

ENVIRONMENT AND CITIZEN RESISTANCE OF POLICE COERCIVE AUTHORITY:
APPLICATION OF DEFIANCE AND SOCIAL DISORGANIZATION THEORIES

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ABSTRACT

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Police officers face a variety of challenges in the course of carrying out their broadly defined mandate. One of these challenges for police officers is gaining compliance, and therefore reducing resistance from citizens. The importance of this topic has led to a variety of research examining situational features, officer-based characteristics, and environmental features as predictors of citizen resistance against the police. Current research examining citizen resistance does, however, suffer from some limitations including use of appropriate theoretical frameworks and a lack of studies examining situational, officer, and environmental predictors concurrently. In order to address some of the limitations of previous research, the current inquiry uses official police records and census data to test an integrated theoretical framework drawn from defiance and social disorganization theories.

Thus, this dissertation addresses the following three research objectives: 1) Determining how often officers are subjected to aggressive physical resistance, 2) Testing the effects of situational features and officer-based characteristics on the likelihood of aggressive physical resistance, and 3) Testing the effects of environmental characteristics of census tracts (i.e., structural disadvantage, residential mobility, and violent crime rate) on the likelihood of aggressive physical resistance while controlling for situational features and officer-based characteristics. Additionally, implications for both practice and research are discussed.

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CHAPTER ONE: INTRODUCTION

The extent to which citizens resist police coercive authority has been an important area of research interest for both academics and practitioners for decades. For many, aggressive resistance of the police is viewed as an attack on society itself, representing an intense expression of noncompliance with governmental and societal powers (Gau *et al.*, 2012; Jacobs and Carmichael, 2002). Aggression against police officers also attracts substantial research attention due to the potential negative consequences (e.g., injuries, sick leave, and reduced morale), and its prominence as a predictor of police use of force (Kaminski and Sorenson, 1995; Terrill, 2001).

Due to this attention, a large body of literature has developed with respect to various types of citizen resistance (Engel, 2003; Lennings, 1997; Petrocelli, 1997; Rabe-Hemp and Schuck, 2007). The serious consequences associated with intense citizen resistance have promoted a focus on prevention. As a result, research has concentrated on situational predictors (e.g., citizen demographics, alcohol influence, time of day, and offense seriousness) that would allow officers to be better prepared for potential confrontation (Bannon, 1976; Brown, 1994; Chamlin and Cochran, 1994; Chapman, Swanson, and Meyer, 1974; MacDonald *et al.*, 2003; Meyer *et al.*, 1979; Petrocelli, 1997; Rabe-Hemp and Schuck, 2007; Uchida, Brooks, and Koper, 1987). A strong emphasis has also been placed on officer characteristics (e.g., height, weight, gender, experience, education, and race) through a variety of conceptual frameworks (Bannon, 1976; Brown, 1994; Kavanaugh, 1997; Rabe-Hemp and Schuck, 2007; Uchida, Brooks, and Koper, 1987). More recent research has focused on environmental characteristics (e.g., violent crime rate, region of the United States, state socio-economic status, and city socio-economic status), although these studies are often limited by a lack of data at smaller than city-level

geographic units (Fridell *et al.*, 2009; Jacobs and Carmichael, 2002; Kaminski, Jefferis, and Gu, 2003).

Notwithstanding the substantial research on citizen resistance, the current resistance literature has not examined environmental, situational, and officer predictors concurrently. The primary goal of the current inquiry is to remedy this limitation by examining the role of structural disadvantage (i.e., poverty, unemployment, female headed household, percent nonwhite) and residential mobility (i.e., percent not living in census tract one year prior) at the census tract level on citizen resistance while controlling situational and officer-based variables. Furthermore, this research reexamines the role of situational and officer-based predictors while accounting for theoretical and methodological limitations in previous research.

As mentioned, the current body of citizen resistance literature suffers from a lack of appropriate theory. Research focusing on citizen resistance has developed in a disjointed manner due to a lack of consistency in theoretical frameworks and available data. Multivariate studies that examine the role of neighborhood characteristics while adequately controlling for situational features and officer-based characteristics are noticeably absent from citizen resistance research (Jacobs and Carmichael, 2002; Kaminski, Jefferis, and Gu, 2003; Morrison and Meyer, 1974; Regens *et al.*, 1974; Wilson and Zhao, 2008). Environmental research on citizen resistance has also suffered from other methodological issues, such as small sample sizes and a lack of data at geographic units meaningful to the study of police behavior such as neighborhoods, census tracts, and police beats/districts (Fridell and Pate, 1995; Jacobs and Carmichael, 2002; for an exception see Kaminski, Jefferis, and Gu, 2003).

Those studies that have employed rigorous methodologies at a neighborhood or smaller level have not controlled for potential variations in situational features or officer-based

characteristics (see Kaminski, Jefferis, and Gu, 2003). This may be due to data limitations, but also possibly due to a lack of theoretical integration (Morrison and Meyer, 1974; Regens *et al.*, 1974). In their study of assaults on police officers and block groups, Kaminski, Jefferis, and Gu (2003) used an opportunity model (inspired by routine activities theory), which was not integrated with situational features or officer characteristics. Situational variables are often the strongest predictors of events that occur during police citizen encounters (Riksheim and Chermak, 1993), and thus should be controlled when predicting such events.

In exploring the more extreme forms of citizen noncompliance (i.e., homicide and serious assaults), environmental research has employed conceptualizations such as routine activities, strain, social disorganization theory (Kaminski, 2008), and even minority threat hypothesis (Jacobs and Carmichael, 2002). It is certainly reasonable to expect that in areas characterized by high population density, high violent crime levels, and more individuals with criminal records that the police would be more likely to be resisted. Support is also found, however, for conceptual frameworks that identify resistance against the police as a specialized form of political protest in disadvantaged areas, where access to conventional forms of protest is blocked (Jacobs and Carmichael, 2002).

Literature focusing on citizen compliance rather than assaultive behavior takes a different approach, hypothesizing that structural features may be connected to citizen compliance via the levels of support, trust, and confidence police enjoy across communities (Engel, 2003; Tyler, 1990). Members of structurally disadvantaged areas have less favorable opinions of the police on average, which may alter the reward structure for violence against the police (Anderson, 1999; Weitzer, 1999). Lower opinions of the police and increased levels of legal cynicism may make attacks upon the police more acceptable in disadvantaged communities, possibly leading to

an increased likelihood of aggressive resistance (Sampson and Bartusch, 1998; Sherman, 1993; Tyler, 1990).

To address these gaps in the literature for aggressive physical resistance, data must be collected on a variety of measures. These include the situational characteristics of an incident, officer characteristics, and characteristics of the surrounding neighborhood structure.

Additionally, due to the rare nature of higher levels of citizen resistance, data must be collected over an extended period of time to ensure that a sufficient number of physical noncompliance cases are collected. Fortunately, such a dataset is currently available.

Using data collected as part of the *Assessing Police Use of Force Policy and Outcomes* study, as well as data provided by the United States Census Bureau, this research examines the influence of environmental features, situational-features, and officer-based characteristics on the likelihood of physical resistance experienced by individual officers. The *Assessing Police Use of Force Policy and Outcomes* study collected a variety of data from eight municipal agencies, including an extensive number of measures in encounters where officers used force on citizens. The data collected are particularly relevant to this course of study, including the levels of citizen resistance and officer coercion, where and when the incident took place, situational features such as citizen characteristics and the influence of alcohol, and the demographic characteristics of each officer. Data were collected on officer force incidents (including citizen resistance) via officer reports over consecutive two-year periods in each city.

The availability of use of force reports rather than arrest reports or arrests for resisting arrest also allows for an opportunity to expand the collection of resistance data beyond many previous studies. This study uses a measure which better conceptualizes intense physical noncompliance. Rather than selecting from the myriad of inconsistent measures of citizen

resistance (e.g., resisting arrest or assault), this research uses an operational definition that a citizen *aggressively resisted* an officer. This definition requires that a citizen attacked or attempted to attack an officer, and is more representative of definitions of resistance common to research in the area of police coercion (see Terrill, 2001).

This study examines three main research areas. The first research area examined is *how often* police officers are subjected to aggressive physical resistance over a two-year period. Different measurement techniques have been used to examine resistance, but few have used a measurement technique that mitigates the impacts of officer decision-making aspects associated with arrest and charging decisions. This research counters many studies which have relied on charges filed for resisting arrest or self-reported assault victimizations (Griffiths and McDaniel, 1993; Kavanaugh, 1997). These measurement techniques lack a common operational definition and are subject to biases including cover charges (e.g., filing an assault or resisting arrest charge against an offender to justify use of coercion), variation in arrest decisions, and recall issues (Bannon, 1976; Garner *et al.*, 1996; Griffiths and McDaniel, 1993; Kavanaugh, 1997; Rabe-Hemp and Schuck, 2007).

Second, this research examines the role of situational features and officer-based characteristics on the likelihood of officers experiencing aggressive physical resistance. While this area has been the subject of previous studies, the current research overcomes many limitations of previous research in this area (i.e., external validity, data collection period, base rate, and consistent measurement of the dependent variable). Therefore, it is appropriate to revisit these relevant situational and officer predictors of resistance with a contemporary dataset.

Third, this research examines the influence of environmental variables (i.e., structural disadvantage, residential mobility, and violent crime rate) on citizen resistance controlling for

situational features (i.e., citizen gender, race, age, alcohol influence, weapon possession, and time of day) and officer-based characteristics (i.e., gender, race, and age) using an integrated theoretical model and appropriate multivariate techniques. Using more properly specified multivariate models allows for a fair test of the influence of environmental conceptualizations associated with citizen resistance (see Mastrofski, Snipes, and Supina, 1996; Sampson and Bartusch, 1998), while controlling for the influences of situational features and officer-based characteristics.

The second chapter of this proposal reviews the existing literature on citizen resistance with respect to environmental, situational, and officer-based predictors. Special consideration is given to empirical findings and the methods used to obtain these findings. Limitations of previous research are also detailed. Chapter Three presents an integrated theoretical model proposed to explain the relationship between structural disadvantage and citizen resistance of police coercive authority. Through integration of social disorganization and defiance theories, the third chapter provides a detailed account of the mechanisms explaining resistance of police officers. Chapter Four details the dataset used to address the research objectives and a methodology that overcomes some limitations of previous research. Chapter Five presents the findings for each of the three research objectives, with a discussion of the findings presented in Chapter Six. Conclusions and implications for policy and future research are presented in Chapter Seven.

CHAPTER TWO: LITERATURE REVIEW

The literature explaining variation in citizen resistance largely began as an exploratory endeavor. In an attempt to identify risks to officers, empirical research has largely focused on gathering a sample of citizen encounters, arrests, or assaults on officers and then testing citizen-based or officer-based characteristics as causes of attacks. Much like research focusing on officer behavior, citizen resistance has shown a marginal relationship to these commonly used predictors (Risksheim and Chermak, 1993; Skogan and Frydl, 2004).

Similar to findings for officer behavior, situational predictors have emerged as some of the most salient explanatory features of aggressive citizen resistance. Research has consistently shown that resistance is more likely to occur when a citizen is under the influence of alcohol or drugs, is mentally or emotionally impaired, and during nighttime hours/on weekends (Dai, Frank, and Sun, 2011; French, 2011; Mastrofski, Snipes, and Supina, 1996).

To a certain extent, research has also expanded into environmental and social structural predictors of citizen resistance. Many of these studies have used data at high levels of aggregation (e.g., an entire city) and congruent theoretical frameworks (e.g., minority threat hypothesis), and have excluded situational and officer-based explanations (Jacobs and Carmichael, 2002). Others have used smaller, more meaningful levels of aggregation (e.g., block groups) in conjunction with theoretical frameworks that could integrate situational and officer-based explanations (e.g., routine activities theory), but have lacked the data or drive to include situational and officer-based predictors (Kaminski, Jefferis, and Gu, 2003).

Given the inability of research to incorporate social structural elements with situational and officer-based predictors, calls for research that can combine these elements simultaneously to examine citizen resistance have emerged (Leeper-Piquero and Bouffard, 2003). This literature

review examines the extant literature for environmental, situational, and officer-based predictors of citizen resistance. First, the current empirical status of environmental, situational, and officer-based predictors is evaluated. This discussion includes the general direction of influence and the methods used to arrive at such conclusions. Second, the limitations of previous research are synthesized. Finally, a chapter summary will highlight the main points of the review.

Empirical Research

Environmental features

Like crime research in general (Shaw and McKay, 1972), research on aggressive resistance of the police had an early origin in examining the role of environmental characteristics. While patterns of crime were generally the impetus for environmental studies, resistance researchers were more focused on preventing assaults of officers and finding cues that could alert officers to danger. Thus, the goal of early research on environmental predictors of aggressive citizen resistance was identifying warning signs that could alert officers to highly dangerous situations simply by their surrounding stimuli in the hopes that they could be trained to thwart potential attacks (Chapman *et al.*, 1974).

The present study takes a different approach than many previous studies that have included environmental predictors of physical resistance. Unlike more exploratory studies that sought to identify salient items for a training curriculum (Chapman *et al.*, 1974; Regens *et al.*, 1974), this research seeks to use environmental characteristics to account for police legitimacy and the strength of bonds within the framework of defiance theory. Therefore, the environmental characteristics will be those most associated with police legitimacy and social cohesion, rather than those aimed at explaining general crime trends through broad criminological theory (see Kaminski, Jefferis, and Gu, 2003). Defiance theory hypothesizes that specific and direct

defiance (i.e., action taken against the police) is best explained by police legitimacy, social bonds within the community, and the citizen/officer bond. Therefore, this research will rely on social disorganization theory and police legitimacy literature to determine the environmental predictors most associated with police legitimacy and social cohesion (i.e., structural disadvantage, residential mobility, and violent crime rate). As shown in Table 2.1, eleven such studies examined community environmental features on the likelihood of physical resistance.

Poverty

Seven of the eleven studies examining the influence of environmental features on aggressive physical resistance included poverty or income as a predictor. Of these seven studies, three identified poverty as increasing the likelihood of resistance against officers and one found a marginal negative relationship. Morrison and Meyer (1974) found that the higher the percent poverty of a census tract, the more likely an officer assigned to that census tract will become a victim of assault. Their research was primarily bivariate in nature, which allowed them to compare a variety of measures of poverty (which were collinear with female headed households). Among these various and sundry measures of SES, percent of families receiving public assistance or welfare exhibited the strongest relationship to female headed household at .81. The weakest measure of SES was families with income less than \$3,000, which held a .77 correlation with female headed household. Female headed household held a .75 relationship to assault victimization.

Using a more sophisticated model, Kaminski, Jefferis, and Gu (2003; p. 135) found support for a component variable they labeled “resource deprivation”. This factor included poverty, unemployment, low income, family disruption, and African-American residents. This

Table 2.1: Empirical Literature on Environmental Characteristics and Citizen Resistance

Publication	Unit & Sample Size	Environmental Vars.	Summary
Morrison and Meyer, 1974	Census tracts	Age, female-headed household, minority population, education, population stability, family income, employment, vehicle ownership, housing, arrests, crime rate, and police activity	Males 14+ separated or divorced (+), percent white (-), percent Black (+), poverty (+), no car (+), median rent (-), arrests (+), Part I (+), Part II (+), police activity (+)
Regens <i>et al.</i> , 1974	Cities (46)	Income, population stability, education, age, poverty, pop. density, police per 1k, Arrests	Pop. stability (+), education (+), poverty (-), pop. density (+), police per 1k (+), arrests (+)
Lester, 1978	Cities (26)	Officers/1K pop., pop., pop. density, pct. Black, pct. poverty, segregation, crime rate, homicide of police, mean annual temp., number of days below freezing.	No variables found significant
Uchida <i>et al.</i> , 1988	Precincts (9)	Economic disadvantage	Economic disadvantage (+)
Jacobs and Carmichael, 2002	Cities (165)	Percent black, Black/White income, violent crime rate, pop., segregation, Black mayor, poverty, police per capita, pct. Black*pop.,	Black/White income (-), violent crime (+), segregation (-), black mayor (-), Black*pop. (+)
Kaminski, Jefferis, and Gu, 2003	Block groups (568)	Transitional areas, resource deprivation, pop. structure, arrests, violence	Transitional areas (+), resource deprivation (+), arrests (+), violence (+)
Belvedere, Worrall, and Tibbetts, 2005	Beats	Dangerous beat (Binary)	Dangerous beat (+)
Rabe-Hemp and Schuck, 2007	Dangerous location	Dangerous location (Binary)	Dangerous location (+)

Table 2.1 (cont'd)

Wilson and Zhao, 2008	Cities (267)	COP activity, COP meetings, violent crime arrest rates, drug arrest rates, disorderly arrest rates, percent poverty, racial heterogeneity, residential mobility, region	COP meetings (+), drug arrest rates (+), Midwest (+), Northeast (+),
Fridell <i>et al.</i> , 2009	Cities (108)	Economic structure, criminogenic population, racial income inequality, violent crime rate, Part I arrests	Violent crime rate (+)
Engel <i>et al.</i> , 2011	Census tracts (236)	Percent black, percent Hispanic, percent male, poverty factor	Null for environmental variables

variable was found to be a significant predictor of the number of assaults on police officers at the block group level. Due to the large potential for collinearity in their study site of Boston, it was impossible to tease out the individual effects of race and income (a common issue). Further, there was no control for individual, situational, or officer related variables and thus no way to determine the degree to which this relationship is moderated by other features of police-citizen encounters in disadvantaged block groups.

At the city level of analysis, Jacobs and Carmichael (2002) found support for an interaction term used to capture racial income inequality. While not a measure of poverty *per se*, findings indicate that a variable created by dividing black income by white income bears a negative relationship to assault on officers. This means that as the income of Blacks approaches the income of Whites in a city, the likelihood that an officer will be assaulted in that city decreases. A similar measure of racial income inequality used by Fridell *et al.*, (2009) held a null finding.

In other research, Regens and colleagues' (1974) consideration of 46 cities found that poverty held a weak, negative relationship to assaults on police officers (-.11). No indicators were provided to show whether this finding was statistically significant. Lester's (1978) study of 26 cities also found no relationship between income and assault. Wilson and Zhao (2008) and Fridell *et al.*, (2009) also found no relationships at the city level using more contemporary data and larger sample sizes.

Unemployment

Fewer studies have compared the role of unemployment in the surrounding area with aggressive physical resistance against the police. Three of the eleven studies examined the influence of local levels of unemployment; however, only one of these studies examined

unemployment directly rather than as a component of a latent variable. Morrison and Meyer (1974) examined the role of unemployment on assaults of officers and found that it was not a significant predictor while other variables were controlled. Fridell *et al.*, (2009) also reported null findings for their latent variable of economic structure in their attempt to predict levels of police assault across 108 US cities. Only Kaminski, Jefferis, and Gu (2003) found support for their latent variable “resource deprivation”, which included levels of unemployment at the block level. Five studies have examined citizen unemployment at the individual level (see Table 2.2), with four of these studies finding that unemployed individuals are more likely to physically resist the police.

Female Headed Households

Morrison and Meyer (1974) provide the only study identified which directly examined the relationship between percent female headed households and aggressive physical resistance against the police. Their theoretical framework indicated that structural conditions would create increased work levels for the police officers. This increased work level would then place officers in harm’s way more frequently than more intact, less disadvantaged neighborhoods. While this study focused on the raw number of assaults within each census tract rather than the probability of individual events turning violent, percent female headed households did exhibit a .75 r-square relationship to assaults of police officers in each tract.

Nonwhite Population

Race of offenders in assaults on police officers has been a frequently studied research area, but relatively few studies have examined the influence of racial demographics in the local neighborhood. As shown in Table 2.1, five studies have examined the influence of community or city level racial dynamics on resistance against police officers. Of these five studies, three

find that the percent of African-Americans present in the population increases the likelihood of an officer becoming a victim of assault in that area. Morrison and Meyer (1974) found that as the percent Black population in a census tracts increases, the number of officers assaulted also increases. Jacobs and Carmichael (2002) employed an interaction term (percent black multiplied by total population) due to a belief that race would be more important in larger cities rather than smaller cities. Their posited relationship at the city level was supported, as the interaction term was significant, but percent Black was not significant. This indicates that racial dynamics may be more important in larger cities rather than smaller cities.

Residential Mobility

The findings for the influence of residential mobility are much weaker than those for indicators of structural disadvantage. Morrison and Meyer (1974) state that residential mobility is included in their study, but do not report the coding strategy or findings for this particular variable, citing collinearity concerns. In their study of 46 cities, Regens and colleagues (1974) did not find a significant relationship between residential mobility and assaults upon officers. Using the operational definition of persons living in the same household for five years, Wilson and Zhao (2008) did not find a relationship between residential mobility and rate of assault on police officers in their 267 city sample.

Only Kaminski, Jefferis, and Gu (2003) found a relationship between residential mobility and assaults upon officers. This finding was only reported in their Poisson model, and was not significant when their analysis employed an assumption of a negative binomial distribution in the dependent variable (Kaminski, Jefferis, and Gu, 2003). One methodological concern is their component analysis, which incorporates residential mobility with percent age 15-29, persons enrolled in college, residential stability, and population density into a single factor. Due to the

nature of their study site of Boston, residential mobility is strongly associated with students, who frequently change residences or leave the city entirely over a five year period. Unfortunately, the best study examining residential mobility has the least representative sample in terms of generalization to other locations in the United States.

Violent Crime Rate

As shown in Table 2.1, six of the eleven studies examined the crime rate of an area in some fashion. Generally, the crime rate appears to exhibit a positive influence on the likelihood of aggression against police officers. Kaminski, Jefferis, and Gu (2003) found that the violent crime rate of a census block group was positively related to the number of aggravated assaults on officers. Morrison and Meyer (1974) also found that the number of Part I crimes in a census tract increased assaults on officers, as did Fridell *et al.*, (2009) for crime rate at the city level. Wilson and Zhao (2008), Jacobs and Carmichael (2002), and Lester (1978) all found a null relationship between crime rate and assaults on officers.

Environmental Summary

Overall, the empirical evidence stemming from studies that have examined environmental characteristics tends to support the relationships hypothesized by defiance theory. Measures of structural disadvantage have undergone more empirical examination than residential mobility, and given the research, structural disadvantage appears to be the more salient predictor. Poverty, unemployment, female headed households, and percent nonwhite all trend in the direction of increasing resistance against the police. The findings for indicators of residential mobility are less favorable in the limited empirical examination focused on these variables. Violent crime rate also appears to bear a positive, or null, relationship to defiance against police officers, which is in the predicted direction.

Situational Features

Through a comprehensive literature search, 20 publications were identified that examined the link between situational features during an encounter (other than structural disadvantage, residential mobility, and violent crime) and the frequency, likelihood, or level of resistance exercised by a citizen (see Table 2.2). Many of these studies are descriptive in nature, with some providing base rates. Others are well thought out and articulated multivariate studies that are based in theory. The following section is a description of empirical findings for each of the situational variables included in this study (i.e., citizen gender, race, age, alcohol or drug influence, weapon possession, time of day, and offense seriousness). Where the quality of the work provides divergent results, more credence is given to studies with a more robust methodology.

Citizen Gender

Of the 20 studies that linked situational features to the behavior of citizens, 16 examined the role of citizen gender. Using Systematic Social Observation (SSO) techniques and employing a sophisticated multivariate model, Mastrofski, Snipes, and Supina (1996) found that male citizens were actually more likely to comply than their female counterparts. Engel (2003) also used SSO and multivariate techniques to study predictors of physical resistance including citizen gender. She reported a null finding between gender and physical resistance. Similar findings are reported by Dai, Frank, and Sun (2011), Leeper-Piquero and Bouffard (2003), and McCluskey, Mastrofski, and Parks (1999) using SSO methodology in Cincinnati, the Police Services Study (PSS), and the Project on Policing Neighborhoods (POPEN), respectively.

The next tier of methodological rigor includes studies that used official reports and multivariate modeling techniques to examine citizen gender and resistance. In general, this class

of research also reports negative or null findings for resistance of officers by males. Engel and colleagues (2011), using a combined measure of noncompliance/resistance, found that males were actually less likely to fail to comply or resist officers than female motorists. Rabe-Hemp and Schuck (2007) report a null relationship between arrestee gender and the likelihood of assault upon police officers. Countering these findings is Petrocelli (1997), who found that when resistance is measured in a continuous fashion, being male has a positive association with the likelihood of increasing levels of resistance.

Six studies examined the role gender plays in citizen resistance descriptively. All six of these studies report that male citizens are more likely to physically resist officers than female citizens (Bannon, 1976; Brown, 1994; Chapman, Swanson, and Meyer, 1974; Meyer *et al.*, 1981; Uchida *et al.*, 1988; White and Bloch, 1975). The disparity in findings, often showing that close to 90 percent of individuals who physically resist or assault the police is justification alone for inclusion of gender in an explanatory model of citizen resistance.

Citizen Race

Much like the findings for gender, the influence of citizen race appears to be dependent upon the quality of the research. Starting with observational research, Engel (2003) found no relationship between the race of a suspect and the likelihood of physical resistance. Mastrofski, Snipes, and Supina (1996) used a more exhaustive approach to examine compliance by examining interactions between officer race and suspect race. Their findings elucidated the relationship between race and noncompliance, showing that when a white officer interacted with a nonwhite suspect compliance levels were higher than other encounters, and that when a white suspect interacted with a nonwhite officer levels of compliance were lower than other encounters (Mastrofski, Snipes, and Supina, 1996). This finding has been countered by research examining

Table 2.2: Empirical Literature on Situational Characteristics and Citizen Resistance

Publication	Sample Size	Situational Vars.	Resistance	Summary
Stobart, 1972	613 incidents	Time of day, day of week, alcohol influence, number of assailants, number of officers, encounter in police station	Serious Assaults	Night (+), weekend (+), alcohol (+), 2 officers (+), police station (+)
Chapman, Swanson, and Meyer, 1974	1,143 Assaults	Suspect height/build, Sex, race, age, employment, alcohol/drugs, time, weekend, location	Assaults	Male (+), nonwhite (+), age 18-29 (+), unemployed (+), alcohol (+), night (+), weekend (+), private residence (+), roadway (+)
White and Bloch, 1975	182 Assaults	Sex, race, age, number of assailants, alcohol, drugs, mentally disturbed, known to officer	Assaults	Male (+), age 20-30 (+), one assailant (+), intoxicated (+), known to officer (-)
Bannon, 1976	359 incidents, 436 subjects, 547 officers	Suspect age, military experience, sex, race, height/weight, education, parenting, criminal record, alcohol, day of week, time, offense, number of officers	Assaults	Young (+), male (+), prior arrest record (+), alcohol (+), weekend (+), 6pm-3am (+), number of officers (+)
Meyer, <i>et al.</i> , 1981	1,304 assaults	Call type, location, time, day of week, season, number of officers, other suspects, number of witnesses, suspect size, race, age, sex, employment, alcohol/drug influence, known to officer	Assaults	Disturbance call (+), robbery call (+), residence (+), roadway (+), jail/booking (+), weekend (+), Spring-Summer (+), other officer (+), other suspects (-), age 20-30 (+), male (+), alcohol (+), suspect known (-)
Uchida <i>et al.</i> , 1988	1,550 Assaults	Suspect gender, race, age, weekend, season, time, location	Assaults	Male (+), nonwhite (+), age 20-30 (+), weekend (+), Spring-Summer (+), 12am-2am (+), residence (+), roadway (+), police department (+),

Table 2.2 (cont'd)

Noaks and Christopher, 1990	453 officers, 770 assaults	Suspect age, previous record, unemployed, alcohol influence, location, number of officers	Assaults	Suspect 17-25 (+), criminal record (+), unemployed (+), alcohol influence (+), public (+), number of officers (+)
Moxey and McKenzie, 1993	116 assaults	Urban/city, criminal history	Assaults	Urban/city (+), criminal history (+)
Brown, 1994	265 incidents	Suspect age, sex, unemployed, prior record, alcohol drugs, roadway location	Assaults	Age ~24 years (+), male (+), unemployed (+), prior record (+), alcohol/drugs (+), roadway location (+)
Mastrofski, Snipes, and Supina, 1996	346 requests	Problem seriousness, #bystanders, #officers, weapon, entry tactic, citizen mental state, reactive encounter, officer disrespect, evidence, public location, conflict, citizen wealth, age, race interactions, citizen gender, neighborhood ties, known to police	Compliance	Serious problem (-), #officers (-), force entry (-), irrational elements (-), officer disrespect (+), evidence (+), public location (+), citizen poor (-), WO/MC (+), MO/WC (-), male (+), known to police (-)
Kavanaugh, 1997	1,072 arrests	Suspect gender, age, height, race, disrespectful, serious offense, other suspect violence, alcohol, night, officer initiated, other suspects present	Violent encounter	Serious offense (+), other suspect violence (+), disrespect (+), alcohol (+), night (+), proactive (+), other suspects present (+)
Petrocelli, 1997	n=517; n=895	Suspect age, race, gender, criminal record, gang membership, offense serious, bystanders present, drug/alcohol influence	Resistance (continuous)	Suspect male (+), gang member (+), drug/alcohol (+)

Table 2.2 (cont'd)

McCluskey, Mastrofski, and Parks 1999	989 encounters	Problem seriousness, #audience, #officers, weapon, anticipate violence, request type, third party supporter, #irrational elements, reactive, citizen role, evidence, public place, illegality mentioned, conflict with present intimate, repeat event, citizen age (young), poor, male, racial interactions, known to police, ties to neighborhood	Compliance with police requests/demands	Anticipate violence (-), #irrational elements (-), non-suspect role (-), illegality mentioned (-), conflict (-), repeat event (-), citizen young (-)
Engel, 2003	1,461 encounters	Suspect race, age, gender offense seriousness, proactive encounter, public location, number of bystanders, number of officers, alcohol influence, fight/argument on scene	Physical resistance	#Bystanders (+), #officers (+), alcohol (+)
Leeper-Piquero and Bouffard, 2003	10,277 citizens	Citizen sex, known, race interactions, demeanor, #citizens, #bystanders, dangerous area, commercial location, residential location, reactive encounter	Noncompliance	Previous acquaintance (+), white ofc./nonwhite cit.(+), nonwhite ofc./white cit. (-), nonwhite ofc./nonwhite cit. (+), beginning demeanor (+), #bystanders (+), danger (+)
Belvedere, Worrall, and Tibbetts, 2005	400 encounters	Suspect race, resident status, beat dangerousness, offense type	Resisting arrest	Black suspect (+), nonresident (+), dangerous beat (+)
Rabe-Hemp and Schuck, 2007	7,512 arrests	Suspect race, age, size, sex, gang membership, drugs, alcohol, family conflict, proactive, in custody, bystanders present, dangerous location, nighttime	Assaults occurred in any arrest encounter	Nonwhite (+), drugs (+), alcohol (+), family conflict (+), proactive (-), in custody (-), bystanders (+), dangerous location (+), night (+)

Table 2.2 (cont'd)

French, 2011	14,050 assaults, 5,589 officers	Day of week, time of day, street offenses, alcohol, urban, sex, age, unemployed,	Officer indicates an assault based on legal definition of assault in New South Wales	Weekend (+), 9pm-3am (+), street offenses (+), alcohol (+), urban (+), suspect male (+), age 18-35 (+), unemployed (+)
Dai, Frank, and Sun, 2011	332 encounters	#officers, #bystanders, reactive, encouraged to cooperate, citizen irrational, nonwhite, female, juvenile, lower class	Noncompliance	Encouraged to cooperate (+), irrationality (+), juvenile (+),
Engel <i>et al.</i> , 2011	Traffic Stops Level 1 = 39,191 Level 2 = 236	Suspect race, sex, age, vehicle registration, veh. modifications, veh. condition, #passengers, time, weekend, highway, offense type, arrest, search, population demographics, poverty level	Demeanor and noncompliance/ resistance	Black (+), male (-), vehicle poor condition (+), valid license/registration (-), #violations (+), arrest (+), search (+),

racial dyads using PSS data, where nonwhite citizens were less likely to comply regardless of officer race (Leeper-Piquero and Bouffard, 2003). Despite the fact that Leeper-Piquero and Bouffard published their article in 2003, the PSS study is substantially older than the Richmond data used by Mastrofski, Snipes, and Supina (1996) which were collected in 1992. This may explain the disparity in the findings, if treatment of nonwhite citizens by the police changed over this time period. Further complicating this issue, McCluskey, Mastrofski, and Parks (1999) found a null relationship between racial interaction dyads and compliance with requests and/or demands made by officers.

Research studies using multivariate techniques and official records as a data source report nonwhite suspects being more resistant of police authority than are white suspects. Kavanaugh (1997) reported that arrests involving nonwhite suspects are more likely to result in some form of violence, either on the part of the citizen or officer, than are arrests involving white suspects. This finding, which uses a more open definition of resistance, is also supported by research with more refined definitions of resistance. Rabe-Hemp and Schuck (2007) reported that nonwhite citizens were more likely to assault officers than were white citizens in a multi-city study of police force usage during arrests. This finding is also buttressed by Engel and colleagues (2011) who found that nonwhite motorists were more likely to be noncompliant or resistant than their white counterparts. Additionally, using multivariate models Belvedere, Worrall, and Tibbets (2005) report that black suspects are more likely to resist arrest than comparative groups. These findings have also been supported by descriptive analyses as well (Chapman, Swanson, and Meyer, 1974; Uchida *et al.*, 1988).

Citizen Age

Sixteen of the 20 studies identified examined the influence of age on the likelihood of suspect resistance. Eight of these 20 studies found that young adults were the most likely to resist the coercive authority of police. Two multivariate studies found a significant relationship between age and resistance of the police, indicating that juveniles were less likely as a group to comply with the police, while five multivariate studies found a null relationship (Engel, 2003; Engel *et al.*, 2011; Kavanaugh, 1997; Mastrofski, Snipes, and Supina, 1996; Petrocelli, 1997). Outside of the findings for juveniles among the most reliable studies, suspects of assaulting or resisting officers are most commonly between the ages of 18 and 35 years in the descriptive studies, with means of about 24-28 years (Brown, 1994; Bloch and White, 1975; Meyer *et al.*, 1981; Noaks and Christopher, 1990). Thus, more contemporary and reliable research seems to support the predictions of defiance theory, which would indicate that juveniles are among those most likely to resist the police.

Alcohol/Drug Influence

Sixteen of the 20 studies examining situational predictors included the role of alcohol and/or drugs in predicting citizen resistance in some manner. Of these sixteen studies, all sixteen indicated that a citizen who is under the influence of drugs or alcohol is more likely to resist an officer than a citizen who is not under the influence. Six of these studies employed multivariate modeling techniques, and four used SSO techniques from various research projects. Mastrofski and colleagues (1996) found that the number of irrational elements possessed by a suspect (i.e., alcohol influence, diminished mental capacity, and heightened emotional state) decreased the likelihood that a citizen would be compliant. This finding was echoed by Dai, Frank, and Sun (2011) in Cincinnati, and by McCluskey, Mastrofski, and Parks (1999) in

Indianapolis and St. Petersburg. Similarly, Leeper-Piquero and Bouffard (2003) found increased defiance using the PSS data when an encounter was characterized by danger, measured using a scale which included inebriation. Focusing solely on substance use, Engel (2003) found that citizens under the influence of alcohol were more likely to aggressively physically resist officers. Similarly, Kavanaugh (1997) reported that when an arrestee was under the influence of alcohol the likelihood of violence during an arrest increased. Rabe-Hemp and Schuck (2007) also reported that individuals under the influence of alcohol were more likely to assault police officers than those who were sober. Additionally, the nine descriptive studies that examined the role of alcohol unanimously reported it increased the likelihood of suspect resistance.

Weapon

Weapon possession has generally not been used in models that predict citizen resistance, but rather officer use of force against citizens (Terrill and Mastrofski, 2002). For the purposes of this research, suspect weapon possession will be included as a control variable. Deadly resistance is often coded by officers as being in possession of a weapon where proximity dictates that an officer's life could be in imminent danger. With some weapons such as knives, pipes, or hypodermic syringes, this may require close proximity; while with other weapons such as firearms the proximity need not be so close.

Only three of the studies identified have considered weapon possession in any format, with Mastrofski, Snipes, and Supina (1996) and McCluskey, Mastrofski, and Parks (1999) reporting null findings. Leeper-Piquero and Bouffard (2003) found support for their "danger" variable in predicting defiance, but this scale was confounded with other predictors such as intoxication, and that the officer indicated they expected danger may be present.

Time of Day/Shift

Time of day has also been a strong predictor of aggression against the police. A general understanding in resistance research is that suspects will be more likely to resist police authority during the nighttime hours associated with the traditional second shift or more modern umbrella type shift (e.g., 7pm-3am). In fact, nine of the 20 studies identified considered the time of day that an encounter took place.

Three of the studies examined employed some type of multivariate model or adequate statistical control. Kavanaugh (1997) and Rabe-Hemp and Schuck (2007) both found that when an encounter occurred at night it increased aggression against police officers. As the time of day is related to other contributing factors such as what someone is doing with their leisure time or the influence of alcohol, the Kavanaugh (1997) study also controlled for alcohol influence.

A null finding was reported by Engel *et al.* (2011) in their study of Cleveland motorists. This finding may be somewhat influenced by the nature of traffic enforcement, and that commuters travelling to or from work during business hours may be displeased with being stopped by officers. In these instances, motorists in a rush to get to work or back home may be more resistant, noncompliant, or hostile than they may be during leisure time. The dependent variable used in Engel and colleagues' (2011) research was more inclusive of these lower level behaviors such as noncompliance, whereas the dependent variables used by Kavanaugh (1997) and Rabe-Hemp and Schuck (2007) represented much more serious and aggressive actions.

In terms of more descriptive work, five of the six studies reported that the time of day did influence the likelihood of resistance by citizens. Bannon (1976) reported that an assault upon a police officer was most likely to occur between the hours of 6pm and 3am. In a study that focused on police assaults in New South Wales, French (2011) reported a similar window,

reporting that most assaults were between the hours of 9pm and 3am. Uchida and colleagues (1988) report an even smaller window, citing midnight to 2am as the most intense time period of attacks on police officers. Given these very descriptive periods of increased resistance activity (often coinciding with alcohol consumption patterns), time of day may best be described by a nominal variable that captures the period between 7pm and 3am, similar to the frame supplied by Bannon (1976) and French (2011).

Situational Features Summary

Overall, with the exception of drug and alcohol influence, few of the situational variables predicting citizen compliance provide a clear picture of their true influence on compliance with the police. Much of this may have to do with the distinction between compliance and assaults. Despite indications that whites, females, and juveniles appear to comply less frequently, the assault literature seems to point toward offenders who are nonwhite, male, and young adults. This could be due to the decisions made by officers with regard to charging citizens with resisting arrest or assault, or that young adult, nonwhite males are more likely to take aggressive actions that go beyond simply refusing to comply.

Officer-based Characteristics

Through an expansive search of the compliance and assault literature, this study was able to locate 25 studies focusing on citizen resistance that included officer-based characteristics in some format in their findings. The bulk of extant research is descriptive, with some using bivariate statistical techniques and fewer yet using appropriate multivariate statistics. Overall, the findings for officer characteristics are underwhelming in terms of support, but some variables such as officer age/experience do show the potential for a possible causal relationship.

Officer Gender

Twelve of the 25 studies considered the relationship between officer gender and citizen resistance (see Table 2.3). The quality of these studies varied, as some were very much simple description with no, or quite crude, base rates for exposure (Bannon, 1976; Chapman *et al.*, 1974; Stobart, 1972). Two of the studies focused on gender more in depth. Rabe-Hemp and Schuck (2007) examined gender through a number of potential interactions, and found that female officers were more likely to be assaulted in domestic disturbances than male officers. On the whole, they did not find that female officers were more likely to be physically resisted than male officers, just in particular circumstances (e.g., domestics) where the officer may be blamed for the problem.

The only other significant finding for gender was by French (2011) in a governmental report on assaults of officers in New South Wales, Australia. Using official records, French (2011) found that female officers were less likely to be assaulted than male officers, experiencing on average 0.5 fewer assaults per year. Upon further investigation, the infrequency of attacks on female officers could actually be attributed to assignment. Female officers assigned to more dangerous tasks, such as general duty (patrol), were actually more likely to be the victim of aggressive physical resistance. Additionally, female officers were more likely than male officers to be assaulted early in their careers or after changing to a new assignment (French, 2011). French (2011) is one of the few researchers to explore, and find, an interaction between gender and officer experience. The bulk of consideration for interaction with respect to officer characteristics is between assignment and experience.

Table 2.3: Empirical Literature on Officer Characteristics and Citizen Resistance

Publication	Sample Size	Officer Vars.	Resistance	Summary
Stobart, 1972	709 Assaults	Experience, gender	Serious injuries	Experience (-), night (+)
Hoobler and McQueeny, 1973	70 assaults; 656 officers	Height	Assault	Height (-)
Chapman, Swanson, and Meyer, 1974	1, 143 assaults	Height, weight, gender, experience, race, training, assignment	Any overt physical act that the officer perceives or has reason to believe was intended to cause him harm	Age (-), experience (-), patrol (+)
Talbert <i>et al.</i> , 1974	278 treatment officers (578 total)	Height, age, race, weight	Unruly prisoner reports	The shortest officers (<5'9") may be more likely to be assaulted than tallest officers (> 5'11")
Hale and Wilson, 1974	1,912 officers	Age, education, experience, rank, and height	Officer report/Physical contact summary	Age (-), education (+), experience (-), rank (-)
White and Bloch, 1975	182 Assaults	Height, experience, assignment, education, academy score, auto accidents, sick leave, injury leave, commendations, complaints, number of injuries	Officer assaulted marked "yes" on incident form	Experience (-), patrol (+), HS education or less (-), academy average 90+ (-), auto accidents (+), injury leave (+), commendations (+), complaints (+), injuries (-)
Bannon, 1976	359 incidents, 436 subjects, 547 officers	Age, experience, role, height, weight, birth state, race, education, reared by, gender, marital status, military experience, awards, assignment, prior assaults, disciplinary action	Arrests where officer was assaulted	Patrol (+), disciplinary action (+)

Table 2.3 (cont'd)

Meyer <i>et al.</i> , 1981	1,304 assaults	Height, build, race	Any overt physical act that the officer perceives or has reason to believe was intended to cause him harm	White (+)
Konstantin, 1984	280 homicides	Race	Homicide	Black (+)
Uchida <i>et al.</i> , 1988	1,550 Assaults	Gender, race, age, experience, assignment	Any overt physical act that the officer perceives or has reason to believe was intended to cause him harm (ofc. reported)	Age (-), experience (-), patrol (+)
Noaks and Christopher, 1990	453 officers, 770 assaults	Gender, rank, experience	Physical contact in police report	Experience (-)
Griffiths and McDaniel, 1993	227 officers	Education, age, height, weight, military Experience, police experience	Self administered survey with self-reported assault	Age (-), weight (-), police experience (-)
Moxey and McKenzie, 1993	116 assaults	Gender, complaints, manner (as perceived by assailant)	Force records	Complaints (+), aggressive manner (+)
Brown, 1994	265 incidents	Age, experience, assignment, prior assaults, multiple assaults	Charges for assault, personnel and sickness files	Jail duty (+), prior assaults (+), multiple assaults (+)
Mastrofski, Snipes, and Supina, 1996	346 requests	Gender, race interactions, experience, community policing orientation	Compliance	WO/MC (+), MO/WC (-), experience (+), CP orientation (+)
Kavanaugh, 1997	1,072 arrests	Age, height, race, education, attitudes	Violent encounter (citizen resisted or officer used physical force)	Attitudes: desire to keep job (-), use-of-force law too restrictive (+)
Pinnizotto, Davis, and Miller, 1997	52 officers, 40 incidents	Gender, age, race, height, weight, marital status, education, experience, training	Felonious Assaults	Null

Table 2.3 (cont'd)

McCluskey, Mastrofski, and Parks 1999	989 encounters	Experience, community policing attitudes, citizen distrust attitudes, department, male, respectful/disrespectful race interactions	Compliance with officer requests/demands	Respect (+), disrespect (-)
Engel, 2003	1,461 encounters	Race, age	Physical resistance	Age (+)
Leeper-Piquero and Bouffard, 2003	10,277 encounters	Race interactions, nonthreatening verbal, threatening verbal, physical force	Noncompliance	White ofc/nwhite cit (+), nwhite ofc/white cit (-), nwhite/nwhite (+), Non-threat verbal (-), threat verbal (+), physical force (+)
Belvedere, Worrall, and Tibbetts, 2005	400 encounters	Race	Charge for resisting arrest	Null
Rabe-Hemp and Schuck, 2007	7,512 arrests	Gender, race, age, physical size, prior medical attention	Assaults occurred in any arrest encounter	Prior medical attention (+)
French, 2011	14,050 assaults, 5,589 officers	Gender, assignment, experience	Officer indicates an assault based on legal definition of assault in New South Wales	Mixed results, female patrol officers (+), and inexperienced/newly assigned female officers (+)
Dai, Frank, and Sun, 2011	332 encounters	Care, disrespect, force, accuracy, consideration, rejection, consistency, inconsistency, officer race, officer gender, COP assignment	Noncompliance	Voice consideration (-)
Engel <i>et al.</i> , 2011	Traffic Stops Level 1 = 39,191 Level 2 = 236	Race, traffic assignment, experience	Noncompliance/resistance	Null

Age/Experience

As previously mentioned, police experience is the officer characteristic that most often is found to have a relationship with aggressive physical resistance in the literature. As shown in Table 2.3, 18 of the 25 studies identified included officer experience, age, or both in some fashion. Nine of these 18 studies identified police age or experience as having a negative relationship to the likelihood of citizen resistance. Thus, as an officer becomes older and/or gains more experience, it becomes less likely that he or she will be faced with noncompliance or resistance. Unfortunately, these research studies were almost exclusively descriptive, and despite numerous claims since the 1970s that experience is linked to the assignments that police officers receive, only the Engel and colleagues (2011) and Kavanaugh (1997) studies controlled for the time of day, while neither controlled for neighborhood setting (Chapman *et al.*, 1974; Griffiths and McDaniel, 1993; Hale and Wilson, 1974; White and Bloch, 1975). Both Kavanaugh (1997) and Engel *et al.* (2011) found a null relationship for officer age/experience when controlling for the time of day.

One interesting feature of experience is that it has held up as a predictor of resistance across a variety of geographies and methodologies. The first identified study was conducted by Stobart (1972) using serious injuries as the measure of police assault in the 1960s in Great Britain. His findings indicated that the majority of officers assaulted were between 18 and 24 years of age. Using official data sources and the definition of any overt physical act, Uchida *et al.* (1988) also found that officers with more experience were less likely to be physically resisted. Drawing upon survey responses from 227 officers across several departments (which would make a positive finding less likely due to within variance), Griffiths and McDaniel (1993) also found more experienced officers were less likely to be the victim of an assault.

In sum, most findings point toward officer age and experience reducing the likelihood of physical resistance by citizens. Another seeming consensus in the literature is that police officer age interacts with the assignment an officer receives, and that this interaction from a neighborhood environmental perspective has yet to be addressed. Despite the breadth of study on officer age, a dose of depth is needed to tease out the relationship between age, assignment, and locale.

Race

Of the 25 studies identified, 16 examined the influence of officer race on citizen resistance. All but three found anything other than a null relationship between officer race and the likelihood of citizen resistance. The only study to find a positive relationship between nonwhite officers and attacks on officers used homicide as a dependent variable (Konstantin, 1984). It is likely that homicide is a completely different phenomenon and that race bears no influence in aggression against officers at lower levels. Further, Konstantin (1984) largely attributed the difference to attacks on Black officers near their residence while off duty. On the contrary, Mastrofski, Snipes and Supina (1996) found that white citizens were more likely to be noncompliant with nonwhite officers. When all of this is taken under advisement it is unlikely that officer race bears any relationship to aggressive physical resistance while on duty.

Summary of Officer Characteristics

Overall, officer characteristics appear to be the weakest and least consistent predictors of citizen resistance. Officer age and experience appear to be the most salient predictors, with older or more experienced officers less likely to face resistance from citizens. Officer gender and race appear to exhibit mostly null findings, with female officers and nonwhite officers more likely to be attacked or subjected to noncompliance when relationships are reported. Despite the very

weak evidence, these predictions would be congruent with defiance theory if any relationship is present (for a synthesis of the methodology used by previous studies, consult Appendix A).

Limitations of Previous Research

Previous research that has examined citizen resistance of officer coercive authority has suffered from a number of methodological limitations. Among the most threatening limitations are the lack of theory outlining causal processes of resistance, measurement of resistance, the constrained number of study sites and short study periods, and the low base rate of citizen attacks. The following sections provide an in depth discussion about these limitations and potential solutions for these issues

Model Specification and Theoretical Integration

One of the most serious threats to validity in previous research on citizen resistance is the lack of theory explaining action against officers, and the model specification problems associated with exploratory research. Up until the mid-1990s, most studies of citizen resistance were merely descriptive (Bannon, 1976; Brandl, 1996; Uchida, Brooks, and Koper, 1987). Studies that employed multivariate modeling techniques had substantial issues with specification, reflecting a more “kitchen-sink” approach without consideration for potential collinearity (Morrison and Meyer, 1974; Kavanaugh, 1997). Even several contemporary studies have relied heavily on bivariate statistics for many predictors (Rabe-Hemp and Schuck, 2007), ostensibly ignoring the intersections between environmental features and predictors such as officer age and assignment.

Even strong environmental research like Kaminski, Jefferis, and Gu (2003) failed to account for officer-based characteristics and other situational features in their analysis. Thus, previous literature has not appropriately addressed environmental predictors while controlling for

situational and officer-based predictors, nor has research examining situational features and officer-based characteristics properly controlled for environmental influences. The lack of available data, along with a dearth of theoretical frameworks outlining causality of attacks against officers, has precluded integration of macro- and micro-level predictors of citizen resistance

Police research is generally devoid of any theory (Terrill, 2014), and citizen resistance of police appears to be no exception. While some research in the area of citizen resistance has appeared to apply ill-fitting theories to citizen resistance, or made some strides in integrating theory, work is still necessary to further explain citizen resistance. One theoretical framework that seems particularly well suited is defiance theory (Leeper-Piquero and Bouffard, 2003). An extensive review of the literature shows that the tenets of defiance theory are mostly congruent with the empirical literature regarding citizen resistance of the police, and that a more thorough examination is warranted.

Measurement

The number of police officers who are subjected to physical resistance every year is a relatively unknown figure, particularly given the variety of ways that attacks on police officers can be measured. Previous research have used operational definitions such as aggravated assaults reported to the Federal Bureau of Investigation (FBI), aggravated assaults reported by an officer, charges filed against a citizen for assault, arrest for an assault, an indication of any physical force by an officer or physical resistance by a citizen, officer recollection of assault over the previous 12 months, a physical contact summary filled out by officers, or determinations of the level of resistance as determined by a trained observer *in situ*, just to name a few. This lack

of standardization has promoted a body of research where the likelihood of an officer experiencing an attack or aggressive physical resistance, is virtually unknown.

Using a definition of assaults on officers, a common operational definition in the literature, is troublesome because the filing of an assault report or charge is subject to a number of officer discretionary decisions. *The current inquiry uses data where the requirements for reporting citizen aggression against officers are standardized, and operational definitions of aggressive physical resistance are uniform across a number of sites for an extended period of time.* In some ways, the use of officer retrospective self-reports and observational techniques may be superior in that they remove the officer from a data collection role. Unfortunately, asking officers to think about their physical interactions over the course of a year can be problematic because of recall issues. When considering observational techniques, the expense of collecting this type of data limits these studies to a sample of officers, in a limited number of locations, over relatively shorter time durations than those using official records (Engel, 2003; Mastroski, Snipes, and Supina, 1996).

Location and Duration

Another major limitation of studies focusing on citizen resistance is the location and duration of the study. Studies, in terms of geography, can be classified into one of two different categories. Some studies are able to employ officer or demographic characteristics, but do so at a single police department. Others are able to compare a large number of police departments, but then may only employ organizational characteristics or environmental features at a large level of aggregation, which is substantially less meaningful.

For example, Bannon (1976) was able to accomplish an impressive study of police assaults using officer and assailant characteristics, as well as interviews of assailants by the

police. This research was also able to continue over a long period of time, for about a year. A substantial limitation is that the research was conducted exclusively in the Detroit Police Department in the 1970s, undermining the ability to generalize to typical police departments at that time. A similar example is Kavanaugh (1997), who was able to include assailant characteristics, officer demographics, and even officer attitudes. Unfortunately this research was even more limited in terms of departmental scope, as it focused exclusively on the Port Authority Bus Terminal in Manhattan, NY and thus could not examine variation in environmental predictors. The clientele and officers at a single bus terminal would also not be representative of departments across the United States, making external validity substantially weaker.

Perhaps the most exhaustive research on environmental features and assaults on officers was done by Kaminski, Jefferis, and Gu (2003) in Boston. Their use of block groups was an impressive feat when dealing with police data, particularly assaults, that commonly have a low base rate. Unfortunately, one would also be hard pressed to call Boston a representative city. Metropolitan Boston is home to over 50 institutions of higher learning, with 18 institutions that grant mostly bachelors and masters degrees. Using Boston as a study site changes the intersections of income, race, residential mobility, and background characteristics typical of most American cities, and thus the challenges faced by officers there. Their research also did not include situational features or officer-based characteristics, a potentially confounding problem given the officer experience/environment dynamic and the potential for the same officer to police the same area.

Other research has employed the methodology of comparing environmental variables across cities and departments. This is problematic for a number of reasons. First is what geographers call the Modifiable Area Unit Problem (MAUP) (Bailey and Gatrell, 1995).

Essentially, a change in the level of aggregation at which data are collected can change the results from those data because the causal process may not be at the observed geographic unit of analysis (for example, the inner city may be poor but nearby upscale housing may hide just *how* poor).

The second reason is that the variance of large units like cities may be substantial within and less between. Some measures capture this by comparing Black to White income ratios (Jacobs and Carmichael, 2002), but ultimately this is not the optimal way to analyze the experiences of the inner city poor. Finally, there is the assumption that policing is uniform across cities, and that different parts of the city are not policed differently. Police scholarship has often argued that departments vary a great deal in how they police across space in a single department (Klinger, 1997; Muir, 1977; Skolnick, 1966; Werthman and Piliavin, 1967). Focusing on a single city fails to capture differences in police policy as it is actually implemented on the street throughout a city.

Studies that have been able to focus on a small unit of analysis (e.g., officer) and included more than one city or department have often been limited in terms of their duration. A single six-site study has been the source of data for several publications on violent police-citizen interaction (Garner and Maxwell, 2002; Rabe-Hemp and Schuck, 2007). This study used arrest encounters as a unit of analysis across the six studies, which required project staff to collect data only until the requisite numbers of arrests were achieved. This meant that the data covered roughly a two to seven week period depending on the size of the department. Considering the small base rates of arrests for officers (0-1 per year), this is not a long period of time to collect data for aggressive physical resistance of officers, often subject to a much smaller base rate.

Base Rates

Base rate is also a feature that hampers research in the area of citizen resistance (Fridell *et al.*, 2009; Kaminski, Jefferis, and Gu, 2003; Wilson and Zhao, 2008). Perhaps the best example of this is the study of resistance in police-suspect encounters conducted by Engel (2003). Engel (2003) used a large observational data set with an extensive number of rides occurring over an extensive period of time. However, such a design provided a dependent variable where the outcome of resistance occurred in only one percent of encounters; thus, the level of variation makes the likelihood of finding statistical significance with meaningful real world implications doomed from the beginning.

For the larger levels of aggregation (e.g., cities) base rates still pose substantial problems. Data may be unreliable if extracted from LEOKA, and highly specialized techniques such as negative binomial regression are generally required (Fridell *et al.*, 2009; Wilson and Zhao, 2008). These specialized techniques are rarely common curricula in the criminal justice field, and thus the numbers of studies employing this technique pre-2003 were basically non-existent. Additionally, research projects that would allow for the collection of data that fit such a model including situational features and officer-based characteristics at an aggregation level smaller than a city have not been completed. This type of study would require data for individual officers, police units, or census tracts over an extended period of time to accurately arrive at a count of incidents of aggressive physical resistance worthy of employing a regression model.

Chapter Summary

Based upon this extensive review of the literature, it appears that situational and environmental predictors, followed by officer-based characteristics, are the most important features predicting aggressive physical resistance against police officers. Situational predictors

such as citizens who are under the influence of alcohol, the citizen's employment status, and the time of day appear to be quite significant considerations, as is the age and/or experience of the police officer handling an incident. Socioeconomic, family disruption and ethnicity measures such as the local percent poverty level, the percent unemployed, the percent of female headed households, and the percent nonwhite in an area are also important considerations. The major gap in the citizen resistance literature is that current research has been unable to isolate the impacts of environment from situational and officer-based predictors. Furthermore, this body of research has been limited by lack of appropriate theory, measurement issues, limited study sites and study periods, and the base rate of resistance.

The following sections of this manuscript will address these issues. Chapter Three outlines an integration of defiance and social disorganization theories to produce a theoretical framework designed to explain variation in citizen resistance with environmental variables. Chapter Four outlines the methods that address shortcomings in the measurement of resistance, study period, study sites, and base rates of resistance.

CHAPTER THREE: THEORETICAL FRAMEWORK

Citizen resistance of police coercive authority is an area of research that is essentially devoid of strong theories explaining differences across environmental, situational, and officer-based predictors. The evolution in explanations of citizen resistance might be best classified as an amalgamation of various conceptual frameworks. Chapter Three begins with identification and description of prior conceptual frameworks explaining citizen resistance. This description is followed by a description of two criminological theories (i.e., defiance and social disorganization theories) that can be integrated to explain environmental variation in citizen resistance. Subsequently, the integrated theory combining defiance and social disorganization theories is offered.

Environmental Predictors of Citizen Resistance

The study and theoretical development of the role environment plays in prompting citizens to resist police coercive authority is limited. Previous research has examined environment in an exploratory manner, as a predictor of raw police output, as a correlate of opportunity and motivation to attack officers, and from a perspective of strain and relative deprivation. This section will discuss the theoretical evolution of environment as an explanation of citizen resistance.

Like most areas of research, environmental explanations of resistance of police officers began largely as an exploratory ordeal. Among the first research comparing socioeconomic factors such as income, unemployment, and family disruption to the frequency of attacks on police officers was the work of Morrison and Meyer (1974) and Regens and colleagues (1974). These early explanations centered on the exposure of officers to threatening situations. Morrison and Meyer (1974) hypothesized that environmental conditions of an area dictated a police

officer's level of activity. Essentially, they argued that features of an area such as family disruption, poverty, and high percent minority populations led to increased police activity such as responding to more calls for service and making more arrests. In turn, the increased activity level put officers in dangerous situations more frequently, leading to an increased number of attacks on officers (see also Regens *et al.*, 1974).

Further development of this idea was conducted by Chamlin and Cochran (1994), who applied routine activities theory to the likelihood of assaults on police officers. Their argument centered on the number of arrests officers made, and the racial make-up of Oklahoma City, Oklahoma over time. Application of routine activities theory was quite simple, the more arrests officers made, the more frequently officers would be assaulted. This argument anchored the opportunity portion of routine activities and aggression against officers. Where Chamlin and Cochran (1994) were more innovative was their inclusion of Turk's (1969) pluralistic conflict theory to explain differences in offender motivation. Their inclusion of conflict theory drew a link between officer behaviors and the environment they policed. Their theoretical development supposed that negative treatment of citizens in areas of low socioeconomic status (SES) resulted in resentment of the police by residents, and the resentment resulted in increased attacks on officers. This theoretical theme is observed in subsequent research.

Other research closely related to Turk's (1969) conflict theory is the application of minority threat hypothesis by Jacobs and Carmichael (2002). Minority threat hypothesis argues that groups in power subjugate those who are not in power by blocking their access to legitimate political channels. Thus, Jacobs and Carmichael (2002) argue that increased incidences of violence against police in disadvantaged areas serves as a form of political protest when legitimate channels are blocked (Jacob and Carmichael, 2002; Tilly, 1978; see also Merton,

1938). The amount of violence associated with repressed political action is believed to increase as the relative deprivation between the rulers and the disadvantaged increases. Jacobs and Carmichael (2002) hypothesize that violence against state agents increase as racial, economic, and political stratification increases.

Social disorganization and strain theory have also been used by researchers to explain assaults on police officers. Kaminski, Jefferis, and Gu (2003) drew upon research conducted on police homicides to illustrate that structural conditions influence rates of assault on police officers in basically the same way that they influence street crime in general (by breakdowns in informal social control and increased levels of strain). Integrating social disorganization with other theories that include situational features and officer-based characteristics may help further explain the variation between community structural features and attacks on police officers.

One potential avenue for integration of social disorganization theory is defiance theory. Defiance theory (Sherman, 1993) has been employed as an explanation of citizen resistance from the officer demeanor perspective (Leeper-Piquero and Bouffard, 2003). Officer actions toward citizens have been linked to environmental features (Smith, 1986; Terrill and Reisig, 2003), as have citizen attitudes toward officers (Kusow, Wilson, and Martin, 1997; Sampson and Bartusch, 1998). Thus, social disorganization theory may be linked to other theories associated with officer behavior such as procedural justice or defiance.

Situational Predictors of Citizen Resistance

Situational predictors are among the most salient variables explaining officer behavior and citizen actions toward the police (Riksheim and Chermak, 1993; Skogan and Frydl, 2004). While some may consider environmental influences to be included under the umbrella of situational predictors, this section outlines the potential influence of situational features other

than environmental constructs. Namely, the focus of this section will be explaining the conceptual development of suspect gender, race, age, alcohol influence, weapon possession, and time of day on a citizen's inclination to resist police coercive authority in a physically aggressive manner.

Citizen Gender

Generally, citizen gender and resistance of the police has been framed as an issue of males being more prone to violence than females. Early research on resistance against police officers found that well over 80 percent and sometimes over 90 percent of police assailants were men (Bannon, 1976; White and Bloch, 1975; Chapman, Swanson, and Meyer, 1974; Meyer *et al.*, 1981). These figures outpace the representation of males in arrest records, leading to an early belief that men would be more likely to resist officers.

From an instrumental perspective, the overrepresentation of men in attacks on police officers is linked solely to physical size and strength. Men who are more likely to possess physical capabilities to attack a police officer evaluate their ability to successfully resist or intimidate an officer as higher (Mastrofski, Snipes, and Supina, 1996). Westley (1970) opined that physically large officers experience less physical resistance simply due to their imposing figure. It is then possible that male suspects who encounter police officers may in turn use their ability to intimidate to impose their will on police officers.

An alternative explanation is that men in general view the police more negatively and thus as less legitimate. Empirical support has shown men hold less positive views toward police performance (Austin and Vogel, 1995), which would support the procedural justice aspects of defiance theory and explain gender disparity in noncompliance with police officers. Essentially, males may be more likely to define a sanction as unfair and stigmatizing than females. They also

will have a harder time reconciling shame if they lack bonds to mainstream society and the community in general. Because males are less socially bonded to sanctioning agents and the community than females, as some researchers suggest (Anderson, 1989; Austin and Vogel, 1995), the attenuated bonds they have with the community lead to increased levels of aggression.

A final thought is that gender interacts with structural disadvantage to make male citizens more aggressive against officers in resource deprived neighborhoods. Anderson (1999) has argued that male citizens are held to a different code than females in structurally disadvantaged neighborhoods, which prompts violent reaction to threats on their person by others. Anderson (1999) outlines a “code of the street” where males must respond to disrespect or “disses” by engaging in violent confrontation and not showing fear. Officers who are dismissive or disrespectful, or even those who are only exercising their authority, may prompt aggression from male citizens. While female residents of the inner city are also bound by a code, it would not require violent attacks against the police to “save face” (Anderson, 1999).

Race

Conceptual frameworks that explain citizen resistance of officers are split on the role that race may play. Some explanations argue that nonwhite citizens are more likely to resist the police, while others would point toward nonwhite citizens being more compliant than their white counterparts. In general, the empirical evidence has pointed toward nonwhite citizens being more likely to engage in aggressive physical resistance or assaults (Chapman, Swanson, and Meyer, 1974; Uchida *et al.*, 1988). With respect to compliance, when any relationship is evident the results tend to be mixed (Engel, 2003; Engel *et al.*, 2011; Leeper-Piquero and Bouffard, 2003; Mastrofski, Snipes, and Supina, 1996).

Defiance and procedural justice theory conceptualizations would point toward minority/nonwhite citizens being more likely to resist the coercive authority of police. Nonwhite citizens generally have poorer perceptions of the police, and lower satisfaction with police performance even when controlling for neighborhood disadvantage (Dean, 1980; Reisig and Parks, 2000; Weitzer, 1999). The police are also more likely to impose formal sanctions on nonwhite citizens (Smith and Visser, 1981), as well as using force more frequently on nonwhites while other variables are controlled (Terrill and Mastrofski, 2002). The strained relations in nonwhite communities may lead citizens to view the police as unfair and illegitimate, leading to more frequent defiance.

A counter argument made by norm resistance theory (Lanza-Kaduce and Greenleaf, 1994; Turk, 1969) argues that it may be normative for a minority citizen to acquiesce to a white officer. Generally in Western society, minorities are expected to submit to whites, meaning that white citizens may be more likely to resist minority officers, as it is not normative for a person of the white race to acquiesce to a nonwhite. Both directions of this argument have empirical support in the recent literature (Mastrofski, Snipes, and Supina, 1996).

Age

Explanations for the role of age often focus on the negative relationship that young persons have with the police. Generally the young tend to be more marginalized than older individuals, and teens have more negative attitudes than other age groups, with older citizens having the most positive impressions of the police (Austin and Vogel, 1995). From defiance and procedural justice theory perspectives, this would lead to teens having the greatest levels of defiance against police officers. Not only because teens have strained relations with the police, but because they often have to save face in front of their friends due to peer pressure. While

intuitively appealing, the theoretical influence of age consistent with defiance theory has received only marginal empirical support (Dai, Frank, and Sun, 2011).

Findings indicate that teens are not considered the most likely to resist, but rather the age group comprised of citizens 18-34 years of age. This finding is also contrary to the more general body of crime literature where 18-34 years would be a period of desistance from criminal activity (Moffitt, 1993). Perhaps the best explanation may be from the instrumental perspective, in that youths evaluate their ability to intimidate officers as lower, acquiescence is normative, they have less status to protect, and they are less likely to be under the influence of alcohol. All of these factors would point toward youth compliance, particularly if these other variables were not controlled statistically.

Alcohol/Drug Influence

Alcohol and drug influence is a substantial predictor of physical resistance of police authority. Nearly every study that includes the influence of alcohol or drugs finds it to be a significant predictor, and often is the strongest predictor of noncompliance (Bannon, 1976; Brown, 1994; Chapman, Swanson, and Meyer, 1974; French, 2011; Kavanaugh, 1997; Meyer *et al.*, 1981; Noaks and Christopher, 1990; Petrocelli, 1997; Rabe-Hemp and Schuck, 1997; Stobart, 1972). The general explanation is straightforward; alcohol modifies the rationality of the actor police are contacting. Individuals who are drunk or high may evaluate their abilities to overcome a police officer differently than a sober person. Additionally, the consequences and rewards of their behavior may not be as fully clear as they would be to a more rational actor. Defiance theory might point out that those who are drunk or high may still feel the sting of stigmatization that a sanction brings, but could readily deny the shame felt due to an altered state of consciousness.

Weapon Possession

Weapon possession is not a variable that has garnered a great deal of discussion in resistance literature. Whether a suspect is in possession of a weapon may be an important consideration for a number of reasons. First, possession of a weapon could fundamentally change the level of suspect resistance. A suspect in possession of a visible firearm may be more readily perceived to be resistant because of the imminent possibility of lethal resistance. Second, the individual may weigh their ability to overcome the officers more favorably than they would if not in possession of a dangerous object. Third, as has been proposed by some tests of defiance theory (Leeper-Piquero and Bouffard, 2003), officers may approach an armed suspect in a different manner, perhaps somewhat nervously, with a greater sense of urgency and less understanding. The brusque manner of an officer dealing with an armed suspect may then make the confrontation even more hostile.

Time of Day

Prior research shows that officers are more likely to be attacked at night, but studies that include time of day as a variable are either descriptive (French, 2011) or lack a well developed theoretical explanation for the relationship (Kavanaugh, 1997; Rabe-Hemp and Schuck, 2007). Generally, it is believed to be tied to other phenomena such as the influence of drugs and alcohol, and day of the week (French, 2011). To a certain extent, there may also be some security provided by cover of darkness. Offenders may feel they are less likely to be identified, and thus if successful in their attack they are more likely to avoid capture.

Officer-based Characteristics

Many of the initial conceptual frameworks and theories as to why an individual police officer may face more frequent noncompliance focused on the physical stature of the officer,

believing that larger officers would be more intimidating for citizens to physically challenge. When female officers began to enter the police force, some of these same arguments were made to explain why they may be attacked more frequently. Theories considering other officer traits such as experience, training and education took a different approach, insisting that more experienced, better trained and more educated officers would possess greater communication skills resulting in calmer encounters. Essentially, an experienced or more educated officer is considered more skilled at the craft and thus would be more proficient at deescalating potentially violent encounters. Still other conceptualizations exist for other characteristics. Officer race, along with gender, can be viewed as somehow reducing the perceived legitimacy of an officer who is handling an encounter (Lanza-Kaduce and Greenleaf, 1994; Mastrofski, Snipes, and Supina, 1996; Rabe-Hemp and Schuck, 2007; Turk, 1969). Gender has also been hypothesized as being more related to communication skills and other beneficial traditionally conceived feminine traits, which would serve an officer in de-escalation (Lonsway, 2001; Nifong, 1996). There are also environmental explanations for officer race, whereby nonwhite officers may live and work in the more disadvantaged areas characterized by violent crime, resulting in a greater likelihood of facing aggression from citizens. The following sections will delve more deeply into the conceptual framework for each officer characteristic.

Physical Size

Height and weight were the primary considerations in early theory explaining physical noncompliance, with many believing that officers needed physical prowess to properly catch thieves and avoid being attacked while maintaining order on the streets (Bannon, 1976). William Westley (1970) linked the physical size of officers to the potential resistance they faced from subjects. He states “Some men are so powerful that they seldom experience resistance on the

part of the public” (Westley, 1970, p. 120). He further explains that the physical prowess of these officers allows them to physically control suspects without being attacked even if the citizen is intent on physical harm. The need for officers to physically dominate their assigned geographic space was a feature of officer role conception pre-professional era, and in some locations well into the professional era (Bannon, 1976; Skolnick, 1966). Patrol officers were assumed not to possess the intellect necessary for problem solving, investigating crime, or reasoning with criminals. The expectation was that officers would physically dominate any suspects, and that being attacked or injured by a citizen was tantamount to failure.

This conceptualization began to change along with the civil rights and police professionalism movements. From a civil rights perspective, the Law Enforcement Assistance Administration (LEAA) required departments implementing height and weight requirements to demonstrate that physical size was linked to officer competency (Chapman, Swanson, and Meyer, 1974). Lack of verification meant that departments would have to suspend these selection criteria or be in violation of the Civil Rights Act (Chapman, Swanson, and Meyer, 1974). Empirical research has consistently found a null relationship between officer size and physical resistance, resulting in the suspension of height and weight requirements in many departments.

The legal requirements coupled with a refocusing on education and training meant that a police officer’s height and weight became less important. The concept of physical prowess gave way to professionalism as police departments began to ease height and weight requirements. Personnel standards began to reflect an officer’s intelligence rather than his or her physical size. Additionally, studies began to emerge that showed null relationships between officer size and competency (Bannon, 1976; Chapman, Swanson, and Meyer, 1974; Kavanaugh, 1997; Rabe-

Hemp and Schuck, 2007). By the 1980s research had generally found little support for the officer size hypothesis, leading to a decrease in research and theoretical development waned.

Officer Gender

The number and percent of female officers in the United States has risen over the past four decades. There were only about 10,000 female police officers in 1970, a number that has increased to over 65,000 (Rabe-Hemp and Schuck, 2007). As the prevalence of women in law enforcement increases, the interest and ability of researchers to study the gender dynamic in policing also increases. Recent study has brought attention to the role of gender and policing in contemporary society, highlighting the areas of physical capacity and interpersonal communication skills (DeJong, 2004; Martin, 1999; Paoline and Terrill, 2004; Rabe-Hemp and Schuck, 2007).

Perhaps one of the greatest challenges in determining whether female officers are more at risk due to an inability to maintain control of a situation, or less at risk due to their communication skills and ability to deescalate encounters is the variation within the realm of female officers. Martin (1979) finds variation among female officers with regard to their willingness to use coercion and their role conception. Her argument is that female officers represent a token group in policing, and thus must find ways to cope with the increased scrutiny. *Policewomen* are claimed by Martin (1979) to embrace the traditional police role conception by taking charge in encounters, engaging citizens with verbal and physical coercion, having a strong law enforcement orientation, and using the advantages of her gender as another tool to carry out the police mandate. *Policewomen* are claimed to be counter to *policewomen* in that they emphasize femininity, avoid confrontation, avoid taking charge of situations, and seek assignments more in line with their personal gender conception (Martin, 1979).

While perceptions and stereotypes exist about female officers and the type of policing in which they engage (or should engage) in, empirical differences are not typically manifested. Female officers have been shown to be no more or less likely to use coercion (Paoline and Terrill, 2004), comfort citizens (DeJong, 2004), or to be victims of assault (Rabe-Hemp and Schuck, 2007). Despite these findings, others have found women to be more skilled in verbal communication and managing potentially violent encounters (Lonsway, 2001; Nifong, 1996; Steffensmeier, 1979; van Wormer, 1981). Women have also been viewed as entering a situation in a less confrontational manner (Nifong, 1996), a trait that would lead to greater compliance on the part of a citizen according to procedural justice scholars (Sunshine and Tyler, 2003), or open the potential for an attack for those who believe that not taking charge is a sign of weakness.

Still others contend that female police officers may be more or less likely to face resistance for other reasons. Some view the potential for female officers to be attacked in domestic violence situations to be greater, as the presence of a female officer taking control of an encounter with a male suspect may trigger a response due to the challenge upon his masculinity (Rabe-Hemp and Schuck, 2007). Others contend that domestic violence offenders may lay blame upon a female officer simply because she is female (Rabe-Hemp and Schuck, 2007). The idea of chivalry/masculinity should also not be discounted. This research views attacks on police officers as an expressive rather than instrumental (e.g., escape) action, and while it may improve someone's image to physically resist a policeman, the same may not be true for attacking a policewoman (Talney, 1969).

The hypothesized influence of gender on potential victimization is more split with respect to gender than other officer characteristics. This split is not easily reconciled simply by selecting a theoretical model. Defiance theory does not provide an explanation for officer gender with

respect to citizen resistance. On one hand, if female officers do possess superior verbal communication skills, and appear less threatening, the likelihood of being resisted could be less than a male officer. The fewer stigmas that are levied during encounters, the lower the potential for attacks. On the other hand, if the presence of a female officer is viewed as illegitimate and embarrassing as suggested by Rabe-Hemp and Schuck (2007), the likelihood of resistance may be higher in these types of encounters.

Experience/Age

Unlike the conceptual confusion surrounding gender and the potential influence it may have on the likelihood of an officer to face resistance, the hypothesized role of officer experience is unequivocal. Chapman and colleagues (1974, p. 9) state “officer tenure is examined as a possible correlate of assaultive behavior on the premise that seasoned, experienced officers may be more capable of avoiding assault situations”. Research by Bayley and Garofalo (1989) support the contention that more experienced officers may develop skills that allow them to manage potentially violent encounters. Others agree that less experienced officers are at a greater risk, but note that the variation may be due to deployment patterns (e.g., late shift, weekend shifts, and disadvantaged beats) rather than a lack of competence.

Hans Toch (1995) offered that younger officers may try to establish a valued “gung-ho” or “ass-kicker” reputation, which would increase their likelihood of being involved in physical encounters. Defiance theory would predict, consistent with the resistance literature, that more experienced or older officers are less likely to face resistance. Not only are they perceived to be more skilled at managing potentially violent encounters, but normatively persons in the United States defer to their elders. Conversely, some researchers have suggested that the reduced risk to more experienced officers is due to their assigned location, shift time, and scheduled days of the

week (Brown, 1994). In essence, more senior officers receive preferable (and less dangerous) shifts due to union scheduling associated with seniority. To date, the interaction between officer experience and deployment patterns has not been sufficiently disentangled, despite the calls for such research (Brown, 1994).

Race

Officer race is a predictor, which like gender, elicits two possibilities related to the likelihood that an officer may be aggressively resisted. From a purely social/psychological view, nonwhite officers should be less likely to be attacked by citizens. Popular literature on officer race indicates that nonwhite officers should have an easier time interacting with nonwhite citizens who come to the attention of the police (Bannon and Wilt, 1973). Nonwhite officers have been shown to have more positive attitudes toward community policing, as well as some indication that they may have more negative attitudes toward aggressive patrol (Paoline, Meyers, and Worden, 2000). These characteristics are indicative of a reduced propensity for triggering resistance under defiance theory.

Bannon (1976) argues that nonwhite officers should more readily communicate with nonwhite offenders due to having a similar cultural upbringing. This is particularly relevant for Bannon's (1976) work in the city of Detroit where the community ethnic make-up was far more nonwhite than the police department. Nonwhite officers in this locale should have been more successful in interacting without an encounter becoming violent, as nonwhite citizens would have a stronger bond to nonwhite agents over white agents. The findings from Bannon's (1976) study do not reflect this hypothesis, as the percentage of assaults on white and nonwhite officers was identical to their representation in the department, about 83 percent and 17 percent, respectively.

One possible explanation of this phenomenon is articulated by Fyfe (1981), Geller and Karales (1981), and Konstantin (1984). Their findings paint an interesting picture of the officer race and violent encounter situation of the late 1970s-1980s. In all three studies, nonwhite officers were more likely to find themselves in situations where firearms were discharged. All three studies also made convincing arguments that the frequency of violence associated with nonwhite officers could be traced back to two features of a nonwhite officer's life. First, nonwhite officers were more frequently assigned to nonwhite areas where violence between officers and citizens was more common. Second, nonwhite officers lived in nonwhite communities which increased their use of firearms and homicide victimization during their off-duty time. Increased risk for nonwhite officers is also predicted by Norm-resistance theory, whereby white citizens may be less likely to defer to nonwhite officers given traditional race roles in Western society. Generally, findings for officer race and resistance have been null despite indications that nonwhite officers would be less likely to experience resistance. Recent research has not been able to untangle the race-assignment conundrum due to data limitations associated with citizen resistance.

As demonstrated in the preceding sections, studies of police behavior are generally devoid of a unified theory that is narrowly tailored to explain specific police actions across physical space (e.g., arrest, force, and search) (Klinger, 1997). The lack of theory becomes even more apparent when researchers seek to explain citizen actions toward the police, an area that has received less research attention. One such theory that does partially explain citizen actions against the police is defiance theory (Sherman, 1993). Defiance Theory, however, lacks a robust explanation about the role that environmental features may play in citizen resistance to the police. Therefore, to account for the role environmental features play in citizen resistance to

police coercive authority, defiance theory will be integrated with the systemic model of social disorganization theory (Bursik and Grasmick, 1993). The systemic model of social disorganization theory is not only one of the most well supported explanations of geographic variation in crime rates, but the assumptions of social disorganization are cohesive with defiance theory, making integration of the theories appropriate and useful for the current inquiry.

Defiance Theory

Lawrence Sherman's (1993) defiance theory provides a framework for explaining why responses to criminal sanctions differ across settings (for a graphic depiction of the theory, consult Appendix B). In formulating defiance theory, Sherman (1993) compared the opposing assumptions of deterrence and labeling theories in an effort to explain the effect of sanctions on an offender's future behavior and criminal decision making. Sherman (1993) was able to articulate defiance theory by integrating Braithwaite's (1989) reintegrative shaming theory, Tyler's (1990) procedural justice theory, and Scheff and Retzinger's (1991) master emotion theory.

Drawing upon these theories, Sherman (1993) identified three basic responses of an offender to a criminal sanction. The first possible effect, and a general goal of most criminal sanctions, is deterrence. A deterrence response by an offender indicates that the imposition of a sanction against an offender will curtail their future criminal offending. The second potential effect is irrelevance. Irrelevance means that the criminal sanction levied against an offender will have no impact on offending, and the sanctioned person will continue offending at the same rate as if the sanction had not happened. The final possible effect of a sanction is that it produces defiance. Defiance of the law would involve more persistent, more frequent, or more serious criminal offending by the sanctioned individual.

Variation in the impacts of criminal sanctions is attributed by Sherman (1993) to four key concepts. The key concepts that drive variation in responses according to defiance theory are legitimacy of the sanctioning group, the bond of the offender to the sanctioning agent or community, the shame an offender feels and whether it is accepted or denied, and whether the offender then feels pride in defiance. More specifically, Sherman (1993) indicates that these key concepts lead to three falsifiable premises that relate to the likelihood of defiance, deterrence, or irrelevance in response to a criminal sanction. The first premise is that defiance is more likely when an offender views the sanctioning group as illegitimate, the offender is weakly bonded to their community, family or the sanctioning agent, and if the offender has pride rather than shame in their actions. The second premise argues that defiance will be less likely if an offender views the sanctioning group as legitimate, an offender is well bonded, and the offender is willing to accept shame. Sherman (1993) argues that well bonded individuals have a stronger stake in conformity, making deterrence the more likely result of a criminal sanction. The third premise argues when an offender views the sanctioning group as moderately legitimate, the bond of the offender is moderate, and contributors to shame acceptance or denial are equally balanced, the effect of the sanction is likely to be irrelevant.

Incorporating Tyler's (1990) procedural justice theory, defiance theory argues that people are more likely to obey the law when they feel it is legitimate. Sherman (1993) argues that perceived legitimacy of the sanctioning groups arises from two major sources. The first way that legitimacy is lost is through the behavior of a sanctioning agent. Agents such as police officers can show disrespect in two different ways. The disrespect can be directly targeted at the offender (e.g., calling the offender names and/or using profanity) or it can be targeted at a group to whom the offender belongs (e.g., making references to ghetto culture, slums, and/or using

racist, ageist, or sexist language). The perceived illegitimacy of the sanctioning agent, regardless of the sanction itself, can cause the offender to perceive the sanction as unfair because of the manner in which it is applied (Sherman, 1993).

The offender may also view the sanctioning agent or group as illegitimate if the sanction that is applied seems patently unfair. Sherman (1993; p. 461) uses the phrase “substantively arbitrary, discriminatory, excessive, undeserved, or otherwise objectively unjust”. Defiance theory argues that a sanction that is not legitimate leads to retreatism or aggressive rage, but does not offer a theoretical reason for differential responses between individuals.

After the legitimacy of the sanctioning body, the bond that the sanctioned person holds with the sanctioning agent and the community in general becomes an important feature, if the sanction is felt to be unfair. If those who are sanctioned are well bonded to the agents, to the community, or to both, the shaming effect of even an unfair punishment is likely to have a deterrent effect. The effect of an unfair sanction on a well bonded offender might be irrelevant in a worst case scenario, and unfair sanctions are theorized to have a less robust deterrent effect.

Poorly bonded offenders represent a different scenario, where sanctions can produce a defiant reaction. When a poorly bonded offender accepts the shame produced by a sanction that is viewed as unfair, they will not engage in defiance. Sanctions where shame is accepted rather than denied produce irrelevant or even deterrent reactions. Defiance occurs only when the shame of a sanction is rejected, which becomes more likely as the attachment between an offender and their community, family, and the sanctioning agent weakens. Thus, poorer bonds result in increased frequency, persistence, or seriousness of criminal offending.

Defiance theory also argues that aggression or increased offending may manifest itself in four possible ways, represented by two mutually exclusive dichotomies. Defiance can be either

specific or general and either direct or indirect. Sherman (1993) states that specific defiance occurs when an offender individually responds to a sanction, whereas general defiance involves conduct by a group of people who identify with the unfairly sanctioned person. These two situations are mutually exclusive, as a person cannot defy by themselves and in a group at the same time. Further, defiance can be direct or indirect. Sherman (1993) uses the example of an officer being disrespectful at a domestic violence encounter. If the offender were to take action against the officer, this would be direct defiance. An action taken against the spouse, partner, other intimate, or a random person on the street who is not the police officer would be indirect. Thus, the focus of this research on aggression against the police would be an example of direct defiance.

Social Disorganization Theory

Social disorganization theory, developed initially from biological and ecological research, forms an explanation for variation in criminal activity over geographic space (Walker, 2009). Among the earliest work using this theory, rooted in human ecology, was the research conducted by Park and Burgess in the late 1920s that examined the relationship between density of crime and land use practices. Park, Burgess, and McKenzie (1969) expanded the human ecology research when they developed the Burgess zonal hypothesis, which sought to explain why concentrations of crime varied in accordance with land use in concentric circles that extended outward from the city of Chicago. They observed that crime was far more concentrated in the industrial zone ring about one mile outside of the city center than it was in the suburban rings that were two to three miles outside of the city center.

Shaw and McKay (1942) used this information to originate modern social disorganization theory. They expanded the human ecology literature beyond the land use/land cover hypotheses

into more concrete sociological hypotheses about the relationship between geographic space and variation in crime and delinquency. The initial concentric zone hypothesis was replaced by hypotheses about the social features present in each zone. First, and most important, was the level of population change and turnover within a neighborhood. Population dynamics were believed to cause crime and delinquency through tension between groups and unstable norms within transitioning neighborhoods. Shaw and McKay (1942) hypothesized that when incursion of different groups had stabilized, often with the immigrating group forming a majority, crime would decrease to levels lower than those during a group incursion due to a stabilization of norms. Second, Shaw and McKay (1942) believed that signs of physical disorder and decay would be linked to criminal activity, in much the same way as modern broken windows theory. The belief was that signs of disorder would undermine the ability of neighbors to engage in informal social controls. Finally, the number of vacant and abandoned houses was also hypothesized to contribute to crime via an unwillingness of transients to establish and maintain the community norms. The empirical data provided by Shaw and McKay (1942) supported all three of these hypotheses.

The next group of hypotheses from Shaw and McKay (1942) tested links between the economic standing of a community and delinquency. Their research supported a belief that lower income areas and neighborhoods where people were less likely to own their home had higher levels of delinquency than higher income and owner-centric locales. Reasoning inductively from their findings, Shaw and McKay (1942) attributed the relationship between qualities of a community (e.g., concentrated disadvantage and population change) and levels of criminal and delinquent activity to differing levels of social organization within each of the communities. Essentially, Shaw and McKay (1942) believed that crime occurs more frequently

in poor and transient neighborhoods because the permanency of owning a home and maintaining a middle class lifestyle gave residents a greater investment to protect in their community. Thus, residents in these areas spend more time and energy enforcing cultural norms that are counter to crime and delinquency.

The work of Sampson and colleagues led to major development in social disorganization theory. Two substantial improvements were the formalization of predictors of neighborhood disorganization and an intervening mechanism between social make-up of a community and levels of crime. Sampson (1986) suggested that the link between population characteristics and crime may be the strength of informal social controls in the community, which has become the intervening feature between social disorganization and levels of crime in social disorganization literature. Sampson and Groves (1989) were able to test the role of informal social controls by integrating social disorganization with systemic theory (see Kasarda and Janowitz, 1974), as well as expanding and clarifying which social disorganization predictors might be most salient in influencing levels of informal social control (defined as density of local friendship networks, number of unsupervised peer groups, and organizational participation). Their research expanded the focus of social disorganization to five predictors of informal social control: socioeconomic status, residential stability, ethnic heterogeneity, family disruption, and urbanization. Sampson and Groves' (1989) empirical data supported extension of the theory that informal social control is an intervening variable in the relationship between community structure and crime. This paved the way for further development of the systemic model of social disorganization by Bursik and Grasmick (1993).

Much like the research of Sampson and Groves (1989), Bursik and Grasmick (1993) theorized that social structural issues (e.g., the socioeconomic composition of a neighborhood)

influenced the strength of relational networks that residents were able to form with their family and friends. The attachment to family, other community members, and local organizations is known collectively in the systemic model as social ties. Social ties are theorized to be the link between community structure and the ability of a neighborhood to exercise informal social control. In their expanded version of the systemic model, Bursik and Grasmick (1993) relied on a three prong approach to social control suggested by Hunter (1985), including private (family), parochial (neighborhood), and formal (public) methods of social control.

Thus, according to the systemic model, measures of social disorganization impact the methods of social control in a variety of ways (for a graphical depiction, see Appendix C). The role of poverty is primarily a parochial level of control consideration, but it also has implications for private and public levels of social control. Poverty limits the ability of people to live in communities that share their values. When residents are unsure if their values are shared by their neighbors, they are less willing to intervene, weakening informal social control. A lack of income may also prevent adults from socializing with their neighbors and forming strong secondary relational networks, particularly if those with middle class values are working multiple jobs or have families but cannot afford childcare. As children become adolescents, parents in lower income areas may be forced to leave them unsupervised. These unsupervised teens may then become community nuisances because the parental unit is unable to exercise private control, further undermining the ability of residents to exercise parochial control. Poverty may also decrease the ability of a community or individual to secure services from public social control institutions such as the local police department (Bursik and Grasmick, 1993). Indeed, the decline of industry in urban areas leads to decline in tax bases, leaving many police departments with fewer resources to devote to traditionally conceived crime prevention

activities such as preventive patrol (Terrill, Rossler, and Paoline, 2014). The lack of formal controls may also have an impact on informal controls, as a concerned citizen may not be willing to intervene with local troublemakers if the police cannot be trusted to arrive in a timely and responsive fashion if the situation escalates (Warner, 2007).

Another cause of weakening in the social ties necessary for parochial social control is residential mobility. Residential mobility limits the amount of time that community members have to form bonds with other residents. The lack of continuity in neighbors reduces the density of local friendship networks and the ability of residents to prevent unsupervised peer groups (Sampson and Groves, 1989). Furthermore, some research indicates that those who change residences at a high rate have lower participation in groups, and tend to favor self-conception over the needs of family members, local community members, and local neighborhood organizations (Oishi, Lun, and Sherman, 2007).

The systemic model also hypothesizes that the formation of relationships between community members will be stunted if there is a high level of ethnic heterogeneity in the neighborhood (Sampson and Groves, 1989; Wilcox and Cullen, 2010). Differences in ethnic background are theorized to prevent dense friendship networks and the formation of neighborhood organizations (Wilcox and Cullen, 2010). A high level of ethnic diversity may also be indicative of a lack of common culture or shared experiences. A lack of common culture may make forming shared expectations about conduct in the community more difficult. This interruption of a shared standard may make residents more hesitant to intervene if they are unsure of the informal rules in their community, further undermining parochial control.

Alternative formulations of social disorganization theory argue that ethnic heterogeneity in communities is not as debilitating to social control as is the social isolation in impoverished

communities (Sampson and Wilson, 1995). The link between poverty, social isolation, and crime is manifested in several ways. First, the levels of crime and delinquent behavior linked to areas of concentrated disadvantage prompts parents to isolate their children from adults who are suspected or known to engage in aberrant behavior (Anderson, 1999; Wilson, 1996). This parenting strategy undermines intergenerational closure in impoverished and high crime communities, which weakens the ability of the neighborhood to exercise informal social controls. Second, poor black communities often suffer from high levels of unemployment and family disruption. The prevalence of single unmarried African-Americans (both men and women) is linked to further social isolation. Impoverished and single African-Americans are less likely to participate in neighborhood organizations, be exposed to friends who are working, college educated, and married (Sampson and Groves, 1989; Wilson, 1996). African-American women solely dependent on public assistance are even more isolated than the working poor, as nonworking mothers are even less frequently exposed to mainstream, working role models and associates (Wilson, 1996). Finally, impoverished and predominantly black neighborhoods as a whole often become socially isolated due to outmigration of pro-social institutions, businesses, and mainstream neighbors. Isolation from more mainstream, working neighborhoods leads to poor schools, police, and a significant detachment from legitimate society and work opportunities (Wilson, 1996).

Family disruption is also linked to a lack of private control in the systemic model of social disorganization theory. Single parent households are viewed to be less able to supervise young or adolescent children, and do not provide the same level of guardianship over their own personal property (Cohen and Felson, 1979; Sampson, 1987). Family disruption can also extend into the ability of a community to supervise young peer groups such as gangs. Empirical

evidence supports this hypothesis that unsupervised youth are more prevalent in communities where collective family control is lower (Sampson and Groves, 1989).

Urbanization, or the population density of an area, can weaken the informal social controls that a neighborhood is capable of exercising as well. Higher population densities may hamper the ability of residents to identify outsiders. Similarly, formal social controls are bound to be more effective if suspects of violent crime can be identified and reported to the police. This relative anonymity of the inner-city when compared to rural or even suburban neighborhoods attenuates the ability of residents to exercise social control. Urbanization has also been linked to weakening of familial and friendship bonds in local communities, as well as reduced participation in local groups (Sampson and Groves, 1989). In essence, the empirical data offered by Sampson and Groves (1989) and subsequent studies such as Sampson, Raudenbush, and Earls (1997) and Warner (2007), support the basic systemic model as conceived by Bursik and Grasmick (1993).

The systemic model was further expanded by Sampson, Raudenbush, and Earls (1997) with the introduction of collective efficacy. Their research found that concentrated disadvantage and residential mobility reduced the willingness of residents to act in a positive manner for the betterment of their community. Collective efficacy then emerged as a strong predictor of violent crime, net of structural disadvantage and residential mobility. While the inclusion of collective efficacy and social capital have improved social disorganization over the basic systemic model, these features are not necessary for integration of defiance and social disorganization theories. As will be discussed in the following section, the link between social disorganization and defiance theories are the bonds between a citizen and their family, community, and sanctioning

agent. Collective efficacy moves from the level of attachment to the willingness to act on the behalf of neighbors, which is beyond the scope of defiance theory.

Neighborhood level indicators of distress associated with social disorganization theory have also been linked with perceptions of the police and police behavior. Residents of impoverished neighborhoods have less favorable attitudes toward the police (Kusow, Wilson, and Martin, 1997; Reisig and Parks, 2000; Weitzer, 1999) and view the police as less legitimate (Gau *et al.*, 2012). The reduced legitimacy of the police in areas of concentrated disadvantage may also be related to officer behavior in these areas (Gau *et al.*, 2012). Research linking concentrated disadvantage to officer behavior shows that the police may be more coercive (Terrill and Reisig, 2003), more disrespectful (Mastrofski, Reisig, and McCluskey, 2002), more corrupt (Kane, 2002; Weitzer, 1999), and less responsive to citizens (Varano *et al.*, 2009) in structurally disadvantaged neighborhoods.

Concentrated disadvantage can also lead to legal cynicism (Sampson and Bartusch, 1998). The underlying theoretical explanation for why features of a community such as poverty lead to perceptions of injustice are that those with low political capital are unable to influence and mobilize formal powers (Black, 1976; Hagan and Albonetti, 1982; Sampson and Bartusch, 1998). The loss of faith in formal justice agencies such as the police may then promote a perceived need for “self-help”, where violence against people in the neighborhood becomes the approved method of social control in lieu of a capable and trustworthy police force (Black, 1983; p. 34). This model of addressing affronts may be most evident in response to behavior from the police in a community, as reporting misconduct to official channels may not be as effective a social control strategy over police officers as aggressively resisting their coercive authority (Black, 1983).

In summary, the systemic model of social disorganization links structural features of a community (e.g., concentrated disadvantage, residential mobility, ethnic heterogeneity, family disruption, and urbanization) to the strength of social control that can be exercised (i.e., private, parochial, and formal). The link between these structural features and levels of crime is the attachment of residents to their community, family, and public resources. More distressed neighborhoods are shown to have less ability to exercise formal control, which leads to increased levels of crime and delinquency. Common predictors of social disorganization are also linked to negative police behaviors and reduced legitimacy of the police. Social disorganization theory continues to develop, incorporating even more explanation of the link between structural disadvantage to crime via collective efficacy and social capital.

Integrating Defiance and Social Disorganization Theories

Rather than examining citizen resistance in an exploratory manner, this research seeks to provide a theoretical framework explaining the association between poverty, residential mobility, ethnic make-up, family disruption, and urbanization, as well as situational and officer-based characteristics, and the likelihood of an officer experiencing aggressive or deadly resistance. In order to accomplish this task, this section of the dissertation proposal will integrate defiance theory with social disorganization theory. The proposed theory will focus on explanations of defiance in general, and specific, direct defiance against the police in particular (for a graphical depiction, see Appendix D).

Social Organization and Defiance

The systemic model of social disorganization argues that structural disadvantage and residential mobility dictate crime rates via breakdowns in informal social controls (i.e., private, parochial, and formal). Structural disadvantage in a community leads to attenuated social ties

and bonds to family, friends, and public institutions such as the police. The attenuated bonds are said to promote crime because those bonds form the basis for social control. Defiance theory argues that these bonds promote the acceptance of shame resulting from a criminal sanction, thus strong bonds to family, friends, and formal institutions reduces the likelihood of defiance and increases the likelihood of deterrence. The following section integrates indicators of social organization (i.e., poverty, ethnic make-up, family disruption, urbanization, and residential mobility) with direct and specific defiance.

Poverty

Poverty can lead to defiance of criminal sanctions assessed by the police in a number of ways. Social disorganization theory states that residents of low income areas are less likely to form positive peer networks and often take less ownership over their neighborhood. The systemic model also argues that people in lower income areas may struggle to mobilize public institutions (Bursik and Grasmick, 1993), an argument supported in the police literature (Varano *et al.*, 2009).

Lower income areas struggle with forming positive peer networks and bonds, as well as an inability to supervise groups of adolescents, and lower participation in local organizations (Sampson and Groves, 1989; Wilson, 1996). It is well established that these features represent a breakdown in informal social controls, but what is not made obvious is that they may also produce inability to properly shame offenders for improper behavior. If poverty indirectly undermines informal social control, poverty may also insulate offenders from stigma for their behaviors. When the community loses the ability to shame an offender because social ties are weakened due to poverty, the offender may more easily deny the shame of a sanction, or even

take pride in the sanction. The denial of shame by an offender then opens the door for defiance against the sanctioning agent.

Poverty is also related to less financial investment in the community by residents, who then feel less compelled to protect their property. Home ownership may compel persons to exert more guardianship over their property, strengthening informal social controls (Sampson and Groves, 1989; Shaw and McKay, 1972). The increased social control of negative behaviors may more effectively shame an individual who commits a crime and is sanctioned. The ability to effectively shame an offender leads to a reduced likelihood of defiance, and thus a reduced likelihood of attacks on the police.

Poverty is also linked to lower tax bases, and therefore reduced social services including the police. The inability to pay for the police, or at least contribute a substantial amount, is exacerbated by the increased demand for police services often associated with impoverished areas (Klinger, 1997; Werthman and Piliavin, 1967). Higher demand and lower contributions can then lead to situations in a community where it is more difficult to mobilize the police. Police departments may be less willing to contribute substantial resources into crime prevention in areas where the political capital of residents is low. The police may then become less responsive (Varano *et al.*, 2009), leading to reduced police legitimacy in low income neighborhoods (Gau *et al.*, 2012).

The increased social distance between officers and citizens in lower income communities may also lead to negative police behavior (Black, 1976). Differential or improper treatment by the police may then lead to reduced police legitimacy. Reduced police legitimacy may then ultimately lead to the perception of a sanction as unfair, leading to increased levels of defiance against the police. Empirical research has shown that officers are more punitive (Smith, 1986),

coercive (Terrill and Reisig, 2003), corrupt (Kane, 2002), and less procedurally just (Gau *et al.*, 2012; Mastrofski, Reisig, and McCluskey, 2002) in disadvantaged neighborhoods.

Ethnic Make-up

Early formulations of social disorganization theory focused on ethnic heterogeneity as a reason for the breakdown in informal social control, the logic being that cultural variety would prevent the formulation of common expectations for behavior. It certainly seems reasonable that a person might feel insulated from shame for their deviant behaviors if the neighborhood members responsible for social control were of another race. Social distance associated with ethnic heterogeneity may permit an offender to deny shame more easily due to their lower levels of attachment to their neighbors, making defiance a more likely outcome. In communities where the police are less reflective of the residents, residents will be less well bonded to the police and therefore more likely to aggressively resist (Black, 1976).

More contemporary formulations of social disorganization theory and structural disadvantage actually focus more on the impact of social isolation in poor, urban, minority communities (Wilson, 1996). Isolation from mainstream society reduces the attachments that inner city residents have to public organizations such as employers, the police, and the courts. Furthermore, the isolation from mainstream society assuages the stigma associated with “ghetto-related” behaviors such as drug dealing, prostitution, and weapon possession (Wilson, 1996, p. 52). The institutionalization of illegitimate enterprises as an appropriate way to earn money increases the perception of criminal sanctions as unfair and makes denial of shame easier for offenders.

Predominately African-American disadvantaged neighborhoods may also have more negative perceptions of the police, and view the police as less legitimate, due to historical

treatment of Blacks by the police (Brunson, 2007; Feagin, 1991; Weitzer, 2002). Police in the United States have a long standing reputation of mistreatment of poor Blacks, from police involvement in the murder of James Chaney, the fatal beating of Malice Green, and of course the Rodney King incident in 1991. The global negative perception of police by poor, inner city blacks emanating from personal experience, vicarious experience, and historical abuse leads to reduced legitimacy (Brunson, 2007). Thus, sanctions that the police apply in urban, predominately Black neighborhoods may be viewed as unfair regardless of the actual fairness of the present interaction.

Police behavior may also be viewed as unfair in predominately African-American neighborhoods because it actually is more unlikely to be unfair. Research has linked structural disadvantage to police misconduct (Kane, 2002), disrespect of citizens (Mastrofski, Reisig, and McCluskey, 2002), coercion (Terrill and Reisig, 2003), and arrest (Smith, 1986). Unfairness by the police, associated with a social distance between officer and citizen, may promote resistance by the citizen. This resistance would take the form of specific and direct defiance.

Family Disruption

The most obvious contribution of family disruption in social disorganization literature is the reduced supervision of parents in the household, with the effective message being that two parents can more effectively control an adolescent than can a single parent. A positive relationship and strong bond between an adolescent and two parents would make shame resulting from criminal sanction less easy to deny. Thus, intact families may more effectively shame after a criminal sanction, making defiance less likely.

A central argument related to social disorganization theory is that family disruption leads to less dense peer networks, reduced participation in local organizations, and an inability to

supervise adolescent peer groups (Sampson and Groves, 1989). The attenuated social ties produce a neighborhood where parochial controls are depleted. When residents in the community lose the ability to exercise informal controls, they may also lose the ability to shame their neighbors for deviant behaviors.

Unsupervised peer groups may also further complicate this issue by increasing the ties that youths feel toward their peers rather than older community members. This may weaken the ability of local adults to shame youths due to the lack of intergenerational closure in the neighborhood (Wilson, 1996). Even more compelling is that the reference peer group may have less positive views of the police (Austin and Vogel, 1995), promoting a sense of pride in attacking an officer rather than a sense of shame (Anderson, 1999).

Urbanization

Urbanization is said by social disorganization theory to increase crime because the level of anonymity it provides residents makes social control less effective. The inability to recognize outsiders undermines parochial control because residents cannot defend communal space. Public control is also weakened, because when crime is reported the suspect is less likely to be identifiable by name. The anonymity also insulates an offender from shame, because their negative reputation will be less likely to attach, making the consequences for denying shame lower. Additionally, the higher population density makes bonds between the police and citizens weaker, meaning the bond to an agent as a deterrent to defiance is also weaker.

Residential Mobility

Social disorganization proponents theorize that residential mobility leads to a breakdown in informal social control and crime because turnover stifles the formation of bonds in a community (Bursik and Grasmick, 1993; Sampson and Groves, 1989; Sampson, Raudenbush,

and Earls, 1997; Shaw and McKay, 1972). Mobility, also associated with reduced homeownership, may also make residents less persistent in enforcing social control because their investment in the community is less (Shaw and McKay, 1972). The attenuated social ties may reduce the bond that an offender feels to the community, permitting the offender to deny shame more readily. Less persistent social controls could also truncate the effectiveness of shame in the local community, permitting more frequent denials of shame.

Overall, the theoretical framework offered in this chapter links concentrated disadvantage and residential mobility to the ability of neighbors to shame deviance in their neighborhood. This integrated theoretical framework also makes statements about community condition and the bond residents feel to one another and the police. Furthermore, structural disadvantage is also linked to levels of police legitimacy and legal cynicism in an area based on police conduct. The next chapter outlines data and analytical techniques to test this integrated theory.

CHAPTER FOUR: METHODS

Studies of citizens resisting the lawful authority of police officers are relatively rare (Engel, 2003), although research has focused on this phenomenon in a variety of forms (e.g., noncompliance, resistance, assault, and homicide) (Jacobs and Carmichael, 2002; Kaminski, 2008; Kaminski, Jefferis, and Gu, 2008; Kavanaugh, 1997; Mastrofski, Snipes, and Worden, 1996). Even with a more expansive definition, the role that environment plays in citizen resistance remains a limited area of study. Empirical research on environment and citizen resistance that include situational features and officer-based controls in multivariate analyses are substantially rarer.

Generally, data that are able to examine the role of environmental factors while controlling for situational and officer-based predictors have been unavailable (Kaminski, Jefferis, and Gu, 2003; Morrison and Meyer, 1974). Furthermore, studies that do include *any* environmental features generally examine their role at a large level of aggregation (e.g., city, county, and state) or examine smaller levels of aggregation (e.g., census tract and block group) within a single city (Fridell *et al.*, 2009; Jacobs and Carmichael, 2002; Kaminski, Jefferis, and Gu, 2003; Morrison and Meyer, 1974, Regens *et al.*, 1974). Research focusing on citizen resistance has suffered from other methodological issues as well, including definitional problems (i.e., a lack of agreement on how resistance is measured) and examination over short periods of time for a low-frequency event (Garner *et al.*, 1996; Rabe-Hemp and Schuck, 2007).

The current inquiry addresses these issues in several ways. First, this study uses an objective definition of citizen resistance that is not subject to officer discretionary decisions (e.g., filing a criminal charge for resisting arrest or assaulting a police officer). Second, this study uses data that were collected over a two-year period, which is a substantial improvement over limited

time frames used in previous studies. Third, data are available on the location where the incident took place, which permits the linkage between behavior and localized neighborhood characteristics. The available data also include information about situational features and officer-based characteristics, which are not available from other existing data sources. Finally, the data for the current inquiry includes multiple police departments, a substantial improvement over most previous studies of environment and citizen resistance. Included in the remainder of this section is a description of the methodology and data employed. Specifically, the data sources, cities, departments, protocols, variables, and analytical techniques are detailed.

Given the ability to improve upon limitations of previous research (i.e. model specification, definition of citizen resistance, location and duration of study, and base rates) this dissertation examines three essential research questions: 1. How often are officers subjected to aggressive physical resistance? 2. What influence do situational features and officer-based characteristics have on citizen aggressive resistance? 3. What influence do environmental conditions have on citizen resistance while situational features and officer-based variables are controlled?

Resistance, Situational, and Officer Data: Assessing Use of Force Policy and Outcomes Study

The aforementioned data for this study were collected in conjunction with the *Assessing Use of Force Policy and Outcomes* study (2005-IJCX-005NIJ), which released its final technical report in 2012 (Terrill, Paoline, and Ingram, 2012). Essentially, the two overarching goals of this project were to: (1) Identify variation in departmental use of force policies and (2) link these varying force policies to outcomes in an attempt to determine which offer the most benefit to police agencies. The project involved two phases of research tailored to these goals, with each

phase involving multiple departments across the United States (Terrill, Paoline, and Ingram, 2012).

Phase I, the initial phase of the project, surveyed 1,083 (selected via a systematic random sample focusing on organizational size and type) municipal police and sheriff's departments about their use of force policies (Ingram, 2010). As previously mentioned, this phase focused on identifying variation in use of force policies across departments in the United States. More specifically, the survey asked departments if their policy included a force continuum, the structure of said continuum, and the organization of tactical options within said structure (Terrill, Paoline, and Ingram, 2012).

Following Phase I, the second phase (Phase II) involved the purposive selection of eight agencies contingent upon a number of factors. The primary consideration was maintaining a variety of force policies for examination, which was coupled with congruence of agency size (internal and external validity), crime rate, workload, and SES to enhance internal validity (Ingram, 2010). Subsequent to the selection process, the primary investigators obtained cooperation from police leadership in each department, which enabled access to officers and departmental records (Terrill, Paoline, and Ingram, 2012). This resulted in the selection of eight city police departments (i.e., Columbus, Ohio (CPD), Charlotte-Mecklenburg, North Carolina (CMPD), Portland, Oregon (PPB), Albuquerque, New Mexico (APD), Colorado Springs, Colorado (CSPD), Fort Wayne, Indiana (FWPD), St. Petersburg, Florida (SPD), and Knoxville, Tennessee (KPD))¹.

More specifically, data were collected via survey of officer attitudes and perceptions toward their employer's force policy, and work environment. (Ingram, 2010). Data were also

¹ Columbus Police Department did not include citizen race in their records and is thus excluded from the analyses.

collected from official records for a 24-month retrospective period, including information about use of force incidents, citizen complaints, lawsuits, arrests, calls for service, and reported crime. The reports collected from each department during Phase II of the *Assessing Use of Force Policy and Outcomes* study are the data source for the dependent variable and all independent variables with the exception of environmental features (i.e., structural disadvantage, residential mobility, and violent crime).

Census Data: The American Community Survey

A product of the United States Census Bureau, the American Community Survey (ACS) is a fairly new (2006) development in terms of demographic data over geographic space. Unlike the long form survey of the decennial census, the ACS collects data monthly over census tracts and block groups. These monthly surveys allow for more up-to-date information about the demographic characteristics within small geographic areas, which is consistent with the intent of this study (ACS Design and Methodology, 2013).

Within this framework, options exist between one-, three-, or five-year retrospective estimates of demographic data at various levels of aggregation. One-year estimates provide the most contemporary data, but the results are less reliable at smaller levels of geographic aggregation (i.e., census tracts and block groups). In some instances these data may even be incomplete, as one year will not provide a valid estimate for every census tract in an entire city. The five-year estimates are the least timely, but are the most reliable at smaller levels of aggregation. Three-year estimates fall in between one- and five-year estimates in terms of their currency and reliability. Five-year estimates are available beginning in 2010 (collection began in 2005, thus the estimate frame is from 2006-2010).

Thus, for the purposes of this research, the five-year estimates will be used as they coincide most closely to the research frame for nearly all of the study sites. The five-year estimates are the most reliable at small levels of aggregation, and more updated versions are not necessary given that the data were collected retrospectively for a 24-month period, the earliest of which was Fort Wayne (December 2004-December 2006) and the latest Albuquerque (April 2006-April 2008) (Terrill, Paoline, and Ingram, 2012). Use of the five-year estimate is also preferable over the 2000 decennial census, as the 2000 census is less proximate to the collection of data associated with the *Assessing Use of Force Policy and Outcomes* study, is less reliable due to a shorter sampling window, and is more likely to suffer from historical threats to validity as it is collected at a single point in time (ACS Design and Methodology, 2013).

As previously mentioned, the ACS uses small, monthly samples to keep a continuously updated dataset that is timely. The ACS uses the same Master Address File (MAF) that was created for the 2000 Census, but this list is continuously updated using data provided by the US Postal Service and through data agreements with municipal governments (ACS Design and Methodology, 2013). Locations of reported force incidents are then linked to the Topologically Integrated Geographic Encoding and Referencing (TIGER) system to determine placement in the proper census tracts. An address locator available free from the University of California Los Angeles (UCLA) was used to determine the placement of addresses coded in police reports with their respective census tract.

The ACS achieves a high response rate through a number of tactics. Those selected to participate are legally bound to respond to the survey and project staff are legally bound to keep the identity of respondents confidential. In addition, the survey starts with a mailed form, but a series of follow-up interview techniques are used to connect with non-respondents. If a

respondent fails to complete the hard-copy form and return it within their sampled month, they are contacted via a computer assisted telephone interview (CATI) if they have a phone number on record. If this is unsuccessful, the household or occupant is contacted in-person and the questions are answered via computer assisted personal interviewing (CAPI). Through these techniques the ACS is able to achieve a response rate in the area of 98 percent (ACS Design and Methodology, 2013).

What makes the ACS particularly useful to this research are the data types collected. The ACS contains data on poverty, unemployment, percent female-headed households, and racial demographics (e.g, percent Black or African American and percent Hispanic). Data concerning recent changes in residence are also available. These variables are important to predicting attitudes toward the police (Reisig and Parks, 2000; Weitzer, 1999), as well as citizen resistance of police officers (Kaminski, Jefferis, and Gu, 2003, Morrison and Meyer, 1974; Regens *et al.*, 1974). Thus, measures derived from the ACS are used to examine the relationship between environmental features and aggressive physical resistance by citizens.

Study Sites

This section examines the demographic characteristics of the seven study sites. These data were collected from three sources, namely the Uniform Crime Reports (UCR), the 2000 decennial census, and departmental reports and master roster files (Ingram, 2010). It is important to examine the demographic characteristics of the cities, not only because this is the primary focus of the research, but also because these features played an integral part of department selection secondary to achieving variation in force policy (Terrill, Paoline, and Ingram, 2012).

Study Sites: City and Departmental Descriptions

As previously stated, the sites for this study were selected for variance in policy for officer use of force and congruence among social characteristics. The data for Table 4.1 were extracted from two sources, the 2000 US census (source of information for selection) and the 2007 UCR. Departments were also selected to be more representative of medium-sized police departments in the United States. Smaller agencies would not generate enough data for suitable analyses, and departments in larger cities are relatively rare and thus not representative of typical American police departments (Hickman and Reaves, 2006; Terrill and Paoline, 2011).

City Descriptions

As shown in Table 4.1, the size of cities the study departments served ranged in size from about 730,000 residents (Charlotte-Mecklenburg) to about 180,000 residents (Knoxville). The average number of residents across the seven sites is about 405,000 residents. The seven cities are also quite comparable across dimensions of social structure. Charlotte-Mecklenburg had the highest nonwhite percentage at 36 percent, while Colorado Springs had the smallest ratio of nonwhite composition at about 19 percent. Poverty ranged from six percent below the poverty line in Portland to about 14 percent below in Knoxville. Unemployment rates were also quite low for each city, ranging from three percent in Colorado Springs to four and a half percent in Portland (Terrill, Paoline, and Ingram, 2012).

Department Descriptions

Table 4.1 also shows the variation not only between the cities, but also between departments. Charlotte-Mecklenburg had the most sworn officers, with around 1,600. The fewest sworn officers are found in the Knoxville police department (KPD), which employs 382. Across these seven departments, the average number of sworn officers employed is about 806. In terms of officers per population, Colorado Springs has the lowest ratio, with about 1.8 officers

per 1,000 residents. As the largest city, Charlotte-Mecklenburg had the highest officer-to-population ratio at 2.23 officers per 1,000 population. The national average across all police departments is about 2.3 per 1,000 residents (Walker and Katz, 2012). In terms of workload, KPD had the most Part I offenses per officer with about 39. Fort Wayne had the least number of serious crimes per officer reported, with only about 24 Part I crimes registered per officer.

Use of Force Reporting and Citizen Resistance, Location, and Situational Features

As previously mentioned, the data from use of force reports were collected over a 24-month period². Given the original intent of the data collection process (to compare outcomes across policy types), the primary investigators sought a period where policy (both tactical placement and reporting requirements) remained consistent over the two-year period (Terrill, Paoline, and Ingram, 2012). These study periods across all sites align well with the American Communities Survey five-year estimates (2006-2010), and thus reduce historical threats to validity across both data sets due to the extensive data collection windows.

Differences may be noted between departments in their reporting procedures. As the original research focused on use of force incidents via use of force reports, officers had to use some form of force and write a report in order for the incident to be coded. In Charlotte-Mecklenburg and St. Petersburg, a report was required every time reportable force was used (Terrill, Paoline, and, Ingram, 2012). The next four smallest departments other than St. Petersburg (i.e., Portland, Albuquerque, Colorado Springs, and Fort Wayne) mandated that a report be completed by every officer who used reportable force. Finally, Knoxville, the smallest

² The study period for each site: Charlotte-Mecklenburg (January 1, 2006- December 31, 2007), Portland (November 5, 2005-November 4, 2007), Albuquerque (April 13, 2006-April 12, 2008), Colorado Springs (January 1, 2006-December 31, 2007), St. Petersburg (April 1, 2006-March 31, 2008), Fort Wayne (December 18, 2004-December 17, 2006). See Terrill, Paoline, and Ingram 2011, for greater detail.

department, required that officers complete a report if the level of force exceeded empty hand soft or direction controls (Terrill, Paoline, and Ingram, 2012). The standard for reportable force was the same across all study sites, essentially any hands on force that exceeded handcuffing or simple restraint, as well as the use of any weapon.

Departments also varied in the methods utilized for their data collection and storage. The two largest departments had data that were available in an electronic format (i.e., Charlotte-Mecklenburg, and Portland), while three of the four smallest (i.e., Colorado Springs, Fort Wayne, and Knoxville) had only hard paper copies available to the research team (Terrill, Paoline, and Ingram, 2012). Albuquerque and St. Petersburg, two city departments that were near the middle in size, actually kept records in both electronic and paper format. For the four cities where electronic data were available, these data were often supplemented by coding of the written records by project staff, as not every incident was coded for the variables of interest in the desired format. In addition, the paper copies from Albuquerque, Colorado Springs, Fort Wayne, and Knoxville all had to be coded by project staff (Terrill, Paoline, and Ingram, 2012).

Resistance

Within the use of force reports that officers completed for each department, the officers were asked to report the level of citizen resistance that occurred in each incident (Terrill, Paoline, and Ingram, 2012). Naturally, there was some degree of variation between departments in their coding of citizen resistance both in the electronic data, as well as in the hard copy report form

Table 4.1: Description of Study Sites

	Charlotte- Meck.	Portland	Albuquerque	Colorado Springs	St. Petersburg	Ft. Wayne	Knoxville
<i>Agency</i>							
Number Sworn Officers	1,638	989	986	669	520	457	382
Officers per 1K Pop.	2.23	1.84	1.92	1.79	2.10	1.84	2.09
Part I Crime/ Sworn Ofc.	35.7	35.7	34.9	27.7	36.6	23.7	39.1
<i>City</i>							
Population	733,291	538,133	513,124	374,112	248,069	248,423	182,337
%Nonwhite	36.0	22.1	28.4	19.3	28.6	24.5	20.3
%Female Household	7.6	6.3	8.0	7.1	7.9	9.8	8.0
%Poverty	6.6	8.5	10.0	6.1	9.2	9.6	14.4
%Unempl.	3.7	4.5	3.8	3.1	3.2	4.3	3.9
Part I Crimes	58,512	35,287	34,373	18,539	19,019	10,845	14,920
Part I Crime/ 1K Pop.	79.8	65.6	67.0	49.6	76.6	43.7	81.8

and narratives. In order to allow for proper comparisons between policies, it was necessary to standardize the measurement of resistance across the departments (Terrill, Paoline, and Ingram, 2012). Project staff devised a framework for coding citizen resistance across all sites, and then coded and recoded the data to ensure that levels of resistance were measured similarly for each department (Terrill, Paoline, and Ingram, 2012).

This framework of comparable measures resulted in a six category coding system of resistance: compliance, passive resistance, verbal resistance, defensive resistance, active resistance, and deadly resistance (Terrill, Paoline, and Ingram, 2012). Compliance is fairly straightforward, and this level of resistance involves citizens who followed police commands and directives without resisting the officer. The first level of actual resistance is passive resistance (Terrill, Paoline, and Ingram, 2012). Passive resisters were citizens who did not respond to police commands or directives, basically ignoring the officer. This may be a behavior as simple as not physically responding to a command to move, or may involve other behaviors such as going limp during an arrest. What passive resistance is not is an attempt to flee or other type of more active behavior (Terrill, Paoline, and Ingram, 2012). The next level is verbal resistance, which involves a citizen verbally rejecting an officer's directive (e.g., telling an officer "no", using profanity that dismisses an officer's command, and telling an officer to leave them alone). This must not involve a physical action and must also be resistive (asking an officer to repeat a command or asking for clarification would be verbal, but not resistance). Citizen behavior that is considered defensive resistance involves physical action by a target of coercion that is an attempt to evade, elude, or escape the police (Terrill, Paoline, and Ingram, 2012). This may involve a number of actions including running away from an officer, attempting to pull away from an officer, hiding, or preventing an officer from moving extremities (e.g., preventing an officer from

handcuffing by keeping arms in front rather than behind). The next two categories are those that represent aggressive physical resistance. Active resistance involves behaviors that are commonly associated with assaults on police officers, in that they involve striking or attempting to strike an officer (Terrill, Paoline, and Ingram, 2012). This level of resistance is characterized by aggression against the police by a suspect rather than just noncompliance or an attempt to escape (Terrill, Paoline, and Ingram, 2012). Behaviors that might be coded as active resistance include throwing a punch, kicking, biting, spitting, using or brandishing a weapon that is considered nonlethal (e.g., knife at a reasonable distance, stick, baseball bat, frying pan, and tea kettle). The final and most extreme level of resistance is deadly resistance. Deadly resistance involves resistance that could reasonably be considered to cause death to an officer (e.g., shooting or pointing a firearm) (Terrill, Paoline, and Ingram, 2012).

Location

Location is also a feature of the use of force reports. Officers were required to report the address where the incident took place in each of the seven cities. This street address was also coded into the dataset, making it readily available for geocoding. The addresses reported by officers were geocoded using an ArcGIS 10 software program. Once the address was geocoded, the location was matched to its respective census tract and therefore the surrounding social-structural characteristics. The localized structural social disorganization values (i.e., structural disadvantage, residential mobility, and violent crime rate) of each incident were matched to the original dataset in SPSS 19 for subsequent analyses in both SPSS and Stata 13.

Violent crime data were also available from the departments as crimes reported to or by police.³ These data include the police organizational unit where the crime occurred, which when mapped allowed for the creation a violent crime rate in each census tract (For a detailed explanation of the crime rate calculation, consult footnote four). These crime data (i.e., homicide, robbery, and aggravated assault) were then used to estimate the violent crime rate for each census tract. Census tracts were assigned a violent crime rate (per 1,000 residents) rather than relying on raw numbers of violent incidents in each tract, which are not as interpretable as a crime rate (Kaminski, Jefferis, and Gu, 2003).

Situational Characteristics

The reports completed by police officers also included a number of situational features, many of which are found to be useful controls in the citizen resistance literature. Among these variables are the sex of the citizen, the race of the citizen, the age of the citizen, whether the citizen was under the influence of drugs or alcohol, and whether the citizen was in possession of a weapon. Furthermore, the time of the incident and the officer's shift are also included in these data. The inclusion of these characteristics of the encounter in the data source improves upon the ability of previous research endeavors to properly specify the models in this proposed research.

Master Roster

In order to establish how frequently officers are subjected to aggressive physical resistance over a two-year period, it is necessary to identify officers who are at risk. Officers assigned to patrol share a similar, higher level of risk not associated with most other assignments in a police department (French, 2011). Some members of a police department may occupy an

³ KPD did not provide violent crime data at a useful level of aggregation, and thus are excluded from analyses involving violent crime.

assignment where the threat of attack is significantly reduced (e.g., detectives, desk sergeants, and records personnel), and including them would misrepresent the actual risks presented to patrol officers. Additionally, identifying a distribution from only those officers who filed at least one force report would make the risk appear greater, as it is likely that some officers would not file a force report over a two-year period. Thus, to establish a base rate for aggressive physical resistance against officers, a master roster for each department of patrol officers assigned to the field will be used to determine how frequently officers are attacked over a two-year period.

Census Data

As previously mentioned, data for measures of social structure were extracted from the Topologically Integrated Geographic Encoding and Referencing (TIGER) data provided by the United States Census Bureau. The TIGER products come from the data used by the census bureau to identify addresses of residences, and include transportation data such as railroads and rivers. Legal and political boundaries are also available, as are statistical demographic features (e.g., population counts and poverty status). Unfortunately not all data desired were included in the available shapefiles, which meant that some remaining data were downloaded using the American Factfinder tool on the Census/ACS website and matched to the census tracts using SPSS.

In order to link the force incidents to the geographic data, reports from the seven cities were geocoded (using a publicly available address locator from UCLA) and mapped using ArcGIS software. The incidents were thus represented by points, in a “points” shapefile in ArcGIS. Each incident was represented as single line of data in the attribute table, and this line of data was represented by a dot on a map at the exact location of the incident. The census tracts were represented by a polygon shapefile, which displays the borders and area of each census

tract. The data were then linked by mapping the two shapefiles and ensuring that they were in the same and proper projection and using a spatial join to assign attributes from one feature to the other (i.e., the census tract number and demographic data were assigned to each force incident). From here the information about environmental variables (i.e., structural disadvantage, residential mobility, and violent crime rate) was linked to each of the incidents using SPSS.

Operationalization of Variables

Dependent Variable: Aggressive Resistance

For this research, aggressive citizen resistance is defined as citizen active or deadly resistance against a police officer during an encounter involving use of force by the police. Levels of citizen resistance that are not coded as aggressive physical resistance include compliance, passive resistance, verbal resistance of the officer including threats, and attempting to evade the officer (defensive resistance). Active and deadly resistance are the two highest levels of resistance against officers. Active resistance involves a citizen attacking or attempting to attack an officer, and deadly resistance involves actions by a citizen against the officer that could reasonably result in the officer's death. As shown in Table 4.2, actions encompassing active or deadly resistance are coded as "1", while all other types of resistance are coded as "0".

Environmental Features: Structural Disadvantage, Residential Mobility, and Crime Rate

As shown in Table 4.2, structural disadvantage is represented by four indicators, including percent below the poverty level, unemployment rate, percent female-headed households, and percent nonwhite. These are the data extracted from the ACS 2006-2010 five-year estimate for the census tract in which the incident occurred. As has been shown in previous research, there is potential for a large degree of collinearity between these variables (Kaminski,

Jefferis, and Gu, 2003). Due to this potential collinearity, these variables were combined into a single factor (latent variable) using principal components analysis (PCA) factor scoring in SPSS 19. Previous research in both criminology and policing has shown that these variables load on a single latent variable thought to represent structural disadvantage (Reisig and Parks, 2000; Sampson, Raudenbush, and Earls, 1997; Terrill and Reisig, 2003).

Also, consideration must be given to the residential mobility that occurs within an area and its link to social bonding and the collective self per social disorganization theory (Sampson, Raudenbush, and Earls, 1997; See also Oishi, Lun, and Sherman, 2007). In order to capture residential mobility, data were collected on one-year movers (those who have changed residence in the past year). This variable is used to represent the degree of residential mobility in the census tract.

One further consideration that is explored is the rate of violent crime in each of the neighborhoods. Research has shown that reporting of violent crime across space varies a great deal, but that the most reliable indicators for study of attacks on the police are homicide, robbery, and aggravated assault (Kaminski, Jefferis, and Gu, 2003). For this reason, the violent crime rate for each census tract was estimated (estimated total number of violent crimes/estimated total number of residents) to approximate the violence in each tract area. The data for violent crimes were collected from the departments via during the *Assessing Use of Force Policy and Outcomes* study. These data were then used to estimate the number of violent crimes per person occurring in each of the census tracts⁴.

⁴Violent crime data were provided for study sites as the number of violent crimes per police organizational unit (e.g., precinct, beat, response zone). These data were not directly transferrable to census tracts, and thus a raster was created for each police unit that detailed the crime density per square kilometer. This raster was then aggregated to estimate the number of

Situational Characteristics

Situational variables are operationalized as the officer's reported perception of the situation. Sex of the citizen is a binary variable that is coded by the officers in their use of force report (0=female, 1=male). Table 4.2 also shows the coding for the race of the citizen, which is represented by two variables, Black/African American (0=all others, 1=Black/African American) and Hispanic/Latino (0=all others, 1=Hispanic/Latino). The collection of these categories is also dependent on the coding by officers in their use of force reports. Citizen age is coded to reflect those in the population hypothesized to be more likely to aggressively resist, with those under 18 grouped against all others (i.e., 0=all others, 1=age 18 or less). Whether the citizen was under the influence of drugs or alcohol is also determined by the officer (0=no drug/alcohol influence, 1=citizen under the influence of alcohol/drugs), as is whether the citizen was in possession of a weapon (0=no weapons possession, 1=weapon possession). Furthermore, the time an incident occurred is also included as a control variable (0=all others, 1=7pm-3am). Additionally, this research also controls for variation between departments. This is accomplished by dummy coding each of the departments with Charlotte-Mecklenburg serving as the reference category.

Officer Characteristics

Officer characteristics were obtained via departmental data. The officers were required to provide basic demographic information that forms the basis for operationalizing the officer characteristic data. The officers were asked to report their gender (0=male, 1=female), experience (reported experience in years at the time of the incident), and race (0=nonwhite, 1=white).

violent crimes per census tract, and then the violent crime rate per one-thousand residents in each tract.

Plan of Analysis

Research Objective One

The first objective of this research is determining how often officers were subjected to aggressive physical resistance over a two-year period. Previous research has sought to examine this phenomenon (generally using the definition of assault), but research that examines a group of officers over a two-year period using an objective definition and measure of resistance is virtually absent. To address this problem, officers identified in the patrol master roster and who had similar periods of exposure (i.e., were employed during the entire two-year retrospective period) are examined to determine the relative frequency with which they were attacked. Using the officers named in the roster ensures that the officers are in fact in a position to be attacked (e.g., working in the patrol function as opposed to behind bulletproof glass in a records office). This allows for a fair comparison of how many officers were attacked zero times, as well as providing a distribution for those were attacked at least one time or more.

Research Objective Two

Situational features and officer-based characteristics, in lieu of environmental predictors, are among the more robustly studied areas in this body of literature. Traditionally, situational features and officer-based predictors of citizen resistance have been tested using no theoretical framework, or a framework that is consistent with that outlined in Chapter Three of the current inquiry. Where other research on resistance in general, and aggressive physical resistance in particular, has struggled is in the areas of generalizability to a variety of departments, data collection over an extended period of time, and a consistent way to measure citizen resistance across officers and/or departments. Where the current inquiry goes beyond the extant literature is that it alleviates many of the concerns associated with these three major limitations of previous

literature simultaneously. Therefore, it is appropriate to revisit these relevant situational and officer predictors of resistance with a contemporary dataset and appropriate binary logistic regression techniques.

Research Objective Three

This research objective tests environmental features consistent with social disorganization as an explanation of aggressive physical resistance in police force encounters, controlling for situational and officer-based predictors of resistance. In order to accomplish this task, hierarchical generalized linear modeling (HGLM), also known as multilevel modeling, is the appropriate technique. As stated previously, the census data from each tract were attributed to each incident occurring in said tract. Additionally, the outcome variable aggressive citizen resistance is Bernoulli distributed (i.e., 0 or 1) which prevents the use of traditional hierarchical linear modeling (HLM) in favor of HGLM. The use of linear regression for predicting a Bernoulli outcome is unrealistic, and HGLM provides for a nonlinear logit transformation of the outcome variable similar to logistic regression (Raudenbush and Bryk, 2002). The nonlinear distribution of the outcome variable also means that the outcome variable is not normally distributed, nor are the errors of their predicted values homogenous, both of which would be violations of ordinary least squares regression. The nested nature of these data also favors HGLM over traditional binary logistic regression for a number of reasons more specifically outlined in the following paragraph.

First, multilevel models provide a useful framework for organizing analyses occurring on multiple levels (Guo and Zhao, 2000). The census tracts represent neighborhoods, or clusters, where outcomes are believed to be more alike. Second, these observations would share variance in the predictor at the second level (i.e., social structure), which would be a violation of the

assumptions of binary logistic regression if they were placed on the same level. Failing to account for the multilevel structure of the data, and thus the shared variance, could result in biased parameter estimates that could compromise tests for statistical significance (Guo and Zhao, 2000). Third, using HGLM or multilevel modeling techniques allows for estimation of accurate standard errors. As mentioned above, relationships between predictors which are clustered (e.g., spatially autocorrelated or sharing neighborhood features) violates the assumption of linear modeling that observations are independent (Raudenbush and Bryk, 2002). Failing to account for this lack of independence may result in biased standard errors through underestimation (Guo and Zhao, 2000). Underestimation of the standard errors can lead to an increased risk of making a type I error, which could result in reporting an important impact where one does not exist. Finally, and perhaps most importantly for this research focusing on the influence of the social structural environment, estimations of variance and covariance for random effects at each level permits decomposition of the independent contribution of effects at those levels (Guo and Zhao, 2000). Essentially for this research, it permits interpretation of the impact environment has on citizen resistance of police coercive authority relative to situational and officer-based predictors.

Table 4.2: Variables, Coding, and Predicted Influence

Variable	Coding	Predicted Influence
Dependent Variables		
Aggressive Resistance	0 = All others, 1 = Aggressive physical resistance	
Independent Variables		
Level II		
Disadvantage		+
Poverty	Percent poverty	
Unemployment	Percent unemployed	
FHH	Percent female headed households	
Nonwhite	Percent nonwhite	
Mobility	Percent that have changed residence in previous year	+
Violent Crime Rate	Homicides, Robberies, and Agg. Assault/1K Pop.	+
Level I		
<i>Situational</i>		
Male	0 = Citizen female, 1 = Citizen male	+
Race		
Black	0 = All others, 1 = Citizen Black	+
Hispanic	0 = All others, 1 = Citizen Hispanic	+
Citizen Age	0 = All others, 1 = 18 years or less	+
Alcohol/Drug	0 = No influence, 1 = Alcohol/drug influence	+
Weapon	0 = All others, 1 = Citizen possessed weapon	+
Second Shift	0 = All other, 1 = 7pm-3am	+
<i>Officer</i>		
Female	0 = Male, 1 = Female	+
White	0 = All others, 1 = White	+
Experience	Officer experience in years	-
White officer/ Black Citizen	Interaction term for White officer and Black citizen	+
White officer/ Hisp. Citizen	Interaction term for White officer and Hispanic citizen	+
<i>Site</i>		
CSPD	0 = All others, 1 = Portland	-/+
APD	0 = All others, 1 = Albuquerque	-/+
PPB	0 = All others, 1 = Colorado Springs	-/+
FYPD	0 = All others, 1 = St. Petersburg	-/+
SPPD	0 = All others, 1 = Fort Wayne	-/+
KPD	0 = All others, 1 = Knoxville	-/+

CHAPTER FIVE: ANALYSES AND RESULTS

Chapter Five of this dissertation presents the analyses and results for each of the three research objectives outlined in Chapter Four. Therefore, the primary goals of this chapter are three-fold. First, this research determines the distribution of attacks against police officers in the seven study cities over a 24-month period. Second, this chapter reexamines the influence of situational features (i.e., citizen gender, race, age, alcohol or drug influence, weapon possession, and time of day) and officer-based characteristics (i.e., officer gender, race, and years of experience) on the likelihood of aggressive resistance against the police. Finally, this chapter examines whether environmental features such as structural disadvantage (i.e., percent below the poverty level, percent unemployed, percent female-headed households, and percent nonwhite), residential mobility (i.e., percent living in census who did not live there one-year prior), and violent crime rate (i.e., number of homicides, armed robberies, and aggravated assaults per resident) predict the likelihood of aggressive physical resistance of police officers while other explanatory variables (i.e., situational features and officer-based characteristics) are held constant.

This chapter begins by presenting analyses and findings for the first research objective. Essentially, the distribution of the number of incidents of aggressive physical resistance experienced by all officers filing a use-of-force report and the distribution of incidents for patrol officers only over a two-year period is presented. Next, for the second research objective, univariate and bivariate statistics for aggressive physical resistance, situational features, officer-based characteristics, and site dummy variables are presented. Additionally, two logistic regression models examining predictors of aggressive physical resistance against officers are detailed. The chapter concludes with findings for the third research objective. Analysis for the

third research objective begins with descriptive statistics for the level two predictors of structural disadvantage, residential mobility, and violent crime rate for each of the included census tracts. Finally, five multilevel logistic regression models are presented and discussed.

Analyses and Results

Objective #1: Distribution of Aggressive Physical Resistance

Previous research attempting to identify the risk of attacks against police officers has generally found that most are usually at a low risk of experiencing aggressive physical resistance. For example, Griffiths and McDaniel (1993) employed survey techniques and found that 56 percent of police officers reported experiencing no assaults over a one-year period. Additionally, 16 percent of officers reported experiencing a single assault in the previous year and 12 percent reported experiencing two assaults. Furthermore, two percent of officers reported being assaulted ten times or more. Thus, Griffiths and McDaniel's (1993) distribution indicates that most officers report a small chance of experiencing aggressive physical resistance, and this finding has been supported by other research using official reports of assault (Brown, 1994; French, 2011). As previously mentioned, the first research objective seeks to improve upon these previous studies by examining the risk of aggressive physical resistance against officers using a universal operational definition, across seven study sites, over a two-year reporting period.

One potential issue of examining only officers who filed a use of force report is the potential that the inherent risk of resistance to all officers may be exaggerated. Essentially, this operational definition for examining count data of incidents involving aggressive physical resistance would deflate the number of "zero" values for patrol officers who neither filed a force report nor were attacked. Thus, this section provides a frequency table for the number of

incidents of aggressive physical resistance against all officers who filed a use-of-force report, and for all officers identified as being assigned to “patrol” duty during the observational period from the master rosters.

Overall, officers in the current sample report experiencing just fewer than one incident of aggressive physical resistance over the two-year study period, on average. If condensed to a single year, this means that each officer averages about .5 incidents of aggressive physical resistance per year. The risk of aggressive physical resistance is not equally distributed among the officers, and is actually quite disparate. As shown in Table 5.1, the plurality of all officers and patrol officers experience zero incidents of aggressive resistance. About 44 percent of all officers who filed a use-of-force report experienced no aggressive physical resistance over a two-year period. Similarly, about 39 percent of patrol officers (a group generally believed to have a higher risk) did not experience a single incident of aggressive physical resistance. A large portion of officers also reported experiencing a single incident of aggressive resistance over the two-year period, with about 39 percent of all officers and 38 percent of patrol officers reporting only one incident. Additionally, about 87 percent of patrol officers experience two or fewer attacks from citizens per year, and only about four percent of officers reported experiencing more than four incidents of aggressive resistance over the two-year period.

Another striking feature of these data is that a small percentage of officers account for a quite a large proportion of the incidents involving aggressive physical resistance against the police. For all officers who filed a use of force report, about five percent of officers (those experiencing between four and nineteen incidents of aggressive physical resistance) account for nearly one third (32 percent) of all incidents of aggressive physical resistance. The distribution for patrol officers is also striking, but not quite as positively skewed as that for all officers.

Patrol officers experiencing four or more incidents of aggressive resistance comprise about eight percent of the sample, and account for about 38 percent of all incidents of aggressive physical resistance.

Table 5.1: Incidents of Aggressive Physical Resistance Among All and Patrol Officers

#Incidents	All officers		Patrol officers	
	N	Percent	N	Percent
Zero	1702	44.27	615	38.87
One	1494	38.86	601	37.99
Two	295	7.67	161	10.18
Three	150	3.90	83	5.25
Four	86	2.23	53	3.35
Five	45	1.17	24	1.52
Six	24	0.62	14	0.89
Seven	14	0.36	8	0.51
Eight	10	0.26	7	0.44
Nine	6	0.16	4	0.25
Ten	5	0.13	3	0.19
Eleven	3	0.08	2	0.13
Twelve	2	0.05	2	0.13
Thirteen	3	0.08	1	0.06
Fourteen	0	0.00	0	0.00
Fifteen	1	0.03	1	0.06
Sixteen	0	0.00	0	0.00
Seventeen	2	0.05	1	0.06
Eighteen	1	0.03	1	0.06
Nineteen	2	0.05	1	0.06
Total	3845	100.00	1582	100.00

Objective #2: Situational and Officer-based Predictors

The second research objective of this study is the reexamination of traditional predictors of citizen resistance against police officers. Historically, situational features of interactions between officers and citizens have been the most salient predictors of whether citizens will act aggressively toward police officers (Chapman, Swanson, and Meyer, 1974; Engel *et al.*, 2011; Mastrofski, Snipes, and Supina, 1996; Rabe-Hemp and Schuck, 2007). Conversely, officer-based predictors have remained popular in the citizen resistance literature despite being less

reliable predictors than situational features (Engel *et al.*, 2011; Kavanaugh, 1997; Mastrofski, Snipes, and Supina, 1996).

As noted in the first four chapters, several methodological limitations exist with respect to examining the likelihood of aggressive physical resistance against police officers in the current literature. Less than optimal measurement techniques such as recall surveys, LEOKA data, and measures which combine aggression by either the citizen *or* the officer have been used in the previous research (Fridell *et al.*, 2009; Kavanaugh, 1997; Pinnizotto and Miller, 1997). Additionally, research has been limited in validity and generalizability due to either short data collection windows (Rabe-Hemp and Schuck, 2007; McCluskey, Mastrofski, and Parks, 1999) or due to a limited number of research sites used (Bannon, 1976; Dai, Frank, and Sun, 2011; Engel *et al.*, 2011; Morrison and Meyer, 1974; Uchida *et al.*, 1984; White and Bloch, 1975). Furthermore, some otherwise robust research has suffered from limited variation in the dependent variable due to the data collection strategy employed (Engel, 2003). Given that the present endeavor can address all of these limitations concurrently, the current inquiry revisits the influence of situational features (i.e., citizen gender, citizen race, citizen age, alcohol or drug influence, weapon possession, time of day, and offense seriousness) and officer-based characteristics (i.e., gender, race, experience), as well as interactions between officer and citizen race. Analyses for the second research objective include descriptive statistics for the dependent and independent variables, a correlation matrix displaying the bivariate relationship between all variables included in the objective two analysis, as well as two multivariate binary logistic regression models examining aggressive resistance against the police.

Descriptive Statistics

The independent variables for the second research objective are organized into two distinct categories, namely situational features (i.e., citizen male, citizen Black, citizen Hispanic, citizen young, alcohol/drug influence, weapon possession, and second shift) and officer characteristics (i.e., female, White, and experience). Citizen characteristics such as whether the citizen is male (1 = citizen male, 0 = citizen female), Black (1 = citizen Black, 0 = all others), Hispanic (1 = citizen Hispanic, 0 = all others), alcohol or drug influence (1 = citizen under the influence of alcohol or drugs, 0 = all other), and weapon possession (1 = citizen possessed weapon, 0 = all other), and the time of day (1 = 7pm-3am, 0 = all others) are determinations made by the officer and included in the use-of-force report. Furthermore, the officer based characteristics of gender (1 = officer female, 0 = officer male), race (1 = officer White, 0 = officer nonwhite), and experience (officer experience in years) included in the analysis are drawn from departmental data linked to the officers. Additionally, two interaction terms (White officer*Black citizen and White officer*Hispanic citizen) are included, as are dummy coded variables for six of the seven (i.e., Colorado Springs, Portland, Albuquerque, Fort Wayne, St. Petersburg, and Knoxville) sites, with Charlotte-Mecklenburg serving as the reference category.

Table 5.2 displays the descriptive statistics for each of the variables of interest. As shown 30 percent of use-of-force reports across the seven study sites indicated aggressive physical resistance by citizens against officers. In terms of variation in the dependent variable, this is a substantial improvement over some previous research with about one percent of cases involving aggressive resistance (Engel, 2003). This difference is due to the utilization of police use-of-force reports rather than observational data including all suspects. Thus, there is sufficient variation in the dependent variable to be explained by the independent variables.

Table 5.2 also displays the descriptive statistics for the independent variables included in the logistic regression models. In terms of the situational features, the majority of citizens in this sample of use-of-force incidents are male (87 percent), nonwhite (41 percent Black and 14 percent Hispanic), and are over 18 years old (88 percent). Furthermore, about half of the incidents involve a citizen who is under the influence of alcohol or drugs (48 percent), and only about one-tenth of incidents involve a citizen in possession of a weapon (11 percent). Additionally, about half of the incidents occurred between 7pm and 3am (54 percent).

Descriptive statistics for officer characteristics are also displayed in Table 5.2. As is typical in much of the police research, very few of the officers in this sample were female (7 percent) while the overwhelming majority of officers were White (86 percent). On average, police officers in these seven study sites had just fewer than seven years of experience. Additionally, about 36 percent of incidents involved a White officer interacting with a Black citizen, while 10 percent of incidents involved a White officer interacting with a Hispanic citizen.

Six dummy variables representing the departments are also included in Table 5.2. About six percent of incidents occurred in Colorado Springs (CO), 32 percent in Portland (OR), 12 percent in Albuquerque (NM), 17 percent in Fort Wayne (IN), 14 percent in St. Petersburg (FL), and eight percent in Knoxville (TN). The remaining 11 percent of incidents took place in Charlotte-Mecklenburg (NC), which is the largest department in the analysis and serves as the reference category.

Table 5.2: Descriptive Statistics

Variables	Coding	Mean	SD
Dependent Variable			
Agg. Resistance	1=Aggressive Resistance, 0 = other	.30	.46
Independent Variables			
Situational			
<i>Citizen</i>			
Male	1 = Citizen male, 0 = other	.87	.34
Black	1 = Citizen Black, 0 = other	.41	.49
Hispanic	1 = Citizen Hispanic, 0 = other	.14	.34
Young	1 = Citizen ≤ 18 years, 0 = other	.12	.32
<i>Other</i>			
Alcohol/Drug	1 = Citizen under influence, 0 = other	.48	.50
Weapon	1 = Citizen possessed weapon, 0 = other	.11	.31
Second Shift	1 = 7pm-3am, 0 = other	.54	.50
Officer			
Female	1 = Officer female, 0 = other	.07	.25
White	1 = Officer White, 0 = other	.86	.35
Experience	Officer experience in years	6.73	5.77
Interactions			
WO/BC	1 = White officer/Black citizen, 0 = other	.36	.48
WO/HC	1 = White officer/Hispanic citizen, 0 = other	.10	.30
Site			
CSPD	1 = Colorado Springs, 0 = other	.06	.23
APD	1 = Albuquerque, 0 = other	.12	.33
PPB	1 = Portland, 0 = other	.32	.47
FYPD	1 = Fort Wayne, 0 = other	.17	.37
SPPD	1 = St. Petersburg, 0 = other	.14	.35
KPD	1 = Knoxville, 0 = other	.08	.27

Bivariate Relationships

Building on the descriptive statistics, Table 5.3 displays the bivariate correlation between each of the variables included in the analysis. As shown, most of the variables in the analysis bear a weak-to-moderate relationship to aggressive physical resistance on the part of citizens. The strongest association with aggressive resistance appears with the research location control variables (e.g., Portland = -.231, Albuquerque = .162, Knoxville = .147). Additionally, the weakest predictor appears to be whether the citizen was under the age of 18 (e.g., Young = -.013).

Table 5.3: Correlation Matrix of Aggressive Physical Resistance and Situational Features/Officer-based Characteristics

	Agg. Res.	Male	Blk.	Hisp.	Yng.	Alc/ Drug	WPN	2 nd Shift	Fem.	Wht.	Exp.	WO/ BC	WO/ HC	CS PD	APD	PPB	FW PD	SP PD	KPD
Agg. Res.	1																		
<i>Citizen</i>																			
Male	-.063	1																	
Black	-.023	-.010	1																
Hisp.	.056	.053	-.328	1															
Young	-.013	-.091	.133	-.015	1														
<i>Other</i>																			
Alc.	.035	.046	-.220	.050	-.220	1													
WPN	.018	.051	-.028	.020	.004	-.050	1												
2-Shift	.048	.018	-.046	.026	-.057	.201	.008	1											
<i>Officer</i>																			
Female	.030	-.108	-.021	.008	.003	.022	-.019	-.022	1										
White	-.054	-.011	.055	-.145	-.003	-.022	.002	-.007	-.017	1									
Exp.	-.043	.009	.015	-.069	.041	-.039	.015	-.117	-.046	.024	1								
<i>Int.</i>																			
WOBC	-.022	-.010	.903	-.296	.110	-.206	-.019	-.040	-.024	.304	.015	1							
WOHC	.025	.046	-.275	.838	-.010	.048	.013	.029	.004	.134	-.058	-.248	1						
<i>Site</i>																			
CSPD	.013	.004	-.075	.057	-.032	.098	-.018	.046	.024	-.013	-.003	-.071	.062	1					
APD	.162	.018	-.240	.434	-.041	.041	-.008	.059	.002	-.251	-.122	-.231	.271	-.090	1				
PPB	-.231	.040	-.155	-.056	-.044	.093	.086	-.009	.012	.061	.085	-.143	-.014	-.170	-.255	1			
FWPD	.020	-.030	.106	-.075	.006	-.129	-.057	-.029	-.026	.111	-.084	.131	-.042	-.110	-.164	-.310	1		
SPPD	-.072	-.035	.139	-.140	.090	-.022	-.031	-.034	.024	.009	.054	.114	-.113	-.101	-.151	-.285	-.184	1	
KPD	.147	-.017	.015	-.100	.007	-.078	-.018	-.012	-.026	.061	-.055	.027	-.080	-.071	-.106	-.200	-.129	-.119	1

In addition, the independent variables also have fairly weak correlations to one another (with the exception of the interaction terms White officer*Black citizen to Black citizen and White officer*Hispanic citizen to Hispanic citizen at .903 and .838 respectively).⁵ The high correlation between the interaction terms and citizen race may indicate collinearity issues for the interaction model presented in the following section.

Logistic Regression

Building upon the descriptive statistics and bivariate correlation matrix, two binary logistic regression models are displayed in Table 5.4 to address the second research objective through multivariate logistic regression. As shown, the overall model is significant in both the base model and the interaction model as evidenced by the chi-square statistics of 1251.50 ($p \leq .001$) and 1253.26 ($p \leq .001$), respectively (Table 5.4). The base and interaction models each explain about 14 percent of the pseudo-variance in citizen resistance (pseudo R-square).

In accordance with previous research (Kavanaugh, 1997; Rabe-Hemp and Schuck, 2007; Uchida *et al.*, 1988), situational features appear to be the strongest predictors of aggressive physical resistance by citizens against the police. As shown in the base model, citizens who are male ($p = .000$, OR = .663) and citizens who are Black ($p = .032$, OR = .898) are significantly less likely to aggressively physically resist the police than female or non-Black citizens. Furthermore, citizens who are under the influence of alcohol or drugs ($p = .000$, OR = 1.326) or are in possession of a weapon ($p = .000$, OR = 1.391) are 33 percent and 39 percent more likely to aggressively resist the police, respectively. Additionally, incidents occurring during the traditional second shift period are also more likely to result in aggressive physical resistance than are incidents occurring at other times of day ($p = .004$, OR = 1.133).

⁵ All bivariate relationships are calculated using Kendall's Tau b, except those for experience which are calculated using Spearman's rho.

While situational features emerge as the dominant body of predictors, some officer-based characteristics also display a significant relationship to aggressive physical resistance. As shown in Table 5.4, female officers are more likely to experience aggressive resistance during incidents involving the use of force ($p = .000$, OR = 1.341), while White officers are less likely to experience aggressive physical resistance ($p = .028$, OR = .874). Somewhat contrary to the previous literature, officer experience was not a significant predictor of aggressive resistance when controlling for situational features and other officer-based characteristics.

The department in which the use-of-force incident took place is also a significant predictor of the likelihood of aggressive physical resistance. Incidents occurring in Albuquerque ($p = .016$, OR = 1.239) and Knoxville ($p = .000$, OR = 1.539) were significantly more likely to involve aggressive physical resistance than those in Charlotte-Mecklenburg. Furthermore, incidents in Colorado Springs ($p = .000$, OR = .560), Portland ($p = .000$, OR = .211), Fort Wayne ($p = .000$, OR = .644), and St. Petersburg ($p = .000$, OR = .368) were less likely to involve aggressive physical resistance in comparison to the reference category.

Previous research has also identified officer-citizen racial dyads as contributing to the understanding of citizen compliance with the police (Mastrofski, Snipes, and Supina, 1996). In general, nonwhite citizens are believed to be more likely to acquiesce to White officers due to traditional power structures within Western society (Lanza-Kaduce and Greenleaf, 1994; Mastrofski, Snipes, and Supina, 1996). Conceptual frameworks such as Norm-Resistance theory argue that cultural norms would dictate that White officers interacting with nonwhite citizens would produce the least conflict, as the authority and deference roles are congruent with those in Western society, and that Nonwhite officers interacting with White citizens would produce the

most conflict, as the balance of authority in this interaction is less congruent with cultural norms (Mastrofski, Snipes, and Supina, 1996; Weidner and Terrill, 2005).

Table 5.4: Logistic Regression of Aggressive Physical Resistance Against Police Officers (n = 11,754)

Variables	Base Model				Interaction Model			
	<i>b</i>	SE	<i>p</i>	OR	<i>b</i>	SE	<i>p</i>	OR
<i>Situational</i>								
<i>Citizen</i>								
Male	-.412	.060	.000	0.663***	-.412	.060	.000	0.662***
Black	-.108	.050	.032	0.898*	-.261	.132	.049	0.770*
Hispanic	-.035	.071	.620	0.966	-.052	.136	.702	0.949
Young	.002	.068	.974	1.002	.004	.068	.949	1.004
<i>Other</i>								
Alcohol/Drug	.282	.046	.000	1.326***	.282	.046	.000	1.326***
Weapon	.330	.068	.000	1.391***	.328	.068	.000	1.389***
Second Shift	.125	.044	.004	1.133**	.125	.044	.005	1.133**
<i>Officer</i>								
Female	.294	.083	.000	1.341***	.293	.083	.000	1.341***
White	-.135	.062	.028	0.874*	-.199	.094	.035	0.819*
Experience	.003	.004	.421	1.003	.003	.004	.430	1.003
<i>Interactions</i>								
White officer/ Black Citizen	-	-	-	-	.174	.139	.211	1.190
White officer/ Hisp. Citizen	-	-	-	-	.015	.152	.921	1.015
<i>Site</i>								
CSPD	-.580	.104	.000	0.560***	-.583	.104	.000	0.558***
APD	.214	.089	.016	1.239*	.203	.089	.023	1.225*
PPB	-1.555	.076	.000	0.211***	-1.556	.076	.000	0.211***
FWPD	-.440	.076	.000	0.644***	-.445	.076	.000	0.641***
SPPD	-1.000	.082	.000	0.368***	-1.001	.082	.000	0.368***
KPD	.431	.090	.000	1.539***	.428	.090	.000	1.534***
Intercept	-.005	.112	.962	0.995	.055	.129	.672	1.056
$\chi^2 = 1251.497$					$\chi^2 = 1253.262$			
-2 Log = 13153.826					-2 Log = 13152.060			
pseudo R ² = .143					pseudo R ² = .143			

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Given the findings from the base model that nonwhite citizens are less likely to aggressively resist and that White officers are less likely to be resisted, two interaction terms are included in the model examining the impact of incidents involving white officers and Black citizens, as well

as incidents involving White officers and Hispanic citizens. As shown in the Interaction Model in Table 5.4, both of the racial dyad interaction variables fail to reach statistical significance, while the coefficients for both citizen Black and officer White remain statistically significant. This finding indicates that the racial effects for both officers and citizens are due to the characteristics of the officer or citizen, rather than being limited to interactions between White officers and Black citizens.

Logistic Regression Diagnostics

In general, logistic regression relaxes many of the assumptions made by ordinary least squares regression. Logistic regression essentially requires that the dependent variable is binary, that the model is fitted correctly, the error terms are independent, and finally that the independent variables are not linear combinations of one another. Several of these requirements are met by virtue of the data collection and coding processes. The dependent variable is dichotomous and coded as a 0-1. Additionally, the model is not over-fitted although there are likely missing independent variables that may be addressed in the subsequent analyses which include neighborhood characteristics. There is some potential for the error terms to be related as these data include police-citizen encounters involving the same officer.⁶ Additionally, error terms may also be spatially autocorrelated.

Addressing the issue as to whether the independent variables are linear combinations of one another requires regression diagnostics. The aforementioned correlation matrix is a good starting place for this analysis, and it shows that bivariate relationships between the independent variables are of marginal concern. However, this in itself is not sufficient because one independent variable may be a linear combination of two or more independent variables. To

⁶ On average there were less than three use-of-force reports per officer.

address this concern, regression diagnostics were performed that highlighted the tolerance and variance inflation factors (VIF) for each of the models displayed in Table 5.4.

All VIFs were below three for the base model, with the highest being for the control variable of Portland Police Bureau as a study site (tolerance = .351, VIF = 2.847). These values indicate a low potential for severe collinearity issues (Chatterjee and Price, 1991). Introducing the interaction effects in the second logistic regression model did produce higher VIFs. The VIF for the White officer*Black citizen term is 10.218 and the VIF for Black citizen is 9.702. This is a common occurrence when employing interaction terms (Craney and Surles, 2002). Diagnostics indicate that collinearity in this model may undermine a fair test of significance. Future examination of officer-citizen racial dyad interactions using the current data set should seek alternative methods to examine these relationships.

Objective #3: Environmental, Situational and Officer-based Predictors

This section presents the result of analyses for the third research objective, namely whether the environmental features of structural disadvantage, residential mobility, and the violent crime rate predict aggressive physical resistance in police force encounters while controlling for other covariates. More specifically, a factor generated from percent in poverty, unemployment rates, percent nonwhite, and percent female headed households for each census tract are analyzed as predictors of the likelihood of aggressive physical resistance. In addition to structural disadvantage, residential turnover in the previous year and the estimated violent crime rate of the tract are analyzed concurrently with situational features (i.e., citizen sex, race, age, drug or alcohol influence, weapon possession, time of day, and study site) and officer-based predictors of resistance (i.e., officer sex, race, and experience). This research methodology offers an improvement over previous research not only because it examines the likelihood of

resistance over raw counts, but also because the current inquiry is able to assess the role of environment, situational features, and officer-based characteristics concurrently in the same multilevel regression model. Presentation of findings for objective three begins with descriptive statistics for both the individual level (i.e., situational features, officer-based characteristics, and study site) and census tract level (i.e., structural disadvantage, residential mobility, and violent crime rate). This chapter concludes with six multilevel logistic regression models examining the role that neighborhood level attributes play in increasing complexity.

As has been stated previously, examination of the impacts of environmental, situational, and officer predictors of aggressive physical resistance concurrently requires the use of data at two levels. Environmental predictors (i.e., structural disadvantage, residential mobility, and violent crime rate) are at the second (census tract) level while situational features, officer-based characteristics, and study sites are at level one. For this reason multilevel analyses are the appropriate methodology for nested data, in this case observations clustered within census tracts. Furthermore, the models presented are more accurately described as Hierarchical Generalized Linear Models (HGLM), which is required given the use of a binary dependent variable. The HGLM process is completed through a four step procedure.

First, the descriptive statistics for the variables included in the multilevel modeling process are reported. Second, findings from the null (unconditional) models are presented.⁷ The null models are two-level models that contain no covariates at level one or level two. The first null model includes all cases, while the second null model excludes cases that do not contain violent crime data. Also called an intercept only model, the null model is constructed and reported to determine if significant variation is present between census tracts in the likelihood of

⁷ All models were estimated in Stata 13 using melogit and the adaptive quadrature estimation technique.

aggressive physical resistance. Essentially, this model serves as a litmus test to determine if multilevel modeling is necessary. If significant variation in aggressive physical resistance against officers exists between census tracts, multilevel modeling is deemed appropriate.

Third, two models are estimated that contain only level two predictors. In addition to serving as a further litmus test, a model containing only level two predictors can determine what percent of the variation between census tracts is explained by the level two predictors. This is accomplished by dividing the intraclass correlation coefficient (ICC) of the model containing the level two covariates by the ICC of the null model.

Finally, two fully specified models are estimated and reported. The environmental predictors (i.e., structural disadvantage, residential mobility, and violent crime rate) are included at level two while situational features, officer based characteristics, and site dummy variables are included at level one. Additionally, all level one variables are grand-mean centered. This allows for proper interpretation of the level two coefficient estimates as the impact of environmental features (i.e., structural disadvantage, residential mobility, and violent crime rate) while controlling for level one predictors (Raudenbush and Bryk, 2002). Thus, the final reported models test the impact of structural disadvantage, residential mobility, and violent crime rate while situational features, officer-based characteristics, and study site location variables are held constant.

Descriptive Statistics

Table 5.5 displays the descriptive statistics for situational features, officer-based characteristics, site, and census tract variables included in the multilevel models. As shown, 11,469 incidents were able to be geocoded and mapped within 726 census tracts across the seven police departments under study. Thus, there were on average just under sixteen use-of-force

incidents in each of the census tracts. Fortunately, this distribution is generally held as acceptable for the use of multilevel modeling analyses (Maas and Hox, 2005; Scherbaum and Ferreter, 2009).

Level One

In general, the descriptive statistics for the dependent variable (i.e., aggressive physical resistance) and the independent variables (i.e., situational features, officer-based characteristics, and site variables) remain basically unchanged. About 2.4 percent (285) of the incidents were unable to be geocoded and mapped, producing a sample size of 11,469 incidents. Of these incidents, about 30 percent involved some form of aggressive physical resistance by the citizen. As previously mentioned, a large majority of citizens involved were male (87%). About 40 percent of citizens were identified by officers as being Black, and about 13 percent identified as Hispanic. Additionally, very few of the citizens involved in force incidents were 18 years or younger.

With respect to other situational cues, nearly half of all incidents involved some indication that the citizen was under the influence of drugs or alcohol, and over half of the incidents occurred between 7pm and 3am. This time period is generally conceptualized as second shift, and over half of the incidents occurred this period representing only one-third of the day. Furthermore, just over 10 percent of incidents involved citizen possession of a weapon.

In terms of officer-based characteristics, the current sample is reflective police departments across the nation. About 86 percent of all incidents involved a white police officer, and about 93 percent of officers in this sample were male. These officers had, on average, just over six years of experience.

Departmental controls are also included as level one fixed effects. As shown, Portland had the greatest number of incidents and represents nearly one-third of the sample. This is followed by Fort Wayne (17%), St. Petersburg (14%), Albuquerque (12%), Charlotte-Mecklenburg (11%), Knoxville (8%) and Colorado Springs (6%).

Level Two

As mentioned, these 11,469 incidents were nested within 726 census tracts, each having its own values for structural disadvantage, residential mobility, and estimated violent crime rate. Using a principal components analysis, percent poverty, percent unemployed, percent nonwhite, and percent female headed household were reduced to a single dimension representing census tract structural disadvantage. The structural disadvantage factor produced a Kaiser-Meyer-Olkin (KMO) score = .697 and Bartlett's Test of Sphericity at $p = .000$. General guidelines suggest that a KMO of 0.6 or greater and Bartlett's of less than .05 indicate that the sample is appropriate for factor analysis (Hair *et al.*, 1998). Attempts to include residential mobility produced two factors with the second factor's score dominated by the percent of persons living in a tract who were not residents there the previous year (i.e., residential mobility). Thus, residential mobility is retained as a standalone variable with more readily interpretable values.

Following the reduction of percent poverty, percent unemployed, percent nonwhite, and percent female headed household into a single factor (i.e., structural disadvantage), analyses continue with three predictors at level two (i.e., structural disadvantage, residential mobility, and violent crime rate). As shown, the average census tract is about 21 percent new residents. The violent crime rate for each census tract was estimated from data provided by each police

department at their lowest organizational level.⁸ On average, each census tract had a violent crime rate of about eight violent crimes per one-thousand residents. This is just under twice the national average of about 4.4 per one thousand residents.

Multilevel Results

The third research objective is to examine the relationship of social structural elements such as structural disadvantage, residential mobility, and violent crime rate to aggressive resistance against officers while controlling for situational features and officer based characteristics, and vice versa. Table 5.6, Table 5.7, and Table 5.8 display the results from five multilevel models examining these relationships. The initial results in Table 5.6 displays the unconditional or null model for all cases, and a model containing the level two variables of structural disadvantage and residential mobility. All models were conducted in Stata 13 using the Gauss-Hermite mean-variance adaptive quadrature estimation technique.

The null model shown in Table 5.6 indicates that there is sufficient variation between census tracts to continue with multilevel modeling techniques ($\sigma^2_2 = .871, p \leq .001$; ICC = .209).⁹ The approximate variation between census tracts (ICC) is about 21 percent, and an ICC of over .20 is actually considered fairly robust for binary dependent variables (Bliese, 2000). Building upon the unconditional model, the explanatory variables at the census tract level (i.e., structural disadvantage and residential mobility) are added to the level two model displayed in Table 5.6.

⁸ Knoxville Police Department did not provide crime data at an organizational level that could be used for meaningful analyses, and thus are excluded from analyses including violent crime rates.

⁹ Intraclass Correlation Coefficient (ICC) is a measure that represents the variance between clusters as a function of the total variance. Because within variance cannot be estimated in logistic models, the ICC for multi-level logistic models is based on the value $\pi^2/3$, which represents the assumed variance of the logistic distribution (Guo and Zhao, 2000). Thus, the formula for the ICC is $\tau_{00} / (\tau_{00} + (\pi^2/3))$, and this formula represents the percent of variation explained that can be explained by census tract location in the current inquiry.

Table 5.5: Descriptive Statistics for Multilevel Regression

		Base Models (n = 11,469)		Crime Models (n = 10,316)	
Variables	Coding	Mean	SD	Mean	SD
Dependent Variable					
Agg. Resistance	1=Aggressive Resistance, 0 = other	.30	.46	.29	.45
Level 1					
<i>Citizen</i>					
Male	1 = Citizen male, 0 = other	.87	.34	.87	.34
Black	1 = Citizen Black, 0 = other	.41	.49	.40	.49
Hispanic	1 = Citizen Hispanic, 0 = other	.13	.34	.15	.35
Young	1 = Citizen ≤ 18 years, 0 = other	.12	.32	.12	.32
<i>Other</i>					
Alc/Drug	1 = Citizen under influence, 0 = other	.48	.50	.50	.50
Weapon	1 = Citizen possessed weapon, 0 = other	.11	.31	.11	.31
Second Shift	1 = 7pm-3am, 0 = other	.54	.50	.54	.50
<i>Officer</i>					
Female	1 = Officer female, 0 = other	.07	.25	.07	.26
White	1 = Officer White, 0 = other	.86	.35	.85	.35
Experience	Officer experience in years	6.03	5.73	6.70	5.63
<i>Site</i>					
CSPD	1 = Colorado Springs, 0 = other	.06	.23	.06	.24
APD	1 = Albuquerque, 0 = other	.12	.32	.13	.34
PPB	1 = Portland, 0 = other	.32	.47	.36	.48
FYPD	1 = Fort Wayne, 0 = other	.17	.37	.18	.39
SPPD	1 = St. Petersburg, 0 = other	.14	.35	.14	.35
KPD	1 = Knoxville, 0 = other	.08	.27	-	-
Level 2					
<i>Census Tracts</i>		(n = 726)		(n = 626)	
Disadvantage	PCA of Structural Disadvantage	.00	1.00	.04	1.01
Mobility	Percent new residents in tract	20.70	10.59	20.83	10.60
Violent Crime	Violent crimes per 1,000 residents	-	-	8.13	12.04

The model including structural disadvantage and residential mobility allows for the establishment of the influence of level two predictors prior to controlling for level one predictors.

As shown, neither the level of structural disadvantage nor the percent of residential mobility in a census tract bears a significant relationship to the likelihood of aggressive physical

Table 5.6: Multilevel Logistic Regression of Aggressive Physical Resistance: Null and Level two models (n = 11,469; 726)

Variables	Null Model		Level Two Model		
	<i>b</i>	SE	<i>b</i>	SE	OR
Level 2					
Random Effects					
Intercept	.871***	.092	.861***	.091	
Fixed Effects					
<i>Census Tracts</i>					
Disadvantage			.075	.045	1.077
Mobility			.006	.004	1.006
Level 1					
Intercept	-.835***	.048	-.990***	.039	
ICC		.209		.207	
Chi-Square		837.88***		838.63***	

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

resistance against officers in use of force incidents. In fact, these two variables combined explain less than one percent of the variation between census tracts. Thus, this finding indicates that significant variation still exists between census tracts that is not explained by structural disadvantage and residential mobility ($\sigma^2_2 = .861, p \leq .001$; ICC = .207).

Table 5.7: Multilevel Logistic Regression of Aggressive Physical Resistance: Null and Level two models including violent crime rate (n = 10,316; 626)

Variables	Null Model		Level Two Model		
	<i>B</i>	SE	<i>b</i>	SE	OR
Level 2					
Random Effects					
Intercept	.778***	.090	.758***	.088	
Fixed Effects					
<i>Census Tracts</i>					
Disadvantage			.089	.048	1.093
Mobility			.004	.005	1.004
Violent Crime			.005	.003	1.005
Level 1					
Intercept	-.906***	.049	-1.067***	.109	
ICC		.192		.187	
Chi-Square		652.80***		619.78***	

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

A multilevel model including structural disadvantage, residential mobility, and all level one variables, including six dummy variables for research site was also estimated (not reported). This model indicated that a model capturing random effects for census tract was significantly better at explaining aggressive resistance against police officers than a logistic regression model that does not account for variation between census tracts ($\chi^2 = 65.08, p \leq .001$). However, all variables that were significant in the logistic regression models presented in research objective two remained significant and in the same direction, while all variables that failed to reach significance remained nonsignificant.

As previously mentioned, KPD did not provide violent crime rates at a meaningful level of aggregation, and are excluded from analyses including violent crime rates. Displayed in Table 5.7 are the null and level two models for all cases with violent crime data. As shown, significant variation is present between census tracts ($\sigma^2_2 = .778, p \leq .001$; ICC = .192) and continuation of multilevel modeling is appropriate. Also displayed in Table 5.7 is the level two model including structural disadvantage, residential mobility, and violent crime rate. As displayed, none of the level two explanatory variables were significant predictors of the likelihood of aggressive resistance against the police. In fact, these three variables combine to explain less than three percent of the variation between census tracts.

Table 5.8 continues the examination environmental predictors of aggressive physical resistance against the police by displaying the full and violent crime models.¹⁰ As displayed in the full model, neither census tract disadvantage ($b = -.052, SE = .030$) nor residential mobility

¹⁰ Diagnostic tests for collinearity were conducted at level two by examining the census tract mean for aggressive physical resistance as the dependent variable in linear regression models for all multilevel models displayed. All VIF values were 1.745 or lower, which is within the accepted range for VIF values (Chatterjee and Price, 1991).

($b = .004$, $SE = .003$) is a significant predictor of the likelihood of aggressive physical resistance against officers during use of force incidents at the 95 percent confidence interval.

Also shown are the coefficients for situational features, officer-based characteristics, and site control variables. Male citizens were shown to be less likely to engage in aggressive physical resistance during force incidents ($b = -.413$). Those under the influence of alcohol or drugs were more likely to engage in aggressive resistance ($b = .238$), as were those in possession of a weapon ($b = .360$). Furthermore, incidents of aggressive physical resistance were also more likely to occur from 7pm-3am ($b = .118$). With respect to officer characteristics, female officers were more likely to be subject to aggressive physical resistance ($b = .289$), and White officers were less likely ($b = -.126$). In this model, the variable identifying a citizen as Black was not a significant predictor of aggressive physical resistance.

Five of the six control variables for site at level one were also significant. Officers in Colorado Springs ($b = -.718$), Portland ($b = -1.648$), Fort Wayne ($b = -.429$), and St. Petersburg ($b = -1.041$) were all less likely to experience aggressive physical resistance during an incident than officers in Charlotte-Mecklenburg. Additionally, officers in Knoxville ($b = .450$) were more likely to experience aggressive physical resistance and officers in Albuquerque were statistically indistinguishable from those in reference category of CMPD. The between variance in the full model is also still significant ($\sigma^2_2 = .172$, $p \leq .001$; $ICC = .050$).

**Table 5.8: Multilevel Logistic Regression of Aggressive Resistance:
Full and Violent Crime Models**

Variables	Full Model (N = 11,469)			Violent Crime Model (N = 10,316)		
	<i>b</i>	SE	OR	<i>b</i>	SE	OR
Level 2						
Random Effects						
Intercept	.172***	.038		.165***	.040	
Fixed Effects						
<i>Census Tracts</i>						
Disadvantage	-.052	.030	.950	-.069*	.034	.933
Mobility	.004	.003	1.004	.003	.003	1.003
Crime	-	-	-	.001	.002	1.001
Level 1						
Intercept	-1.058***	.072		-1.074***	.077	
<i>Site</i>						
CSPD	-.718***	.137	.488	-.725***	.137	.485
APD	.134	.118	1.143	.126	.118	1.133
PPB	-1.648***	.108	.192	-1.646***	.110	.193
FYPD	-.429***	.113	.651	-.436***	.114	.647
SPPD	-1.041***	.121	.353	-1.052***	.132	.349
KPD	.451***	.129	1.569	-	-	-
<i>Citizen</i>						
Male	-.413***	.063	.661	-.440***	.067	.644
Black	-.097	.055	.908	-.088	.060	.915
Hispanic	-.051	.075	.950	-.064	.077	.938
Young	-.007	.072	.993	-.062	.078	.940
<i>Other</i>						
Alc/Drug	.238***	.048	1.269	.225***	.051	1.252
Weapon	.360***	.072	1.433	.359***	.076	1.431
Second Shift	.118**	.046	1.125	.119*	.049	1.127
<i>Officer</i>						
Female	.289***	.086	1.335	.303***	.089	1.353
White	-.126*	.064	.882	-.110	.067	.896
Experience	.002	.004	1.002	.002	.004	1.002
ICC		.050			.048	
Chi-Square		54.14***			41.03***	

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Also displayed in Table 5.8 is a multilevel model controlling for the estimated violent crime rate in each of the census tracts. As shown, the violent crime rate has very little effect on the likelihood of aggressive physical resistance against police officers. Further, the inclusion of violent crime rate as a control variable had little effect on the direction, magnitude, or significance on every other variable except the level of structural disadvantage in the census tract. As shown, in this model disadvantage is now negative and significant, although the magnitude of the coefficient remains quite small ($b = -.069$). Furthermore, officer race was no longer a significant predictor in this model.

Summary

Chapter five sought to address the three research questions outlined in the theoretical framework (Chapter Three) and methods (Chapter Four) chapters of this dissertation. Namely, empirical data were presented that addressed: 1) How often individual officers are subjected to aggressive physical resistance, 2) The effects of situational features and officer-based characteristics on the likelihood of aggressive physical resistance, and 3) The effects of environmental characteristics (i.e., structural disadvantage, residential mobility, and violent crime rate) on the likelihood of aggressive physical resistance while controlling situational features and officer-based characteristics.

Despite the improved methodology for measuring how often officers are subject to some type of physical aggression, this research supports previous research (Brown, 1994; French, 2011; Griffith and McDaniel, 1993) with regard to the frequency of aggressive physical resistance against officers. The plurality of police officers experience zero incidents of aggressive resistance over a two-year period, even when the population of officers is limited only to those who operate in a patrol capacity. Additionally, the vast majority of officers who file a

use of force report experience one or fewer incidents of aggressive resistance over a 24-month time frame. Another striking feature of these findings is that a very small percentage of officers account for a substantial portion of the incidents of aggressive resistance against the police. About five percent of officers account for nearly one third of all incidents of aggressive physical resistance, meaning that most officers experience little aggressive physical resistance from citizens while some officers experience a great deal.

Reexamination of the relationship between situational features, officer based-characteristics, and aggressive physical resistance against the police in the second research objective produced mixed support for previous findings. Previous research has found that situational features are the strongest predictors of aggressive physical resistance against the police, and the current inquiry provides additional support for theoretical salience (Brown, 1994; Kavanaugh, 1997; Rabe-Hemp and Schuck, 2007). As predicted, officers were more likely to be attacked when a citizen is under the influence of alcohol or drugs, is in possession of a weapon, or when the incident occurs between the hours of 7pm and 3am. Additionally, Black citizens were less likely to engage in aggressive physical resistance against officers, and male citizens were less likely to aggressively resist the police. With regard to officer characteristics, findings indicate that female officers are more likely to be subject to attack, as are nonwhite officers. Findings for officer experience did not reach statistical significance.

The third research objective was designed to examine the role of environmental features, namely social disadvantage, residential mobility, and violent crime on the likelihood of aggressive physical resistance. In general, these findings point toward environmental features being poor predictors of the likelihood of aggressive resistance against officers. The level of disadvantage in a census tract and the residential turnover in that tract explain less than one

percent of the variation between census tracts. However, a substantial amount of the variation between tracts is by explained the department in which the incident took place. In terms of the influence of location on situational and officer based characteristics, both citizen and officer race were found to be not statistically significant in the model including all environmental features. Thus, findings for resistance against the police do not seem to be influenced by race when environmental features are controlled.

CHAPTER SIX: DISCUSSION

Chapter five provided empirical evidence about several aspects of aggressive physical resistance against the police, including an examination of situational features and officer-based predictors of those attacks, as well as an examination of environmental predictors of aggressive resistance while controlling for situational features and officer-based characteristics. The results showed that over a two-year period, about 40 percent of patrol officers did not experience a single incident of aggressive physical resistance. Additionally, this research supports the prior literature in that situational features are the strongest predictors of aggressive resistance beyond officer-based characteristics and environmental circumstances. The findings also illustrate that environment is not a strong predictor of the *likelihood* of aggressive physical resistance in use-of-force encounters. This chapter proceeds by discussing the research implications for each of the three objectives outlined in this study, specifically: 1) Determining how often officers are subjected to aggressive physical resistance, 2) Testing the effects of situational features and officer based characteristics on the likelihood of aggressive physical resistance, and 3) Testing the effects of environmental characteristics of census tracts (i.e., structural disadvantage, residential mobility, and violent crime rate) on the likelihood of aggressive physical resistance.

Research Objective #1

From the first research objective, several conclusions can be drawn that help to further future research. First, despite some claims that assaults are underreported due to limited work time for officers, a lack of seriousness, or competing interests, this research finds a strikingly similar distribution of attacks on officers as previous research using a variety of methods in a variety of locations. Some of this previous research includes the work of Griffiths and McDaniel (1993), which used survey research to ask officers in Virginia about the number of assaults they

experienced in the previous year. Their findings indicated that 56 percent of officers experienced no assaults, 16 percent experienced one assault, and 12 percent experienced two assaults, with a Poisson-type distribution to ten or more assaults in a given year. Similarly, over a two-year period this research produced a distribution that would be within three percent of the findings reported by Griffiths and McDaniel (1993) for zero, one, and two attacks if a one-year period was used in this inquiry. This finding provides strong support for the use of survey methods to ask officers about assault or aggressive resistance victimization. Furthermore, other research in both England and Australia using official records to measure police assault have produced very similar results to this research examining aggressive physical resistance (Brown, 1994; French, 2011).

Second, the two-year time frame of the current inquiry allows for greater identification of the officers at higher risk. This research indicates a doubling of the distribution of assaults on officers over two years rather than a balancing of the distribution that would be prevalent if attacks were random (e.g., officers who are frequently assaulted in the first year of observation are again frequently assaulted in the second year of observation). Thus, this research provides even stronger evidence that some police officers are at a continually higher risk for experiencing aggressive physical resistance than others, rather than supporting a conception of aggressive physical resistance as a random event for all officers. Over a two year period, the plurality of officers experienced no aggressive resistance, and a small percentage of officers (8%) accounted for 40 percent of all incidents of aggressive resistance. Future research should focus on identifying why this small contingent of officers is at such a high risk for attack.

Third, this dissertation is limited in the identification of officer-based characteristics explaining the disparity in the likelihood of attack. The second research objective is able to shed

some light on this phenomenon, but the multivariate models are dominated by situational cues on the likelihood of resistance. In order to understand why officers vary in their risk for the *number* of times they are attacked, future study should examine the characteristics of officers and their work environment irrespective of situational cues. Future research should be conducted to examine officer-based characteristics (e.g., gender, race, age, education), occupational attitudes, and work environment as predictors of the number of attacks against each officer. Improved research in this area may help to determine why some officers are attacked nineteen times in two years while others are not attacked at all.

Research Objective #2

The second research objective of this dissertation sought to explain the variation in aggressive physical resistance of police officers by examining situational features and officer-based characteristics as predictors of attacks during use of force incidents. In general, situational features were the most salient predictors of the likelihood of aggressive physical resistance. Findings show that citizens who are female, non-Black, under the influence of alcohol or other drugs, and those in possession of a weapon are more likely to aggressively resist the police. Furthermore, incidents occurring between the hours of 7pm and 3am are more likely to result in aggressive resistance. Though less powerful, the findings also indicated that officer-based characteristics can also influence the likelihood of aggressive resistance against police officers, with female officers slightly more likely and nonwhite officers slightly less likely to experience aggressive physical resistance.

Situational Features

Compared to previous research, the findings with regard to the citizen characteristics of gender and race may appear somewhat surprising. The findings indicate that female and non-

Black citizens are more likely to aggressively resist the police than are male and Black citizens. Hispanic and young citizens were shown to have a null relationship to aggression against the police. Conversely, the findings for all the other situational features are significant and in the anticipated direction. Situational features not associated with citizen demographics all held a significant relationship to resistance, with incidents involving citizens under the influence of alcohol or drugs, in possession of a weapon, and occurring between the hours of 7pm and 3am all being more likely to result in aggressive resistance against the police.

Citizen Gender

Many of the previous studies examining aggressive resistance against the police show that male citizens are the most frequent perpetrators. Most of the research identifying males as the most common perpetrators of attacks against the police are more descriptive in nature or compare assaults to arrest statistics (Bannon, 1976; Brown, 1994; French, 2011, White and Bloch, 1975). Research focusing on citizen gender that is more robust often finds a null relationship with respect to gender (Leeper-Piquero and Bouffard, 2003; McCluskey *et al.*, 1999; Rabe-Hemp and Schuck, 2007; See Petrocelli, 1997 for an exception). Furthermore, relatively strong research examining lower levels of resistance or compliance have found that males are more likely to comply with police officers (Mastrofski *et al.*, 1996) and less likely to engage in lower levels of resistance against the police than are female citizens (Engel *et al.*, 2011).

There are several reasons why findings from the current inquiry point toward female citizens being more likely to aggressively resist the police, and future research should further examine these possibilities. The first possible explanation for this finding is that female citizens feel insulated from repercussions from officers. Research supports the hypothesis that female inmates may anticipate less severe consequences for aggression against correctional officers in

prison settings (Lindquist, 1980). Second, female citizens may also engage in aggressive resistance that is much lower in terms of severity (e.g., slapping or scratching), but that may occur more frequently during incidents with the police involving reportable force. One limitation of the current inquiry is that the severity of aggressive physical resistance was not included. Future research examining resistance or assault against officers should identify the severity of the attack, rather than a binary outcome.

A final possibility is related to the data structure and collection process. It is possible that the driving force behind this finding is a distillation occurring at each stage of the criminal justice process, resulting in a sample of females who are on average more likely to act aggressively toward the police (e.g., hardened offenders). Essentially, a smaller proportion of females encountered by the police come to their attention as potential offenders. An even smaller proportion (relative to males) are approached by the police, an even smaller proportion are arrested, and an ultimately smaller proportion are subjected to reportable force. Thus there is a potential that the females retained at the stage of the criminal justice process involving reportable force are a concentrated sample of more hardened offenders relative to males, and therefore were more likely to aggressively resist. Evidence in current literature supports this possibility to an extent, as females comprise 25 percent of all citizens identified as offenders in observational studies (Mastrofski, Worden, and Snipes, 1995; Terrill and Paoline, 2007) but the sample used in the current inquiry utilizing use-of-force incidents is only about 13 percent female. This distilled group of female offenders may be more aggressive toward the police, on average, than the remaining males who comprise 87 percent of the sample.

Citizen Race

Citizen race also initially appears to be a somewhat anomalous finding, with the identification of Black citizens being less likely to aggressively resist the police (although the relationship is null in the multilevel analyses including environmental predictors). This finding provides a limited amount of support for the norm-resistance theory (Lanza-Kaduce and Greenleaf, 1994; Turk, 1969) which argues that nonwhite citizens are more likely to defer to white authority figures in Western societies. The norm resistance theory argues that patterns of deference generally dictate that minorities defer to whites and females defer to males. Deviation from this pattern is ultimately what leads to violence in encounters according to norm-resistance theory.

An additional explanation for this finding may be the enhanced racial socialization that occurs in African-American communities and households with respect to police-citizen interactions. Intergenerational transmission of knowledge and expectations about how to interact with the police is more common among African-Americans, and advising against aggressive physical resistance may impact the outcome of interactions with the police (Brunson and Weitzer, 2011). Despite the finding that 41 percent of the sample is identified as Black, this research finds no evidence that African-Americans are more *likely* to aggressively resist the police, and may even be slightly less likely to resist the police during a use-of-force incident. As previously mentioned, no significant relationship was found between citizens being of Hispanic origin and aggressive resistance against the police.

Citizen Age

This research also hypothesized that citizens under the age of 18 would be the most likely to aggressively resist the police due to this group having the most negative attitudes toward the

police (Austin and Vogel, 1995). No relationship was found between citizens being under the age of 18 and aggressively resisting the police. So, the negative perceptions held by youths about the police (Austin and Vogel, 1995) do not result in an increased likelihood of resistance. Future research might consider changing the age that is examined from under 18 to a more mature category such as 25-35 years, or proceed by creating several dummy variables for theoretical differences between generational age groupings.

Alcohol and Drug Influence

The three situational features in this analysis that were not citizen demographics (i.e., alcohol/drug influence, time of day, and weapon possession) were all significant and in the anticipated direction. Like virtually all previous studies on citizen resistance or assault, this study found that those under the influence of a substance were significantly more likely to resist the police. The strong influence of intoxication is likely due to the altered state of consciousness that these substances induce, thus leading to the perception on the part of the citizen that they can overcome the officer and escape.

While this finding is likely due to instrumental considerations on the part of a suspect with reduced rationality, some of the conclusions that can be drawn are also supportive of defiance theory (Sherman, 1993). Substance use by citizens may increase the likelihood that citizens will be able to deny the shame associated with an attack on police officers. Similarly, drug and alcohol use may temporarily attenuate the bonds that a person feels to their neighborhood and the officer, as their cognitive functions are impaired and the inhibitions produced by these bonds will not be as strong.

Due to the near consensus on the effects of drugs and alcohol in the literature and its relatively strong predictive power in the current inquiry, police organizations (and perhaps

researchers) should focus on the role alcohol and drugs play in citizen interactions if they would like to increase citizen compliance. Future research should consider evaluation of alcohol and drug related training for officers, or policy related to managing citizens under the influence. Ultimately, developing best practices approaches for dealing with persons who have diminished capacity due to substance use could greatly improve the ability of the police to achieve compliance. Citizens under the influence comprised nearly half of the sample, and increased success in encounters where citizens are inebriated could pay some of the largest dividends in terms of reducing resistance.

Time of Day

The current inquiry also supported previous research linking citizen resistance to the time of day (French, 2011; Kavanaugh, 1997; Rabe-Hemp and Schuck, 2007). Incidents occurring between 7pm and 3am made up over 50 percent of the sample despite only accounting for one-third of a work day. Additionally, incidents occurring during this period representing second shift were significantly more likely to result in aggressive resistance than those at all other times. Consideration of the increased prevalence of force incidents, coupled with the increased likelihood of attack means that second shift officers are at much higher risks for the consequences associated with attacks in the line of duty. The substantially higher risk of experiencing aggressive physical resistance for second shift officers indicates that departments should focus on ways to reduce the risks for officers assigned to this time period. One potential solution would be to increase patrol officer staffing on second shift. While, increasing the total number of patrol officers may prove difficult in tough economic times (Terrill, Rossler, and Paoline, 2014), staffing allocation on each shift could be addressed to increase back-up on second shift and reduce the number of calls to which second shift officers respond.

Weapon Possession

The current inquiry also added citizen possession of a weapon as a predictor of citizen resistance. Despite the intuitive importance, the current literature has not extensively tested this predictor. As hypothesized, citizen possession of a weapon significantly increased the likelihood that the citizen would engage in aggressive physical resistance. What could not be isolated from this research is whether the possession of a weapon exerts influence on the likelihood of resistance through the citizen's perception that they have a better chance of intimidating or overcoming the officer, or because the actions by officers toward persons with a weapon are substantively different than police behavior toward persons who are unarmed (Leeper-Piquero and Bouffard, 2003). Thus, the findings from this research support the inclusion of weapon possession as a control variable, and future research examining aggression against the police should seek to clarify why weapon possession has such a strong influence on the likelihood of resistance.

Officer-Based Predictors

Two of the three officer based predictors were shown to have a significant relationship to the likelihood of aggressive physical resistance. Female officers were shown to be a more likely target of aggressive physical resistance and White officers were shown to be slightly less at risk of physical resistance holding all other variables constant. Experience, which has shown a negative relationship to citizen resistance in previous research, was found to have a null relationship to resistance in the current inquiry.

Officer Gender

The bulk of previous research on officer gender has shown a null relationship to resistance or assault (Mastrofski *et al.*, 1999; McCluskey *et al.*, 1999; Uchida *et al.*, 1988), but

the research exhibiting a relationship between these variables often indicates that female officers are at a higher risk (French, 2011; Dai, Frank, and Sun, 2011; See also Rabe-Hemp and Schuck, 2007). There are a few possible explanations for why female police officers may be at a somewhat greater risk of experiencing aggressive resistance from citizens. First, it is possible that female officers are viewed as having less physical capacity than male officers, and the presence of a female officer invites attack because, instrumentally, a citizen views their chances of escape as higher. Second, victimization of female officers may be higher because victimization for female officers is higher in incidents involving domestic violence. Male perpetrators of domestic violence may feel that a female authority presence challenges their masculinity (Rabe-Hemp and Schuck, 2007). Furthermore, male perpetrators may blame female officers simply because they are female (Rabe-Hemp and Schuck, 2007). Unfortunately, a limitation of this research is that it was not able to collect data on the specific nature of the problem, which thwarts the use of domestic violence incident as a control variable.

In some ways, this finding supports the integrated theory outlined in Chapter Three. Offenders, who are most typically male, may not view female police officers as a legitimate sanctioning agent. The view that female officers are not legitimate may lead to an increased level of defiance and thus aggressive physical resistance. Male offenders may also be less well bonded to female officers. The view of a female officer as illegitimate, combined with an attenuated bond and an instrumental perception that a female officer would be easier to intimidate or overtake may lead to the empirical finding of increased aggression against female officers.

Certainly, one claim that this research does not support is that the stronger, on average, verbal communication skills possessed by female officers (Lonsway, 2001; Nifong, 1996)

insulates them from higher order levels of resistance such as assault. A finding in this direction does not provide support to the integrated theory outlined in Chapter Three. In essence, the hypothesized ability of female officers to act in a manner that is more procedurally fair does not insulate them from potential attack. The empirical evidence presented in this inquiry points more toward the salience of irrational elements (e.g., alcohol or drug use) rather than an ability by the officer to reason with offenders. It is likely that despite better communication skills, female officers are no more likely to reason with someone who is irrational than are male officers.

Officer Race

The race of an officer was also shown to be related to the likelihood of aggressive physical resistance, although this relationship was not significant in the violent crime multilevel model. Thus, White officers may be slightly insulated from aggressive physical resistance compared to their nonwhite counterparts. The current inquiry does not support hypotheses outlined in the theoretical framework that nonwhite officers are less likely to experience aggressive physical resistance due to an enhanced ability to interact and bond with nonwhite urban poor.

One limitation of previous research examining the relationship between officer race and aggressive resistance was the inability to control for officer assignment in terms of both shift and location. Findings presented in the current inquiry were among the first to examine the relationship between officer race and aggressive physical resistance while controlling for time of day. The empirical findings of this research support the hypothesis that nonwhite officers are at an increased risk of facing aggressive physical resistance due to the structural disadvantages present in the assigned beats of nonwhite officers (Fyfe, 1981; Geller and Karales, 1981;

Konstantin, 1984). This finding should provide insight to future researchers, and helps to untangle the relationship between race, assignment, and the likelihood of officer victimization.

Officer Experience

Few officer demographic variables have shown a relationship to the likelihood of aggressive physical resistance by citizens, but one of the most consistent findings in the resistance literature is that officers with more years of experience are less likely to face aggressive resistance (Chapman *et al.*, 1974; Griffiths and McDaniel, 1993; Hale and Wilson, 1974; White and Bloch, 1975). Contrary to this conventional wisdom, findings from this research show a null relationship between officer experience and aggressive resistance while controlling for when an incident occurred. This supports the hypothesis that findings for officer experience and reduced risk for attack are more proximately related to the shift assignments that these officers are able to choose rather than becoming experts at de-escalation and the craft of policing (Bayley and Bittner, 1997), or that experienced officers are more procedurally fair and have an increased ability to bond with citizens (Engel *et al.*, 2011; French, 2011).

Research Objective #3

The essential argument in studying the third research objective is that structural disadvantage and residential mobility in a census tract erode the perceived legitimacy of the police and the ability of neighbors to form bonds, resulting in an increased likelihood of aggressive physical resistance during use-of-force encounters. Chapter Three outlined an integrated theoretical framework that included several explanations for why structural disadvantage would lead to increased aggressive resistance including a lack of positive peer networks to develop bonds, social distance between the police and citizenry, historical (and

current) mistreatment by the police, and an inability of residents to exercise informal social controls.

Structural Disadvantage

The empirical findings presented in Chapter Five do not support the argument from the integrated theory that structural disadvantage leads to increased aggressive resistance against the police. There are two identifiable reasons that may explain why this research failed to elucidate a finding common in other research, including how the dependent variable was measured, or simply a lack of causation between disadvantage and aggression against the police.

The first reason why this research may have failed to find the hypothesized effect is that the *likelihood* of aggressive physical resistance against police officers was measured rather than a summation of incidents as has been common in previous research (Kaminski, Jefferis, and Gu, 2003; Morrison and Meyer, 1974). While it was beyond the scope of the current inquiry, anecdotally those tracts with higher levels of disadvantage generally had a greater number of incidents, but the likelihood of an incident involving an attack on an officer was no higher in these locations according to the empirical evidence presented. Thus, the higher numbers of aggressive physical resistance or assaults offered in previous research may be a product of increased levels of police activity in disadvantaged areas rather than being due to an increased likelihood of aggressive resistance. Furthermore, the utilization of use-of-force reports may have contributed some biases, as some research shows that police are more likely to use force on citizens in disadvantaged neighborhoods while controlling for resistance (Terrill and Reisig, 2003). However, the same could be said about other methods of obtaining a sample including arrest (Smith, 1986) or even contact (Alpert *et al.*, 2006) which have been used in previous research.

Second, this research may simply be supporting the argument made in this inquiry that the limitation of previous measurement techniques for aggressive resistance is indeed flawed. Using a measure of the *likelihood* of aggressive resistance may point toward a lack of causation between neighborhood features and aggressive physical resistance. Previous research has found that the number of attacks on officers is higher in disadvantaged areas (Kaminski, Jefferis, and Gu, 2003), and police contact with citizens is usually higher in urbanized areas (Weitzer and Tuch, 2006). Police officers make more stops of residents, respond to more calls, search more residents, and make more arrests in disadvantaged areas. As the current inquiry shows, this does not translate to a greater likelihood of resistance against the police (raw counts perhaps, but not likelihood). This research does not find evidence that the attenuated bonds and negative perceptions of police officers in the inner-city translates to a greater likelihood of aggressive physical resistance. In fact, the likelihood may actually be lower in properly specified models.

Residential Mobility

The argument behind residential mobility offered in the theoretical framework is that turnover within a community disrupts the ability of that community to form bonds with one another and with the local police. Presence of attenuated bonds to the community and the police thus results in increased levels of aggressive physical resistance, as residents are more likely to be defiant upon receiving a sanction.

Empirical evidence presented in Chapter Five did not support this hypothesis. While the influence of residential mobility was in the anticipated direction, the coefficient was not significant in any of the models. Essentially, the effect of community turnover on the likelihood of aggressive physical resistance is null. This finding, like the findings presented for structural disadvantage, provides little support for the outlined theoretical framework, at least in terms of

the role played by the surrounding environment. Again, variation in the likelihood of aggressive physical resistance against officers is not driven by local environmental features, but by situational predictors that reduce citizen rationality. Even in poorer areas, the attenuated bonds to society and police and negative views toward officers do not result in increased violence against the police.

Violent Crime Rate

The estimated rate of violent crime in an area also did not show a relationship to aggressive resistance against police officers. Much like the findings for structural disadvantage, aggressive resistance is more frequent in areas characterized by a high crime rate, but given the increased interactions between the police, is not necessarily more likely. Again, situational features such as substance abuse, time of day, and weapon possession appear to be the driving catalyst for aggression against the police.

Summary

Overall, this research showed mixed support for previous research examining aggressive physical resistance against the police. To start, research objective number one examined the number of times that officers experience aggressive resistance over a two-year period. The first research objective supported prior research employing survey and official report methods of addressing attacks against the police. While questioned in the literature review, survey methods and official reports obtained from police departments have actually provided an accurate portrayal of the risks faced by officers. Furthermore, this research also supports previous findings that most officers are at a fairly low risk of experiencing aggressive resistance, but that a small contingent of officers are at an extreme risk relative to their colleagues. Thus, future

research should investigate why some officers are at a continually high risk for aggressive physical resistance while a majority is at a continually low risk.

The second research objective reexamined the salience of common situational features and officer-based predictors of the likelihood of aggressive physical resistance. Findings from this objective supported previous research with regard to non-demographic situational features, while calling into question findings related to citizen gender, citizen race, and officer experience. Like most previous research, officers are most at risk of aggressive physical resistance when a citizen is under the influence of alcohol or drugs, is in possession of a weapon, and the incident occurs during the typical second shift period. Additionally, the research shows that female officers are more likely to be the victims of aggressive resistance. Contrary to previous findings, female citizens are more likely to be the perpetrators of aggressive physical resistance during use-of-force incidents.

Finally, the third research objective identified little relationship between the characteristics of a census tract and the likelihood of aggressive physical resistance. Environmental features explained very little of the variation in the likelihood of aggressive physical resistance between census tracts, and no environmental predictor was significant when other variables were controlled, except the model including violent crime rate, where structural disadvantage was shown to have a marginal *negative* effect on aggressive physical resistance. In addition to questioning the influence of environmental predictors, this research also found that environmental predictors may curtail the influence of both citizen and officer race as a predictor of aggressive physical resistance.

Overall, the current research endeavor found that officers do not share an equal risk for experiencing aggressive resistance. The variation in risk seems to be driven mostly by

situational exigencies, followed by the characteristics of the officer and the location where the officer is assigned. Thus, little support is offered for the proposed theoretical framework, at least in terms of community level of attachment and perceptions of police legitimacy as a catalyst for aggressively resisting officers.

CHAPTER SEVEN: CONCLUSIONS

The purpose of this study was to address the shortcomings in previous literature examining aggressive resistance against police officers. First, previous research suffered from a lack of theory explaining the reasons why situational features, officer-based characteristics, and environmental features impact the likelihood of aggressive physical resistance. Second, previous research was also unable to examine the impacts of these three distinct groups of predictors simultaneously in a more properly specified model. Third, prior studies were also limited by measurement techniques identifying aggressive physical resistance and assault against police officers. Furthermore, the measurement techniques used in the prior literature resulted in dependent variables in several studies that were severely limited in terms of the variation present that could possibly be explained by the associated independent variables. Finally, many previous studies were limited to examining many research sites (e.g., cities) at a large unit of aggregation such as the city level, or were able to examine smaller units of analysis within a single study location.

In addressing these shortcomings, the current inquiry has improved upon previous research in a number of ways. First, this research offered an integrated theory that linked defiance theory (Sherman, 1993) with the systemic model of social disorganization theory (Bursik and Grasmick, 1993) to explain not only why research has identified higher numbers of incidents involving aggressive physical resistance in structurally disadvantaged communities, but also how situational features and officer-based characteristics can impact bonding and legitimacy and thus aggression against the police. Second, this research was among the first to provide a multilevel logistic regression model that was capable of examining environmental features, as well as situational features and officer-based characteristics simultaneously as predictors of

aggressive resistance against the police. The ability to examine various predictors of aggressive resistance while holding several others constant produced some illuminating results, particularly in the areas of citizen and officer race. Third, the measurement of aggressive physical resistance in the present inquiry offered an operational definition of aggressive physical resistance that was consistent across seven study sites. Additionally, the measurement technique allowed for sufficient variation in the dependent variable, with about 30 percent of the observations involving a case of aggressive physical resistance. Finally, the current inquiry examined situational features and officer-based predictors across seven study sites while it concurrently examined the role of structural disadvantage and residential mobility across 726 census tracts. This exhaustive coverage of aggressive physical resistance against the police substantially improves on the research conducted in previous inquiries. Despite these contributions, the current inquiry is not without its own set of limitations.

Summary of Major Findings

Research Objective #1

The first research objective sought to determine on how many occasions an individual officer was subjected to aggressive physical resistance over a two-year period. The current inquiry improved upon previous research by employing data collected over a more extensive period of time and by using an operational definition that was universal across several departments, and included not only severe incidents but any time a citizen acted in a physically aggressive manner toward an officer. A citizen was coded as engaging in aggressive physical resistance if they attacked or attempted to attack an officer based upon data from use-of-force reports collected by each department. The use of these data was intended as an improvement over previous methods such as retrospective surveys asking officers about victimization in their

previous year, or data collected by the FBI and published through LEOKA (Fridell *et al.*, 2009; Griffith and McDaniel, 1993). The analyses conducted for the first research objective led to three compelling findings:

- 1. The plurality of officers did not experience a single incident of aggressive physical resistance during the course of their duty over the two-year study period.**
- 2. A large majority of officers experienced one or fewer incidents of aggressive physical resistance over the two-year study period.**
- 3. A small percentage of officers accounted for a substantial amount of the total number of incidents involving aggressive physical resistance.**

These findings illustrate an important dichotomy in the risks for officers with respect to the likelihood of experiencing aggressive physical resistance. Essentially this research concurs with previous inquiries (Griffith and McDaniel, 1993) in the finding that over half of all officers will not be confronted by a citizen who tries to attack them over the course of a year, and forty percent of officers will not experience an attack over a two-year period. Conversely, a very small percentage of officers (8 percent) account for a substantial portion of the incidents of aggressive physical resistance against officers (40 percent). Thus, a small contingent of officers is at an extremely high risk of experiencing aggressive physical resistance while a large contingent experiences a much smaller risk.

The substantial disparity in the risks faced by officers does not seem to be explained by the officer-based characteristics (research objective #2) nor the environment to which an officer is assigned (research objective #3) on a case by case basis. It is important that future research address this disparity by examining other potential explanations for what is empirically a stark

difference between two different groups of police officers. Future inquiries may examine these officers' working personalities or other explanations that have not been adequately addressed in the research. The inability of extant research to theoretically address the gap between these officers may warrant a qualitative or exploratory methodology to drive hypotheses and theory that may explain the underlying causal processes behind this disparity.

Research Objective #2

The second research objective sought to reexamine the influence of situational features and officer-based characteristics on the likelihood of aggressive resistance against the police. While these predictors have been employed in previous research, the current inquiry improved upon the extant literature by using a more inclusive operational definition, a measurement technique that allowed for greater variation in the dependent variable, a more contemporary dataset, and data collected from seven police departments over a 24-month data collection window. Furthermore, variation in study designs and epochs of data collection have led to a body of literature that is less than definitive on the influence of many predictors of resistance against the police. The key findings from the second research objective are as follows:

- 1. Situational features that are not citizen demographics (i.e., alcohol or drug influence, weapon possession, and time of day) are the most robust class of predictors of the likelihood that an incident will result in aggressive physical resistance.**
- 2. Aggressive resistance is more likely when a citizen is under the influence of drugs or alcohol.**
- 3. Aggressive resistance is more likely when a citizen is in possession of a weapon.**
- 4. Aggressive resistance is most likely between the hours of 7pm and 3am.**

- 5. Female offenders are more likely to engage in aggressive physical resistance during a use-of-force incident.**
- 6. Female officers are more likely to be the targets of aggressive physical resistance.**

Like many of the previous works examining interactions between the public and the police, this research finds that situational cues are the most influential in terms of identifying the likelihood of resistance against officers (Kavanaugh, 1997; Rabe-Hemp and Schuck, 2007; Uchida *et al.*, 1988). Nearly every previous study on assault or aggressive physical resistance found that when officers encounter someone who is under the influence of alcohol or drugs, the likelihood that an attack will be attempted upon an officer increases (Bannon, 1976; Brown, 1994; Engel, 2003; French, 2011; Kavanaugh, 1997; Noaks and Christopher, 1990; Rabe-Hemp and Schuck, 2007). Similarly, previous research has found that attacks on officers are more likely when an event occurs at night (Kavanaugh, 1997; Rabe-Hemp and Schuck, 2007). The current research supports the hypothesis that officers are at greater risk of attack during second shift, even when other variables are controlled. Furthermore, the current inquiry adds to the policing and police assault literature by showing that those in possession of a weapon are more likely to aggressively resist the police than those who are not. This variable, used as a control in the present inquiry, has been generally omitted from previous research, and should be included as an explanatory variable in future research.

Gender was also shown to have an impact on the likelihood of aggressive resistance during use-of-force encounters, both from a citizen and officer based perspective. Contrary to previous research, female citizens were more likely to aggressively resist the police. This finding is anomalous, and is likely due to the distillation process that occurs as female citizens are removed from observation (e.g., more female citizens are suspects than are arrested, more are

arrested than involved in use-of-force) rather than due to female citizens categorically being a more substantial threat to the police. Furthermore, female officers were shown to be at a slightly higher risk for experiencing aggressive physical resistance than are male officers.

The second research objective makes two strong contributions to the police resistance literature. First, this research supports situational features as the most prominent predictors of citizen behavior against the police. Citizen actions are more strongly influenced by substance abuse, time of day, and weapon possession than by features about the officer or even the citizen. Second, this research calls into question some of the previous findings with respect to officer based characteristics. Findings point toward female officers being at greater risk of attack and White officers being at a slightly lower risk of attack. Furthermore, contrary to the current literature, police experience holds a null relationship to the likelihood of aggressive physical resistance when time of day is held constant.

Research Objective #3

Research objective number three sought to examine if knowledge about the neighborhood (i.e., census tract) where an incident took place could explain the likelihood of aggressive resistance. The environmental features to be examined included the structural disadvantage (i.e., percent poverty, percent unemployed, percent female headed households, and percent nonwhite), residential mobility, and estimated violent crime rate in the census tract. Based upon the findings presented in the current inquiry, knowledge of these environmental features tells researchers little about the *likelihood* of aggressive physical resistance during an incident involving police use of force. These analyses lead to the following major finding:

1. Knowledge of structural disadvantage, residential mobility, and violent crime rate in the census tract where a police use-of-force incident occurs explains little of the variation in aggressive physical resistance between census tracts.

The current inquiry does not dispute findings from previous research that assaults or incidents involving aggression are more concentrated in areas of structural disadvantage and higher violent crime rates (Kaminski, Jefferis, and Gu, 2003). What may be overlooked by previous research is that virtually ALL police activity is concentrated in areas of higher urbanization, structural disadvantage, residential mobility, and violent crime rates (Lerman and Weaver, 2014; Weitzer and Tuch, 2006). Findings presented in the current inquiry are somewhat different from previous research in that they show that the likelihood of aggressive resistance on a per incident basis is virtually indistinguishable based solely on urbanization, and that urbanization and the associated structural disadvantage explain little of the variation in the likelihood of aggressive physical resistance between census tracts.

There are also a few alternative explanations that could result in the null finding for structural disadvantage and the influence it has on aggressive resistance. Differential patterns of police use-of-force may negate the positive (directional) effect of disadvantage on the likelihood of resistance. Police have been shown to be more likely to use force in disadvantaged neighborhoods (Terrill and Reisig, 2003) and thus may only use force in more advantaged areas when the citizen represents a clear and present threat. Given the patterns of police activity and behavior in disadvantaged areas, resentment toward the police does not necessarily result in an empirical demonstration of a greater *likelihood* of aggressive physical resistance against the

police, as demonstrated in the current inquiry. The current inquiry does not, however, dispute that a greater number of attacks on police occur in disadvantaged areas.

Study Limitations

The current inquiry lists several improvements over previous studies, but does have some potential limitations including the utilization of use-of-force reports. There are additional questions related to proper model specification and the inclusion of all relevant variables, the use of only municipal police departments, the nature of the address used to determine location, the use of census tracts as second level units, and an inability to directly measure every aspect of the integrated theory provided. The remainder of this section will address each of these limitations in order and discuss how research could improve upon these issues in the future.

The first limitation noted is that police use-of-force reports may not be the best method for addressing differences in aggression against the police. Force reports were utilized because they do have advantages including much more substantial variation in the dependent variable, they are much more cost effective to gather when the dependent variable is a rare occurrence, and the retrospective nature of the study allowed for two-years worth of data to be collected from each site. Unfortunately, the distillation process that results in a dependent variable with enhanced variation may also represent a threat to validity. Individuals involved in use-of-force incidents are going to be more predisposed toward noncompliance than those being arrested, and even more so than suspects who are simply encountered by the police. This predisposition is a threat to validity that should be addressed by future research.

An additional threat to validity posed by use-of-force reports is that some scholars observe that the use of official reports can represent a threat to validity (Terrill and Paoline, 2011). The opposition to the use of official records in measuring the result of a police citizen

interaction is that the officer will falsify a report to conceal some wrongdoing or make their actions appear more acceptable. While this threat certainly must be considered, the consistency between this research and survey self-reports from officers certainly assuages some of the concerns noted by critics of official reports (Griffiths and McDaniel, 1993).

In order to address the shortcomings of this design, and the shortcomings of other previous designs, perhaps the best alternative would be a case-control study using a large observational dataset. The rare nature of aggressive physical resistance against the police restricts the use of observational data involving almost no variation in the dependent variable, and case-control designs are some of the best methods for studying rare phenomena (Mann, 2003). Employing an observational dataset where the location of the incident was collected would address the concerns present in this study, as well as those of previous research.

The second limitation identified in this research is that some potentially relevant explanatory variables could not be included in the analyses, potentially leaving the models misspecified. While all efforts were made to include all relevant predictors, some simply could not be included. Variables such as offense seriousness and citizen mental illness were not reliably collected by each of the study departments and thus could not be included in the analyses. The inability to include all relevant predictors could limit the current inquiry in several ways.

First, previous research has shown that the risk of assault to officers varies depending on the type of problem that they are addressing during an encounter with citizens (Brandl, 1996; Rabe-Hemp and Schuck, 2007). One of the most compelling findings for officer characteristics is that female officers are at greater risk for aggressive physical resistance. Given the findings of previous research, it is possible that this disparity could be partially explained by an increased

risk for female officers in incidents involving domestic violence (Rabe-Hemp and Schuck, 2007).

A second variable closely related to problem type that could not be included is the suspected offense seriousness attached to the citizen in question. Previous research has indicated that offense seriousness may be an important predictor of noncompliance in encounters with citizens (Mastrofski *et al.*, 1996). A related consideration may be the warrant status of a citizen, which has not been identified as a predictor but should be considered in future research. It stands to reason that a citizen suspected of a low-level misdemeanor might be more likely to resist the police if they also have an arrest warrant for a serious felony. The data available to examine warrant status as a predictor of aggression toward the police has generally not been available to researchers, and the current inquiry is no exception.

The final predictor that was not able to be included in the current inquiry is the mental status of the citizen involved in the use-of-force incidents. The study sites used for this research did not reliably code whether the citizen involved suffered from mental illness across the board. Given the dominance of rationality-based situational features in predicting resistance shown in this research, coding mental illness for citizens would be an important consideration for future research in this topic area.

A third limitation of this research is that only municipal police agencies for mid-to-large sized cities were used. Population dynamics have led to a situation where cities in general are more disadvantaged than surrounding neighborhoods and suburban areas. The differences in perceived legitimacy of the police and aggressive resistance may become more manifest if less disadvantaged areas could be included in the analyses. A related limitation is that actual neighborhood boundaries and data for these neighborhoods could not be used and that census

tracts were substituted as a proxy. While this is unlikely to make a difference, it would still be an improvement for future research to accomplish.

The fourth limitation identified in the current inquiry is that the addresses used to identify structural disadvantage represent the location where an incident occurred rather than the permanent residence of the citizen involved. There are numerous reasons why a person living in a less disadvantaged neighborhood could travel through a more disadvantaged neighborhood and encounter a police officer. In these instances the visitor who interacts with police would not have the negative view toward the police, attenuated bonds to the community, and perceived insulation from shame that a person who resides in the neighborhood may possess.

A final limitation identified in this research is that the bond held between a citizen and both the community and officer could not be directly measured. While structural disadvantage and residential mobility are linked to negative attitudes toward the criminal justice system and attenuated community bonds, neither of these predictors were directly measured via a survey questionnaire. Future research should employ a method that measures each element of the integrated theory presented in this research, either at the individual or community level. This may produce different results than measuring the environmental features where the interaction took place.

Policy and Research Implications

The current inquiry provides five potential policy implications for policing organizations, as well as some important implications for future research. First, police departments should use interventions to improve the relationship between police and citizens at a department-wide level rather than solely focusing on disadvantaged neighborhoods. While there are certainly more incidences in disadvantaged neighborhoods, more variation in aggressive physical resistance was

explained by the department in which the incident occurred, indicating that there is potential for department wide improvement in terms of reducing the incidence of aggressive resistance. Essentially, any investment in improving relations between the police and the public should be department-wide rather than simply focusing on disadvantaged neighborhoods.

A second implication for departments is the need to provide focused policy and training directed at the handling of persons under the influence of alcohol or drugs. The findings indicate that intoxicating substances are substantial predictor of aggression against police. Furthermore, a positive relationship was present between intoxication and aggression against the police in all literature reviewed. Police departments seeking to reduce violence against officers should investigate and develop best practices approaches for interacting with citizens who have a diminished capacity to employ clear rationality as a result of substance abuse.

Third, departments should address staffing and compensation issues for officers assigned to shifts during the 7pm-3am window. The current inquiry demonstrated that officers are at the greatest risk of attack during this second shift timeframe. While some departments do optimize their staffing based on call need (Taylor and Huxley, 1989), these departments should also make considerations for the likelihood of aggressive resistance. Staffing strategies that increase the availability of back-up during high risk times could help to remediate the likelihood and seriousness of attacks on officers.

A fourth possible policy solution to the issue of attacks on officers would be to implement an early warning system type of intervention solely for incidents of aggressive physical resistance. Much like officer misconduct, a large number of the total incidents involving aggressive physical resistance from citizens are concentrated among just a few officers (Walker, Alpert, and Kenney, 2001). An early warning system type of intervention would allow

counseling and/or training to be targeted at just a few officers who have consistent issues with violence in citizen encounters. Perhaps sessions could be arranged where officers who are identified as having expertise in conflict reduction meet with struggling officers to share what they find works in reducing conflict with citizens. Furthermore, unlike more sophisticated early warning systems, there is no need for complicated selection algorithms, and the data collection process is already in place at several of the study sites. Additionally, the goal of reducing incidents of aggressive physical resistance is more clearly defined and measurable than the goal of reducing misconduct.

A final potential policy solution for reducing incidents of aggressive physical resistance could be the implementation of Problem-oriented Policing (POP) within the organization by a division like internal affairs. Essentially, the police department looking to reduce attacks upon officers could employ the SARA model to determine why some individual officers are at greater risk of victimization (Goldstein, 1990). Determining the ultimate root cause of the problem could allow the department to institute creative and targeted solutions designed to reduce police citizen conflicts. Again, analysis would be fairly straight forward as the goal is simply defined and the data collection procedures are already in place at some departments.

The first note for future research is that economic disadvantage and the associated negative attitudes toward the police do not necessarily lead to an increased likelihood of aggressive resistance against the police. Much of the previous research in this area has focused on raw numbers of output, which tend to show that the risk is higher in inner-city disadvantaged neighborhoods, when in actuality all police activity is higher in poor areas on average (Weitzer and Tuch, 2006). In lieu of future research, structural disadvantage does not emerge as a powerful predictor of noncompliance with police at the highest level (i.e., attacking or attempting

to attack an officer). Research in the area of procedural justice and police legitimacy should observe that while these factors may be related to cooperation, structural disadvantage does not necessarily lead to a greater likelihood of aggressive physical resistance against police officers.

Another important implication for future research is that the variation between areal units should not be ignored in policing inquiries. The variance between census tracts was still significant and not inconsequential when all explanatory variables were added to the model ($\sigma^2_2 = .165, p \leq .001$; ICC = .048). Additionally, inclusion of environmental predictors for the census tract resulted in findings that race for both officers and citizens bears a null relationship to the likelihood of aggressive resistance. Given the influence of environmental predictors on findings for citizen and officer race, other important findings in the policing research should be subjected to the same scrutiny using multilevel modeling techniques.

Furthermore, this research shows that a large portion of the variation in aggressive physical resistance at the census tract level can be explained by the department in which the tract is located. Previous research examining the characteristics of cities has been able to show that elements of structural disadvantage can make a difference in the frequency of incidents of aggressive resistance (Jacobs and Carmichael, 2002). A great step forward for the police assault and resistance literature would be the identification of organizational level variables that predict the *likelihood* of aggressive physical resistance in citizen encounters with the police. While this would be a substantial undertaking, it would provide substantial direction for departments seeking to improve police-citizen relations.

Finally, future research should focus more attention on developing theory to explain the influence of situational predictors related to citizen rationality such as alcohol or drug influence, weapon possession, and time of day. The importance of independent variables such as these in

many policing studies regardless of the dependent variable shows that more research attention should be focused on these predictors. Rather than continuing a focus on citizen and officer predictors, theory should develop antecedent and intervening explanations regarding drug and alcohol abuse that can be measured. It is not simply the effects of alcohol or nighttime that explain aggressiveness toward the police, and theory should do a better job of explaining the role these situational variables play in explaining the outcomes of police-citizen interactions.

APPENDICES

APPENDIX A: SAMPLE SIZE, METHOD, AND LOCATIONS FOR CITED STUDIES

Table 8.1: Sample Size, Method, and Locations for Cited Studies

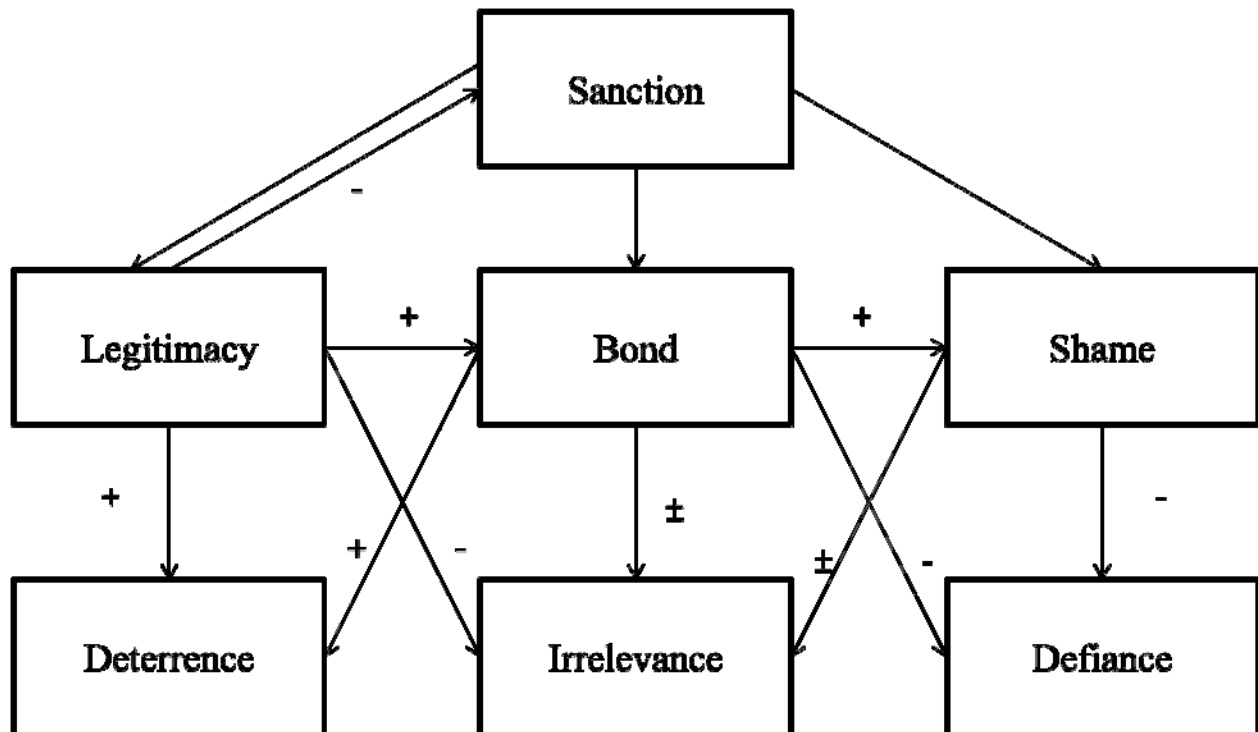
Publication	Sample Size	Method	Location(s)
Stobart, 1972	613 incidents	Official records	London, England
Hoobler and McQueeney, 1973	70 assaults; 656 officers	Official records	San Diego, CA
Chapman, Swanson, and Meyer, 1974	1,143 assaults	Officer reports on every assault (Physical Contact Summary)	South Central US
Morrison and Meyer, 1974	Unreported	Official records	Austin, TX
Regens <i>et al.</i> , 1974	46 cities	Official records	South Central, US
Talbert <i>et al.</i> , 1974	578 officers	Official records	Atlanta, GA
Hale and Wilson, 1974	1,912 officers 1,858 assaults	Official records	Southern US
White and Bloch, 1975	182 Assaults	Official records	Dallas, TX
Bannon, 1976	359 incidents, 436 subjects, 547 officers	Official records and interviews	Detroit, MI
Lester, 1978	26 cities	Uniform Crime Reports & US Census	United States
Meyer <i>et al.</i> , 1981	1,304 assaults	Officer reports on every assault (Physical Contact Summary)	South Central US
Uchida <i>et al.</i> , 1988	1,550 assaults	Official records	Baltimore, MD
Noaks and Christopher, 1990	453 officers, 770 assaults	Official records, offender interviews	South Wales, UK
Moxey and McKenzie, 1993	116 assaults	Official records, offender interviews, officer interviews	Southern England
Brown, 1994	265 incidents	Official records	Bedfordshire, South Yorkshire, and Greater Manchester, UK
Mastrofski, Snipes, and Supina, 1996	346 requests	Systematic Social Observation	Richmond, VA
Kavanaugh, 1997	1,072 arrests	Official records and officer survey	Manhattan Port Authority Bus Terminal

Table 8.1 (cont'd)

Petrocelli, 1997	n=517; n=895 assaults	Suspect interviews	San Diego, CA and St. Petersburg, FL
Pinnizzotto and Miller, 1997	52 officers, 40 incidents	Uniform Crime Reports	United States
McCluskey, Mastrofski, and Parks, 1999	989 encounters	Systematic Social Observation	Indianapolis, IN and St. Petersburg, FL
Jacobs and Carmichael, 2002	165 cities	Uniform Crime Reports, US Census	United States
Kaminski, Jefferis, and Gu, 2003	603 assaults	Official records, US Census	Boston, MA
Engel, 2003	1,461 encounters	Systematic Social Observation	Police Services Study (US)
Leeper-Piquero and Bouffard, 2003	10,277 encounters	Systematic Social Observation	Police Services Study (US)
Belvedere, Worrall, and Tibbetts, 2005	400 encounters	Official records	Southern California
Rabe-Hemp and Schuck, 2007	7,512 arrests	Officer survey following arrest	Charlotte, NC; Colorado Springs, CO; Dallas, TX; St. Petersburg, FL; San Diego Police, CA and San Diego Sheriffs, CA
Wilson and Zhao, 2008	267 cities	Law Enforcement Officers Killed and Assaulted, Uniform Crime Report, LEMAS survey, US Census	United States
Fridell <i>et al.</i> , 2009	108 cities	NIBRS, Agency survey, US Census	United States
French, 2011	14,050 assaults, 5,589 officers	Official records	New South Wales, Australia
Dai, Frank, and Sun, 2011	332 encounters	Systematic Social Observation	Cincinnati, OH
Engel <i>et al.</i> , 2011	Traffic Stops Level 1 = 39,191 Level 2 = 236	Officer completed traffic stop form	Cleveland, OH

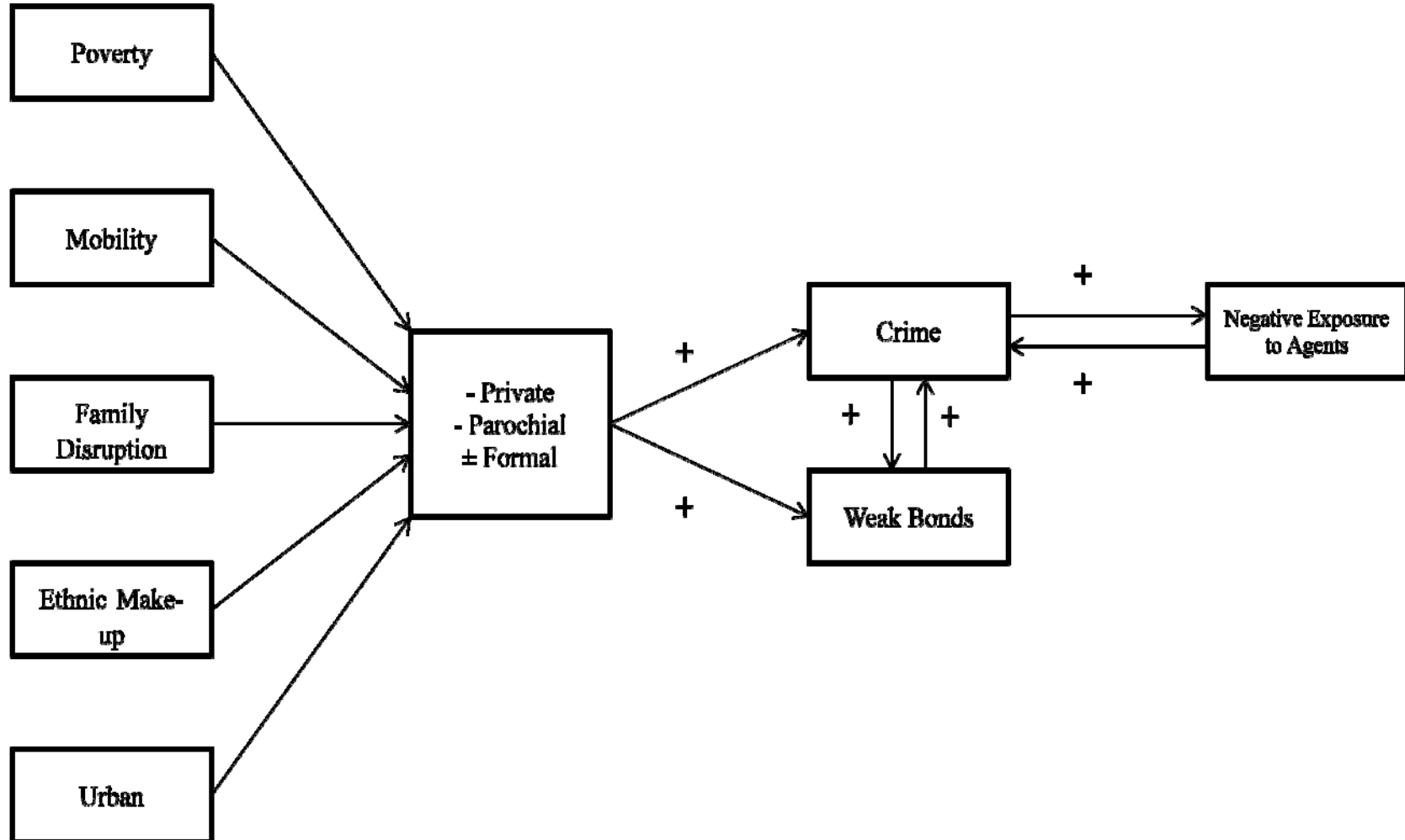
APPENDIX B: CONCEPT MAP OF DEFIANCE THEORY

Figure 1: Concept Map of Defiance Theory



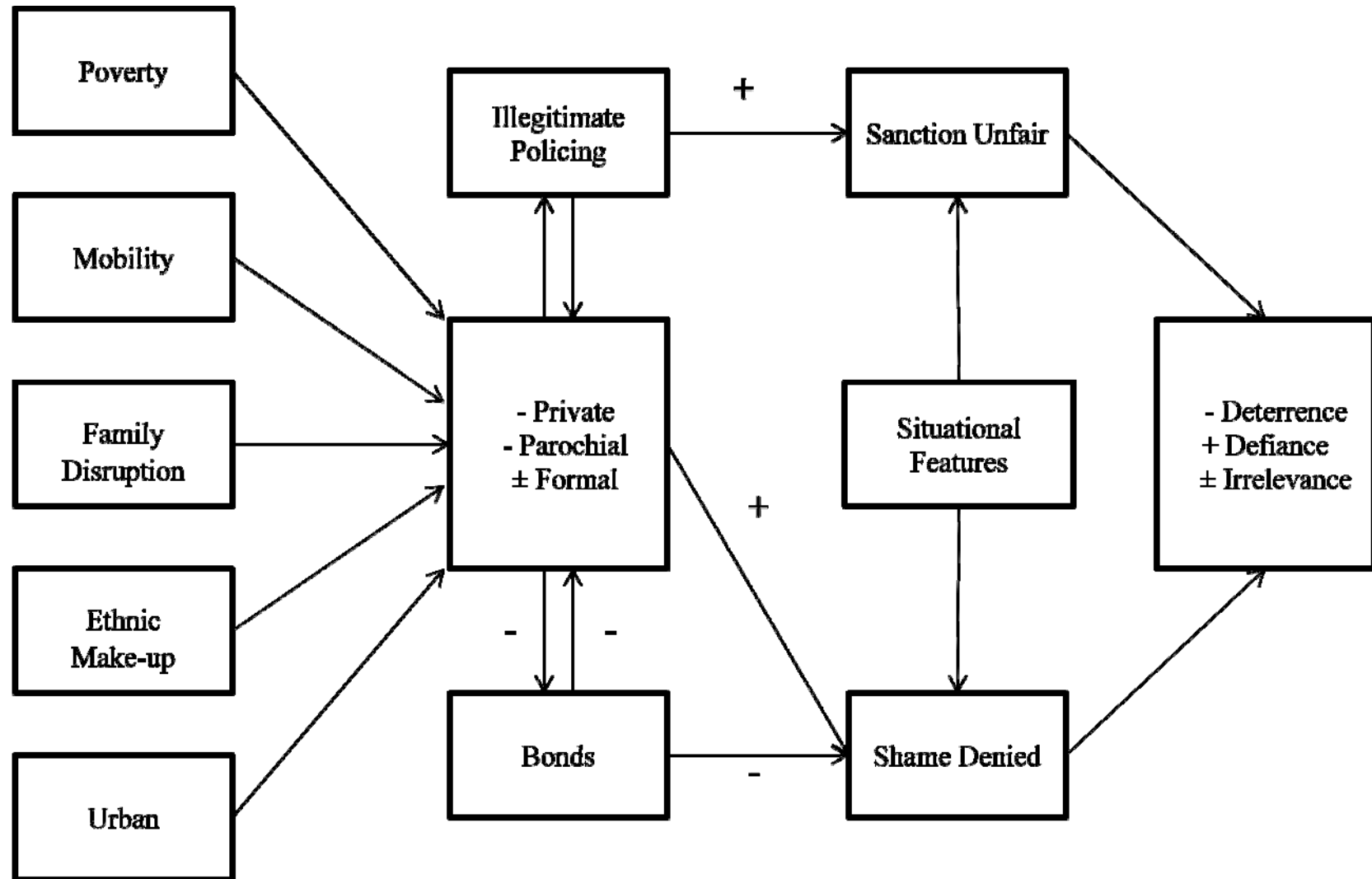
APPENDIX C: CONCEPT MAP OF THE SYSTEMIC MODEL OF SOCIAL DISORGANIZATION THEORY

Figure 2: Concept Map of the Systemic Model of Social Disorganization Theory



APPENDIX D: INTEGRATED THEORY OF DEFIANCE AND SOCIAL DISORGANIZATION THEORIES

Figure 3: Integrated Theory of Defiance and Social Disorganization Theories



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