- [7] Blickle, G. (1996). Personality traits, learning strategies, and performance. *European Journal of Personality*, 10, 337-352.
- [8] Boyes, F.A.J. (2006). *The Trait-Self Descriptive Inventory: An Examination of the Psychometric Properties and Exploration of an Abbreviated Version*. Technical Note 2006-02 submitted for publication. Director Human Resources Research and Evaluation, National Defence Headquarters, Ottawa, Ontario, Canada.
- [9] Chamorro-Premuzic, T. & Furnham, A. (2003). Personality traits and academic examination performance. *European Journal of Personality*, 17, 237-250.
- [10] Costa, P.T. Jr. and McCrae, P.R. (1988). Personality in adulthood: A six-year longitudinal study of self-reports and personality ratings on the NEO Personality Inventory. *Journal of Personality and Social Psychology*, 54, 853-863.
- [11] Costa, P.T. and McCrae, R.R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources, Inc.
- [12] Costa, P.T. Jr. and McCrae, P.R. (1995). Domains and facets: Hierarchical personality assessment using the revised NEO personality inventory. *Journal of Personality Assessment*, 64, 21-50.

- [13] Darr, W. (2008). *The Trait Self Descriptive (TSD) Inventory: A Facet-Level Examination*. Technical Memorandum 2008 (in press). Director of Military Personnel Operational Research and Analysis, National Defence Headquarters, Ottawa, Ontario, Canada.
- [14] Fredette, M.K. (2008). Semi-structured diagnostic interviews and peer reports for personality disorder assessment. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 69, 675.
- [15] Garson, D.G. (2008). *Statnotes: Topics in Multivariate Analysis*. Online Textbook in Statistics. <http://faculty.chass.ncsu.edu/garson/PA765/statnote.htm>
- [16] Girard, M.L. and Scholtz, D.C. (2005). *Trial of the Psychological Screening Program for Sniper Selection in the Canadian Forces*. Conference Paper 2005-01. Director Human Resources Research and Evaluation, National Defence Headquarters, Ottawa, Ontario, Canada.
- [17] Grandmaison, L. (2007). *Assessing the Incremental Validity of Personality on Direct Leadership in the Canadian Forces*. Doctoral Dissertation, Carleton University, Ottawa.
- [18] Howard, A., and Bray, D. W. (1988). Managerial lives in transition: Advancing age and changing times. *Adult Development and Aging*. New York: Guilford Press.
- [19] Hurtz, G.M. and Donovan, J.J. (2000), Personality and Job Performance: The Big Five Revisited. *Journal of Applied Psychology*, 85, 869-879.
- [20] Jones, D.K., Uggerslev, S., Paquet, S., Kline, T., and Sulsky, L. (2000). *Validation of the Trait-Self Description Inventory Factors Using Basic and Advanced MOC Course Results and Self-Reported Job Performance*. Contractor's Report 00-08. Director of Human Resource Research and Evaluation, Ottawa, Ontario, Canada.
- [21] Judge, T.A. and Bono, J.E. (2000). Five-factor model of personality and transformational leadership, *Journal of Applied Psychology*, 85, 751-765.
- [22] Judge, T.A., Higgins, C.A., Thoresen, C.J., and Barrick, M.R. (1999). The Big Five personality traits, general mental ability, and career success across the life span. *Personnel Psychology*, 52, 621-652.
- [23] Judge, T.A., Martocchio, J.J. and Thoresen, C.J. (1997). Five-factor model of personality and employee absence. *Journal of Applied Psychology*, 82, 745-755.
- [24] Kierstead, J. (1998). *Personality and Job Performance: A Research Overview*. Research Directorate Policy, Research and Communications Branch, Public Service Commission of Canada.
- [25] Kickul, J. and Neuman, G. (2000), Emergent leadership behaviours: The function of personality and cognitive ability in determining teamwork performance and KSAs. *Journal of Business and Psychology*, 15, 27-51.

- [26] Lee, K. and Ashton, M.C. (2004). Psychometric Properties of the HEXACO Personality Inventory. *Multivariate Behavioral Research*, 39, 329-358.
- [27] Martineau, Y., (2008). *Personal Communication*. National Defence Headquarters, Ottawa, Ontario, Canada.
- [28] McCaulley, M. (1990). The Myers-Briggs Type Indicator and leadership, in K.E. Clark and M.B. Clark (Eds.), *Measures of leadership* (pp. 381-418). NJ: Leadership Library of America, West Orange.
- [29] McCrae, R.R. (1989). Why I advocate the Five-Factor Model: Joint analyses of the NEO-PI and other instruments, in D.M. Bass and N. Cantor (Eds.), *Personality Psychology: Recent Trends and Emerging Directions* (pp. 237-245). New York: Springer-Verlag.
- [30] McHenry, J. J., Hough, L. M., Toquam, J. L., Hanson, M. A., and Ashworth, S. (1990). Project A validity results: The relationship between predictor and criterion domains. *Personnel Psychology*, 43, 335-354.
- [31] Mount, M.K. and Barrick, M.R. (1995). The Big Five personality dimensions: Implications for research and practice in human resources management, in G.R. Ferris (Ed.), *Research in Personnel and Human Resource Management* (pp. 153-200). JAI Press.
- [32] O'Keefe, D.F. (1998). *Investigating the Use of Occupational Personality Measures in the Canadian Forces Selection System*. Technical Note 98-14. Director Human Resources Research and Evaluation, National Defence Headquarters, Ottawa, Ontario, Canada.
- [33] O'Keefe, D.F. (1999). *Development of an Optimal Trait-Self Descriptive Inventory (T-SD) Profile for Military Police Applicants*. Technical Note 99-2. Director Human Resources Research and Evaluation, National Defence Headquarters, Ottawa, Ontario, Canada.
- [34] Ones, D.S. and Viswesvaran, C. (1996). Bandwidth-fidelity dilemma in personality measurement for personnel selection. *Journal of Organizational Behavior*, 17, 609-626.
- [35] Personnel Psychology Directive 102 (2006). A-PM-241-001 *Personnel Selection Services Manual*. Ottawa, Ontario, Canada.
- [36] Salgado, J.F. (2003). Predicting job performance using FFM and non-FFM personality measures. *Journal of Occupational and Organizational Psychology*, 76, 323-346.
- [37] Schmidt, F.L. and Hunter, J.E. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin*, 124, 262-264.
- [38] Scholtz, D.C. (2003). *The Validity of Psychological Screening Measures Across the Performance Domain in the Canadian Forces*. Sponsor Research Report 2003-03. Director Human Resources Research and Evaluation, National Defence Headquarters, Ottawa, Ontario, Canada.

- [39] Scholtz, D.C. and Girard, M.L. (2004). *The Development of a Psychological Screening Program for Sniper Selection*. Technical Note 2004-05. Director Human Resources Research and Evaluation, National Defence Headquarters, Ottawa, Ontario, Canada.
- [40] Schouwenburg, H.C. & Lay, C.H. (1995). Trait procrastination and the Big Five factors of personality. *Personality and Individual Differences*, 18, 481-490.
- [41] Schwartz, S. (1999). *The Use of Personality Measures in Personnel Selection*. Technical Note 99-16. Director Human Resources Research and Evaluation, National Defence Headquarters, Ottawa, Ontario, Canada.
- [42] Skomorovsky, A. (2009). *The Role of Personality in the Psychological Well-Being of New Recruits*. Technical Memorandum 2009-xx. (in press). Director General Military Personnel Research and Analysis, Ottawa, Ontario, Canada.
- [43] Skomorovsky, A. (2008). *The 75-Item Trait-Self Descriptive Personality Inventory (TSD-PI): Examining Convergent and Predictive Validity in a Sample of Privates*. Technical Memorandum 2008-036. DRDC CORA, Ottawa, Ontario, Canada.
- [44] Skomorovsky, A., Nisbet, E., Westmacott, R., Matheson, K., and Anisman, H. (2004). *Stress and Depression: The Role of Personality, Self-Esteem and Coping*. Paper presented at the Annual Convention of the Canadian Psychological Association, Newfoundland.
- [45] Smith, G.A. (2009). *Air Space Controller: Validation of Selection System*. Technical Memorandum, (in press). Director General Military personnel Research and Analysis, Ottawa, Ontario, Canada.
- [46] Stanley, L., Crawford, S.L., and Fiedler, E.R. (1991). Development and current status of USAF mental health screening. *Military Medicine*, 156, 596-598.
- [47] Stepp, S.D., Trull, T.J., Burr, R.M., Wolfenstein, M. and Vieth, A.Z. (2005). Incremental Validity of the Structured Interview for the Five-Factor Model of Personality (SIFFM). *European Journal of Personality*, 19. Special issue: Personality and Personality Disorders, 343-357.
- [48] Trull, T.J., and Widiger, T.A. (1997). *SIFFM: Structured Interview for the Five-Factor Model of Personality, professional manual*. Odessa, FL: Psychological Assessment Resources.
- [49] Trull, T.J., Widiger, T.A., Ueda, J.D., Holcomb, J., Doan, B.T., Axelrod, S.R., Stern, B.L., and Gershuny, B.S. (1998). A structured interview for the assessment of the Five-Factor Model of Personality. *Psychological Assessment*, 10, 229-240.
- [50] Vanderpool, M.A. (2003). *Finding a Suitable Alternative to the Canadian Forces Aptitude Test for Selecting Canadian Aboriginal Peoples*. Technical Note 2003-04. Director Human Resources Research and Evaluation, National Defence Headquarters, Ottawa, Ontario, Canada.

- [51] Watson, D. and Clark, L.A. (1997). Extraversion and its positive emotional core, in Hogan, R., Johnson, J. and Briggs, S. (Eds.), *Handbook of Personality Psychology* (pp. 767-793). San Diego, CA: Academic Press.
- [52] Widiger, T.A., and Sanderson, C.J. (1995). Assessing personality disorders, in I.N. Butcher (Ed.), *Clinical personality assessment: Practical approaches*, 380-394. New York: Oxford University Press.
- [53] Zimmerman, M. (1994). Diagnosing personality disorders: A review of issues and research methods. *Archives of General Psychiatry*, 51, 225-245.

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The present study investigated the utility of using the Structured Interview Questionnaire (SIQ) as a part of the Canadian Forces (CF) selection system to assess personality of CF candidates. The convergent and predictive validity of the SIQ was assessed. The convergent validity of the SIQ was examined by comparing the measure to established measures of personality. The results of the study demonstrated that the SIQ is not consistent with the relevant factors of the comparison measures. In addition, the ability of the SIQ to predict basic training performance for privates was examined. Some of the structured interview questions were associated with better training performance. Specifically, work ethic and stress management were associated with greater performance on four training domains, dependability was associated with greater performance on three training domains, and organizational citizenship and openness to novel experiences were each associated with greater training performance on one training domain. However, the SIQ overall did not significantly predict performance in basic training. Therefore, there was no evidence for the convergent or predictive validity of the SIQ in this study. It is recommended that the SIQ be replaced with the Trait Self-Descriptive Personality Inventory (TSD-PI), which was previously found to be a good measure of personality and a good predictor of basic training performance in the CF.

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