COGNITIVE, PERSONALITY, AND BIODATA PREDICTORS OF POLICE
ACADEMY ATTRITION

by

Lauren P. Hewgley

A Thesis Submitted to the
Faculty of the College of Graduate Studies at
Middle Tennessee State University
in Partial Fulfillment
of the Requirements for the Degree of
Master of Arts
in Industrial-Organizational Psychology

Murfreesboro, TN
May 2013

Thesis Committee:

Dr. Patrick McCarthy

Dr. Judith Van Hein

Dr. Terrell McDaniel

To my parents, for all your love and support.

ABSTRACT

Research on selection methods for law enforcement officers has spanned one hundred years. Today, multiple predictors are used to predict a variety of traits and behaviors of police candidates that can lead to successful job performance. The current study provides an exploratory analysis of a test battery, developed by the Institute for Forensic Psychology (IFP), in the prediction of attrition from the police academy. The IFP battery contains tests that measure cognitive ability, personality, and biodata indicators. Previous studies have focused on the validity of the IFP battery in predicting the performance of a police officer. The present study sought to extend the current research by focusing on the prediction of a specific area of concern: attrition from the police academy.

This study found several subscales of IFP measures to be predictive of attrition from the police academy. Additionally, the percent accuracy of the prediction model was assessed. Limitations of the current study are discussed with suggestions for future research.

TABLE OF CONTENTS

LIST OF TABLES

Chapter I: Introduction

The History of Psychological Testing in Police Selection

The history behind the development of what we know today as a structured law enforcement selection process has spanned almost one hundred years. Terman (1917) published his findings in the first issue of the Journal of Applied Psychology. He was asked to screen a group of police and firefighter applicants using the Stanford-Binet IQ test for the purposes of employment. He found the average IQ of that group to be 84. He concluded from his findings that at least average intelligence (i.e., 90) is necessary to perform well as a law enforcement official and suggested that those candidates who score below an 80 should be precluded from the selection process. These results led to the conclusion that intelligence tests could be helpful in making selection decisions in the hiring of law enforcement officials.

The military began testing their recruits with the Army Alpha Intelligence test in the 1920s, and a focus on testing as a predictor of police performance and attitudes began to grow (Kitaeff, 2011). The use of tests other than for the purposes of intelligence testing came into use more in the 1930s, and in the 1950s personality tests began being utilized. These tests were first used for the selection of personnel for the Office of Strategic Services (OSS), which was the precursor for the Central Intelligence Agency (CIA) (Blum, 1964; Kitaeff, 2011). The use of psychological tests for the purpose of police selection became nationally recognized in the 60s and 70s. As stated in Kitaeff (2011), in 1967, the Presidential Commission on Law Enforcement and the Administration of Justice was released. This report stated that all law enforcement personnel should be required to go through a psychological screening process before being hired. This

movement eventually led to the development of the pre-employment screening process. Kitaeff (2011) stated that "by 1985, 11 states had passed statutes requiring police departments to psychologically screen their applicants, and by 1990, 64 percent of state police departments and 73 percent of municipal police departments required psychological screening" (p.5).

In the late 1970s and into the early 1980s, more effort was made to use police pre-employment procedures as a screening out process, as opposed to pinpointing the most qualified candidates (Beutler, Storm, Kirkish, Scogin, & Gaines, 1985). Tests designed for use in police selection gained popularity in the 1980s; some of the more popular tests at this time were the Minnesota Multiphasic Personality Inventory (MMPI), the California Psychological Inventory (CPI), and the Inwald Personality Inventory (IPI) (Cuttler, 2011). Using validated instruments has always been a priority in choosing test batteries for police selection, but an emphasis on job analysis as a basis for choosing these batteries were stressed more heavily in the early 1990s. This led to the use of personality assessments in the identification of job-related personality characteristics. These assessments were found to be useful in the pre-employment screening process, as well as for fitness for duty evaluations (FFDE), which are required of currently employed police officers for the purpose of re-establishing psychological fitness to continue performing essential duties (Kitaeff, 2011). In the late 1990s, psychological testing became part of the post-conditional hiring phase (i.e., candidates are offered a conditional position before undergoing psychological testing). Due to the association of some psychological areas overlapping with medical concerns, the pre-employment psychological screening phase cannot occur until after the police candidate has been

allowed a conditional offer of employment. This practice is in compliance with the

Americans with Disabilities Act (ADA) (Ben-Porath, Fico, Hibler, Inwald, Kruml, &

Roberts, 2011; Cuttler, 2011).

The Department of Justice (Reaves, 2010) conducted a survey of police

departments in 2007 to specify how many departments use psychological screening

methods and how many are using personality testing as a part of those methods. Findings

demonstrated that 98% of departments that serve 25,000 or more citizens use a

psychological assessment as part of their screening process. Furthermore, 48% of

departments utilized written aptitude tests and 46% acknowledged using personality

inventories as part of their screening process. These percentages were even higher for

departments that serve more than 25,000 citizens. They reported that over 80% of

departments utilized written aptitude tests and over 60% of departments used personality

inventories. It was also found that more screening methods have been implemented in the

hiring process since 2003. The screening method with the largest increase in use was

personality inventories which grew from use for 47% of screened officers in 2003 to 66%

in 2007.

In 2010, 26 states had standard requirements for pre-employment psychological

screening of police candidates (Dantzker, 2011). According to Ben-Porath et al. (2011),

pre-employment psychological assessments should be comprised of a written test battery,

including a minimum of two psychological test instruments that screen for job-related

criteria. This criterion should relate to areas proven to have a relationship with good

performance as a police officer. Furthermore, these instruments should be standardized

for use with law enforcement populations. The assessment should then conclude with a structured interview by a psychologist.

Utility of Psychological Testing for Police Selection

The purpose of a good assessment instrument in police selection is its ability to predict performance once on the job. The utility of a selection procedure can only be established through empirically researching the relationship between predictors of performance and actual performance (Jacobs, Cushenberg, & Grabarek, 2011; Spielberger, Ward, & Spaulding, 1979). There are several aspects of police work that should be taken into account when evaluating candidates during the selection process. Police work is complex, there are several novel situations that can occur on a daily basis, and an interpersonal connection between the officer and the community is important. This type of work requires a variety of knowledge, skills, abilities, and other characteristics (KSAOs), which are better assessed through multiple psychological tests (Froemel, 1979; Jacobs et al., 2011).

There is a need for police officers who can adapt to changing situations, possess good coping mechanisms, and retain a willingness for exposure to dangerous circumstances (Beutler, Nussbaum, & Meredith, 1988). Effective selection procedures can help determine which police candidates can develop group norms and work better together in a large group. Qualities of the job of police officer that enhance group cohesiveness include protecting each other in dangerous situations, and a dedication to the job (Burkhart, 1980).

Pre-employment psychological screening is necessary to allow for those officers that are selected to be prepared to deal with the types of stressors typical of police work.

Possible sources of stress can include permission for use of deadly force when considered

necessary (Arrigo & Clausen, 2003; Nietzel & Hartung, 1993). Law enforcement is one

of the few professions that allow employees to carry firearms and use excessive force

when necessary (Shaffer, 2002). Use of these screening tools is essential in establishing a

candidate's ability to withstand high levels of stress and ability to deal with the cognitive

and emotional burdens of police work (Aumiller & Corey, 2007). One quality that is

expected of police officers is to have the proper interpersonal skills by which to

communicate with civilians (Gaines & Falkenberg, 1998). Pre-employment

psychological screening should be conducted as a screening out process to eliminate

unqualified police candidates. More emphasis is placed on the screening out process as it

is less discriminatory in nature. Screened out candidates will be deemed unsuitable in

several areas before they are removed from the selection process. (Dantzker, 2011;

Fabricatore, 1979; Gallo & Halgin, 2011, Lefkowitz, 1977) Measures used for selection

purposes should certify that the personality traits identified to ensure suitability match the

content of the job. The longer period of time allowed in observing police candidates

permits for more job-related information to be collected (Black, 2000; Cascio &Real,

1979; Jacobs et al., 2011). This is the reasoning behind the multiple-hurdle approach used

in police selection. The purpose is to narrow the number of recruits down to those

candidates that will be successful in a law enforcement position. Some of the possible

hurdles to be passed before the psychological screening occurs can include tests of agility

and background investigations (Spielberger, Ward, & Spaulding, 1979). The utility of a

comprehensive selection procedure is paramount when one considers the safety of

civilians and the cost to departments, even if only a few candidates are screened out through the process (Shusman, Inwald, & Landa, 1984).

Murphy (1972) surveyed 203 local and state police jurisdictions across the United States on whether or not they used psychological assessments as part of their selection procedure. Results indicated that 43.9% of the local jurisdictions surveyed used psychological assessments for police selection, but only 13.3% of state jurisdictions used psychological assessments. Out of the total number of police departments surveyed (local and state); only 39.4% utilized psychological assessments as part of their selection procedure. Of the remaining 123 jurisdictions that reported they did not use testing as a screening tool, 23 (18.7%) stated that they would be using psychological testing procedures in the future. The number of jurisdictions that utilize selection procedures with psychological assessments has increased and become more routine over the years (Shusman, Inwald, & Landa, 1984).

Cochrane, Tett, and Vandecreek (2003) surveyed 155 city police departments of different sizes on how selective they were in the hiring process of candidates. Survey questions covered the selection process and procedures used by the department. The results suggested that 91.6% of the total number of departments surveyed reported that they used a selective process for the hiring of police candidates. This number included 73.5% of small departments, 94.3% of medium departments, and 98.5% of large departments. Thirty-six separate selection procedures using different test batteries were reported with no more than six departments using the same procedure. These results demonstrate that most of the jurisdictions surveyed utilize test batteries in selection, but that there are many different types of test batteries utilized for this purpose.

There are a few reasons why using psychological assessments as part of a strict selection procedure for police personnel can be useful. First, they can help reduce corruption and turnover, which is important due to the cost of selecting law enforcement officials and the time and money invested in training them (Arrigo & Claussen, 2003; Barrick & Zimmerman, 2005; Chung, 2010; Drew, Carless, & Thompson, 2008; Cochrane, Tett, & Vandecreek, 2003). Secondly, the screening out process is important to help reduce attrition from the training academy, as the training of police candidates can be expensive for the department (Lefkowitz, 1977).

Another reason for using a strict selection procedure is to reduce legal liability on the part of the police department. Unsuitable candidates can be a threat to the jurisdiction as well as to the community. As public entities, police jurisdictions can be sued for "wrongful employment, wrongful rejection, and/or failing to properly screen" (Cuttler, 2011, p.142) by candidates or by community members. The risk for using an ineffective screening battery is severe as the possibility of a police jurisdiction being sued for employing officers that are unfit for the position is omnipresent. Employing unfit personnel is considered a form of negligence (Kitaeff, 2011). This exemplifies the value of a sound and validated test battery. Another area of liability for police jurisdictions is discrimination against recruits. It is important that all selection procedures follow Title VII of the Civil Rights Act of 1964, which specifies that no employee can be discriminated against on the grounds of race, color, religion, sex, or national origin (Jacobs, Cushenberg, & Grabarek, 2011).

Common Predictors of Performance

Tests utilized in selection are used to establish suitability of the candidate for the role of police officer. There are many types of psychological assessments used in the selection of police personnel, including measures of cognitive abilities, personality, and social history (Cuttler, 2011; Lefkowitz, 1977). Early assessment procedures included tests of general mathematics, verbal, and cognitive skills. Additional tests were used to assess candidates' legal knowledge and awareness of the duties of a police officer (Beutler, Storm, Kirkish, Scogin, & Gaines, 1985). As has been the practice for several decades, police departments look for characteristics of candidates that meet the performance requirements of their particular department (Blum, 1964). This is why so many different test batteries are utilized for the purpose of police selection.

Beutler et al. (1985) conducted a study for the purpose of assessing whether psychological measures could predict subjective and objective performance measures. They described the purpose of their test design "… to index levels of psychological stability, intellectual ability, interpersonal needs, psychiatric symptoms, impulse/anger control, and the ability to organize and plan under stressful conditions" (Beutler et al., 1985, p.327). Test data were collected from three different types of police departments (inner-city, university, and community college) and compared to ratings of performance. They concluded that performance measures could be anticipated by psychological predictors that are measured during the selection process. The level of prediction was able to generalize across all three types of departments, suggesting that that a standardized screening process could generalize across police departments.

Cognitive tests. General cognitive ability is an average of more specific abilities (i.e., verbal aptitude, quantitative aptitude, and occasionally technical aptitude), or how quickly and how much one can learn new information. Cognitive ability is what determines how a person reacts to a novel situation at work, and has been found to be a better predictor of complex jobs as opposed to simple jobs. Overall, it has been established as a good predictor of job performance (Hunter, 1986). It has also been found to be a reasonable predictor of success in the police training academy (Pynes, 2001). Forero, Gallardo-Pujol, Maydeu-Olivares, and Andrés-Pueyo (2009) note that average cognitive abilities are necessary for a police officer to carry out his or her daily tasks (e.g., communication skills, attention to detail).

Judgment is a subcategory of cognitive ability that has been studied as a predictor of job performance. Performance is affected by one's ability to judge the best response to a particular situation. Although less focus has been placed on measuring judgment in regards to police work, research has looked at judgment in relation to job performance. Chan and Schmitt (2002) found that judgment is not only a good predictor of performance, but it can add incremental validity above and beyond cognitive ability, personality, and biographical indicators.

Personality tests. A primary emphasis of law enforcement selection efforts has been to study the link between personality traits and job performance, and in most cases personality has been found to be a good predictor of job performance (Hargrave & Hiatt, 1989; Tett, Jackson, & Rothstein, 1991). Kichuk and Wiesner (1998) described the role that personality plays in employee selection. Personality can add further confirmation of good performance beyond other predictors (e.g., cognitive ability). It can help in the

assessment of potential interpersonal skills, and can be paramount in selecting employees that have the greatest potential for working together and developing positive relationships. Screening for the personality characteristic of conscientiousness can be beneficial, as it has been shown to be associated with job performance (Arrigo & Clausen, 2003). One of the most pressing reasons for using personality variables in the selection process is to control the chances of a dangerous officer being allowed in such an authoritative position (Varela, Boccaccini, Scogin, Stump, & Caputo, 2004). Excessive authoritarianism can be a problematic quality among police officers, primarily because the role of police officer is an authoritative position. This trait is defined by Guller (2003) as "The pathological desire to dominate others, accompanied by rigid and judgmental attitudes" (p.8).

Barrick and Mount (1991) conducted a meta-analysis for the purpose of distinguishing which of the Big Five factors of personality Conscientiousness (i.e., responsible, dependable, achievement-oriented), Openness to Experience (i.e., imaginative, original, curious), Extraversion (i.e., sociable, gregarious, assertive), Emotional Stability (i.e., emotional, insecure, anxious), and Agreeableness (i.e., courteous, flexible, cooperative) are most predictive of performance across a variety of occupations, one of which was police officer. Conscientiousness was hypothesized to have the highest correlation to job performance as it encompasses several qualities that are necessary to succeed in the majority of tasks (e.g., organization, responsibility, and discipline). They found a .22 correlation for the prediction potential of conscientiousness with job performance, across all of the occupations included in the study. Law

enforcement was discovered to have the highest correlation with conscientiousness, followed by emotional stability and agreeableness.

Another study that used personality tests to predict performance of law enforcement candidates was conducted by Topp and Kardash (1986), in which they compared psychological data from a background questionnaire and the 16 Personality Factor Questionnaire (16PF) to scores at the conclusion of a law enforcement training academy. They found that the data did predict some level of success in the academy, but was a better predictor of attrition from the academy. This study supports the use of personality assessments in not only predicting performance, but predicting behaviors that could be costly to police departments.

Forero et al. (2009) studied the effect of personality and motivation on actual performance and how well training in the police academy predicts performance. Three different personality assessments were used to measure different facets of personality. Results demonstrated that job performance could be predicted by psychological data, but that the relationship was mediated by training. They also found that successful police officers tended to have higher emotional stability and conscientiousness than non-successful police officers. These findings add credence to previous studies that high emotional stability and conscientiousness are good indicators of performance.

Another study comparing successful to non-successful police applicants was conducted by Burbeck and Furnham (1984), in which successful applicants were found to be statistically different in traits of extraversion and emotional stability. Results indicated that a greater presence of extraversion and emotional stability are related to success in police work. One theory provided by the authors suggested that those applicants with

lower emotional stability may have a harder time coping with the stressors of police work.

An area of personality that has been found to be a helpful addition to the police screening process is locus of control. Locus of control refers to an individual's tendency to accredit outcomes of situations to either themselves or their surroundings. Those who have an internal locus of control are more likely to accredit these outcomes to themselves, whereas those who have an external locus of control tend to accredit them to the environment (Spector, 1982).

Hattrup, O'Connell, and Labrador (2005) sought to determine the validity of a measure of locus of control as a predictor of job performance without the influence of cognitive ability and conscientiousness. As locus of control is correlated with conscientiousness and general cognitive ability, they hypothesized that it would add incremental validity to the prediction of job performance. They further hypothesized that locus of control would be more closely tied to contextual performance over task performance. Results indicated that high internal locus of control is correlated with higher conscientiousness. It was found to correlate with three performance dimensions (task performance, job dedication, interpersonal facilitation) and to provide incremental validity beyond conscientiousness and cognitive ability. A meta-analysis conducted by Judge and Bono (2001) found a .22 correlation between locus of control and job performance, adding further support of its predictive capabilities and usefulness as an addition to selection procedures. One study that related locus of control to performance of law enforcement officials found that those individuals who have at least two years

employment in law enforcement tend to have a more internal locus of control (Graham, 1981).

Biodata tests. Biodata instruments can take the form of personal history questionnaires, meaning that the type of data provided by these questionnaires is descriptive of the individual's social history (Aumiller & Corey, 2007; Cuttler, 2011). Jacobs, Cushenburg, and Grabarek (2011) describe biodata as the "external actions or objective and discrete events that people have control over" (p.196). Biodata questionnaires have been proven successful in predicting future performance due to the premise that past behavior is a good predictor of future behavior. These items can identify specific characteristics of the person that are indicative of job performance (Cascio & Real, 1979; Jacobs et al., 2011; Mumford, Costanza, Connelly, & Johnson, 1996).

The motivation of the applicant and his or her desire to obtain a particular position are good predictors of intent to quit. Bio-data tests, which can measure a person's attitudes and intentions, are good predictors of turnover. Turnover represents a behavior that is driven by motivation, and therefore is important to study. Information could be applied during the selection process to help identify those recruits who are more likely to resign voluntarily. Measured during selection, these variables can screen out applicants who may quit once in the position (Barrick & Zimmerman, 2005). Topics that might be included in a social history questionnaire include military and employment history, education, driving, and arrest history (Chung, 2010). Cochrane et al. (2003) noted that gauging future potential through past behaviors and performance can be helpful information if assessed during the selection process.

Flynn and Peterson (1972) studied the relationship between psychological screening tools for police selection (including a biodata measure) and police academy performance. They averaged three scores based on relevant experience, a measure of job relevant skills of a police officer, and an oral panel review. Each score was compared to candidates' final score at the end of the academy training period. Relevant experience, as measured by the biodata instrument, was found to be the best predictor of performance in the academy.

Commonly Used Personality Tests

Different personality tests measure different factors. The most commonly used psychological tests in police selection are the Minnesota Multiphasic Personality Inventory (MMPI-2), the California Psychological Inventory (CPI), the Inwald Personality Inventory (IPI), and the NEO Personality Inventory (NEO-PI) (Dantzker, 2011; Gallo& Halgin, 2011; Jacobs et al., 2011; Ostrov, 1986), although there are several more tests currently in use by police departments. Personality tests used for the purpose of screening police candidates should be normed on police populations to be fully validated for the screening process. Tests of personality that are normed on the average population will be interpreted differently than those validated specifically for use with police (Arrigo & Claussen, 2003; Weiss & Weiss, 2011). Personality tests are used for the purpose of identifying candidates whose personality profiles match promising performers, and screen out those candidates whose profiles reflect that of poor performers. Some personality tests are used for the purpose of detecting pathology (i.e. MMPI), but most are used to assess job suitability (Jacobs et al., 2011). In a survey

conducted by Cochrane et al. (2003), police departments reported that they commonly use three or four different tests in their selection procedures.

Shaffer (2002) studied the predictive validity of demographic and personality data provided by the MMPI and Edwards Personal Preference Schedule (EPPS) on police performance. Results of the study indicated that several personality characteristics, as measured by the MMPI and EPPS, and demographic characteristics (e.g., high school grade point average) can be predictive of job performance. Personality assessments that measure typical personality traits, as opposed to tests of psychopathology (the presence of psychiatric disorders, Davison, 2004), have been found to have better predictive potential (Black, 2000).

Minnesota Multiphasic Personality Inventory (MMPI). The Minnesota Multiphasic Personality Inventory (MMPI) and a more recent version, the MMPI-2, is the most utilized personality test in police selection. It consists of 566 true or false questions. Used in an appropriate manner, it can help identify those candidates who have psychiatric disorders (Kitaeff, 2011). Results of studies with the MMPI have been mixed (Henderson, 1979). In a study by Varela et al. (2004), the authors found that the CPI was a better predictor than the IPI and MMPI. One suggestion was that the CPI measures normal aspects of personality, whereas the IPI and MMPI measure more deviant aspects of personality. The MMPI may not be the best personality assessment for the purpose of police selection as it is designed to predict psychopathology as opposed to job suitability (Barrett, Miguel, Hurd, Lueke, & Tan, 2003; Dantzker, 2011; Jacobs et al., 2011; Scogin, Schumacher, Gardner, & Chaplin, 1995). This may be due to its measurement of emotional stability as opposed to conscientiousness (Barrick & Mount, 1991).

California Psychological Inventory (CPI). The California Psychological

Inventory (CPI) consists of 434 items measuring four specific areas: Measures of Poise

(e.g., dominance, sociability, empathy), Measures of Normative Orientation and Values

(e.g., responsibility, self-control, tolerance), Measures of Cognitive and Intellectual

Functioning (e.g., achievement and intellectual efficiency), and Measures of Role and

Interpersonal Style (i.e., psychological mindedness, flexibility, femininity). This

personality measure focuses more on characteristics related to performance as opposed to

clinical disorders. Studies using this personality measure have found direct relationships

to police performance (Kitaeff, 2011).

In a meta-analysis conducted by Barrett et al. (2003) studies using self-report

personality inventories such as the CPI were analyzed as predictors of performance.

Performance was measured using supervisory ratings, training academy performance, or

objective performance such as the number of commendations received. Participants

included state troopers and city police. The results of the study indicated that the

relationship of personality with performance was affected by the type of test (e.g., CPI)

used to measure personality and the type of law enforcement personnel (e.g. state trooper,

city police officer) used in the sample.

The CPI contains four classes of scales that focus on psychological characteristics

related to interpersonal skills. Hargrave and Hiatt (1989) conducted two studies testing

the predictive validity of the CPI for performance as a law enforcement official. In the

first study, personality data were analyzed as a predictor of performance in the training

academy. In the second study, the CPI was evaluated as a predictor of job problems

among law enforcement officers. In study 1, the results demonstrated that candidates

rated unsuitable by training academy instructors had lower scores on their CPI profiles. This suggests that lower scores on the CPI could be related to poor performance. In study 2, there was a strong relationship between lower scores on Class II variables (maturity, personal values, self-control, sense of responsibility) and job problems among law enforcement officers. Those officers who had received disciplinary actions for serious job problems (e.g., providing drugs to inmates, illicit relationships with inmates, conviction for use of illegal drugs, unnecessary use of force) were found to have scored lower on the Class II scale. These results imply that the CPI could be a good assessment method for use in law enforcement selection when paired with other measures.

Sarchione, Cuttler, Muchinsky, and Nelson-Gray (1998) sought to assess both life history and personality measures in predicting the work behaviors of police officers. They hypothesized that conscientiousness could be considered a predictor of dysfunctional behaviors once the police officer is hired. Additionally, they sought to discover if specific scales of the CPI (Responsibility, Socialization, Self-Control), and specific life history items (Work history, Drug history, Criminal history) that are related to the trait of Conscientiousness, could distinguish between those individuals who have and have not engaged in dysfunctional job behaviors. Once analyzed, the three CPI scales were found to distinguish between the two groups, and the six CPI and life history scales combined were found to have a validity coefficient of .27. The life history items were also found to have predictive validity as those officers, who had previous problems with work, criminal behavior, and drug use, were more likely to have disciplinary problems on the job than those officers who did not have previous problems in those areas.

Inwald Personality Inventory (IPI). The Inwald Personality Inventory (IPI) was specifically developed for use in screening law enforcement applicants. Assessments designed specifically for the law enforcement population have been found to be more predictive of police officer performance through the screening of personality traits and relevant behaviors. It consists of 310 true or false questions and 25 scales spanning four areas: Acting out Behavior, Acting out Attitudes, Internalized Conflict, and Interpersonal Conflict. Studies using this measure have found it useful in predicting absences, lateness, termination, and disciplinary issues (Cuttler, 2011; Kitaeff, 2011; Scogin et al., 1995).

Shusman, Inwald, and Landa (1984) compared the MMPI and the Inwald Personality Inventory (IPI) to the retention and termination rates of correctional officers. Results showed that the IPI correctly identified 73% of the candidates for both retention and termination, while the MMPI only predicted 63% of the candidates. This suggests that although the IPI was found to be a better predictor than the MMPI within the law enforcement population, they are both helpful in designating those candidates that could have potential problems on the job.

NEO Personality Inventory (NEO-PI). Another assessment instrument that has gained some recognition in police selection is the NEO Personality Inventory (NEO-PI). The revised version (NEO-PI-R) has 240 items rated on a 1 to 5 scale (1 as strongly disagree and 5 as strongly agree) that cover five different domains (Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness). Within each domain are six facet scores. This assessment is used to predict job performance using the Big Five traits of personality (Detrick, Chibnall, & Luebbert, 2004).

In a literature review conducted by Arrigo and Claussen (2003), it was suggested that the NEO-PI-R could be used to successfully assess Conscientiousness, while antisocial behavior could be better measured by the IPI. It was further suggested that both measures are related to and can predict on the job performance of police officers. While the IPI is better at screening for counterproductive behaviors (e.g., abuse of authority or accepting bribes), the NEO-PI-R can better measure facets of Conscientiousness (e.g., responsibility, dependability, discipline) that have been found to be good predictors of police performance.

Black (2000) conducted a study in which he sought to test the predictive validity of personality traits beyond cognitive ability using the NEO-PI-R. He tested 284 police recruits from the New Zealand Police College and found that personality, as measured by the NEO-PI-R, is a good predictor of police performance. The trait of Conscientiousness was found to have the highest correlation ($r = .42$) with performance. Detrick, Chibnall, and Luebbert (2004) conducted a study in which results from the NEO-PI-R were analyzed with measures of absenteeism and police academy performance. Results indicated that absenteeism could be predicted by self-consciousness, a sub category of Neuroticism (higher scores predicted fewer days absent). The sub categories of Excitement-Seeking (Extraversion), Ideas (Openness to Experience), and Values (Openness to Experience) were found to significantly predict police academy performance. Results specified relationships between specific features of police academy performance and certain sub categories of the NEO-PI-R. This could suggest that coping mechanisms for stress could be evaluated using a five factor personality assessment.

Using the NEO-PI-R, the five factor personality traits were found to have predictive

validity regarding performance in the police academy.

Piedmont, McCrae, and Costa (1992) sought to assess whether the Edwards

Personal Preference Schedule (EPPS), a personality test developed from 15 of Murray's

manifest needs, could be interpreted in relation to the five factor model when compared

with the NEO-PI. Results suggested that the scales of the EPPS had several significant

positive correlations with scales of the NEO-PI. This adds credibility to the use of the

EPPS in police selection as a measure of job performance, as the NEO-PI has been found

to be a good predictor of police performance.

Utility of Multiple Predictors

Police departments reported that they commonly use three or four types of

assessments in their selection procedures (Cochrane et al., 2003). This process should

include a psychological assessment made up of a combination of tests and a structured

interview by a psychologist. Most of the research points to a combination of personality

and cognitive assessments as part of the selection procedure (Dantzker, 2011; Gallo &

Halgin, 2011; Kitaeff, 2011). Utilizing batteries of tests is suggested, as the information

gleaned from each individual test can provide additional information on a candidate's

psychological qualifications (Varela et al., 2004). Super (2006) conducted a survey of

federal, state, and local law enforcement agencies across the southeastern United States.

Results of this survey suggest that test batteries used in police selection should include

tests of "normal personality functioning" (p.87), tests of cognitive ability, and if

necessary, tests of psychopathology. Interviews should include questions of background

history such as employment, military, and social history, legal issues, substance abuse

problems, and physical health. As stated above, most of the research that has been conducted on the best practices of police selection suggests that multiple predictors of performance in a test battery are necessary. This includes, but is not limited to, tests of personality, cognition, and bio-data, followed by a structured interview. One organization that focuses specifically on the most effective and efficient pre-employment selection tests and processes, is the Institute for Forensic Psychology.

The Institute for Forensic Psychology (IFP)

The need is critical for effective instruments in assessing police candidate suitability. Care should be given to the combinations of tests that are used in police selection (Arrigo & Claussen, 2003; Barrett et al., 2003). The Institute for Forensic Psychology (IFP) was founded in 1971, with the center of operations located in New Jersey. As stated by Chung (2010), the IFP "Provides psychological services to over 700 municipal, state, and federal agencies in Australia, the Caribbean (Trinidad & Tobago), and the United States" (Chung, 2010, p.16). There are separate divisions of the IFP established all over the United States (e.g., Illinois, Maryland, Minnesota, New York, Pennsylvania, Tennessee, Texas, and Washington D.C.), each of which is headed by a licensed psychologist. The psychological services mentioned above include pre-employment psychological screenings and fitness for duty evaluations (FFDE) for law enforcement officials. There is a standard test battery established by IFP, but additional assessments (i.e., MMPI-2) can be added to the battery based on the purpose of the assessment (i.e., fitness for duty evaluation). All assessments include a structured interview by a licensed psychologist. The IFP standard battery assesses emotional stability, personality, and cognitive ability as well as social history. The battery included

in this study includes the Shipley Institute of Living scale as a measure of general

cognitive ability, the Candidate and Officer Personnel Survey (COPS) as a measure of

biodata predictors, the Edwards Personal Preference Schedule (EPPS) as a measure of

normal personality traits, the Social Opinion Inventory as a measure of locus of control,

the How Supervise as a measure of judgment, the Police Opinion Survey as a measure of

police attitudes, and the Speed Completion Form as a measure of attitudes and judgment

relating to authority

Utility of the IFP/Australian Institute for Forensic Psychology (AIFP)

Battery. Several studies have been conducted in the United States and Australia to test

the predictive validity of the IFP battery. The battery used in Australia (AIFP) consists of

the same tests used in the United States, which are normed in Australia to generalize to

Australian police officers.

In an effort to establish the predictive validity of the IFP battery, Guller (1994)

sought to test the relationship between psychological measures utilized for pre-

employment screening of police candidates and departmental performance ratings (i.e.,

overall rating, motivation rating, judgment rating, attitudes towards public rating, peer

relationships rating, acceptance of being supervised rating) of these same candidates once

hired. Predictor and performance data was collected for 169 police officers who had

been tested by the Institute for Forensic Psychology and hired into 50 separate, small

police departments in the Eastern United States. Time on the job ranged from six months

to three years for all subjects in this study. Through statistical analyses, several of the IFP

predictors were found to correlate with more than one of the performance ratings of

police officers. Specifically, the How Supervise level II score, the Police Opinion Survey,

the Self Discipline scale of the COPS, and the COPS prediction rating were found to positively correlate. The Impulsivity scale of the COPS was found to negatively correlate with performance ratings. The test battery as a whole was found to have the highest correlation of any of the separate assessments, showing that the predictive validity of the test battery was stronger in its entirety than any one individual assessment was on its own. This study adds evidence that the IFP battery is an effective battery in terms of selecting police officers that are rated high in their performance by supervisors.

Additionally, Heyer (1998) sought to assess the utility of the IFP battery in police selection. Specifically to determine the relationship between these psychological assessments used for the purpose of pre-employment screening of law enforcement officials and positive and negative characteristics of job performance. This study targeted the Minnesota Multiphasic Personality Inventory (MMPI-2), California Psychological Inventory (CPI), Edwards Personal Preference Schedule (EPPS), Candidate and Officer Personnel Survey (COPS), Social Opinion Inventory, and Police Opinion Survey. Test scores were compared to specific performance measures including supervisor ratings, number of citizen complaints, number of sick days, number of worker's compensation claims, and the number of motor vehicle accidents. Supervisor ratings were found to have a relationship with the Social Opinion Survey, the COPS Negative Attitude scale, and the MMPI-2 Hysteria scale. Of the objective test measures of performance (i.e., citizen complaints, sick days, worker's compensation claims), the EPPS Dominance and Autonomy scales, MMPI-2 Social Introversion scale, the COPS Socialized Adjustment scale, the How Supervise Level II score, and the structured interview were all good predictors. As a result of this study it is shown that a battery of

tests designed for the purposes of police selection, can be a good predictor of both positive and negative characteristics of job performance.

In another study by Guller (2003), archival data was collected for 345 police applicants from police agencies located in New Jersey, New York, and Connecticut by the branch of IFP located in New Jersey. Data was collected over a four year period, beginning with the testing data during selection. Supervisor ratings of officers were made available for the first four years of employment. Officers were rated on a 1-10 Likert scale over sixteen separate domains (i.e., motivation and initiative, relationships with co-workers, acceptance of supervision, follows chain of command, judgment, attitudes toward the public, follows departmental rules and regulations, flexibility, team attitude, overall performance; abuse of sick time, evidence of racial bias, problems in dealing with co-workers or citizens of the opposite sex, unrealistic feelings of being oppressed or harassed). These ratings were then compared to testing data to determine the predictive validity of the IFP tests. Tests utilized included the Edwards Personal Preference Schedule, the How Supervise Test, the Candidate and Officer Personnel Survey (COPS), the Social Opinion Inventory, the Police Opinion Survey, The Shipley Institute of Living Scale, and the Beta-II. Testing was followed up with a structured interview. Analyses included bivariate correlations between test results and supervisor ratings and a multiple regression analysis to isolate those combinations of tests that best predicted performance ratings by supervisors. Results demonstrated that the good predictors of supervisor ratings included the Edward's Affiliation scale, the Edward's Aggression scale, the Social Opinion Inventory, the COPS Alcohol Abuse scale, COPS Bias scale, COPS Impulsivity scale, COPS Negative Work Attitudes scale, COPS Integrity/Dishonesty

scale, COPS Inconsistency scale, the interviewer's rating, and the Decision score (i.e., a cumulative score representing the utility of the battery as a whole). For ratings of overall performance, the most predictive variables found through bivariate correlation were the Interviewer's rating, followed by the COPS Overall Prediction, the Edwards' Deference Scale, and the Police Opinion Survey. Multiple regression analyses found the COPS Socialized Adjustment, Alcohol Abuse, and Authoritarianism scales as well as the Shipley I.Q. to have a significant relationship to performance. The COPS Prediction Rating and the Shipley I.Q. score were the two scores from the test battery found to have the most significant correlations with supervisor ratings. The COPS Prediction Rating was correlated with 7 of the 16 domains rated by supervisors. The Shipley I.Q. was found to have the highest bivariate correlation with supervisors' recommendations to rehire and was associated with 7 of 15 domains rated by supervisors. These findings add credence to the theory that biodata information and I.Q. are among the better predictors of police officer performance. Additionally, scales from the Edward's Personal Preference Schedule were found to have relevant correlations, which support the relationship between personality and police officer performance.

Furthermore, in efforts to validate the Australian Institute for Forensic Psychology (AIFP) battery as a predictor of sick leave and dropout rate, Lough, Wald, Byrne, and Walker (2007) hypothesized that correctional officers who were selected using the AIFP test battery would have lower rates of sick leave and attrition than those officers who were not selected in this manner. Sick leave data was used for the first four years of employment for two groups, officers that had been selected using the AIFP battery and those that had not been selected using a screening system. They found that the

attrition rate for the AIFP group was 22.8% as compared to 29.5% for the other group. It was reported that the most significant difference between the groups was during the first two years of employment with the AIFP screened group having a much lower rate of sick leave.

Additionally, Lough and Ryan (2010) compared non-screened and screened officers from the Tasmania Police Department in Australia over a three year period on the basis of negative job performance characteristics (i.e., dropouts, sick days, stress claims, physical injury claims, days off due to stress claims, Internal Investigations Unit (IIU) complaints, and motor vehicle accidents). The unscreened group was found to be involved in 39 % of serious incidents (i.e., breach of important rules of policy), while only 14 % of the AIFP screened officers were involved. Over the entire three year period, the AIFP screened officers were found to do better in six of the nine performance categories.

As illustrated above, there have been many studies conducted to test the success of the IFP battery in predicting a variety of performance criteria around the globe. Some used supervisor ratings, while others used more objective measures of performance. None of the studies described though, tested the relationship between the psychological testing predictors and training academy attrition. Therefore, identifying straightforward hypotheses of which tests and subscales will be the most predictive of attrition is unclear from the present literature. The IFP is a battery of tests that measure several variables of interests and could provide a wide variety of predictors. There are a number of aspects of short-term and long-term performance that could be predicted.

The purpose of this research is to evaluate the predictive quality of the IFP battery with training academy attrition. Of explicit interest is the prediction of initial attrition, or those candidates who tend to drop out of the academy in the first few days. Specifically targeted in this study is the ability of the IFP battery to predict the training success of those candidates whom passed all of the selection hurdles and the psychological test battery, but chose to drop out of the training academy before graduation (i.e., attrition). Attrition is defined in this study as leaving the academy before graduation, in comparison to those that complete the academy (i.e., success). Of concern is the restriction in range of the psychological data, as the available sample of subjects are only those who were not screened out through the multiple selection hurdles and the psychological battery. This could very likely lead to very little or no differentiation among the test scores. This study could add to the current research in further validating the IFP battery for police selection, by providing support of its relationship to initial attrition from the training academy.

In anecdotal conversations with the administrators who run the state trooper academy and whose data are utilized in this study, specific characteristics were identified that are believed to relate to attrition from the academy. Specifically stated were honesty, motivation, ability to handle stress, and ability to deal with authority figures (Anonymous, personal communication, August 21, 2012). Therefore, this will be an exploratory study with the purpose of identifying which tests and subscales have the potential to predict initial attrition from the trooper academy. Table 1 below provides a list of IFP tests that include the specific variables and associated measures that will be utilized in this study. Attrition is a short-term measure and a small part of trooper

academy performance, but can also be costly to the department if not assessed during the selection process. Identification of who to invest in on the front-end can help reduce hiring costs associated with false positives in the selection process. Identifying those tests and subscales within the IFP battery that may be linked to attrition from the academy will be assessed to further assist in screening out those candidates that may not succeed in the paramilitary environment of the trooper academy.

Table 1

IFP Battery Tests Broken Down into Subscales with Definitions

Cognitive Ability	
Shipley Institute of Living Scale	Definitions of Subscales
Verbal	Measure of crystallized verbal knowledge
Abstraction	Measure of abstract reasoning and problem-solving
Biodata	
Candidate and Officer Personnel Survey	Definitions of Subscales
Success	General predictor of performance
Social Adjustment	Social adjustment and conformity to social norms
Motivation	Educational achievement, willingness to take initiative, evidence of persistence on jobs, desire to do one's best, acceptance of personal responsibility
Self-Discipline	Willingness and ability to show self-discipline, initiative and self-direction in the absence of direct supervision
Alcohol Abuse	Use of alcohol, attitudes towards use of alcohol, problems associated with alcohol use
Aggression/Assertiveness	Fighting, unwillingness to deal with frustration, history of getting into trouble due to temper, etc.
Paranoid Orientation	Suspiciousness towards others, attribution of negative characteristics towards others, belief in the malevolence of people in general
Gender bias	Prejudice towards women, especially those in public safety positions, general belief in the stereotyped notions of deceptive character and emotional instability of women

Table 1 continued

Personality Problems	Admitted history of mental health treatment, hospitalizations for mental health problems, use of psychotropic medications, hallucinations and delusions, anxiety, phobias
Depression	Feeling lonely and alone, having had suicidal thoughts, admitting to episodes of depression, being unable to sleep, etc.
Bias	General inclination towards ethnic or racial bias
Authoritarianism	Rigidity and inclination to be judgmental toward others, likely to favor punitive behavior
Impulsivity	Involvement in recent fights, spending too much money, having a hot temper, quitting many jobs, etc.
Negative Work Attitudes	History of being fired from one or more jobs, quitting jobs, disciplinary problems, etc.
Integrity/Dishonesty	Seeing others as dishonest
Lie[a]	Overall candor in responding to survey
Inconsistency[a]	Reliability of responses to similar or identical items

Personality

Edwards Personal Preference Schedule	Definitions of Subscales
Achievement	To do one's best, to be successful, to accomplish tasks requiring skill and effort, etc.
Deference	To get suggestions from others, to follow instructions and do what is expected, to accept the leadership of others, etc.
Order	To make plans before starting on a difficult task, to have things organized, etc.
Exhibition	To talk about personal adventures, experiences, and achievements, to be the center of attention, etc.
Autonomy	To say what one thinks about things, to be independent of others in making decisions, etc.
Affiliation	To be loyal to friends, to form new friendships, to form strong attachments, etc.
Intraception	To analyze one's motives and feelings, to observe others, to understand how others feel about problems, etc.
Succorance	To have others provide help when in trouble, to seek encouragement from others, to receive a great deal of affection from others, etc.
Dominance	To be a leader in groups, to make group decisions, to settle arguments and disputes between others, to supervise and direct the actions of others, etc.

Table 1 continues

Table 1 continued

	Abasement	To feel guilty when one does something wrong, to accept blame, to feel the need for punishment for wrong-doing, etc.
	Nurturance	To assist others less fortunate, to treat others with kindness and sympathy, etc.
	Change	To do new and different things, to meet new people, to experience novelty and change in daily routine, etc.
	Endurance	To keep at a job until it is finished, to complete any job undertaken, to work hard at a task, etc.
	Heterosexuality	Interest in socializing and having relationships with the opposite sex, etc.
	Aggression	To tell others what one thinks about them, to criticize others publicly, to get angry, to blame others, to get revenge, etc.

Locus of Control

Social Opinion Survey	Measure of internal/external locus of control

Judgment

How Supervise	Measure of judgment in interpersonal settings

Attitudes Towards Police Work

Police Opinion Survey	Measure of attitudes towards police work

Note. Overall COPS Prediction Score (not listed as a subscale) is derived from a weighted combination of several of the COPS scales including corrections for validity scales.

[a]Validity Scale to be used as a screening variable

Chapter II: Method

Participants

Participants are 117 candidates who applied and were selected for the position of

state trooper at a statewide jurisdiction in the southeastern United States. Of the

participants 96% were men and 4% were women; 84% were White, 10% were Black, 1%

were Hispanic, and 1% were Native American; 40% of participants had military

experience ($n = 47$). The average age of participants was 32 years, and the average years

of education were at least two years of post-high school higher education. These

candidates were chosen for the 2010 and 2011 academy classes.

Measures

All candidates were psychologically screened for the purposes of employment by

the Institute for Forensic Psychology (IFP) test battery. This test battery included the

Shipley Institute of Living Scale, the Candidate and Officer Personnel Survey (COPS),

the Edwards Personal Preference Schedule (EPPS), the Social Opinion Inventory, the

How Supervise, the Police Opinion Survey, and the Speed Completion Form. Higher

scores on all tests indicate a higher degree of the specific trait in an individual. Lower

scores on all tests indicate a lower degree of the specific trait in an individual. Results of

the test battery were followed-up with a structured interview by a licensed psychologist.

Shipley Institute of Living Scale. The Shipley Institute of Living Scale-2

(Shipley, Gruber, Martin & Klein, 2009) is a revised version of the original 1940s general

test of cognitive ability. It is designed for use with adolescents and adults and can be

administered in a group setting. The test is timed and has three subtests that measure

separate areas of intelligence. These subtests include a Vocabulary scale, an Abstraction

scale, and a Block Patterns Scale. The Block Patterns scale is an assessment of cognitive

ability through nonverbal means. Although the Block Patterns scale is an available

subscale with this particular test, only the Vocabulary and Abstraction scales were used

for the purposes of the present research as they are the only subscales utilized for the pre-

employment screening of police candidates. The Vocabulary scale has 40 items that

assess crystallized verbal knowledge, and the Abstraction scale has 25 items that assess

abstract reasoning and problem-solving. The scores from these subscales are combined

into a standard score of intelligence, referred to as Composite A (Composite B is a

combination of Vocabulary and Block Pattern subscale scores). Internal consistency for

Composite A has been found to range from .88 to .97 across age groups (Shipley, Gruber,

Martin & Klein, 2009).

Test-Retest reliability coefficients have been found to range from .84 to .94 for

Composite A. Content, construct, and concurrent validity has been assessed for this

instrument across adult and adolescent populations. Correlations have been found

between the Shipley-2 and other popular tests of intelligence including the Wechsler

Adult Intelligence Scale Third Edition (WAIS-III), ranging from.66 to.84, and the

Wonderlic Personnel Test, ranging from .50 to .64. Correlations have also been found

between the Shipley-2 and tests of achievement including the Wechsler Individual

Achievement Test (WIAT-II), ranging from .65 to.79, and the Wilde Range Achievement

Test 4 (WRAT4), ranging from.49 to.55 (Shipley, Gruber, Martin & Klein, 2009).

Candidate and Officer Personnel Survey (COPS). The Candidate and Officer

Personnel Survey (COPS) (Guller & Guller, 2003) was developed to assess biodata

predictors specific to police and public safety personnel. It is a 240 item test which

consists of questions regarding life history and attitudes towards the job. These items include life history events and attitudes that have been empirically linked to performance as a law enforcement officer. This test provides several outputs including a Prediction rating which ranges from very poor to outstanding performance as a law enforcement officer. It additionally provides scores on 18 separate scales including Success, Socialized Adjustment, Motivation, Self-Discipline, Alcohol Abuse, Paranoid Orientation, Gender Bias, Personality Problems, Depression, Bias, Authoritarianism, Impulsivity, Negative Work Attitudes, Integrity/Dishonesty, and Aggression/Assertiveness. There are two validity scales included in this test: the Lie scale and the Inconsistency scale. The Lie scale is utilized to assess social desirability and the inconsistency scale is utilized to assess consistency in answering similar items (Guller & Guller, 2003). These scales are used for screening out test responses that are considered to have questionable reliability and validity. Test responses are considered suspect if they fall above a specific score on these scales.

Content validity for this instrument was assessed over several years through research of the existing literature and clinical observation conducted by the author and colleagues. Convergent validity was established by comparison of the COPS to the Minnesota Multiphasic Personality Inventory (MMPI-2), the Sixteen Personality Factor Questionnaire (16PF), the California Psychological Inventory (CPI), and the Edwards Personal Preference Schedule (EPPS). A test-retest reliability coefficient of .85 has been found for this test (Guller & Guller, 2003).

Edwards Personal Preference Schedule. The Edwards Personal Preference Schedule (EPPS) (Edwards, 1959) was developed in 1954 and revised in 1959, to assess

normal as opposed to psychopathological personality traits. The 15 personality traits measured by this instrument were adapted from Murray's Manifest Needs. This test is considered a forced choice questionnaire. It consists of 225 items which include two statements. The subject is asked to choose from one of the two statements, whichever statement they agree with more. The 15 traits that are assessed by this instrument include Achievement, Deference, Order, Exhibition, Autonomy, Affiliation, Intraception, Succorance, Dominance, Abasement, Nurturance, Change, Endurance, Heterosexuality, and Aggression. The higher a score is on a scale indicates that the subject has repeatedly identified themselves with statements related to that particular trait. An additional scale is included in this test called the Test Consistency scale, which assess how consistently the test taker is answering the items (Edwards, 1959). This scale is used to measure questionable and inconsistent response patterns.

Internal consistency coefficients were found to range from .60 to .87 across the 15 traits. Test-retest reliability coefficients were found to range from .74 to .88. Convergent validity was supported through established relationships with the EPPS and the Taylor Manifest Anxiety Scale, Guilford-Martin Personnel Inventory, which assesses cooperativeness, agreeableness, and objectivity, and the Minnesota Multiphasic Personality Inventory (MMPI) (Edwards, 1959).

Social Opinion Inventory. The Social Opinion Inventory (Guller, 1982) was developed by the Institute for Forensic Psychology (IFP) to measure an individual's locus of control. This test consists of 29 pairs of statements and the subject is asked to choose which statement best represents his/her opinion. Scores are measured from 0-14, with a 7 considered as a moderate score. Low scores indicate an internal locus of control, while

high scores indicate an external locus of control. Those subjects who have a middle of the line score are considered to have a more neutral outlook on how much control they feel they have over their own fate. A test-retest reliability coefficient of .86 has been found for this test (Bzik, Guller, & Guller, 1997).

How Supervise. The How Supervise (File & Remmers, 1971) was developed as a test of judgment, specifically in social settings. Its purpose is to assist in categorizing those that have the interpersonal skills and potential to be successful leaders. It assesses the individual's ability to relate to his/her employer as well as subordinates. The test subject is asked to rate how appropriate a statement or behavior might be on a 3-point scale. This scale includes the responses desirable, uncertain, and not desirable. The test consists of 100 items. Police personnel are analyzed at Level II, which assesses supervisory personnel (Level I is for top management and Level III is for those in charge of non-office workers). A split-half reliability coefficient of .87 has been found in support of this test. Convergent validity has been established through correlations with similar tests such as the Wesman Personnel Classification Test, Adaptability Test, and Supervisory Practices Test (File & Remmers, 1971).

Police Opinion Survey. The Police Opinion Survey (Guller, 1995) was developed by the Institute for Forensic Psychology (IFP) to assess the attitudes subjects may possess towards police work. The test consists of 25 questions which are rated on a 1 to 6 scale, ranging from Strongly Agree to Strongly Disagree. Scores are categorized into a range which spans from Lenient attitudes towards police work to Hardline attitudes towards police work. Scores that fall in the Fair to Tolerant ranges are considered to have

more moderate attitudes. Reliability coefficients have been found to range from .82 to

.86. Split-half reliability coefficients were found to range from .70 to .88 (Byrne, 2005).

Procedure

Participants were required to go through a multiple hurdle process before reaching

the pre-employment screening phase of the selection process. This multiple hurdle

process required that after they applied for the trooper position, they take a written exam

administered by the Department of Human Resources. If they passed the written exam,

they were then interviewed for the trooper position. If they passed the interview process,

they were then required to pass an obstacle course as a test of physical agility. For those

that passed the agility test, they were given a conditional job offer which was contingent

on passing the medical and polygraph tests as well as a background check and

fingerprinting. Part of the conditional offer also depended on passing the battery of pre-

employment psychological tests.

Participants were administered the Institute for Forensic Psychology (IFP) test

battery as part of the last hurdle in the selection process. Once administered, tests were

scored and results were written into a report by a licensed psychologist and submitted to

the police jurisdiction. Based on the results of the pre-employment screening phase,

candidates were given a rating of Qualified or Unqualified for the position of State

Trooper. Those that were rated as Qualified were accepted into the trooper academy at

that police jurisdiction.

Each trooper candidate then participated in an 18 week training academy. At the

end of each week, each candidate was given a test over the material presented during that

week of training. Tests covered a range of content including legal knowledge, traffic

crash investigation skills, emergency vehicle operations, DUIs, firearms, defensive tactics, and high risk traffic stops. A minimum score of 80 was necessary for the candidate to move on to the next week of the academy. Those that did not receive a score of 80 or above were allowed two additional opportunities to pass that test or were asked to leave the academy.

Operational Definition of Attrition.

The current study seeks to assess whether the IFP test battery is predictive of attrition from the training academy. Attrition is defined as leaving before the completion of the 18 week academy. Success in the academy is defined as completion and graduation from the trooper academy.

Attrition is also measured based on number of days in the academy before leaving. Number of days was divided into five groups: 1 to 3 days in the academy; 6 to 9 days in the academy; 13 to 19 days in the academy; 33 to 67 days in the academy; and those who remained for the full 126 days and completed the entire academy.

Chapter III: Results

Due to the exploratory nature of this study, three separate analyses were run to test which of the 34 variables were most predictive of attrition from the police academy. These analyses included logistic regression and cluster analysis for a multivariate analysis of the data; and Welch's ANOVAs with Games-Howell post hoc tests to provide an analysis of bivariate relationships.

Logistic Regression with Academy Completion

After the variables were divided into three separate blocks, logistic regression forward stepwise analyses were run to predict those who dropped out and those who completed the academy. Eighty-nine participants completed the academy (76%) and 28 participants dropped out (24%). Variables were separated into blocks due to limited sample size relative to the large number of variables. Block 1 included the COPS scales (i.e., Success, Social Adjustment, Motivation, Self-Discipline, Alcohol Abuse, Aggression Assertiveness, Paranoid Orientation, Gender Bias, Personality Problems, Depression, Bias, Authoritarianism, Impulsivity, Negative Work Attitudes, Integrity/Dishonesty). Block 2 included the EPPS scales (i.e., Achievement, Deference, Order, Exhibition, Autonomy, Affiliation, Intraception, Succorance, Dominance, Abasement, Nurturance, Change, Endurance, Heterosexuality, Aggression). Block 3 included all measures that did not have individual subscales (i.e., Shipley Institute of Living Scale, Social Opinion Inventory, How Supervise, Police Opinions Survey). Table 2 includes the corresponding regression models for each block, including the beta value (*b*). Beta values provide a unique predictive value above and beyond the other variables.

Block 1 results suggested that lower scores on the Personality Problems scale of the COPS significantly predicts completion of the academy (b = -.881, p = .000), and that higher scores on the Integrity/Dishonesty scale of the COPS significantly predicts completion of the academy (b = .559, p = .001). Block 2 results suggested that higher scores on the Dominance scale of the EPPS significantly predict completion of the academy (b = .105, p = .050), and that higher scores on the Endurance scale of the EPPS significantly predict completion of the academy (b = .125, p = .023). Block 3 results suggested that higher scores on the Police Opinions Survey measure of attitudes towards police work significantly predict completion of the academy (b = .034, p = .043).

Once the significant predictors for each block were determined, they were combined into a new block. The combined model block results are also listed in Table 2. Results indicated that the Personality Problems scale of the COPS (b = -.883, p = .000), the Integrity/Dishonesty scale of the COPS (b = .593, p = .000), and the Endurance scale of the EPPS (b = .119, p = .044) best predicted completion of the academy.

Odds ratios were also calculated for each regression model to determine the increase in the odds of a candidate completing the training academy per every point increase or decrease on the measure. Table 2 includes the odds ratios for each measure in each regression model. The COPS subscale of Personality Problems had an odds ratio of .41, suggesting that for every point that a candidate's score decreases on this scale, his/her odds of completing the academy increase by a factor of .41 (or, equivalently because there is a negative relationship, the odds of completing the police academy were 2.41 times greater for each one point decrease on the Personality Problems scale). It should be noted that the scales found to be significant in the regression analyses had

varying value ranges, therefore the potential total gain in odds possible per scale is

dependent on these ranges. For example, the possible value range for the Personality

Problems subscale of the COPS is 0 to 25, while the value range for the Police Opinions

Survey is -8 to 67.

Table 2

Logistic Regression Models with Odds Ratios

Significant Scales by Block	β	p-value	Odds Ratio
Block 1 Model			
Personality Problems	-.881	.00	.41
Integrity/Dishonesty	.559	.00	1.75
Block 2 Model			
Dominance	.105	.05	1.11
Endurance	.125	.02	1.13
Block 3 Model			
Police Opinions	.034	.04	1.03
Significant Predictors Combined Model			
Personality Problems	-.883	.00	.41
Integrity/Dishonesty	.593	.00	1.81
Endurance	.119	.04	1.13

p < .05

Also assessed with the logistic regression analysis was the accuracy of each

regression model in predicting true hires, true rejections, false hires, and false rejections

in the completion of the police academy. Table 3 displays the accuracy of each regression

model in predicting attrition from the police academy. The total predictive accuracy of the combined model was 76.3%. The model resulted in the prediction of 10 false hires from the original 28 candidates who dropped out of the police academy which is equal to a 35.7% accuracy rate in predicting attrition from the police academy.

Table 3

Accuracy of Each Regression Model in Predicting Attrition

Observed Completed Academy		Predicted Completed Academy		Percent Correctly Predicted
Block 1 Model		No	Yes	
Dropped Out	28	9	19	**32.1**
Completed	86[a]	5	81	**94.2**
				Overall Percentage **78.9**
Block 2 Model		No	Yes	
Dropped Out	28	3	25	**10.7**
Completed	89	2	87	**97.8**
				Overall Percentage **76.9**
Block 3 Model		No	Yes	
Dropped Out	28	1	27	**3.6**
Completed	89	1	88	**98.9**
				Overall Percentage **76.1**
Significant Predictors Combined Model		No	Yes	
Dropped Out	28	10	18	**35.7**
Completed	86[a]	9	77	**89.5**
				Overall Percentage **76.3**

[a]Three participants' results for the COPS were screened out based on invalid scores on one or both of the validity scales, reducing the sample size.

Cluster Analysis with All Variables

A cluster analysis was performed using Ward's method in an effort to analyze all of the variables simultaneously. A three cluster solution was found, but cluster definitions were not apparent and cluster membership was not useful for predicting success in the academy, X^2 (1, N = 114) = .58, p = .445.

Welch's ANOVAs with Academy Completion

Welch's one-way ANOVAs were run for each of the thirty-four test variables with the dichotomous variable of whether or not participants completed the academy (i.e., academy completion). P-values were only considered significant if below the .01 level due to the number of tests, to protect the familywise alpha level. Table 4, in Appendix A, includes each variable with its corresponding F value and p-value. The COPS Personality Problems scale was the only one found to significantly predict those who drop out of the police academy, F (1, 37) = 9.87, p = .003.

Welch's ANOVAs with Attrition Groups

Welch's one-way ANOVAs were run for each of the thirty-four test variables with attrition groups based on the number of days candidates were in the academy. Attrition groups were formed based on the natural breaking points in the number of days candidates remained in the academy. Attrition Group 1 included those who dropped out of the academy after 1 to 3 days (n = 13); Attrition Group 2 included those who dropped out of the academy after 6 to 9 days (n = 6); Attrition Group 3 included those who dropped out of the academy after 13 to 19 days (n = 5); Attrition Group 4 included those who dropped out of the academy after 33 to 67 days (n = 4); and Attrition Group 5

included those who remained for the full 126 days and completed the entire academy ($n =$ 89). Games-Howell post hoc tests were run on each of the ANOVAs to determine which attrition groups were the most significantly different. Games–Howell tests were chosen because the sample sizes for each attrition group were unequal and small. Table 5, in Appendix A, includes each variable with its corresponding F values, and p-values.

The How Supervise measure of judgment was the only scale significant at the .01 level, $F (4, 11) = 7.47$, $p = .004$.Post hoc tests indicated that Attrition Group 2 ($M = 71$, $p = .001$) scored higher on this measure than Attrition Group 5 ($M = 56$, $p = .001$). It should be noted that the COPS Personality Problems scale was close to significance ($p = .015$), but did not reach the .01 level. However, the group sizes were small.

Effect sizes were also calculated for all variables to denote the percent of the differences in scores that can be predicted by group membership. Effect sizes were utilized as additional indicators of impact other than significance. Cohen (1988) offers a generally accepted guide for the interpretation of effect sizes, which includes .01 for a small effect size, .09 for a medium effect size, and .25 for a large effect size. Medium effect sizes were found for the COPS scales of Alcohol Abuse ($\eta^2 = .08$) and Personality Problems ($\eta^2 = .17$); the EPPS scales of Exhibition ($\eta^2 = .08$), Dominance ($\eta^2 = .07$), and Endurance ($\eta^2 = .07$); and the How Supervise measure of judgment ($\eta^2 = .08$). Table 5, in Appendix A, also includes each variable with its corresponding effect size.

Chapter IV: Discussion

Combined Prediction Model

The logistic regression analysis was chosen to parallel the applied use of the Institute for Forensic Psychology (IFP) battery. In practice, all tests are used in combination with the purpose of screening out unqualified candidates. These tests used in combination have been empirically supported as validly predictive of high performing police candidates (Guller, 1994; Guller, 2003; Heyer, 1998; Lough et al., 2007; Lough & Ryan, 2010). The regression analyses identified which of these tests and subscales provide unique contributions to the prediction of attrition in the police academy above and beyond the other tests in the battery. The results of this study found both biodata and personality subscales to be significant predictors of academy attrition, in particular, the Personality Problems and Integrity/Dishonesty scales from the COPS biodata measure, and the Endurance subscale from the EPPS personality measure.

The combined model identified which combinations of tests help differentiate those who are likely to drop out from those who are likely to succeed. For the COPS biodata measure, the Personality Problems subscale was found to predict attrition from the academy. Specifically, the lower the candidate scores on this subscale, the more likely he/she will complete the academy. This scale serves as an overall measure of self-reported mental health. This suggests that the fewer mental health problems an individual has, the more likely he/she will complete the academy. The odds ratio of 2.41 for this scale indicates that for each point that a candidate's score decreases, he/she is two times more likely to complete the academy. The effect size for this subscale indicates that 17% of the differences in scores are due to the timeframe during which candidates choose to

leave the academy. In other words, candidates with more personality problems are less likely to complete the training academy.

Additionally, the Integrity/Dishonesty subscale was found to predict attrition from the academy. Specifically, the higher the candidate scores on this subscale, the more likely they will complete the academy. This subscale measures the candidate's view of others as dishonest, which suggests that those candidates who have a tendency to distrust others may have an easier time dealing with the militaristic designof the beginning weeks of the academy. In an anecdotal conversation with a licensed psychologist who interprets the COPS results for the selection of police personnel, it was suggested that:

> Individuals with a high Dishonesty score suspect the motives of others. They are less likely to see interactions as authentic and forthright, and more likely to interpret interpersonal stances of others as "put on" rather than genuine. Thus, they may be more likely to interpret the interpersonal environment of Academy as a "game" and will therefore let the insults, provocations, and "unreasonable" demands …of the Academy atmosphere roll off their backs. In short, because they don't believe it as true, they don't let it "get to" them" (T.M. McDaniel, personal communication, March 19, 2012).

The odds ratio for this subscale indicates that for every point increase on this scale, a candidate is 1.81 times more likely to complete the academy. The effect size for this subscale indicates that 6% of the differences in scores are due to the timeframe during which candidates choose to leave the academy. Candidates with higher scores on this scale are more likely to complete the training academy. It should be noted that state troopers are required to patrol individually, as opposed to with partners as is common

with other law enforcement roles. Therefore, a certain level of suspicion of others is necessary for safety on the job.

Lastly, for the EPPS personality measure, the Endurance subscale was found to predict attrition from the academy. Specifically, the higher the candidate scores on this subscale, the more likely they will complete the academy. This subscale measures the candidate's need to exert meaningful effort on a task until it is finished, and to complete all tasks for which he/she is responsible. Higher scores represent a higher degree of this trait in an individual. This suggests that those individuals who tend to see the completion of tasks through to the end are more likely to complete the academy. The odds ratio for this subscale indicates that for every one point increase on this scale, a candidate is 1.13 times more likely to complete the academy. The effect size for this scale suggests that 7% of the differences in scores are due to the timeframe during which candidates choose to leave the academy. It should be noted that although specific subscales were found to be uniquely predictive of training academy attrition, all variables in the test battery are useful in predicting police officer performance. In other words, as a criterion, police academy attrition encompasses a very narrow sliver of police officer success.

Accuracy of Prediction Model

The prediction model was found to have 76.3% accuracy in predicting those candidates who would drop out of the academy (i.e., false hires). Although the highest percentage of accuracy was in predicting those who are successful (89.5%), out of the 28 candidates who dropped out of the academy, 10 candidates could have been predicted to drop out based on the combined model (37.5%). Thus, the combined model can help screen out more than one-third of the candidates who will not complete the academy. One

caveat to be addressed is that 9 people that succeeded in the academy would have been dropped (i.e. false rejects) by using this model. Selection professionals will need to make a judgment in determining whether using this model provides enough benefits by reducing false hires when successful candidates could be overlooked. In terms of cost per candidate, identifying those candidates who will most likely drop out of the academy could save a substantial amount of money.

Additional Findings

Cluster analysis was run as an alternate multivariate analysis to see if profiles formed from test scores could be predictive of attrition from the academy. Although a three cluster solution was identified, the conceptual distinctions among the clusters based on combinations of the 34 separate test and subscale scores are unclear. Furthermore, cluster membership was not useful for predicting success in the academy.

Although it was of interest to explore the bivariate relationships between each test and subscale with attrition due to the exploratory nature of the study, at this stage of the screening process in practice, tests are used in combination and not in isolation from each other. The few tests/subscales that were significant at the .01 level should not yet be interpreted as predictive of attrition as theoretical support of these findings is weak, and thus, would need to be replicated before generalizing beyond this sample.

Limitations

There are a few limitations to this study to be discussed. First, range restriction is a main concern when making predictions with these data. All participants in this study went through a multiple hurdle process where unqualified candidates were screened out at every hurdle. Those candidates with the lowest scores were screened out before the

academy; therefore, the range of scores available in the psychological data is restricted to the scores of those who were found most qualified for the academy. Significant differences could exist between scores, but the ability to see them could be muted due to the limited range of scores. Additionally the other variables in the battery that were not found to be significant predictors at this stage may have been significant at an earlier stage in the screening process.

Second, the small size of the available sample and the large number of variables restricted the statistical power of the study. A sample of at least 200 is suggested to reduce the likelihood of a type II error. It is possible that a larger sample size could increase the likelihood of significant results. It should be noted that the results of this study are focused on predictors for a specific stage of the selection process and a specific type of attrition.

Future Research

Future research should include the cross-validation of the results of this study on a different sample of participants. The generalizability of this study to other police jurisdictions is unclear at this time. This study focused on attrition, a specific and narrow definition of academy success. Other variables from the IFP battery could be significant predictors of other areas of academy performance including the degree of academy success and the quality of performance. A longitudinal study for predictors of longer term success on the job could also be assessed in subsequent studies. Additionally, future research could look at the entire multiple hurdle process in predicting academy and on-the-job performance.

Additionally, qualitative data could also be explored, such as the battery's Speed Completion Form, which are designed to tap into candidate's attitudes towards a variety of attitudes (e.g., attitudes towards family, superiors, possible bias, and areas specifically related to police work). Content analysis of these data could provide further prediction of attrition intentions.

References

Arrigo, B.A. & Claussen, N. (2003). Police corruption and psychological testing: A

strategy for pre-employment screening. *International Journal of Offender*

Therapy and Comparative Criminology, 47(3), 272-290.

Aumiller, G. S., & Corey, D. (2007). Defining the field of police psychology: Core

domains & proficiencies. *Journal of Police & Criminal Psychology*, *22*(2), 65-76.

doi:10.1007/s11896-007-9013-4

Barrett, G., Miguel, R., Hurd, J., Lueke, S., & Tan, J. (2003). Practical issues in the use of

personality tests in police selection. *Public Personnel Management*, *32*(4), 497-

517.

Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job

performance: A meta-analysis. *Personnel Psychology*, *44*(1), 1-26.

doi:10.1111/j.1744-6570.1991.tb00688.x

Barrick, M. R., & Zimmerman, R. D. (2005). Reducing voluntary, avoidable turnover

through selection. *Journal of Applied Psychology*, *90*(1), 159-166.

doi:10.1037/0021-9010.90.1.159

Ben-Porath, Y.S., Fico, J. M., Hibler, N. S., Inwald, R., Kruml, J., & Roberts, M. R.

(2011). Assessing the psychological suitability of candidates for law enforcement

positions. *The Police Chief*, *78*, 64-70.

Beutler, L. E., Nussbaum, P. D., & Meredith, K. E. (1988). Changing personality patterns

of police officers. *Professional Psychology: Research and Practice*, *19*(5), 503-

507. doi:10.1037/0735-7028.19.5.503

Beutler, L. E., Storm, A., Kirkish, P., Scogin, F., & Gaines, J. A. (1985). Parameters in the prediction of police officer performance. *Professional Psychology: Research and Practice*, *16*(2), 324-335. doi:10.1037/0735-7028.16.2.324

Black, J. (2000). Personality testing and police selection: Utility of the 'Big Five'. *New Zealand Journal of Psychology*, *29*(1), 2-9.

Blum, R. (1964). Psychological testing. In R. Blum (Ed.), *Police Selection* (pp. 85-139). Springfield, IL: Charles C. Thomas.

Burbeck, E., & Furnham, A. (1984). Personality and police selection: Trait differences in successful and non-successful applicants to the metropolitan police. *Personality and Individual Differences*, *5*(3), 257-263.

Burkhart, B. (1980). Conceptual issues in the development of police selection procedures. *Professional Psychology*, *11*(1), 121-129. doi:10.1037/0735-7028.11.1.121

Byrne, K. (2005). *Law Enforcement Profiling System: Manual*. Australia: Australian Institute of Forensic Psychology.

Bzik, S., Guller, I. B., & Guller, M. (1997). *Test-retest reliability of the social opinion inventory*. Oakland, NJ: Institute for Forensic Psychology.

Cascio, W. F., & Real, L. J. (1979). The civil service exam has been passed: Now what?. In C. Spielberger (Ed.), *Police Selection and Evaluation* (pp. 115-140). Washington D.C.: Hemisphere Publishing Corporation.

Chan, D., & Schmitt, N. (2002). Situational judgment and job performance. *Human Performance*, *15*(3), 233-254.

Chung, D. H. (2010). *Performance measures of law enforcement personnel using the Institute for Forensic Psychology (IFP) test battery* (Doctoral dissertation,

University of Hartford). Available from Proquest Dissertations and Theses database. (UMI No. 3377870)

Cochrane, R. E., Tett, R. P., & Vandecreek, L. (2003). Psychological testing and the selection of police officers: A national survey. *Criminal Justice and Behavior*, *30*(5), 511-537. doi:10.1177/0093854803257241

Cohen, J. (1988) *Statistical power analysis for the behavioral sciences.* (2nd ed.). England: Lawrence Erlbaum Associates, Inc.

Cuttler, M. (2011). Pre-employment screening of police officers: Integrating actuarial prediction models with practice. In J. Kitaeff (Ed.), *Handbook of Police Psychology* (pp. 135-164). New York, NY: Taylor & Francis Group, LLC.

Dantzker, M. L. (2011). Psychological pre-employment screening for police candidates: Seeking consistency if not standardization. *Professional Psychology: Research and Practice*, *42*(3), 276-283. doi:10.1037/a0023736

Davison, G. C., Neale, J. M., & Kring, A. M. (2004). *Abnormal Psychology*. (Ninth ed., pp. G12-G13). Hoboken, NJ: John Wiley & Sons, Inc.

Detrick, P., Chibnall, J. T., & Luebbert, M. C. (2004). The Revised NEO Personality Inventory as predictor of police academy performance. *Criminal Justice and Behavior*, *31*(6), 676-694. doi:10.1177/0093854804268751

Drew, J., Carless, S. A., & Thompson, B. M. (2008). Predicting turnover of police officers using the Sixteen Personality Factor Questionnaire. *Journal of Criminal Justice*, *36*(4), 326-331. doi:10.1016/j.jcrimjus.2008.06.003

Edwards, A. L. (1959). *Edwards Personal Preference Schedule: Manual*. San Antonio, TX: Psychological Corporation.

Fabricatore, J. M. (1979). Pre-entry assessment and training: Performance evaluation of

    police officers. In C. Spielberger (Ed.), *Police Selection and Evaluation* (pp. 77-

    85). Washington D.C.: Hemisphere Publishing Corporation.

File, Q. W., & Remmers, H. H. (1971). *How Supervise: Manual*. San Antonio, TX:

    Psychological Corporation.

Flynn, J.T. & Peterson, M. (1972). The use of regression analysis in police patrolman

    selection. *The Journal of Criminal Law, Criminology, and Police Science, 63*(4),

    564-569.

Forero, C. G., Gallardo-Pujol, D., Maydeu-Olivares, A., & Andrés-Pueyo, A. (2009). A

    longitudinal model for predicting performance of police officers using personality

    and behavioral data. *Criminal Justice and Behavior*, *36*(6), 591-606.

    doi:10.1177/0093854809333406

Froemel, E. C. (1979). Objective and subjective measures of police officer performance.

    In C. Spielberger (Ed.), *Police Selection and Evaluation* (pp. 87-111).

    Washington D.C.: Hemisphere Publishing Corporation.

Gaines, L.K., & Falkenberg, S. (1998). An Evaluation of the Written Selection Test:

    Effectiveness and Alternatives. *Journal of Criminal Justice, 26*(3), 175-183.

Gallo, F. J., & Halgin, R. P. (2011). A guide for establishing a practice in police pre-

    employment post-offer psychological evaluations. *Professional Psychology:*

    Research and Practice, *42*(3), 269-275. doi:10.1037/a0022493

Graham, S.L. (1981). *Locus of control and employment in law enforcement* (Doctoral

    dissertation, Duke University). Available from University Microfilms

    International. (UMI No. 8129842)

Guller, I.B. (1982). *Social Opinion Survey.* Oakland, NJ: Institute for Forensic Psychology.

Guller, I.B. (1995). *Police Opinion Survey- P.W.S.* Oakland, NJ: Institute for Forensic Psychology.

Guller, I. B., & Flynne, W. (1994, June). *A follow-up study of appointed public safety officers and relationship of performance to measured psychological variables.* Paper presented at the New Jersey State Chiefs of Police Annual Convention, Atlantic City, New Jersey.

Guller, I. B., & Guller, M. (2003). *C.O.P.S.: Candidate and Officer Personnel Survey Technical Manual.* Oakland, NJ: Institute for Forensic Psychology.

Guller, M. (2004). *Predicting performance of law enforcement personnel using the candidate and officer personnel survey and other psychological measures* (Unpublished doctoral dissertation) Seton Hall University, New Jersey.

Hargrave, G. E., & Hiatt, D. (1989). Use of the California Psychological Inventory in Law Enforcement Officer Selection. *Journal of Personality Assessment*, *53*(2), 267.

Hattrup, K., O'Connell, M. S., & Labrador, J. R. (2005). Incremental validity of locus of control after controlling for cognitive ability and conscientiousness. *Journal of Business & Psychology*, *19*(4), 461-481.

Henderson, N. D. (1979). Criterion-related validity of personality and aptitude scales. In C. Spielberger (Ed.), *Police Selection and Evaluation* (pp. 179-195). Washington D.C.: Hemisphere Publishing Corporation.

Heyer, T. (1998). *A follow-up study of the prediction of police officer performance on psychological evaluation variables.* (Unpublished doctoral dissertation).Minnesota School of Professional Psychology, Minnesota.

Hunter, J. E. (1986). Cognitive ability, cognitive aptitudes, job knowledge, and job performance. *Journal of Vocational Behavior*, *29*(3), 340-62.

Jacobs, R., Cushenberg, L., & Grabarek, P. (2011). Assessments for selection and promotion of police officers. In *Handbook of Police Psychology* (pp. 193-210). New York, NY: Taylor & Francis Group, LLC.

Judge, T. A., & Bono, J. E. (2001). Relationship of core self-evaluations traits—self-esteem, generalized self-efficacy, locus of control, and emotional stability—with job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology*, *86*(1), 80-92. doi:10.1037/0021-9010.86.1.80

Kichuk, S. L., & Wiesner, W. H. (1998). Work teams: Selecting members for optimal performance. *Canadian Psychology/Psychologie Canadienne*, *39*(1), 23-32. doi:10.1037/h0086792

Kitaeff, J. (2011). History of police psychology. In J. Kitaeff (Ed.), *Handbook of Police Psychology* (pp. 1-62). New York, NY: Taylor & Francis Group, LLC.

Lefkowitz, J. (1977). Industrial-organizational psychology and the police. *American Psychologist*, *32,* 346-364.

Lough, J. & Ryan, M. (2005). Psychological profiling of Australian police officers: An examination of post-selection performance. *International Journal of Police Science and Management, 7*(1), 15-23.

Lough, J., & Ryan, M. (2010). Research note: Psychological profiling of Australian

    police officers: A three-year examination of post-selection performance.

    International Journal of Police Science & Management, *12*(3), 480-486.

    doi:10.1350/ijps.2010.12.3.188

Lough, J., Wald, E., Byrne, K., & Walker, G. (2007). The impact of psychological

    profiling of Australian correctional officers. (cover story). *Corrections*

    Compendium, *32*(4), 1-6.

Mumford, M. D., Costanza, D. P., Connelly, M., & Johnson, J. F. (1996). Item generation

    procedures and background data scales: Implications for construct and criterion-

    related validity. *Personnel Psychology*, *49*(2), 361-398. doi:10.1111/j.1744-

    6570.1996.tb01804.x

Murphy, J.T. (1972). Current practices in the use of psychological testing by police

    agencies. *The Journal of Criminal Law, Criminology, and Police Science, 63*(4),

    570-576.

Nietzel, M. T., & Hartung, C. M. (1993). Psychological research on the police: An

    introduction to a special section on the psychology of law enforcement. *Law and*

    Human Behavior, *17*(2), 151-155. doi:10.1007/BF01045935

Ostrov, E. (1986). Police/law enforcement and psychology. *Behavioral Sciences & the*

    Law, *4*(4), 353-370.

Piedmont, R. L., McCrae, R. R., & Costa Jr., P. T. (1992). An assessment of the Edwards

    Personal Preference Schedule from the perspective of the Five-Factor Model.

    Journal of Personality Assessment, *58*(1), 67-78.

Pynes, J.E. (2001). The triumph of techniques over purpose revisited: Evaluating police

    officer selection. *Review of Public Personnel Administration, 21*(3), 219-236.

Reaves, B. A. U.S. Department of Justice, Office of Justice Programs. (2010). *Local*

    police deaprtments, 2007. Washington D.C.: Bureau of Justice Statistics.

Sarchione, C. D., Cuttler, M. J., Muchinsky, P. M., & Nelson-Gray, R. O. (1998).

    Prediction of dysfunctional job behaviors among law enforcement officers.

    Journal of Applied Psychology, *83*(6), 904-912. doi:10.1037/0021-9010.83.6.904

Scogin, F., Schumacher, J., Gardner, J., & Chaplin, W. (1995). Predictive validity of

    psychological testing in law enforcement settings. *Professional Psychology:*

    Research and Practice, 26(1), 68-71.

Shaffer, A. (2002). *Validation of a law enforcement selection and screening battery*

    (Doctoral dissertation, Alliant International University). Available from Proquest

    Dissertations and Theses database. (UMI No. 3045263)

Shipley, W. C., Gruber, C. P., Martin, T. A., & Klein, A. M. (2009). *Shipley-2 manual*.

    Los Angeles, CA: Western Psychological Services.

Shusman, E. J., Inwald, R. E., & Landa, B. (1984). Correction officer job performance as

    predicted by the IPI and MMPI: A validation and cross-validation study. *Criminal*

    Justice & Behavior, *11,* 309-329.

Spector, P. E. (1982). Behavior in organizations as a function of employee's locus of

    control. *Psychological Bulletin*, *91*(3), 482-497. doi:10.1037/0033-2909.91.3.482

Spielberger, C. D., Ward, J. C., & Spaulding, H. C. (1979). A model for the selection of

    law enforcement officers. In C. Spielberger (Ed.), *Police Selection and Evaluation*

    (pp. 11-24). Washington D.C.: Hemisphere Publishing Corporation.

Super, J. T. (2006). A survey of pre-employment psychological evaluation tests and

    procedures. *Journal of Police & Criminal Psychology*, *21*(2), 83-87.

Terman, L. M. (1917). A trial of mental and pedagogical tests in a civil service

    examination for policemen and firemen. *Journal of Applied Psychology*, *1*(1), 17-

    29. doi:10.1037/h0073841

Tett, R. P., Jackson, D. N., & Rothstein, M. (1991). Personality measures as predictors of

    job performance: A meta-analytic review. *Personnel Psychology*, *44*(4), 703-742.

Topp, B. W., & Kardash, C. (1986). Personality, achievement, and attrition: validation in

    a multiple-jurisdiction police academy. *Journal of Police Science &*

    Administration, *14,* 234-241.

Varela, J.G, Boccaccini, M.T., Scogin, F., Stump, J, & Caputo, A. (2004). Personality

    testing in law enforcement settings: A metaanalytic review. *Criminal Justice and*

    Behavior, *31*, 649-675. doi: 10.1177/0093854804268746

Weiss, P., & Weiss, W. (2011). Criterion-related validity in police psychological

    evaluations. In J. Kitaeff (Ed.), *Handbook of Police Psychology* (pp. 125-134).

    New York, NY: Taylor & Francis

APPENDICES

Appendix A: Welch's ANOVAs Tables

Table 4
Results of Welch's ANOVAs for Academy Completion

Variable	F	p-value
Cognitive Ability		
Shipley Institute of Living Scale	.03	.88
Biodata		
Candidate and Officer Personnel Survey		
Success	.31	.58
Social Adjustment	.94	.34
Motivation	3.66	.06
Self-Discipline	3.10	.08
Alcohol Abuse	.51	.48
Agression/Assertiveness	1.67	.20
Paranoid Orientation	2.26	.14
Gender bias	3.22	.08
Personality Problems	9.87	.00**
Depression	.10	.76
Bias	.88	.35
Authoritarianism	2.24	.14
Impulsivity	.26	.60
Negative Work Attitudes	1.16	.29
Integrity/Dishonesty	3.92	.05
Personality		
Edwards Personal Preference Schedule		
Achievement	.59	.45
Deference	.99	.32
Order	1.78	.19
Exhibition	.82	.37
Autonomy	1.83	.18
Affiliation	3.49	.07
Intraception	.80	.38
Succorance	2.41	.13
Dominance	3.17	.08
Abasement	.01	.92
Nurturance	.57	.46
Change	3.86	.06
Endurance	4.10	.05
Heterosexuality	.12	.75
Aggression	.27	.61
Locus of Control		
Social Opinion Survey	1.79	.19
Judgment		
How Supervise	2.10	.15
Attitudes Towards Police Work		
Police Opinion Survey	3.72	.06

**p < .01

Table 5

Results of Welch's ANOVAs for Attrition Groups with Effect Sizes

Variable	F	p-value	η^2
Cognitive Ability			
Shipley Institute of Living Scale	1.71	.22	.04
Biodata			
Candidate and Officer Personnel Survey			
Success	.55	.71	.03
Social Adjustment	2.74	.09	.05
Motivation	2.27	.13	.05
Self-Discipline	1.68	.23	.04
Alcohol Abuse	-	-[a]	.08
Agression/Assertiveness	2.49	.11	.06
Paranoid Orientation	1.07	.42	.03
Gender bias	1.12	.40	.03
Personality Problems	5.11	.02	.17
Depression	1.51	.26	.04
Bias	2.20	.14	.04
Authoritarianism	1.00	.45	.05
Impulsivity	.56	.70	.02
Negative Work Attitudes	.71	.60	.03
Integrity/Dishonesty	1.81	.20	.06
Personality			
Edwards Personal Preference Schedule			
Achievement	1.10	.41	.04
Deference	1.53	.25	.02
Order	1.33	.32	.04
Exhibition	3.13	.06	.08
Autonomy	2.42	.11	.04
Affiliation	3.17	.05	.04
Intraception	.85	.53	.04
Succorance	1.49	.28	.05
Dominance	2.37	.12	.07
Abasement	.24	.91	.01
Nurturance	.99	.45	.02
Change	1.63	.24	.06
Endurance	1.83	.20	.07
Heterosexuality	1.47	.28	.04
Aggression	1.27	.34	.05
Locus of Control			
Social Opinion Survey	1.02	.44	.02
Judgment			
How Supervise	7.47	.00**	.08
Attitudes Towards Police Work			
Police Opinion Survey	1.67	.23	.06

[a]p-value could not be determined for Alcohol Abuse scale because at least one group had zero variance

**p < .01

Appendix B: IRB Approval

October 18, 2012

Lauren Hewgley, Dr. Patrick McCarthy
Department of Psychology
laurenphewgley@gmail.com, patrick.mccarthy@mtsu.edu

Protocol Title: "Predicting Trooper Academy Attrition with the IFP Test Battery"
Protocol Number: 13-099

Dear Investigator(s),
The exemption is pursuant to 45 CFR 46.101(b) (4). This is because the research being conducted involves the collection or study of existing data that is being recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers.

You will need to submit an end-of-project report to the Office of Compliance upon completion of your research. Complete research means that you have finished collecting data and you are ready to submit your thesis and/or publish your findings. Should you not finish your research within the three (3) year period, you must submit a Progress Report and request a continuation prior to the expiration date. Please allow time for review and requested revisions. Your study expires on **October 18, 2015.**

Any change to the protocol must be submitted to the IRB before implementing this change. According to MTSU Policy, a researcher is defined as anyone who works with data or has contact with participants. Anyone meeting this definition needs to be listed on the protocol and needs to provide a certificate of training to the Office of Compliance. **If you add researchers to an approved project, please forward an updated list of researchers and their certificates of training to the Office of Compliance before they begin to work on the project.** Once your research is completed, please send us a copy of the final report questionnaire to the Office of Compliance. This form can be located at www.mtsu.edu/irb on the forms page. Also, all research materials must be retained by the PI or **faculty advisor (if the PI is a student)** for at least three (3) years after study completion. Should you have any questions or need additional information, please do not hesitate to contact me.

Sincerely,

Andrew W. Jones
Graduate Assistant to:
Emily Born
Compliance Officer
615-494-8918
Emily.Born@mtsu.edu