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Predicting police aggression: Using theory to inform police selection assessment

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Predicting Police Aggression:
Using Theory to Inform Police Selection Assessment

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A thesis submitted to the Graduate Faculty of

JAMES MADISON UNIVERSITY

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Abstract

Although incidents of excessive force by police are very rare, they have a significant impact. Instances of excessive force can lead to expensive law suits, wasted resources spent on training and equipping officers, as well as a breakdown of trust between citizens and police departments. Psychologists can help to reduce inappropriate aggressive behavior through careful screening of police officer candidates. Most research has focused on the efficacy of the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) in predicting police performance; however, results have been inconclusive regarding its ability to predict police aggression. The purpose of this study was to identify whether the IAT Reasoning Test (IAT), a measure of trait aggression, and a Monetary Delay Discounting Task (MDDT), a measure of behavioral control, could predict on-the-job police aggression better than the MMPI-2. Researchers administered the MMPI-2, the IAT, and the MDDT, to 85 police officers. Three prediction models were created using scores on the IAT and the MDDT, and scales from the MMPI-2. Model 1 included the IAT, the MDDT, and the interaction (IATxMDDT). Model 2 included MMPI-2 scales Hostility (HO), Overcontrolled Hostility (O-H) and Anger (ANG). Model 3 included MMPI-2 scales Frequency (F), Hysteria (HY), and Psychopathic Deviate (PD). Researchers found Model 1 to be the best predictor of on-the-job aggression. However, the MDDT contributed the most to this model. Based on these findings, behavioral control may be an important trait to measure in order to identify potentially aggressive police officers. If future research replicates these findings, researchers may be able to suggest cut-offs that police departments can use for selection purposes.

CHAPTER 1

Introduction

"As a law enforcement officer, my fundamental duty is to serve the community...I will enforce the law courteously and appropriately without fear or favor, malice or ill will, never employing unnecessary force or violence"

(Law Enforcement Code of Ethics, 2000, p.1).

* * *

A central role of a police officer's job is to handle problem situations while using a minimal amount of force (Sheehan & Cordner, 1989). Reports of police aggression are readily found in the media. A search for incidents of police aggression in the New York Times returned 472 articles related to this topic in the past year alone (2009). It is clear that the American public is inundated by the media with reports of police using inappropriate aggressive force, to the extent that one might consider it a national crisis.

Police Aggression: Low Base Rate, High Impact

Base Rate of Police Aggression

Excessive force is broadly defined as "the use of any more force than a highly skilled police officer should find necessary to use in that particular situation" (Klockars, 1995, p. 8). Police departments define this more specifically through a *use of force continuum* (Figure 1). Although the exact rate of excessive force by police officers is difficult to measure, it is likely to be very low compared to the frequency of interactions between officers and citizens. The Bureau of Justice Statistics (BJS, 2005) estimated that in 2005, 43.5 million people had some interaction with the police. In 2002, large state and

local law enforcement agencies received 26,556 citizen complaints related to police use of force; of these citizen complaints, 2,000 incidents were determined to be genuine (BJS, 2006). If we use the numbers from the BJS reports then legitimate excessive forces occurs in roughly .005 percent of all police interactions with citizens. This estimate of the frequency of cases of excessive force sharply contrasts with what the public hears and sees in the media. Based on this estimate using BJS data, it would seem that psychologists should pay little attention to aggressive police behavior and should focus their efforts on other areas of performance. However, the potential adverse impact of police aggression makes it an important topic of study for police psychologists.

Impact of Police Aggression

Excessive force can lead to expensive court cases for police officers, police departments, and taxpayers (Gaines & Kappeler, 2008). Police officers who engage in excessive force can be tried under state tort laws, state civil rights laws, state and federal criminal liabilities, and federal administrative liabilities (Kockars, 1995). The most common excessive force case falls under Title 42 of the U.S. Code Section 1983, Civil Action for Deprivation of Civil Rights, which states that any person acting under color of law, such as a police officer, cannot cause another individual to suffer a deprivation of any rights, privileges, or immunities secured by the Constitution and laws. Anyone responsible for such actions is liable to the injured party (Anderson, Dyson, Burns, & Taylor, 1998).

Civil liability cases can be extremely expensive for police departments. In *Malloy v. Monahan* (1996), the court awarded \$232,433 to Malloy after Officer Monahan and a fellow officer beat him several times with a baton, even after Malloy surrendered to the

officers. In *Davis v. Mason County* (1991), the court awarded \$1,171,600 to Davis after Gardner and two other deputies repeatedly struck him in the legs and head with their baton because Davis did not immediately respond to the deputies' commands. It is estimated that 30,000 civil actions similar to those cited above are filed against the police every year, and this number is expected to grow. Many police departments have to pay liability insurance to protect themselves from high court costs and expensive settlements due to civil actions (Gaines & Kappelar, 2008).

Although the cited cases above show only the costs that police departments pay for civil cases, other costs should be considered. It costs police departments approximately \$93,000 to train, equip and pay officers annually (BJS, 2003). Much of this expenditure is lost if officers are convicted of felonies. These officers are typically fired because a felony charge prohibits them from carrying a firearm and negatively affects their credibility in court.¹

In addition to the monetary costs, the impact of even a single instance of inappropriate police aggression has the potential to damage citizens' trust in police officers. One of the most widely-cited cases of excessive force occurred on March 3, 1991. Rodney King, an African American, was pursued by police officers in a high-speed chase. After the brief chase, 4 police officers from the Los Angeles Police Department (LAPD) severely beat King with their batons in the presence of 17 other officers and several citizens. One of those citizens videotaped the beating and sold the tape to a local television station. The television station broadcasted the video, which led to a nationwide furor over police brutality and racism. On April 29, 1992, the police officers who had been involved were acquitted of all charges related to the beating (Jacobs, 1996). This

verdict caused tension between citizens and the police and led to the 1992 Los Angeles (LA) Riots. During the LA Riots approximately 1,032 people were injured, 34 were dead, another 3,952 were arrested, and there were approximately \$800 million in property damage (LA Times, 1992). Two of the officers were later found guilty in a federal trial for civil rights violations. Although this case is extreme, it is an example where one incident of police excessive force ultimately led to wide-spread media coverage, millions of dollars in damages, many injuries, and deaths, and a breakdown of trust between citizens and police.

Some researchers have described the impact of inappropriate law enforcement behavior as the *60 Minutes Effect* (Englert et al., 2009). *60 Minutes* is a popular American investigative television show that airs reports and profiles on people in the news. If *60 Minutes* features a police officer or police department, it is likely because of a controversial incident such as excessive force or police brutality. The *60 Minutes Effect* suggests that law enforcement officers are in a special position; where their behaviors are closely monitored and scrutinized by the media and the public, and any instance of inappropriate behavior may result in national media coverage (Englert et al., 2009). Police officers and police departments want to avoid ending up on *60 Minutes* because of the negative impact this may have on their relationships with the citizens they are sworn to protect.

Screening Out Potentially Aggressive Police Officers

It is clear that even though the base rate of police aggression is low, the impact is high. One way that psychologists can help to reduce inappropriate aggressive behavior is through careful screening of police officer candidates. Cognitive and non-cognitive

screening is critically important to police departments, and the need to identify reliable and valid measures of police performance has long been acknowledged. In fact, the 1967 President's Commission on Law Enforcement and Administration of Justice stated:

"Until reliable tests are devised for identifying and measuring the personal characteristics that contribute to good police work, intelligence tests, thorough background investigations, and personal interviews should be used by all departments...to determine the moral character and the intellectual and emotional fitness of police candidates. (p. 110)"

Twenty-two years later the International Association of Chiefs of Police reemphasized the importance of psychological evaluations when they urged all police departments to use professionally administered psychological screening of all police candidates (U.S. Department of Justice, 1989).

Becoming a police officer is a competitive and lengthy process. Police departments and administrators use substantial resources in the selection of police officers. There are several standards that police departments may set when selecting employees, such as: residency requirements, vision standards, educational level, physical ability, criminal history, medical history, and psychological screening (Gaines & Kappeler, 2008). In 2002, about 67% of local police departments, representing 90% of police officers nationally, used psychological tests as part of their selection process (BJS, 2003). Psychological tests are intended to identify and screen out individuals who may exhibit symptoms of psychopathology, or personality characteristics, such as aggression, that are unsuitable in police officers. Anderson et al. (1998) argued that police agencies could reduce excessive force litigation by using valid prescreening assessment and

interviews to identify and screen out potentially aggressive candidates. In order to select the appropriate tests to use, to identify trait aggression, it is first important to identify what variables contribute to aggressive behavior.

Theories of Aggression

Baron and Richardson (1997) identified four general theoretical perspectives on aggression. (a) Instinct theories propose that aggression is innate. One example is Freud's concept of *thanatos*, the death force, which compels humans to engage in self destructive behavior such as aggression. Another example would include a human ethological approach to aggression that suggests that humans have an instinct to aggress that has evolved as an important survival mechanism (Lorenz, 1966). (b) Drive theories propose that different external aversive stimuli elicit aggression. Dollard proposed the original frustration-aggression hypothesis which stated that humans are motivated towards goals and when these goals are blocked (by external stimuli) this leads to frustration, which leads to aggressive behavior to remove those obstacles (Dollard, Doob, Miller, Mowrer, & Sears, 1939). (c) Cognitive theories propose that emotional and cognitive processes underlie aggression. These theories suggest that a person's interpretation of an external stimulus will influence behavior. For example, if an external stimulus is perceived as a threat the person may behave aggressively. Zillman (1990) suggested that competing cognitions might also inhibit aggressive behavior. (d) Social learning theories propose that aggression is primarily acquired through observational learning and direct experience with aggressive behavior (Bandura, Ross, & Ross, 1961).

Although the debate over the exact causes of aggressive behavior has not been resolved, current researchers (Baron & Richardson, 1994; Geen, 1990; Lindsay & Anderson, 2000) accept that aggression probably stems from both nature and nurture.

Geen's Model of Affective Aggression

Theorists have typically distinguished between two types of aggression—*instrumental aggression* and *affective aggression*. *Instrumental aggression* is aggressive behavior in the absence of any negative feelings (Geen, 1990). An example of this type of aggression would include a police officer who uses physical force to stop a fight. Even though the officer used force that would be described as aggressive, it is likely that the officer did this to protect the individuals from each other and to stop the disturbance, rather than because the officer felt any negative emotion towards either person. This type of aggression may be considered acceptable and is typically not the focus of research on police aggression.

Affective aggression is aggressive behavior that is triggered or accompanied by a strong negative emotional state, such as anger (Geen, 1990). An example of this type of aggression would be a police officer who uses pepper spray to retaliate against an individual who called him or her an offensive name. This type of aggressive behavior would be considered unacceptable because the level of force used was disproportional to the provoking incident and was prompted by anger in the absence of a legitimate police objective. It is this type of police aggression that is typically the focus of police research.

Geen (1990) provided a comprehensive theoretical model of affective aggression based on extensive research that suggests that aggressive behavior is most likely to occur when individuals who have a high potential for aggression (based on various background

variables) are in a situation that elicits aggressive behavior (based on various situation variables).

Background variables. Background variables influence a person's disposition to aggress. Whether these variables are learned or are a part of a person's innate personality, background variables moderate the likelihood that a person will engage in an affective aggressive response when provoked by the environment. Geen's (1990) model identified several background variables that can contribute to an individual's potential for affective aggression, such as personality traits, social-cultural expectations, and observations of violent stimuli.

Personality traits. Personality traits can be a powerful moderating variable of aggressive behavior. For example, *reactive aggressiveness* (Dodge & Coie, 1987) is a personality variable that is thought to moderate the expression of aggression toward others who are perceived as having acted with hostile intent or with ambiguous intent that can be interpreted as hostile. Individuals with high reactive aggression are more likely to overreact angrily when provoked. The tendency for people to attribute hostile intent to another person when the latter's motives are ambiguous is called *hostile attribution bias* (Nasby, Hayden, & DePaulo, 1979). Dodge (1980) found that aggressive boys were more likely than the non-aggressive boys to retaliate against another boy whose intent was ambiguous. In police officers, high reactive aggression may lead to the use of excessive force towards citizens who are deliberately provocative as well as towards citizens whose behaviors may be ambiguous.

Social-cultural expectations. A culture or subculture can mandate values, beliefs, and attitudes that support aggressive behavior. Some social groups are more likely than

others to use violence to solve problems (Wolfgang & Ferracuti, 1967). Each police officer candidate comes from a unique background and has unique attitudes toward the use of aggressive behavior (whether physical or verbal) to solve conflicts. Consider a candidate who is from a culture or group where the proper response to a perceived insult is physical aggression. If selected to be a police officer, he or she may be more likely to resort to aggressive behavior to handle incidents of citizen disrespect.

Observations of violent stimuli. Children who grow up in environments where they observe aggression as a normal response to conflict may imitate these behaviors later on in new situations. Bandura et al. (1961) originally provided some evidence that children who observe violent acts by adults are more likely to imitate those acts. Other researchers have also found support for these findings in family settings (Dishion, Loeber, Southamer-Loeber, & Patterson, 1984; Patterson, Chamberlain, & Reid, 1982). There is evidence to suggest that child-rearing practices are linked to levels of aggression in children and the generalization of that aggression to new situations (Dishion et al., 1984). Consider the hypothetical police officer candidate who was raised in an environment where he or she was frequently exposed to or the victim of aggressive behavior. This officer may be more likely to use physical force to solve conflicts rather than other non-physical strategies (i.e., mediation) when provoked.

It is likely that many of these background variables influence each other. For example, cultural attitudes toward aggression may influence a person's personality. Behaviors learned through the observation of violent stimuli are also likely to shape a person's personality. During prescreening assessment, psychologists attempt to identify

these background variables, particularly personality variables, using various psychological measures and interviews.

Situational variables. Individuals with a strong potential for aggression are more likely to engage in affective aggressive behavior when specific types of situational variables are present. Situational variables that may trigger affective aggressive behavior include environmental stressors, pain, and frustration (Geen, 1990). Unfortunately, police officers are exposed to many of these situational variables as a part of their job.

Environmental stressors. Studies have demonstrated that loud noise (Glass & Singer, 1972) and crowding (Griffitt & Veitch, 1971) influence aggressive behavior. Police officers are likely to encounter loud noises and large groups of people at rallies and group protests (i.e., the 1999 World Trade Organization protests in Seattle). These types of environmental stressors may make officers more likely to respond aggressively if provoked by protesters.

Physical Pain. Physical pain has been demonstrated to play a role in the strength and frequency of aggressive responses. Berkowitz, Cochran, and Embree (1981) found that women whose hand was in pain-inducing cold water delivered fewer rewards and more punishers to another participant who was not responsible for the pain. Berkowitz (1983) later proposed that pain generates negative affect that leads to aggressive reactions. This point is especially relevant to police work. A police officer who is feeling pain from being injured (e.g., hurt in an altercation) earlier in a shift may behave aggressively towards other citizens later in his or her shift. This type of aggressive behavior would not be considered justified by police departments.

Frustration. Frustration is one of the most frequently-studied factors related to the expression of aggressive behavior. Frustration stems from the blocking of goal-directed responses. When a person's progress toward a goal is obstructed, he or she is more likely to engage in an aggressive reaction (Baron & Richardson, 1994). Geen (1968) found that males whose attempts to solve puzzles were thwarted, or who were asked to solve a puzzle that was not solvable, behaved more aggressively than males whose attempts to solve puzzles were not obstructed. Other studies have found similar results (Berkowitz & Geen, 1966; Harris, 1974). These studies may be especially relevant to police use of excessive force. If a police officer's goals are blocked by a citizen (e.g., refusal to comply with an officer's request), the officer may engage in aggressive behavior because of the frustration provoked by the suspect.

Many of these situational variables occur as part of a police officer's job and may cause officers high levels of stress (Violanti & Arron, 1994). Examples include encounters with individuals who are drunk, frustrating encounters with the mentally ill, and domestic disturbances. Although Geen's (1990) theory would predict that these types of situational variables are likely to elicit strong aggressive responses in most people, it is inappropriate for police officers to react to these situations with aggressive behavior. Police officers are expected to manage these encounters while using a minimal amount of force (Sheehan & Cordner, 1989). Typically, there is very little that can be done to eliminate these types of situational variables in police work, because it is the role of the police officer to handle these exact situations on behalf of society.

Megargee's Theory of Control

Geen (1990) included behavioral control as one of the personality variables that contribute to aggressive behavior. Megargee's (1965) Theory of Control suggested that behavioral control is an important factor that may moderate the relation between an individual's potential for aggression and aggressive behavior.

Megargee and Mendelsohn (1962) observed that some extremely assaultive inmates obtained surprisingly low scores on MMPI scales related to aggression and high scores on control scales. From his original research in such populations, Megargee developed a theory that sought to explain why some generally mild-mannered individuals engaged in isolated episodes of extreme aggression, including murder (McGurk, 1981). His findings contrasted with other authorities in the field at the time (cf. Berkowitz, 1962; Buss, 1961) who suggested that assaultive criminals simply lacked adequate behavioral inhibition (Megargee, 2009). On the contrary, Megargee's assaultive subjects appeared to have high levels of behavioral inhibition most of the time.

Megargee suggested that an important factor in the frequency and magnitude of aggressive behavior was the extent to which a person could exercise behavioral control. His theory predicted that *overcontrolled* assaultive individuals would exhibit infrequent but extremely violent displays of aggression, whereas *undercontrolled* individuals would display more frequent but less extreme displays of aggression (McGurk, 1981).

Megargee believed that the primary moderator in the expression of aggression was internal behavioral control. However, he acknowledged that external situational factors could also directly prevent aggressive behavior from occurring. For example, one police officer may stop another police officer from using excessive force. However, for police work, in which officers typically work independently, police departments cannot

rely on external factors to prevent the use of excessive force. Police departments must rely on the individual officer's behavioral controls to prevent the expression of affective aggression.

Based on Megargee's theory it seems relevant to measure levels of aggression and behavioral control, as well as the relation between them, in order to identify police candidates who are at risk of engaging in aggressive behavior on-the-job. Figure 1 provides a simple model that extracts the important features from both Geen's model and Megargee's theory that may inform selection practices.

Traditional Police Selection Measures

Police organizations use psychological screening to aid in the selection of police officers. Many states have laws requiring police departments to use psychological screening as part of the selection process (Dwyer, Prien, & Bernard, 1990). Valid pre-employment screening can help police departments avoid wasting resources on the training of recruits who may not be suited for law enforcement (Inwald & Shushman, 1984). Psychological screening typically includes a battery of tests consisting of cognitive and personality measures. Currently the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) is by far, the most widely used and researched instrument in police selection (Davis, Rostow, Pinkston, Combs, & Dixon, 2004; Hargrave, Hiatt, & Gaffney, 1988, Super, 2006).

Minnesota Multiphasic Personality Inventory-2

The MMPI was originally designed to measure psychopathology. Since 1989, its predecessor, the MMPI-2 has been in use (Graham, 2000). Researchers have studied various scales and indices created from the MMPI-2 to attempt to predict police

performance, disciplinary actions, supervisor ratings, and citizen complaints (Aamodt, 2004).

Hargrave et al. (1988) used MMPI scales Frequency (F), Hysteria (Hy), Psychopathic Deviate (Pd), and Control (Cn) to form an Aggressiveness Index based on prior research by Husemann, Lefkowitz, and Eron (1978). The purpose of their study was to identify the utility of the index to discriminate between an aggressive and non-aggressive group of officers (based on the number of physical fights the officer's were in during the previous year). A discriminate analysis using the four MMPI-2 scales correctly classified 60% of the aggressive officers and 65% of the non-aggressive officers in one police sample, and 67% and 83% in another sample, respectively. A reduced Aggressiveness Index using only scales F, Pd, and Hy has also been found to be moderately correlated with disciplinary suspension days for police officers who were on the job for 3 years (Costello, Schneider, & Schoenfeld, 1996).

Weiss, Johnson, Serafino, and Serafino (2001) conducted a study of aggressiveness in a small group of state police officers. They found that the Overcontrolled Hostility scale (O-H) on the MMPI-2 was moderately related to police officers' performance ratings. They further suggested that hostility control was an important factor to study in the evaluation of police officer candidates and may be related to later overuse of force and authority problems.

Castora, Brewster, and Stoloff (2003) examined the ability of the MMPI-2 to predict police aggression as measured by O-H, and three additional scales, Anger (ANG), Manifest Hostility (HOS), and Hostility (HO). The subjects were police officer candidates in two small city police departments. In one department, small but significant

negative correlations were found between the O-H scale and supervisors' ratings of the number of justified citizen complaints an officer received.

The three studies mentioned provide some support for the use of the MMPI-2 in predicting police aggression, but recent research has cast some doubt on its ability to predict police performance in general (cf. Aamodt, 2004). Because of its widespread use in police selection (Super, 2006), I have chosen to further explore its ability to predict police aggression while also investigating potential new measures in order to identify whether they are better predictors.

Non-traditional Police Selection Measures

Several practical considerations were taken into account when selecting new measures that might have potential for predicting police aggression. First, I wanted to select instruments that measure the important constructs previously discussed in Geen and Megargee's (1965) theories (i.e., potential to aggress and behavioral control). Two appropriate tests were identified: (a) The IAT Reasoning Test (IAT) measures an individual's implicit cognitive readiness to aggress and the (b) Monetary Delay-discounting Task (MDDT) measures impulsivity, or its opposite, behavioral control.

Second, because direct self-report personality measures have been shown to be impacted by tendencies for job candidates to give socially acceptable responses (James & McIntyre, 2000); I wanted to use measures that might be more resistant to impression management. The IAT was deliberately developed to mask its true purpose. Participants who complete the MDDT are also unlikely aware of how their choices will be interpreted.

Third, I wanted instruments that were quick and easy to administer. Both the IAT and MDDT can be given in paper-and-pencil format and have short, easy-to-follow instructions. Both tests can be administered together in approximately 35 min.

Finally, I wanted instruments that would be inexpensive to administer, to make them cost-effective for police departments, especially small departments with few resources. The IAT is obtained from the publisher at a current cost of \$8.50 per use. The MDDT is a task that was developed for use in studying impulse control in humans; it is not owned by any publisher. The only expenses associated with the MDDT are printing costs for each copy administered. Of course, as with any evaluation procedure, there are costs associated with the evaluator's time, but both of these tests are quick to score and interpret.

These measures reasonably met the criteria. The next section will describe each of these measures and findings from different populations.

IAT Reasoning Test

The IAT addresses some of the short-comings of traditional personality instruments (i.e., MMPI-2) by measuring *implicit aggression* rather than *explicit aggression* (James & McIntyre, 2000). Personality measures such as the MMPI-2 measure explicit aggression using a self-report format in which individuals respond in a direct way to questions (LeBreton, Barksdale, Robin, & James, 2007). Because individuals are, directly and consciously responding to the construct of interest these measures may potentially suffer from self-report biases that are common in high-stakes selection. The following is an example of an item selected from the MMPI-2 O-H scale (the "aggressive" response is in bold): **True** or False. At times I feel like swearing.

In contrast, the IAT is designed to indirectly measure biases and rationalizations linked to latent aggressive motives (LeBreton et al., 2007). The advantage of this type of instrument is that it does not directly appear to be measuring the construct of interest and may be less susceptible to socially desirable responding. The following is an item similar to those on the IAT Reasoning test (the "aggressive" response is in bold): John was walking down the street and a man bumped into him, knocking his coffee out of his hand. Which is the most logical explanation?

- a) The street was crowded (logical).
- b) The man had tuna for lunch (illogical).
- c) The man wanted to pick a fight with John (aggressive).**

Although the items from both tests are intended to tap into aggression, the explicit item directly asks the respondent if he or she engages in an aggressive behavior while the implicit item asks the respondent to give a logical explanation for a situation. "Implicit tests are designed to assess whether answers based on personality-driven implicit cognitive biases are logically appealing to respondents" (Lebreton et al., 2007, p. 1).

High scores on the IAT indicate that an individual has a higher level of implicit cognitive readiness to aggress. The IAT has been found to correlate moderately with absenteeism, lying, conduct violations (i.e., cheating, plagiarism, vandalism, physical violence, and theft) and disruptive attrition in several populations (e.g., students, business employees; James & McIntyre, 2000). James, McIntyre, Glisson, Bowler, and Mitchell (2004) studied the relation between scores on the IAT and aggression in undergraduate intramural basketball players. They found that scores on the IAT had a moderate correlation with the frequency of aggressive behaviors. In the only published study using

a police sample, James (1998) administered the IAT to 140 police officers from departments in the Southeastern United States. He found that the IAT was moderately negatively correlated with officers' overall performance, interpersonal skills, reliability, judgment, and professional demeanor as rated by their supervisors. Although this study provides promising evidence for the use of this measure in police selection it is not known whether the instrument can reliably predict on-the-job aggression. I selected this instrument to measure police candidates' potential to aggress (see Figure 1).

Monetary Delay-discounting Task

Another important feature of aggressive behavior identified by Megargee (1965) was behavioral control (see Figure 1). One way to measure behavioral control is by using a delay-discounting task. In a delay-discounting task, individuals choose between smaller, more immediate rewards and larger, more delayed rewards (e.g., \$100 now or \$200 in 1 month). Behavioral control is operationally defined in these tasks by how long an individual is willing to delay gratification, by choosing larger rewards later rather than smaller, more immediate rewards. The term *delay discounting* refers to the subjective devaluation of a reward as the delivery of that reward is increasingly delayed in time (Bickel & Marsch, 2001).

There is debate regarding the function that best describes delay-discounting (Green & Myerson, 2004). Economists once believed that an exponential function² most accurately models delay discounting. These models predict that a reward will lose subjective value at a constant rate for each unit of increase in the delay of that reward (Samuelson, 1937). Currently, however, researchers believe that hyperbolic (Mazur, 1987) and hyperbola-like functions³ (Myerson & Green, 1995) more accurately model the

delay-discounting process. In contrast to exponential models, hyperbolic and hyperbola-like models of delay-discounting predict that a reward will lose subjective value faster at shorter delays and more slowly at larger delays.

In order to study how organisms choose between alternative reinforcers, delay-discounting procedures may vary in terms of the types of rewards (e.g., money, cigarettes, food) and the length of the delay before the reward is received (e.g., minutes, days, months; Mazur, 1987). Sometimes the reward chosen by the participant is actually delivered; sometimes the choice is between hypothetical rewards that are not delivered (Johnson & Bickel, 2002).

Performance on delay-discounting tasks has been found to be related to many different behaviors where impulsivity may be an issue, such as pathological gambling (Dixon, Marley, & Jacobs, 2003), smoking (Bickel, Odum, & Madden, 1999), illicit drug use (Kirby, Petry, & Bickel, 1999) prisoners' dilemma game strategies (Harris & Madden, 2002), delinquency (White et al., 1994) and aggression (Cherek, Moeller, Dougherty & Rhoades, 1997; Dougherty, Bjork, Huckabee, Moeller, & Swann, 1999). A subset of these studies will be further explored below.

Dixon et al. (2003) used a hypothetical monetary delay-discounting procedure to study how pathological gamblers chose between immediate and delayed rewards. Participants chose between immediate awards incrementing from \$1 to \$1000 and a fixed delay reward of \$1000 with delays incrementing from 1 week to 10 years (e.g., "Would you like \$500 now or \$1000 dollars in 6 months"). They found that gamblers discounted delayed rewards more steeply, and were willing to choose smaller immediate rewards

over larger delayed rewards, suggesting that they had less impulse control than non-gamblers.

A study by Bickel et al. (1999) used a monetary delay-discounting task to identify whether cigarette smokers, ex-smokers, and non-smokers differed in impulse control. They found that cigarette smokers, also discounted delayed rewards more steeply, and were willing to choose smaller immediate rewards over larger delayed rewards, suggesting that they had less impulse control than non-smoking groups.

Researchers have also looked at the relations between known aggressive groups (e.g., men with violent criminal histories, and women with borderline personality disorder) and behavioral measures of impulsivity. Cherek et al. (1997) used a delay-discounting procedure in which a group of violent male parolees and a non-violent control group could actually earn money. The participants could press one button and receive \$0.05 after 5 s or they could press another button and receive \$0.15 cents after varying delays (always longer than 5 s). Choosing the delayed reward would ultimately net the most money over the session. The researchers found that the violent male parolees more often chose the smaller, more immediate rewards over the larger delayed rewards compared to the non-violent control group. The violent male parolee group also scored significantly higher than the control group on the Barratt Impulsivity Scale (BIS-11).

The advantage of using a delay-discounting task over self-report measures is that individuals may not be aware that the task is measuring behavioral control. Below is an example to highlight the difference between a traditional self-report personality item and a hypothetical MDDT item (responses that are indicative of behavioral control are bolded).

1. Item from the MMPI-2 O-H scale: True or **False**. My conduct is largely controlled by the behavior of those around me.
2. Item from the MDDT: Which would you prefer? \$50.00 now or **\$100.00 in 1 month**.

Delay-discounting tasks have a rich history as behavioral measures of impulsivity and have been useful for better understanding aggressive behavior. There is evidence that delay-discounting tasks are reliable with test-retest coefficients reported around .9 (Simpson & Vuchinich, 2000). Research also supports its ability to distinguish between known impulsive and non-impulsive groups (Crean, Wit, & Richards, 2000). Although there are many self-report measures of impulsivity (e.g., BIS-11, Dickman Impulsivity Scale,) in high-stakes police selection these measures may suffer from socially desirable response biases, which may be avoided by the use of the MDDT.

The purpose of selecting these non-traditional instruments (IAT, MDDT) was to determine whether they have any utility beyond traditional measures in predicting police officer aggression. Thus, I plan to compare the predictive ability of these non-traditional measures (IAT, MDDT) to a commonly used traditional self-report personality measure (MMPI-2).

The Present Study

The researcher will address several questions in this study. The first question is concerned with identifying whether impulsivity is a moderator of the relation between background variables and reported on-the-job aggression in police officers. The remaining two questions are concerned with identifying the best measures and scales to use in predicting police aggression.

Hypothesis 1

Research question: Does behavioral control (as measured by the MDDT) moderate the relation between an individual's readiness to aggress (as measured by the IAT) and his or her actual on-the-job aggression (as measured by supervisors' ratings of on-the-job aggression; see Appendix B)?

Hypothesis: There will be an interaction between the MDDT and the IAT that will best explain supervisors' ratings of on-the-job aggression and will significantly contribute to the prediction model. Specifically, as behavioral control (measured by the MDDT) increases, the relation between a person's potential to aggress (measured by the IAT) and actual aggression (measured by supervisors' ratings) will become weaker.

Hypothesis 2

Research question: Which combination of variables is the best predictor of on-the-job aggression?

Model 1 is a non-traditional model selected to best align with the proposed model of aggression, which is a combination of Geen's (1990) model and Megargee's (1965) theory of aggression. This model includes cognitive readiness to aggress (IAT), behavioral control (MDDT), and the interaction between them (IATxMDDT).

Model 2 is a traditional model based on the work of Castora et al. (2003) and Weiss et al. (2001), which found that these variables are useful in predicting various aggression-related outcomes. This model includes the MMPI-2 scales Hostility (HO), Overcontrolled Hostility (O-H), and Anger (ANG). This combination of variables incorporates personality features related to both aggressive tendencies (HO, ANG) and

features related to behavioral control (O-H). This is consistent with the proposed theoretical model, using traditional measures.

Model 3 is a traditional model based on the Aggressive Index (Hargrave et al., 1988, Husemann et al., 1978). This model is composed of the MMPI-2 scales Frequency (F), Hysteria (HY), and Psychopathic Deviate (PD)⁴. Although this model does not align with the proposed theoretical model it is one of the most frequently cited models for predicting aggression in police. This model serves as a basis of comparison against the newly proposed model.

Hypothesis: A two-predictor model including the MDDT, the IAT, and the interaction between them (MDDT x IAT) will best predict on-the-job aggression. This model incorporates both personality features related to readiness to aggress and behavioral control, while potentially avoiding the problem of impression management found with the MMPI-2.

Hypothesis 3

Research question: Which single variable best predicts supervisors' ratings of police aggression? Measures include the IAT, the MDDT, and scales from the MMPI-2, including Overcontrolled Hostility (O-H), Hostility (HO), Anger (ANG), Psychopathic Deviate (PD), Frequency (F), and Hypomania (Hy).

Hypothesis: The IAT will be the best individual predictor of supervisors' ratings of aggression. If the proposed model is accurate, then there should be a relation between the IAT and on-the-job aggression because it is designed to be a measure of an individual's potential to aggress, and previous research has found that it relates to aggressive behavior (James et al., 2004). Although scales from the MMPI-2 (e.g., O-H,

HO, and ANG) also measure personality features related to potential to aggress, the IAT may be a better measure because it may not be as susceptible to impression management.

CHAPTER 2

Method

Participants

Participants were from two small city police departments ($N = 85$). The researcher collected data from currently employed police officers. The data from the two police departments were combined and treated as one sample because there were no significant differences found between the departments on any of the variables used. The departments are also similar; they are in towns that are approximately the same size (Department A \approx 22,000 citizens and Department B \approx 24,000), and each department has approximately 50 sworn police officers.

The final sample used for analysis contained 60 of the original 85 participants. Participants were removed list-wise from the data for any of the following three reasons: (a) if they did not receive enough supervisors' ratings to compute a total aggression score (see Measures section of Chapter 2), (b) if data on the MDDT were identified as nonsystematic⁵ (cf. Johnson & Bickel, 2008), or (c) if data on the IAT were identified as nonsystematic⁶ (cf. James & McIntyre, 2000).

The final sample consisted of 82% men and 18% women. The sample was composed of 93.7% Caucasian, 4.2% African American, and 2.1% Hispanic police officers. At the time of the collection of the MMPI-2 data (at time of hiring) the officers' average age was 27.78 ($SD = 6.59$) years, and they had 14.61 ($SD = 1.55$) years of education. At the time of the collection of the IAT and MDDT data, the officers' average age was 35.25 ($SD = 10.05$).

Measures

Annual Performance Questionnaire. The APQ is a 131-item questionnaire that includes a variety of items related to police officer performance (see Appendix B). Supervisors rate each officer's performance every year using the APQ. The APQ is used for research use only and is not tied to officers' promotion or pay. The researcher selected six items from this measure as indicators of police officer aggression (see Appendix A). An average rating for each item was computed using all of the APQs the officer had received.

An exploratory factor analysis using principle axis extraction conducted on the average ratings revealed that a single factor accounted for 66.66 percent of the common-item variance for these six items. Table 1 contains the inter-item correlations, and Table 2 contains the factor pattern coefficients and extracted communalities (see Appendix B for selected items from the APQ). Factor pattern coefficients represent the relations between the items and the factor. Extracted communalities indicate the proportion of each variable's variance that can be explained by the single factor. Each of the items were retained because they had moderate to high pattern coefficients ($>.3$) and moderate to high extracted communalities ($>.15$).

Because all of the items appear to be measuring overlapping facets of aggression, a total aggression score (AGRESS) was computed using all of the items to represent an overall rating of on-the-job aggression. The computed AGRESS score ranges from 6 to 39, with 6 indicating that the officer *rarely* engaged in aggressive behavior and 39 indicating that the officer engaged in aggressive behavior *very often*.

Minnesota Multiphasic Personality Inventory-2. The MMPI-2 is a 567-item, self-report, true-false personality inventory, originally developed to identify psychopathology. Scores on the MMPI-2 are reported as *T*-scores with a mean of 50 and a standard deviation of 10. The MMPI-2 has 10 clinical scales and 15 supplementary scales, as well as hundreds of research and special scales. A score above 65T on any scale is considered clinically elevated. Graham (2000) reported that median test-retest coefficients for the MMPI-2 were .81 and median internal consistency coefficients were .64. Many MMPI-2 scales have been used to study police officer aggression. The researcher selected scales that have may related police aggression [Hostility (HO), Anger (ANG), Psychopathic Deviate (PD), Frequency (F), and Hypomania (Hy)] and behavioral control [Overcontrolled Hostility (O-H)].

The IAT Reasoning Test. The IAT was developed to be a better measure of aggression than traditional self-report personality tests, because the authors masked the true purpose of the test (see Appendix C). The test was designed to appear to measure critical reasoning skills, but, it actually measures an individual's cognitive readiness to aggress (James & McIntyre, 2000). The test contains 25 items: 22 conditional reasoning problems designed to measure aggression and 3 critical reasoning problems that are not scored. A raw score is computed by summing the number of aggression-type responses that an individual chooses. Scores range from 0 to 22, with the population mean at 3 (*SD* = 2). Scores ranging from 0 - 2 correspond to *low aggression*, scores ranging from 3 – 7 correspond to *moderate aggression*, and scores that are 8 and above correspond to *high aggression*. Data collected by James and McIntyre (2000) suggested that the test has good reliability with reliability coefficients ranging from .84 to .86.

Monetary Delay-discounting Task. The monetary delay-discounting task is a behavioral measure of impulsivity (or its opposite, behavioral control; see Appendix D). The hypothetical monetary delay-discounting task used here was based on Rachlin et al.'s (1991) methodology. The participants do not actually receive any money but choose between hypothetical monetary rewards. Researchers have found that participants respond to delay-discounting tasks similarly whether real or hypothetical money rewards are used (Johnson & Bickel, 2002).

The MDDT is a 140-item task in which participants choose between two hypothetical monetary rewards, for example, a smaller reward to be received immediately and a larger reward to be received after some delay. The smaller immediate rewards (e.g., \$50 NOW) were listed on the left side of each page, and the larger delayed rewards were listed on the right (e.g., \$200 in 1 month). Smaller rewards incremented over 20 items on each page, from \$10 to \$199 and the larger rewards were always \$200. There were seven delay values used: 2 weeks, 1 month, 3 months, 6 months, 1 year, 3 years, and 8 years. For each level of delay, the researcher computed an indifference point or the reward amount where participants switched from selecting the larger delayed reward to selecting the smaller immediate reward (i.e., where the two rewards are subjectively equal). The indifference point is calculated by taking the average of the last immediate reward that was rejected and the first immediate reward that was accepted. For example, on one item a participant selects \$200 in 1 month over \$190 now. On the next item, the participant switches and selects \$198 now over \$200 in one month. The indifference point is \$194, the average of \$190 and \$198. This represents the hypothetical point at which both the delayed reward and immediate reward are subjectively equal.

Each indifference point was used to calculate an area under the discounting curve (AUC) for each participant. AUC values range continuously from 0.00, which indicates steeper discounting, or low behavioral control, to 1.00, which indicates less steep discounting, or high behavioral control⁷. Although researchers often use derived discounting parameters (k) to represent discounting (i.e., using exponential, hyperbolic, or hyperbola-like models) instead of AUC; Myerson, Green, and Warusawitharana (2001) identified problems with using derived discounting parameters when conducting inferential statistics. First, the different mathematical discounting models used to obtain k values are theoretically based (cf. Chapter 1) and may not necessarily fit an individual's discounting data. In contrast, AUC values are non-theoretical, meaning that they make no assumption about the discounting curve for any individual. Second, k values tend to be skewed, making them less ideal for use in parametric analyses. AUCs tend to be more normally distributed making them ideal for parametric statistical analyses.

Data collected by the researcher suggest that the MDDT has adequate reliability in this sample with an alternate form test-retest coefficient of .78.

Procedures

The procedures are described in two sections because of the use of both archival and non-archival data. Part 1 describes collection of the MMPI-2 data during pre-employment screening of each police officer and the subsequent yearly administration of the APQ. Part 2 describes how data from the MDDT and IAT were obtained for the current study. Prior to collecting any data, IRB approval was obtained.

Part 1: MMPI-2 and APQ. As part of pre-employment screening performed by a licensed clinical psychologist, police officer candidates in both departments took a

battery of psychological tests that included the MMPI-2. The archived MMPI-2 data were obtained for each of the participants in the current study. After pre-employment screening, candidates who became police officers were evaluated annually by their supervisors using the APQ. Each officer provided informed consent for the use of their test scores and their APQ data for use in future research projects.

Part 2: MDDT and IAT. The researcher obtained consent from the police chiefs of two local police departments to administer the IAT and MDDT to currently employed officers. Each officer also gave informed consent to participate in this study. To avoid interfering with the regular duties of the police officers, the researcher traveled to the police departments on several occasions over 2 months to collect the data prior to or after shift change.

The IAT was administered followed by the MDDT. Consistent with the test instructions, the researcher allowed officers 25 min to complete the IAT. Officers had unlimited time to complete the MDDT. However, all officers completed both instruments within 35 min. After collecting the data, data management and analysis was completed using SPSS 17.0.

CHAPTER 3

Results

Prior to testing individual hypotheses, descriptive statistics were obtained for each of the predictors and the criterion (Table 3), and for the intercorrelations between predictors (Table 4). Mean scores on all predictors fell within the normal population ranges for those instruments. Mean scores of supervisors' ratings of on-the-job aggression were positively skewed with almost all officers rated by their supervisors as rarely engaging in aggressive behavior.

Hypothesis 1

To test Hypothesis 1 (that behavioral control moderates the relation between potential to aggress and on-the-job aggression), a hierarchical regression analysis was conducted to evaluate whether the relation between a person's cognitive readiness to aggress (IAT) and supervisors' ratings of on-the-job aggression (AGRESS) is moderated by an officer's level of behavioral control (MDDT); see Table 5.

Before conducting the analysis, both predictors (IAT and MDDT) were centered. Centering is a linear transformation that puts the mean of the predictors at 0 by subtracting the group mean on the predictor from each of the individual scores. Centering was conducted because it reduces the high multicollinearity between the predictors (IAT and MDDT) and the interaction term (IATxMDDT; Aiken & West, 1991). This is necessary so that the interaction term is not rejected during statistical computation due to nonessential multicollinearity.

As shown in Table 5, the interaction term was not statistically significant ($sr^2 = .044, p = .11$). This suggests that the relation between potential to aggress (IAT) and

supervisors' ratings of on-the-job aggression (AGRESS) does not change as a function of behavioral control (MDDT).

Discussion. These findings do not support Hypothesis 1. Behavioral control did not moderate the relation between cognitive readiness to aggress and on-the-job aggression; rather there was a direct relation between behavioral control and on-the-job aggression. These findings are inconsistent with the proposed model (cf. Figure 1) of the relation between cognitive readiness to aggress, behavioral control, and on-the-job aggression in police officers.

These results do not provide conclusive evidence for Megargee's (1965) theory of control and how it relates to police officers. Megargee's theory identifies behavioral control as the primary moderator in the expression of aggressive behavior. However, the theory was developed, and subsequently supported, by research in highly assaultive criminal populations (Megargee, 2009). Comparatively, only one officer in this sample scored in the high aggression range on the IAT, with a score of 8.00 ($M = 3.35$). Officers in this sample may not have high enough trait aggression to the point where behavioral control would become a moderator of the relation between cognitive readiness to aggress and on-the-job aggression. These officers appear to have normal levels of aggression, and under such circumstances, behavioral control appears to be the most important factor in the expression of on-the-job aggression.

These findings are consistent with much of the research on aggressive behavior. Specifically, current models of aggression suggest that situational variables (e.g., environmental stressors, pain, and frustration) are causal factors in the expression of

aggressive behavior (Baron & Richardson, 1994; Geen, 1990; Lindsay & Anderson, 2000).

Police officers' jobs entail being in situations that would elicit aggressive behavior in most people. Thus, having higher levels of behavioral control may be necessary to subvert expected aggressive behavior and to promote appropriate handling of these situations. Indeed, much of an officer's training in the academy and during their probationary period involves learning how to respond appropriately (i.e., non-aggressively) to citizens who may be disrespectful, hostile, or otherwise provocative.

Hypothesis 2

To test Hypothesis 2 (that a model including the IAT, MDDT, and IATxMDDT will best predict AGRESS), multiple block-wise regression analyses were conducted to test the utility of each of the models in predicting supervisors' ratings of on-the-job aggression (AGRESS). Model 1 included cognitive readiness to aggress (IAT), behavioral control (MDDT), and the interaction term (IATxMDDT). Model 2 included the MMPI-2 scales Hostility (HO), Anger (ANG), and Overcontrolled Hostility (O-H). Model 3 included the MMPI-2 scales Frequency (F), Hysteria (HY), and Psychopathic Deviate (PD).

Prior to conducting the regression analyses, bivariate correlations between all predictor and criterion variables in the model were analyzed (Table 4). In examining the intercorrelations, it seems apparent that there will be moderate multicollinearity (moderate correlations between predictors) between the variables in Model 2 and Model 3. HO and ANG are strongly correlated ($r = .67$ $p < .05$), and, PD and HY have a moderate correlation ($r = .31$ $p < .05$). The unique contributions of these predictors will

be attenuated when included in the same model because they may account for the same variance in AGGRESS.

Model 1 explained a statistically significant percentage of the variance in AGRESS [$R^2 = .20$, $F(3, 51) = 3.84$, $p = .02$, 95% CI: .02 to .37]. Model 2 did not explain a significant percentage of variance in AGRESS [$R^2 = .043$, $F(3, 45) = .628$, $p = .60$, 95% CI: 0.00 to .15], nor did Model 3 [$R^2 = .01$, $F(3, 51) = .16$, $p = .92$, 95% CI: 0.00 to .05]. Tables 5, 6, and 7 include the statistical summary of each of the models and their ability to predict supervisors' ratings of on-the-job aggression.

Discussion. These findings partially support hypothesis 2. A model including the MDDT, IAT, and IATxMDDT (Model 1) was the best, and only, significant predictor of supervisors' ratings of on-the-job aggression. Traditional MMPI-2 models, 2 and 3, did not predict supervisors' ratings of on-the-job aggression.

Although Model 1 was the best predictor, its predictive utility is due primarily to the inclusion of the MDDT. Including the IAT and the interaction (IATxMDDT) did not add any predictive power beyond using the MDDT alone. These results are surprising because there is considerable research to support the relation between measures of trait aggression (such as the IAT) and aggressive behavior.

One possible explanation is, again, that officers in this sample did not have high aggression as measured by the IAT, resulting in restriction of range that is making it impossible to identify a potential true relation between scores on the IAT and on-the-job aggression. It may be difficult to obtain police samples with high aggression scores because these candidates are theoretically screened out before hiring. It may be that the

relation between cognitive readiness to aggress and aggressive behavior is only apparent at higher levels of trait aggression.

Use of a known aggressive sample, such as criminals incarcerated for assaultive crimes, may make it possible to identify whether there is a relation between cognitive readiness to aggress and severity of crime. However, even this research would be limited in its usefulness because findings would not be reliably generalized to a police population. If the current study was replicated with a larger police sample (e.g., NYPD) with more variability in IAT scores, a relation between readiness to aggress and on-the-job aggression might be found. If continued research does not demonstrate that the IAT can predict important police outcomes, then it should not be implemented into police screening.

Another possible explanation for these findings may be that officers were responding in a socially desirable way on the IAT and we did not accurately measure their cognitive readiness to aggress. In spite of the fact that the IAT was developed to mask its true purpose, police officers who are psychologically sophisticated may still discern the purpose of the test, and may respond in a socially desirable fashion. Indeed, anecdotal evidence from this sample suggests that some of the officers did correctly identify the purpose of the test. Because the measure was given to employed officers rather than candidates, it was hoped that impression management would not be a factor, because scores on the test were not reported to the police administration. However, this may not have been the case. Future research should identify whether participants are aware that the IAT is measuring a construct of aggression.

Traditional MMPI-2 models (Models 2 and 3) were not useful in predicting on-the-job aggression. These findings are consistent with recent research (Aamodt, 2004; Davis et al., 2004) which suggests that the MMPI-2 has little utility in predicting aggression-related outcomes. In contrast to Castora et al. (2003) and Weiss et al. (2001), the O-H scale was not found to predict police performance outcomes. The ANG and HOS scales were also not successful in predicting police performance outcomes, consistent with their research (Castora et al., 2003). These findings also contrast with Hargrave et al.'s. (1988) research that found the Aggressive Index (Model 3) to be useful in discriminating between aggressive and non-aggressive police officers. It is important to note that the Aggressive Index was originally derived from the MMPI and not the MMPI-2. Revisions to individual items and changes in scales may have altered the predictive utility of the index. Current research trends suggest that MMPI indices and scales that were found to be valid predictors of police performance are not as useful when using these same indices and scales on the revised MMPI-2. Current research does not support their use in police selection.

Hypothesis 3

To test hypothesis 3 (that the IAT will be the best single predictor of AGRESS), correlational and multiple regression analyses were performed to identify the relations between each of the predictors [Hostility (HO), Overcontrolled Hostility (O-H), Anger (ANG), Frequency (F), Psychopathic Deviate (PD), Hysteria (HY), cognitive readiness to aggress (IAT), and behavioral control (MDDT)], and supervisors' ratings of on-the-job aggression (AGRESS). There was a statistically significant, moderate correlation between the MDDT and AGRESS ($r = -.41, p = .001$). As scores on the MDDT increased

(indicating higher levels of behavioral control), ratings on AGRESS decreased (indicating less on-the-job aggression). No other variable had a statistically significant relation with AGRESS (see Table 4).

A multiple regression analysis was performed to obtain squared semi-partials. Squared semi-partials represent the unique relation between each of the predictors and AGRESS after controlling for the relations among all of the variables. The MDDT accounted for 14% of the variance in AGRESS, after controlling for the variance explained by all other variables in the model ($sr^2 = .14, p = .02$). No other variable had a statistically significant relation with AGRESS after controlling for all other variables (see Table 3).

Although HO appeared to account for a significant amount of variance in ratings of aggression, this likely due to a suppression effect. Because the other MMPI-2 variables used in the analysis are highly related to HO (i.e., ANG, F, Pd, and Hy); the relation between HO and AGRESS is improved because the other variables account for the error variance in HO, which inflates its relation with AGRESS. This spurious relation can be seen when looking at the bivariate relation (Table 4) between HO and AGRESS. This relation is almost 0 and is statistically non-significant; it is only with the introduction of the other variables into the regression model that this relation appears to become important.

Discussion. These findings do not support hypothesis 3. The IAT was not the best predictor of supervisors' ratings of on-the-job aggression; the MDDT was. Individual MMPI-2 scales and the IAT were not predictors of supervisors' ratings of on-the-job aggression.

Although the IAT has been found to be correlated with aggressive behavior in other populations, such as in work place violence and in student athletes (James & McIntyre, 2000), it has no relation with supervisors' ratings of on-the-job aggression in this sample of police officers. The possible reasons for this have already been stated in the previous discussion of hypothesis 2. First, total scores on the IAT were, on average very low ($M = 3.35$) on a test with scores ranging from 0 to 22. This average is close the population mean provided by the test authors ($M = 3.00$), suggesting that police officer candidates are no more aggressive than the average person. Based on Geen's (1990) model of aggression, most people would engage in aggressive behavior when placed in situations where they are provoked or put under stress, the types of situations that officers often face. Therefore, the likelihood of engaging in aggressive behavior may be related more directly to an officer's level of behavioral control and not to his/her cognitive readiness to aggress, particularly in individuals who are not overly aggressive to begin with.

As has already been stated, even though the IAT is designed to mask its true purpose, it may still be obvious to police officers which responses are socially desirable; they may still be engaging in impression management. If they are, then this test may not be capable of accurately measuring police officers' levels of trait aggression.

Traditional MMPI-2 scales were also not useful in predicting supervisors' ratings of on-the-job aggression. These results are generally in line with the more recent research findings that individual scales on the MMPI-2 are not good predictors of future police behavior (Aamodt, 2004).

Although the MMPI-2 continues to be the most widely used instrument in the selection of police officers (Super, 2006), other instruments have been developed in the past decade that have become increasingly popular in police selection. Measures such as the Inwald Personality Inventory (IPI) and Matrix-Predictive Uniform Law Enforcement Selection Evaluation Inventory (M-PULSE) were developed specifically for use in police selection and have been found to be more useful in the selection process. However, like the MMPI-2, these measures do not attempt to mask the constructs they are measuring and they may also suffer from impression management. Although they include validity scales to identify biased responding, these scales serve only to invalidate an applicant's test. In those cases, the constructs that police departments are interested in measuring still remain unknown.

Even though the MDDT, as a single predictor, accounted for a large amount of variance (14%) in on-the-job aggression ratings, on average, police officers in these departments are rated as having very low aggression overall. The officers' mean AGRESS score was 10.53, on a scale that ranges from 6 to 39. As expected, police officers do not engage in frequent inappropriate aggressive behavior. This causes ratings of aggression to be restricted and skewed, making it difficult to find relations between prescreening measures and on-the-job aggression. Even though these results will likely not help police administrators make clear-cut decisions in police selection, they do suggest that behavioral control may be an important trait to measure during the selection process and that it should be further explored by researchers.

Although behavioral control in the expression of aggressive behavior has been found to be important in criminal populations (Dougherty et al., 1999; Megargee, 2009) it

has received no attention in police selection research. To the researcher's knowledge no studies have used the MDDT for selection or other predictive purposes, although delay-discounting tasks have been used to study a number of negatively viewed behaviors including smoking (Bickel et al., 1999), gambling (Dixon et al. 2003), and narcotic drug use (Kirby et al., 1999). The reason for the lack of attention to behavioral control in selection research is unknown, but may be due to the paucity of jobs where there is a high concern regarding inappropriately aggressive employees. These findings should be replicated before any conclusive statements can be made about using the MDDT as part of the screening process. However, these data provide promising support for the use of this measure, or other measures of behavioral control (e.g., BIS-11, Dickman Impulsivity Scale), in police selection.

CHAPTER 4

General Discussion

"The effectiveness of a law enforcement organization rests to a large degree on its ability to adequately select, train, and supervise its personnel. The critical problem of selecting candidates is one of the thorniest, the most expensive, and the most time consuming tasks facing such organizations" (Colarelli & Siegel, 1964, p.1)

* * *

Aggressive behavior by police officers, while infrequent, jeopardizes the safety of citizens and police-community relations. One way to reduce police aggression is to select candidates who are less likely to engage in aggressive behavior when put in the stressful and demanding situations of the job. In order to do this, researchers must identify characteristics of police candidates that relate to future on-the-job behavior and must measure these characteristics in valid and reliable ways.

The focus of this study was to identify whether new measures (the IAT and MDDT) could do a better job at predicting police aggression than currently used measures (the MMPI-2). It was found that the MDDT was the only significant predictor of supervisors' ratings of on-the-job aggression; the IAT and MMPI-2 were not useful in predicting this outcome. These findings are tentative and should be replicated on various police samples prior to determining the practical utility of using the MDDT, or a similar measure, in the selection process.

Like previous researchers (Aamodt, 2004; Davis et. al., 2004) the researcher found that scales on the MMPI-2 were not useful in predicting police aggression. It is becoming increasingly clear that the MMPI-2, while still the most commonly used test in

police selection, should at the very least not be used as the only instrument given to police applicants. It is more appropriate to use the measure for its original intended purpose, identifying psychopathology, rather than as a tool used to make inferences about future police performance.

Limitations

There were several areas of limitation that should be taken into consideration when interpreting these findings. Some of these limitations are inherent to police selection research and cannot be avoided, while others can and should be corrected in order to produce sound findings.

First, this sample contained mostly Caucasian men from small rural police departments. These findings may not generalize to large, urban police departments or to police departments in other countries. However, the majority of police departments in the United States are small departments comprised of less than 100 officers; in fact departments this size or smaller represent 94% of all police departments (BJS, 2004). The officers employed by these local police departments are primarily Caucasian (76%) and male (89%; BJS, 2003). Thus our sample is representative of the vast majority of police departments. However, there may be variables other than demographics that make police departments distinctly different, such as police subcultures.

Ideally, individual police departments should conduct local validation studies of selection instruments before using them, in order to take into account the individual department's subculture and administrative requirements. In reality this is unlikely to happen since few police departments have the resources to invest in selection research, particularly longitudinal research.

Second, conventional screening methods limit sampling variability, because candidates who are deemed unsuitable are not hired. Variables that may truly be related to on-the-job performance (e.g., trait aggression) are difficult to study because researchers cannot measure the performance of candidates who were not hired. This limitation is problematic but also positive, because current methods may be doing a reasonable job of eliminating most of the officers who would be likely to engage in aggressive behavior. In fact, as has already been stated, inappropriate police aggression is rare. However, the impact of this rare event is significant, so researchers should continue to try to improve screening methods.

Third, a methodological limitation to this study is comparing predictive models using archival data (MMPI-2) to predictive models from non-archival data (IAT and MDDT). When comparing these models an assumption is made about the stability of the measured constructs. Specifically, we are assuming that officers' currently obtained scores on the IAT and MDDT would have been equivalent to their scores on these measures during prescreening. It is possible that if the IAT and MDDT were given at the same time as the MMPI-2, their relations with on-the-job aggression would have been different. Ideally, and more appropriately, all measures would have been given to officers at prescreening and then used to predict on-the-job aggression.

Fourth, an important limitation that arises in comparing research in this domain is how researchers operationally define aggression. Researchers across studies often use different outcomes as indicators of aggression. Some are subjective (supervisors' ratings), while others are more objective (number of reprimands). Some are seemingly direct measures of aggression (number of excessive force complaints) and others are more

indirect, and may be influenced by aggression but may also be influenced by a number of other factors (number of overall citizen complaints). Due to the inconsistencies in operationally defining aggression, it is difficult to accurately replicate findings and make meaningful comparisons across studies.

A related weakness in most selection research is the use of performance data from a single year as an outcome variable. This study attempted to alleviate that limitation by aggregating performance data over 10 years. However, even this aggregate is still based on subjective ratings that may not truly capture on-the-job aggression. With a known low-base-rate phenomenon such as police aggression, one could argue that the worst single annual rating of officer aggression should be used. For example, an officer who received normal ratings on performance items related to aggression for several years may engage in one incident of extreme aggression that results in a very poor rating for that year. Thus, when an aggregate is taken across the officer's tenure the impact of that one incident may be obscured. However, if you used the worst single annual rating of officer aggression as the outcome variable, important relations may become obvious. There is no easy or correct solution to this problem; however, we suggest that it is good practice to collect outcome data as often as possible.

Future Directions

First, to improve upon the aforementioned limitations researchers should give all measures to police officers during prescreening and then study their predictive utility with future on-the-job aggression. To begin to address this issue, both the IAT and MDDT have been added to the battery of prescreening measures given to candidates in

the local police departments. A follow-up study will look at the predictive utility of the MDDT when given at prescreening.

Second, future research should incorporate multiple measures of behavioral control into prescreening batteries to identify which are the best, most efficient predictor aggression and other performance outcomes. Although the MDDT is one measure of behavioral control, other measures, such as the BIS-11 and the Dickman Impulsivity Inventory, measure multiple constructs of behavioral control. These tests are shorter than the MDDT, with 30 and 23 items respectively. They may be more efficient, meaning that they may be able to measure the same construct in less time than the MDDT.

Third, the IAT and MDDT should be further studied to identify whether candidates are aware of the constructs that they are measuring. If candidates know the true purpose of these tests, they may be more apt to respond in socially desirable ways, thus invalidating the meaningfulness of the scores. As mentioned previously, it is entirely possible that the officers were engaging in impression management on the IAT. We think that this is much less likely on the MDDT because candidates are unlikely to be aware of what responses are socially acceptable on this test, due to the nature of the test. Any measure used in high stakes of police selection should be studied to identify whether candidates are responding in socially desirable ways, since this presents a threat to the validity of the interpretation of the test scores.

Finally, future research on police aggression should focus on developing standards for defining police aggression. If a consensus can be reached about what constitutes police aggression and how to measure it, then researchers will be able to better study this outcome and make meaningful comparison with other research studies.

Although this may seem simple enough, it probably is not. Police aggression can take many forms, from verbal aggression to inappropriate use of force, from aggressive behavior towards colleagues to aggressive behavior towards family, and so forth.

Although each of these domains represents aggressive behavior, it would be difficult, if not impossible, to uniformly assess each one. A practical and realistic way to measure on-the-job aggression may be through the development of a police aggression questionnaire that can be filled out by officers' direct supervisors. If such a questionnaire was demonstrated to be both a valid and reliable measure of police aggression then researchers could broadly adopt this questionnaire for use in research.

Implications for Police Departments

Although the findings from this study suggest that behavioral control is a worthy construct for researcher to study its utility in actual selection is unknown. Eventually researchers should suggest cut-offs on the measure of behavioral control that police departments can use to make hiring decisions. With little research available, no cut-offs will be suggested here. It may be the case that police departments would benefit from hiring officers who have higher than average levels of behavioral control, but not extreme levels of behavioral control. Officers in this range may resist engaging in inappropriate aggressive behavior when provoked, while still being willing to engage in aggressive behavior when it serves legitimate police interests.

If behavioral control is important in the expression of on-the-job aggression, then police departments can legitimately ask whether behavioral control can be taught or increased through training (i.e., the academy and/or on-the-job training). Incumbent officers who are found to engage in inappropriate aggressive behavior might benefit from

such training. Additionally, police departments may want to more generally increase all officers' levels of behavioral control if it leads to better on-the-job performance.

Conclusion

The present study provided important preliminary evidence for the MDDT, and the importance of behavioral control, in predicting police aggression. It also adds to the growing literature on the ineffectiveness of the MMPI-2 in predicting police aggression. Sound selection methods may increase department productivity and save money that would be lost on officers who are fired for engaging in inappropriate aggressive behavior. Even if psychological screening costs \$1000.00 per applicant, this is minimal compared to the cost to train, equip, and pay an officer annually, and is trivial compared to the cost of a lost lawsuit that could easily reach one million dollars (BJS, 2003). Although screening methods are far from perfect, the money saved by successfully identifying even 1% of overly aggressive candidates far outweighs the cost of psychological screenings. However, psychological screening is only as good as the measures and methods used. In order to improve selection, police departments must invest in selection research and should work alongside researchers to develop more appropriate and suitable measures.

Footnotes

¹In Virginia state code 19.2-269 states, "A person convicted of a felony or perjury shall not be incompetent to testify, but the fact of conviction may be shown in evidence to affect his credit." Many states have codes such as this and most police departments will fire officers who engage in any felonious crimes because they are no longer viewed as credible in the court system.

² Exponential model of discounting, $V = Ae^{-kD}$, where V is the subjective value of a reward, A is the objective value, D is the delay and k is a constant that represents the rate at which a reward loses subjective value.

³ Hyperbolic model of discounting, $V = A/(1 + kD)$, and hyperbola-like model, $V = A/(1 + kD)^s$, where s accounts for individual differences in scaling.

⁴ Although the final Aggressive Index proposed by Hargrave et al. 1988 included the Control scale from the MMPI, this scale was eliminated from the MMPI-2 following a reduction in items from the original MMPI.

⁵ MDDT data were removed following Johnson & Bickel's (2008) two criteria for identifying non-systematic data: (1) if any indifference point (starting with the second delay) was greater than the preceding indifference point by a magnitude greater than 20% of the larger later reward or (2) if the last indifference point was not less than the first indifference point by at least a magnitude equal to 10% of the larger later reward (p.267).

⁶ IAT data were removed if participants selected five or more illogical responses. The test's authors suggest that in this situation the total score may reflect "reading difficulties, carelessness, and/or a lack of motivation" and not the construct of aggression (James & McIntyre, 2000, p.19).

⁷ AUC is calculated using $\sum(x_2 - x_1) * [(y_1 + y_2) / 2]$, where x_1 and x_2 are successive delays, and y_1 and y_2 are the subjective values (indifference points) associated with those delays.

Table 1

Annual Performance Questionnaire AGRESS Item Correlations

Variables	1	2	3	4	5	6
Item 1	1	.44	.69	.69	.65	.68
Item 2	--	1	.44	.39	.35	.36
Item 3	--	--	1	.71	.62	.59
Item 4	--	--	--	1	.85	.65
Item 5	--	--	--	--	1	.72
Item 6	--	--	--	--	--	1

Note. See Appendix B for the actual items.

Table 2

Exploratory Factor Analysis: Factor Pattern Coefficients and Extracted Communalities

Item	Factor 1	
	λ	λ^2
Item 1	.82	.68
Item 2	.48	.23
Item 3	.79	.62
Item 4	.89	.78
Item 5	.86	.74
Item 6	.78	.61
Extracted eigenvalue		3.66

Extraction method: principle axis factoring.

Note. λ^2 = communalities after extraction

Table 3

Means, Standard Deviations, and Squared Semi Partial for Predictors and AGRESS

Variables	<i>M</i>	<i>SD</i>	<i>sr</i> ²
^a AGRESS	10.53	4.21	1
Predictor Variables			
MDDT	.43	.25	.14*
IAT	3.35	1.8	.002
HO	40.53	7.07	^b .11*
O-H	60.20	8.33	.001
ANG	40.77	6.76	.002
F	43.79	5.55	.001
PD	51.74	6.86	.04
HY	50.26	6.86	.05

**p*<.05, ^a Criterion, ^b Suppressor effect (see p.)

Table 4

Correlations with AGRESS and Intercorrelations between Predictors

Variables	1	2	3	4	5	6	7	8	9
1. ^a AGRESS	1	.02	.41**	-.03	-.09	.17	-.02	.01	-.09
Predictors									
2. IAT	--	1	-.20	.23	-.09	.10	.17	.23	-.21
3. MDDT	--	--	1	-.09	-.08	-.05	-.04	.10	.07
4. HO	--	--	--	1	.39**	.65**	.32*	.36**	.65**
5. O-H	--	--	--	--	1	.48**	-.15	.17	.40**
6. ANG	--	--	--	--	--	1	.42**	-.19	.38**
7. F	--	--	--	--	--	--	1	.19	-.13
8. PD	--	--	--	--	--	--	--	1	.53**
9. HY	--	--	--	--	--	--	--	--	1

* $p < .05$, ** $p < .01$, ^a Criterion

Table 5

*Multiple Regression Analysis Summary for Nontraditional Model 1: IAT and MDDT
measures Predicting AGRESS*

Variables	<i>b</i>	SE <i>b</i>	<i>B</i>	<i>sr</i> ²
IAT	-.15	.33	-.06	.01
MDDT	-6.24	2.25	-.367	.15*
IAT x MDDT (Interaction)	-2.15	1.33	-.21	.04
Intercept = 10.40 <i>R</i> ² = .20*				

**p* < .05

Table 6

*Multiple Regression Analysis Summary for Traditional MMPI-2 Model 2: MMPI-2**Scales Predicting AGRESS*

Variables	<i>b</i>	SE <i>b</i>	<i>B</i>	<i>sr</i> ²
HO	-.13	.13	-.21	.02
O-H	.008	.09	.02	<.001
ANG	.20	.17	.28	.03
Intercept = 7.10 <i>R</i> ² = .04				

**p*<.05

Table 7

*Multiple Regression Analysis Summary for Traditional MMPI-2 Model 3: MMPI-2**Scales Predicting AGRESS*

Variables	<i>b</i>	SE <i>b</i>	<i>B</i>	<i>sr</i> ²
F	-.02	.10	-.04	<.001
PD	.03	.10	.06	.002
HY	-.07	.10	-.12	.009
Intercept = 13.31 <i>R</i> ² = .01				

**p*<.05

Table 8

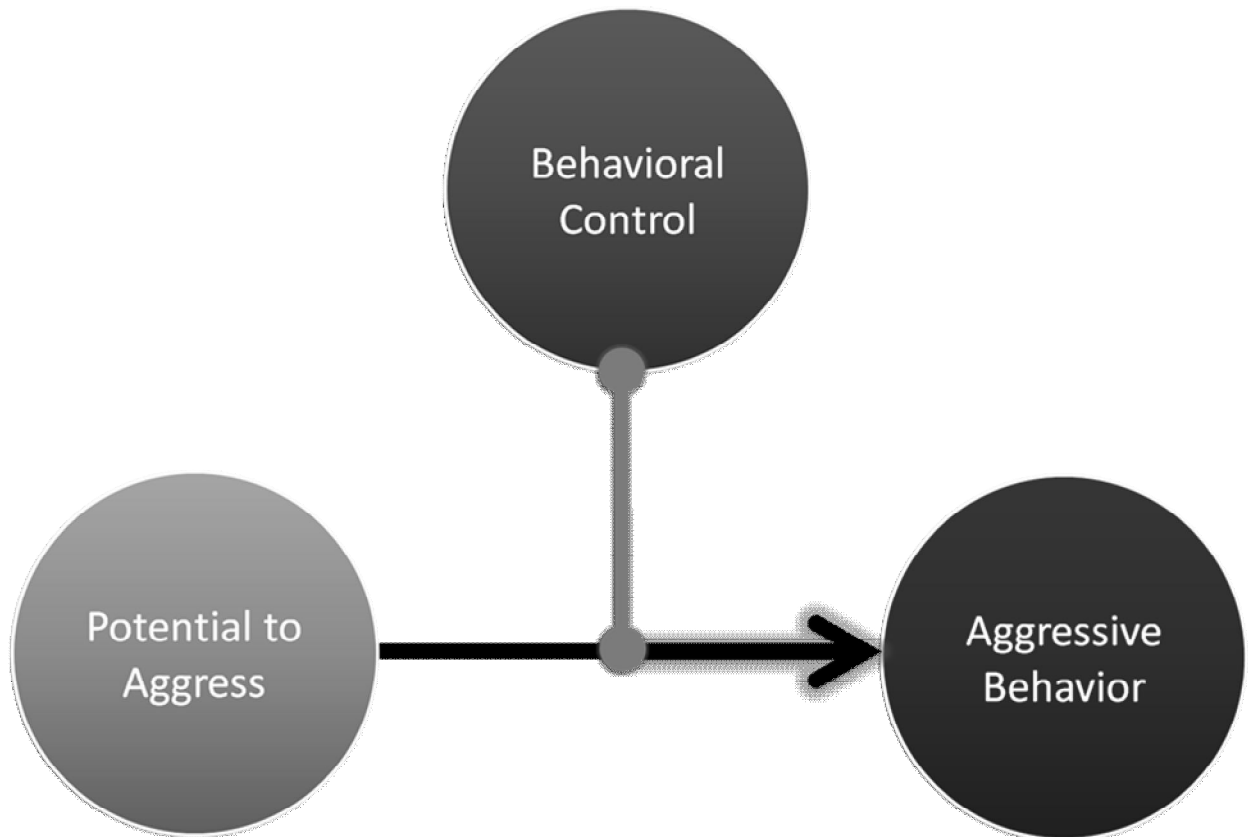
*Hierarchical Regression Analysis Summary for Nontraditional Model 1: IAT and MDDT**Predicting measures AGRESS*

Step and Predictor Variable	R^2	95% CI of R^2	ΔR^2	b	95% CI of b
Step 1	.15*	.01 to .32	.15*		
IAT				-.10	-.77 to .59
MDDT				-6.65*	-11.21 to -2.09
Step 2	.20*	.02 to .37	.04		
IAT				-.15	-.81 to .52
MDDT				-6.24*	-10.76 to -1.73
IATxMDDT (Interaction)				-2.15	-4.83 to .52

b = raw score regression coefficient, * $p < .05$

Figure 1

A practical model of aggression combined from Geen's (1990) Aggression model and Megargee's (1965) Theory of Control. This model is intended to inform selection practices rather than act as a comprehensive model of the causes of aggressive behavior.



Note. This model suggests that the relation between an individual's potential to aggress and aggressive behavior is moderated by an individual's level of behavioral control.

Appendix A

Example Use of Force Continuum (adapted from Gaines & Kappeler, 2008).

1. Physical presence of the officer based on the officer's police authority.	Most suspects become subdued or cooperative in the presence of an officer. Many people recognize a police officer's authority to intervene in situations.
2. Soft handed.	Soft handed refers to a situation in which an officer physically grabs a suspect to control him or her. Soft-handed force is commonly used when a suspect verbally resists or becomes abusive.
3. Mace or pepper spray.	When the soft-handed approach fails to adequately subdue a suspect, the officer may resort to pepper spray. This level is still considered passive as pepper spray is unlikely to inflict physical injury.
4. Hard hands	Hard hands refer to when an officer fights with the suspect. Such fighting may include pushing, hitting, or other physical action to subdue the suspect. This level of force places the officer in greater danger.
5. Police baton	The use of the baton increases the likelihood that there will be physical injury to the suspect. Officers are trained to not hit a suspect in the head as this could result in substantial injury.
6. Threat of deadly force.	If the officer is not able to overcome the suspect with the baton and other physical means, the officer can threaten to use deadly force by unholstering his or her firearm. It is hoped that this action will cause the suspect to conform to the officer's order and allow the officer to take him or her into custody.
7. Deadly force used	Deadly force is when an officer discharges his or her firearm at a suspect. The vast majority of police departments have policies prohibiting warning shots; thus, when a weapon is discharged it is to shoot the suspect. Deadly force can only be used in instances where the officer believes there is a threat of "great bodily harm" to the officer to another person.

Note. Most police departments set standards regarding the appropriate amount of force to use in a situation by establishing a use of force continuum. This continuum is used to identify the highest level of force that is appropriate to respond to a given level of resistance on part of the citizen (Garner, Schade, Hepburn, & Buchanan, 1995)

Appendix B

Annual Performance Questionnaire: Selected Items Related to Aggression

Please rate each officer as accurately as you can on each of the questions, based on their CURRENT performance. If the officer is no longer with the Department, please rate their performance at the time they left the Department. Your patience and accuracy in filling out this questionnaire is appreciated. Your ratings of this officer will be kept confidential.

1. How often does this officer get angry at citizens?

<i>Rarely</i>						<i>Often</i>
1	2	3	4	5	6	7

2. How often excessive physical force?

<i>Rarely</i>						<i>Often</i>
1	2	3	4	5	6	7

3. Rating of Potential for Inappropriate Aggression: Please circle 1, 2, 3, or 4 according to the following definitions:

1 = This officer appears to have excellent impulse/anger control. I would be very surprised to hear that he/she had responded to a situation with inappropriate aggression.

2 = This officer appears to show average impulse/anger control compared with other officers.

3 = This officer needs some improvement in the area of impulse/anger control compared with other officers.

4 = This officer appears to have difficulties with impulse/anger control. I worry about this officer and his/her ability to handle situations appropriately.

4. How likely is this officer to provoke citizens into resistant behavior?

<i>Not very likely</i>						<i>Very likely</i>
1	2	3	4	5	6	7

5. How often is this officer verbally rude toward citizens?

Appendix C

IAT Reasoning Test

**IAT Reasoning Test**

Form R

Name**Date**

Instructions: For each question, identify the one answer that is the most logical based on the information presented. Sometimes this will require you to cut through answers that look logical in order to get to the most genuine or “real” answer. Circle your answers on this test.

Example

Feeling like he had finally recovered from the flu, Tom talked his wife into going out for dinner. They both ordered the flounder and fully enjoyed their meals. Later that evening, Tom developed an upset stomach.

Which of the following is the most logical explanation for Tom's upset stomach?

- a. The flounder was spoiled.
- b. Tom had not fully recovered from the flu.
- c. They sat in the no-smoking section of the restaurant.
- d. His wife had cheesecake for dessert.

Explanation

Answer b is the most logical. Answers a, c, and d involve other people, but Tom was the only one who got sick.

You have 25 minutes to answer all 25 questions.

Appendix D

Hypothetical Monetary Delay-discounting Task

Instructions:

On the following pages, you will be asked to make a series of choices between two hypothetical amounts of money. One amount could be earned immediately; the other amount would require you to wait for a certain delay. For example, you might be asked to choose between:

\$5 NOW OR \$10 in 6 hours

There are no right or wrong answers. We are simply interested in the option you prefer, so please make your choices as honestly and accurately as possible. **Do not rush through this survey, randomly choose your answers, or flip back and forth between sheets.**

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