The Balance Between Privacy and Safety in Police UAV Use: The Power of Threat and Its Effect on People’s Receptivity

Mari Sakiyama

University of Nevada, Las Vegas, sakiyamam@wou.edu

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THE BALANCE BETWEEN PRIVACY AND SAFETY IN POLICE UAV USE:
THE POWER OF THREAT AND ITS EFFECT ON PEOPLE’S RECEPTIVITY

By

Mari Sakiyama

Bachelor of Arts – Criminal Justice
University of Nevada, Las Vegas
2008

Master of Arts – Criminal Justice
University of Nevada, Las Vegas
2011

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Mari Sakiyama

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School of Public Policy and Leadership

Joel D. Lieberman, Ph.D.  
Examination Committee Chair

Terance D. Miethe, Ph.D.  
Examination Committee Member

William H. Sousa, Ph.D.  
Examination Committee Member

Christopher Stream, Ph.D.  
Examination Committee Member

Donovan Conley, Ph.D.  
Graduate College Faculty Representative

Kathryn Hausbeck Korgan, Ph.D.  
Graduate College Interim Dean
ABSTRACT

Unmanned aerial vehicles (UAVs), also known as drones, are an innovative technology that has received significant interest from the law enforcement community. The size and ability, technological capability, and cost effectiveness of UAVs make them an attractive tool for law enforcement agencies to utilize in the course of operations, including domestic surveillance. Despite the potential benefits to the society, public perception of police UAV use is mixed, and “Not Over My Backyard (NOMBY)” attitudes relevant to Fourth Amendment privacy concerns are consistently demonstrated across studies related to public perceptions on this emerging technology.

The present study focuses on the relative impact of privacy threats and other situational factors on individuals’ perceptions of police and their use of UAV technology. Using Stephan and Renfro’s revised reintegrated threat theory (2002), the present research used a scenario-based experimental design to examine: (1) the impact perceived threat from police UAV use on people’s attitudes toward police and their use of UAVs? (2) the attitudinal differences of the degree of participants’ connection to the target of surveillance, and (3) the effect of the people’s pre-existing perceptions of police on participants’ attitudinal differences, and (4) the structural relationships, followed by the theory, between perceived threats, antecedents (i.e., relations between groups, individual difference variables, cultural dimensions, situational factors) to intergroup threat, and the people’s perceptions, as well as demographic or other socio-economic factors.

The findings provide some significant socio-psychological implications concerning police-community intergroup relations. First, the quality of the interpersonal treatment or relations (i.e., individual differences) they had previously received from police officers was the
strongest indicator in predicting their attitudes toward police UAV use. Second, the outcome of UAV activity also influenced their evaluations of police. Lastly, people’s attitudes were more extreme when the level of connection to the target of surveillance was farther away from them and it was interacted with policing strategies (i.e., reactive v proactive policing).
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DEDICATION

To my parents,
Kyoko and Chiaki Sakiyama
My husband, Kristjan Laube,
And my daughter, Emmaliia
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CHAPTER 1
INTRODUCTION

Background

Advancements in police technology have increased both police effectiveness and efficiency in crime control and made a significant impact on police practices, especially with respect to community policing in recent years. For example, unmanned aerial vehicles (UAVs) or unmanned aircraft systems (UAS), also known as drones, are an innovative technology that has received significant attention from the law enforcement community. In the past few years, the increased popularity of UAVs has created some new operational potentials and advantages for police and public safety organizations around the nation. These organizations are gradually starting to acquire this new technology to use in daily operations, such as search and rescue, traffic and accidents, crime scene investigation, and apprehension of criminal fugitives. UAVs are a highly desirable technological tool for law enforcement agencies for two major reasons: they are a low cost alternative to traditional air support, and they reduce risk for officers dealing with highly dangerous situations (Friedenzohn & Mirot, 2013). Although police UAVs have great potential to assist police operations and to save lives of both civilians and officers, significant obstacles must be overcome in order to feasibly utilize this new technology in the domestic airspace.

Although the public moderately accepts this new technology (Monmouth University, 2013; Scott, 2015), the issues regarding invasion of privacy and personal safety are two major remaining concerns that need to be solved. Furthermore, despite the popularity and potential of UAVs, public perception of police UAV use is mixed, and empirical research on this topic is lacking. “Not over my backyard (NOMBY)” attitudes are consistently demonstrated across the
limited number of studies on the topic of public perception on UAVs. For example, Lieberman, Miethe, Troshynski, and Heen (2014) find that a clear majority of survey respondents oppose UAV use for domestic surveillance around their homes (97%), as opposed to in open public places (63%). Another recent study suggests that the level of support significantly varies by context of the use, including the scope of police operation and policing strategies, such as reactive and proactive policing (Sakiyama, Miethe, Lieberman, Heen, & Tuttle, 2016). More specifically, the nature of the public support becomes more positive when there are public safety benefits, and police use UAVs with a specific intent which limits the use of police discretion. For instance, a clear majority of respondents support UAV use in search and rescue operations, yet far fewer support their use for crowd management related operations (Sakiyama et al., 2016).

These previous studies support the idea that the community perception depends on whether or not there are perceived personal or community risks involved with UAV use by police. The common perceived risks associated with police UAV use are invasion of privacy – “big brother” government surveillance of citizens – and data collection, as well as injuries or fatalities related incidents due to human/technical errors.

As an affective element of NOMBY, Bachrach and Zautra (1985) mention that people react emotionally when they face a threat to themselves or to their community. As the perceived risks to a threat to one’s well-being (welfare) and/or ego (sense of self) increase, emotional stress rises, and the level of opposition toward the new project increases along with negative views toward the project sponsors. In the context of police use of UAV technology, the same logic may apply regarding community perceptions. However, it is not clear whether a perceived threat to privacy (or personal safety) has an impact on people’s perception of police as a whole, as well as on police activities. Therefore, the aim of this study is to assess whether the increased level of
perceived threat (and perceived benefits) from police UAV use would change people’s perceptions of police agencies as well as their receptivity to police UAVs.

Again, the present research is devoted to investigating citizen’s opinions regarding police UAV use in an effort to seek a more balanced police-community relationship in order to successfully integrate the innovative technology in the national airspace. When measuring perceptions or attitudes of a person, or a group of people, toward another person or a group of people, the functional view of emotional and cognitive aspects is pertinent to the realm of intergroup relations (Tajfel, 1982). “Intergroup relations” refer to “relations between two or more groups and their respective members” (Sherif, 1958). According to Sherif (1958), a group is a social unit:

1. Which consists of a number of individuals who, at a given time, stand in more or less definite interdependent status and role relationships with one another and (2) which explicitly or implicitly possesses a set of values or norms regulation the behavior of individual members, at least in matters of consequences to the group. Thus, shared attitudes, sentiments, aspirations, and goals are related to and implicit in the common values or norms of the group. (p. 350)

In the present context, the primary focus is on people’s reactions, both emotional and cognitive, that occur when individuals belonging to one group interact (whether individually or collectively) with individuals in another group.

Sherif (1966) notes, “[w]hen ever individuals belonging to one group interact, collectively or individually, with another group or its members in terms of their group identifications we have an instance of intergroup behavior” (p.12). In a function of a variety of social structures and situations, intergroup relations are, therefore, almost always identified; and each group identification is contributed by certain social groups or categories. One of the primary concerns of intergroup relations in the field of social psychology deals with ingroup attitudes and behavior.
toward outgroups. According to Tajfel (1974), negative ingroup-outgroup attitudes and behavior are seen as a result of emerging social norms, particularly due to conflict of goals between ingroups and outgroups. On the other hand, when the goals of different groups are mutual, the relationship tends to be more positive. The existence of a gap of interest or value, or so-called social dilemmas – situations in which interest discrepancies between groups can lead to conflict – between community and police seems to be undeniable in the context of police use of UAVs. The resulting conflict may increase ingroup solidarity, widen ingroup/outgroup distinction, and can produce intergroup hostility, discrimination, prejudice, and stereotyping (Riek, Mania, & Gaertner, 2006). While both sociological and psychological researchers have developed several theoretical approaches for understanding intergroup bias and prejudice, they would mutually agree that the role of threat is an important predictor of prejudice (LeVine & Cambell, 1972; Allport, 1954; Stephan & Stephan, 1996). One theory that highlights threat as a prominent factor is the integrated threat theory (ITT) by Stephan and Stephan (1996) and Stephan and Renfro (2002).

The ITT emphasizes the role of threat for understanding negative evaluations toward an outgroup. The revised version of the ITT (see Stephan & Renfro, 2002), which is used in the current study, postulates that the more ingroups establish pre-existing negative outgroup perspectives or any other negative intergroup interactions, as defined as antecedents (i.e., previous relationship, individual/cultural differences) and express perceptions of threat, the more likely increased level of negative attitudes toward outgroups will be expected. For example, a study of the 9/11 attack conducted by Renfro and Stephan (2002) found that when American people’s safety, welfare, and economy were threatened, they responded with negative emotions and attitudes to the attackers. The theory also mentions that the degree of negative reactions or
evaluations toward outgroup in any given context depend partly on how the intergroup relations are constructed, in which consists both personal and collective elements (Renfro & Stephan, 2002; Riek, Mania, & Gaetner, 2006). Certain threats are directed toward the individual (personal) while others are directed the group (collective), or they can be directed toward both. Although numerous studies have confirmed the ITT framework (Stephan, Demitrakis, Yamada, & Clason, 2000; Stephan Ybarra, Martinez, Schwarzwald, & Tur-Kaspa, 1998; Stephan et al., 2002; Curseu, Stoop, & Schalk, 2007; Velasco Gonzalez, Verkuyten, Weesie, & Poppe, 2008), no studies have yet assessed the effect of perceived threat to privacy and/or its impact on community perception on a hegemonic or hierarchical outgroup like police. With the use of ITT, the present study will examine how, and to what extent, the roles of individual (or personal) and community (or collective) elements in perceived threats from police UAV use impact people’s attitudes on police and police use of UAVs.

**Research Questions**

The primarily objective of this study is to assess community members’ perceptions and attitudes toward police use of UAVs by measuring their perceived threat to privacy. Specifically, this research will address the following three questions: (1) Does a perceived threat to privacy have an impact on people’s attitudes toward police and their use of UAVs? (2) Are there any attitudinal differences when the threat was directed at a personal level versus collective level? (3) Will people’s attitudes toward police and their use of UAVs be affected by situational factors (i.e., policing strategies), and if so, do these factors have a direct or indirect impact on people’s perceptions on police? (4) After controlling for the influence of the structural relationships between perceived threats, antecedents (i.e., relations between groups, individual difference variables, cultural dimensions, situational factors) to intergroup threat, and the
people’s perceptions, will the public attitudes be moderated by demographic or other socio-economic factors?

Summary

The size and ability, technological capability, and cost effectiveness of UAVs make them an attractive tool for law enforcement agencies to utilize in the course of operations, including domestic surveillance. Despite the potential benefits to the society, the emerging technology raises Fourth Amendment privacy concerns, along with safety issues, and has been the subject of debate among law and policy makers. Nevertheless, little is known about the nature of the existing public concerns regarding police use of this innovative technology. A focus on the relative impact of perceived threat on community’s perception toward police and their activities, therefore, should facilitate effective policy implementation in which public understanding, support, and cooperation are integrated.

This introduction chapter discussed about the overall view and organization of the current research. Chapter 2 will begin with the basics of UAVs in the U.S. including its technological capability and regulations, and will shift the focus in particular to UAV use by law enforcement agencies in the U.S. It will also discuss about the previous research and its results regarding public perceptions and concerns about police UAV use. The same chapter will then introduce the important concepts and a theory: NOMBY (“Not Over My Backyard”), social dilemma, and both integrated threat theory (ITT) and its revised version (i.e., RITT), respectively. Chapter 3 will cover the research methodology including design, procedure, sample, and measures of the current study. Chapter 4 will provide the results of the analyses. Chapter 5 will discuss the findings of the research, limitations and recommendations for future research. Relevant policy implications drawn from this research will be presented at the end of the chapter.
CHAPTER 2

REVIEW OF THE LITERATURE

UAVs in the U.S.

Unmanned aerial vehicle (UAV) use have a long history around the world, but only recently the cost and availability made this technology widely accessible to both public and private sectors, and the UAV industry in the U.S. is rapidly growing. According to the Association of Unmanned Vehicle Systems International (AUVSI), there will be 13.6 billion dollars added to the U.S. economy with 70,000 jobs within the first three years in integration. By 2025, they estimated 82 billion dollars of economic growth with over 100,000 jobs in the UAV related industries (AUVSI, 2013). UAVs have a number of potential applications in a wide range of areas including agriculture, journalism, public safety, construction, delivery, survey mapping and many more. Within the public market only, AUVSI (2013) also concludes that public safety is and will be the predominant and potential market for UAV. Public safety entities include police and law enforcement agencies, emergency medical services, and fire departments that protect the community by promoting prevention, response, recovery, and enforcement. The present research focuses on the UAV application on public safety purpose, particularly the use by local police and law enforcement agencies in the U.S.

Capability and Regulations of UAVs in the U.S.

Physical capability of UAVs. These free-flying aircraft come in a variety of shapes and sizes – ranging from something that fits in palm of a hand (or size of a large insect) to a full-size aircraft – and serve diverse purpose. There are commonly categorized into two types of UAVs, large and small, and the former generally refers to military UAVs including the Predator UAVs. “Small” UAVs, which will be discussed in the present paper must weigh less than 55 lbs (25 kg)
including any attached instruments (e.g., camera), and are restricted by the most recent Federal Aviation Administration’s (FAA’s) regulatory proposal (see Summary of Small Unmanned Aircraft Rule, Part 107). The proposed regulations also mandate UAVs to fly no faster than 100 mph (87 knots) and to remain 400 feet above ground level (U.S. Department of Transportation, 2016). They can also be categorized into 2 major shapes: (1) fixed wing (e.g., airplane) and (2) rotary wing (i.e., 1 rotor: helicopter; 3 rotors: tricopter; 4 rotors: quadcopter; etc.). The latter is more common for public safety organizational use including law enforcement agencies.

The capabilities of the attached instruments to UAVs including high definition cameras and sensory-enhancing technologies that collect imagery data and other information. These instruments include GPS, heat or infrared/ultraviolet sensors, see-through imaging technology, motion or speed detectors, and distributed video/audio systems (see Nakashima & Whitlock, 2011; see Takahashi, 2012). In terms of information processing systems, UAVs can also be equipped with video processing systems that can recognize people’s face and body using 3D sensors (Olivito, 2013). Finally, and perhaps most critical, it is not difficult to imagine that these UAVs can also be weaponized. In fact, North Dakota became the first state to legalize law enforcement agencies to use non-lethal armed UAVs (Wagner, 2015). Although the bill only states that “[a] law enforcement agency may not authorize the use of…an unmanned aerial vehicle armed with any lethal weapons” (ND. 1328, 2015), anything classified as “less than lethal” weapons are allowed. Non-lethal weapons come in a variety forms such as rubber bullets, beanbags, pepper spray, tear gas, and Tasers. More recently, Connecticut just passed the bill (CT. H.B. 7260) that prohibits civilians to use weaponized drones, but the bill may exempt law enforcement agencies. In other words, police officers might be able to use lethally armed drones, if the governor approves the bill (Ortiz, 2017). Although unmanned aerial surveillance
technology has a great potential to assist in situations where delay or human error could cost lives, this technology also carries the potential for abuse (Farber, 2014; Olivito, 2013).

**Regulations and deployment of law enforcement UAVs.** Public aircraft operations including law enforcement, border patrol, search and rescue, military training, and other government operational missions are all regulated by federal statute within the national airspace (see FAA Modernization and Reform Act of 2012). More specifically, the Federal Aviation Administration (FAA) issues a *Certificate of Waiver of Authorization* (COA) that permits any government agencies’ UAV use – per case, not per government agency – upon their approval (FAA, 2014). Law enforcement agencies’ use of UAVs have been supported and funded in part by the U.S. Department of Justice (Friedenzohn & Mirot, 2014). Each COA generally remains valid for 2 years and defines the operational and system description, area of operations, performance characteristics, airworthiness requirements, emergency procedures, visual surveillance/detection capability, and ground crew proficiency required to operate the UAVs. Although any government or public entities must obtain their COAs prior to their UAV operations which usually takes up about 60 days, the FAA and the U.S. Justice Department signed an agreement to streamline the process for obtaining COAs for law enforcement agencies. Furthermore, the FAA may also be able to expedite one-time COA approval within few hours for time-sensitive emergency related operations for these agencies. Upon the FAA’s approval, a law enforcement organization receives a COA for training and performance’s evaluation. It then receives a “jurisdictional” or operational COA once the agency has shown proficiency in flying their UAV (FAA, 2015).

According to the FAA’s official reports, they have issued at least 2,000 authorizations since 2006, when the COA application procedure was first created. The number of COA
applications have been increasing for the past several years. For instance, nearly 600 COAs were issued in 2014 alone, and which is triple the amount of it was in 2009 (FAA, 2013). While there were 545 COA active holders as of December, 2013, under the Freedom of Information Act, there are 79 known COA holders across the nation, and 16 of those entities are local law enforcement agencies including municipal, county, and campus police force (FAA, 2013).

Under the Modernization and Reform Act of 2012, the FAA initially allowed public safety agencies to operate UAVs weighting up to only 4.4 pounds. However, the agreement between the FAA and the U.S. Justice Department expands the allowable UAVs weight up to 25 pounds for law enforcement agencies (FAA, 2013). The remaining conditions are the same across all public safety organizations, and these UAVs must be flown less than 400 feet above the ground and inside Class G (all airspace below 14,500 feet) airspace. They also must be operated during daytime within line of sight of the operator and stay more than five miles away from any airport or any other locations with aviation activities including heliports.

**Law Enforcement Use of UAV Technology**

Although the federal law enforcement agencies (e.g., the U.S. Department of Defense, the U.S. Department of Homeland Security) are the current leading stakeholders of UAVs for operating multiple testing, training, and missions in the national airspace, state and local law enforcement agencies are not too far behind on adopting and expanding their use of UAVs for daily operations. This cost-effective technology provides an alternative to manned-aircraft and offers these agencies a bird’s-eye view of disaster and crime scenes that they may not otherwise be able to capture. Therefore, UAVs have great potential for supporting operations such as searching for missing individuals, responding to automobile accidents, locating hazardous
materials without risking human lives, or monitoring fire or weather conditions to assist rescue workers in natural disasters (see Drones & Aerial Robotic Conference [DARC], 2013).

As of today, numerous law enforcement agencies’ UAV applications, both at the federal and local level, have been identified across the nation. At the federal level, the U.S. Custom and Border Patrol is known to be one of the first federal law enforcement agencies to utilize UAVs to monitor the border since 2004 (Haddal & Gertler, 2010). Since 2006, the FBI has been conducting UAV operations including eight regional criminal cases and two national security cases, but no search warrants were issued in any of those cases (Kelly, 2013). At the local police level, Mesa County Sheriff’s Office is one of the 16 known COA holding agencies that currently employs UAVs for their operations. Their typical operational use includes crime scene photography, search and rescue, and firefighting related missions (Villasenor, 2013). In contrast, despite the fact that both Seattle Police Department and Los Angeles Police Department acquired the UAVs and the necessary COAs, they withheld the use of their UAVs due to a significant amount of vocal oppositions from concerned citizens (Clarridge, 2013; Serna, 2014).

Several local police department’s use of UAVs in their daily operations have been also witnessed by the media across the nation. For example, 2 police departments in Georgia, Cobb County Police Department and Gwinnett County Police Department have been utilizing UAV technology in serious traffic accident scene processing and mapping to facilitate a better understanding and reconstruction of the accident scene (Elliot, 2016; Parrish, 2016). The Modesto Police Department (in California) has integrated their crime-fighting UAVs to capture a running robbery suspect (Modesto police introduce UAVs to help fight crime, 2016). The ABC10 (Modesto police introduce UAVs to help fight crime, 2016) also notes that it costs police
departments over $650 an hour for a manned helicopter, but the three UAVs purchased by Modesto Police Department were only $5,000.

**Public Opinions on UAVs**

Over the last decade, numerous local and national surveys have examined several aspects of public opinions on UAV usage. Although most of these surveys have focused on military applications of this technology (e.g., drone air strike), a few surveys have explored public opinions on the domestic use of the technology, including policing activities. The results of the previous surveys in each of these areas are summarized below.

**Public opinions about UAV usage in military operations.** When people have heard about aerial UAVs, it is usually in the context of military operations (see Monmouth University, 2013). Within this setting, most of the national polls reveal that the American public is generally supportive of UAV usage, but the level of support varies by the nature of context, such as UAV activity type (e.g., monitoring vs. airstrikes) and its target (e.g. foreign vs. domestic targets). For example, nearly two-thirds (65%) of U.S. population support UAV use for launching airstrikes in other countries against suspected foreign terrorists (Brown & Newport, 2013). The Fox News (2013) also found that about three-fourths (74%) of their respondents approved of using “drones to kill a suspected terrorist in a foreign country.” However, Brown and Newport (2013) found that public support for drone airstrikes drops dramatically when the context is airstrikes on U.S. soil against American citizens even though the targets are suspected terrorists (i.e., 13% supporting UAV airstrikes) compared to attacks against suspected foreign terrorists in other countries (65%).

Public views about military UAV usage also varies widely across countries as well. For instance, in a global poll of 44 nations, the majority of residents in 39 countries oppose U.S.
drone strikes targeting extremists in countries including Pakistan, Yemen, and Somalia (Pew Research Center, 2014). The U.S., Israel, and Kenya are the only nations in this global poll where at least half of the public supported UAV use in this particular military context. A recent opinion poll suggests that about four-fifth (79%) on the U.S. population believes that U.S. airstrikes are the most effective than any other forces fighting against terrorists or extremists such as Islamic State (Newport, 2015).

The Pew Research Center (2015) also found some significant differences in public opinions on U.S. drone strikes in Iraq across various socio-demographic characteristics. They report that younger adults, females, and minorities are less supportive of U.S. drone strikes compared to their counterparts. Interestingly, the higher the education level (e.g., college graduate or some college experience), the higher the approval level of the U.S. conducting drone strikes. Furthermore, political affiliation differences emerged with Republicans being most likely to be supportive (74%) for using UAVs for attacks compared to Democrats (52%) and Independents (56%). Similarly, while only one-third (32%) of Republicans indicate that they are concerned about whether U.S. drone strikes endanger the lives of innocent civilians, there is a divide within Democrats (52%) and Independents (56%) (Pew Research Center, 2015).

Public opinions about domestic UAV usage and its use for policing activities. For the past few years, the level of general awareness of domestic UAV use has significantly increased, and the Polling Institute at Saint Leo University (2015) reported that a majority of people (78.4%) are now either “somewhat” or “very aware” of UAVs (also see Eyerman et al., 2013). Furthermore, at least one-in-three (35.1%) Americans said they would like to own their own UAVs in the future and utilize them “to see their own property from heights” (32.7%), for their own “safety and security interests” (28.3%), and “to observe my neighbors” (11.7%) (Saint Leo
University, 2015). Interestingly, although the survey showed the moderate level of the desire for ownership, many respondents also expressed a high level of concern (73.1%), indicating that they are “somewhat concerned” or “very concerned” about general use of UAVs in U.S. airspace (Saint Leo University, 2015).

As mentioned earlier, there are a handful of empirical studies on public attitudes toward law enforcement use of UAVs in the U.S. Nevertheless, as the studies regarding the public perceptions about the U.S. military use of UAVs previously indicated, the level of public support for law enforcement use of UAVs also varies by the context of its use. For example, roughly half of the general population (ranging from 44% to 57%) favors U.S. police forces using UAVs to assist in their police work (Associated Press, 2012; Eyerman et al., 2013). A more recent poll conducted by Reuters/Ipsos (Scott, 2015) found that a majority of people support UAV use by law enforcement for solving crimes (68%) and deterring crimes (62%). Moreover, several different survey research studies (Monmouth University, 2013; Eyerman et al., 2013; Sakiyama et al., 2016; Heen et al., 2017) have consistently found that law enforcement UAV use for search and rescue operations is the most supported operation by the public (ranging from 88% to 94%), followed by crime photography (74-81%), tracking fugitives (67-70%), and monitoring international border patrol or homeland security purposes (64-76%). Not surprisingly, all studies also reported that only small minority of the population (23-34%) supports police UAV use to detect traffic violations (e.g., speeding). However, the level of support was significantly greater when the traffic monitoring was for the purpose of accidents or traffic flow (74-76%) (Sakiyama et al., 2016; Heen et al., 2017).

Sakiyama et al. (2016) suggest that respondents in the U.S. are far more supportive of UAV usage of reactive policing purposes (e.g., search and rescue operations, crime scene
investigation, tactical operations) where the strategic use is straightforward with a specific intent. In contrast, UAV use in proactive policing activities (e.g., detecting criminal activities, crowd monitoring), which requires the police to exercise a wide range of discretion, are less likely to be supported by the public. A more recent study conducted by Heen, Liebeman, and Miethe (2017) found that the strongest determinants of support for police UAV use are strong beliefs in police legitimacy (e.g., confidence, trust, respect in police) and in increase in public safety whether the policing strategy was reactive or proactive in nature. And perhaps most importantly, only in situations of reactive policing, are people not concerned about their personal privacy being diminished by police UAV use (Heen et al., 2017).

**Concerns regarding police UAVs.** In terms of public concerns regarding police use of UAVs, both the Associated Press (2012) and Monmouth University (2013) found that approximately two thirds of respondents (59% and 64%, respectively) are somewhat to extremely concerned about police departments (or any other law enforcement agencies) UAV use to monitor people. In particular, Lieberman et al. (2014) report that a slight majority of their survey respondents agreed that government (e.g., police agencies) UAV use to monitor people is “excessive surveillance” (73%) and “violates personal privacy” (70%), and they are less likely to believe that it increases “public safety” (39%) or their “personal safety” (33%). The same survey also found that less than half of respondents said UAV use by government agencies would be an injury threat from “user error” (42%) or “hackers” (39%) (Lieberman et al., 2014). Overall, the level of concerns about personal privacy correlate with public opposition to police use of UAVs, regardless of the type of surveillance activity (Sakiyama et al., 2016).
Nonetheless, some police departments are optimistic about gaining public support for their UAV use. For example, Hinesburg Police Department in Vermont, recently responded to an emergency incident in which a 12-year-old girl had gone missing. They launched an UAV for their searching operation. Although the girl was found by a local woman, a Hinesburg police officer stated that “[t]here is the aspect that Big Brother is watching you and invading your privacy. But in a situation like this…I’m pretty sure that the members of the community would overlook that” (Viglienzoni, 2016).

Other major concerns about police UAV use are related to location of use as well as technology effectiveness. Not surprisingly, a national online survey found that people are far more concerned about UAVs being used to monitor people’s activities around their home (Miethe, Lieberman, Sakiyama, & Troshynski, 2014; Sakiyama, Lieberman, & Miethe, 2017), compared to monitoring around their work or public places. Furthermore, a telephone poll conducted by Reason-Rupe (2013) reported that there was an even split (47% vs 47%) between those who believe they have the right to destroy an UAV if it flies over their property without their permission and those who do not. Aside from people’s concerns about using UAVs for surveillance by law enforcement agencies, the report indicates that citizens are also concerned about local police departments’ use of “drones, military weapons and armored vehicles for law enforcement purposes,” and over half of them think these uses are “going too far” (58%). Only 37% felt these types of technologies were “necessary” (37%) (Reason-Rupe, 2013).

The role of socio-demographic characteristics. In addition to the context of UAV applications, concerns about privacy, and the location of the UAV use, socio-demographic characteristics also contribute to the public receptivity to police use of UAVs. However, the results are somewhat mixed. Previous research has found that younger people with lower
incomes are less supportive of police use of UAVs for applications including detecting criminal activities and border patrol operations (Miethe et al., 2014). Another study conducted by Monmouth University (2013) found that black respondents are far less supportive of UAV use for border patrolling. They also found that the minorities (54% of blacks and 50% Hispanics, very concerned) are more likely to be concerned about their privacy than their white counterparts (39%) (Monmouth University, 2013). A more recent study, however, demonstrated that the significant effect of both age (i.e., younger people being more opposed) and race (i.e., blacks being more supportive) on overall support for UAVs are eliminated once adjustments are made for higher beliefs about UAV invading personal privacy and greater concerns for surveillance (Sakiyama et al., 2016). Nonetheless, far more blacks (77%) than Hispanics (60%) or whites (57%) believe that militarization of police is going too far (Reason-Rupe, 2013).

Although political party affiliation (i.e., Democrats, Republicans, Independent) has a moderating effect (indicating that Democrats tend to have the highest support for police UAV use), several other studies consistently found that belief in a government that emphasizes individual rights over public safety (i.e., libertarian views) is the strongest indicator for overall and application specific UAV use (Miethe et al., 2014; Lieberman et al., 2014; Sakiyama et al., 2016; Heen et al., 2017). Sakiyama et al. (2016) conclude that unlike age and race, the net effect of libertarian views on the public attitudes toward police use of UAVs are not affected by controlling for concerns regarding privacy and surveillance. In addition, Heen et al. (2017) also found that victimization experience in the past 3 years highly correlated with the greater level of support than non-victims. They argue that crime victims tend to be more fearful of crime and hence are more supportive of the utilization of police technology for crime prevention (Heen et al., 2017).
Consequently, the level of support for police UAV use appears to be driven by a wide array of factors including application context (or strategy), privacy concerns, location, as well as general views on police. Furthermore, these factors are often mediated by socio-demographic characteristics. Public receptivity for UAVs also appears to depend upon whether UAVs are used in both situations involving international (or military) or domestic (and law enforcement) use. In addition, attitudes are based upon (1) whether there are perceived impacts associated with the UAV use, and (2) who would be affected by them. While local residents support their local enforcement agency’s UAV use, that does not necessarily mean that they welcome all police UAVs in their vicinity. If the perceived impact is positively associated at the personal level, a resident’s level of support might be greater than the general population. From the utilitarian perspective, it is in our human nature to always want to minimize any personally perceived negative impact and maximize our own individual utility. In the present context, ‘negative impact’ can be regarded as any public concerns from the UAV use, and ‘individual utility’ can be perceived positive impact or benefit at the individual and community level from the technological integration.

Nevertheless, there is not yet any empirical research on how the perceived impact of police UAVs in different situations would have an effect on people’s attitudes toward police and police UAV use. Therefore, this research aims to clarify when and why people become concerned about police use of UAVs, and how these “when” and “why” factors merge into people’s receptivity towards the UAV use as well as their perceptions on police in general. In an effort to further elucidate the effect of a perceived impact on people’s attitudes, the following section will draw attention to two major frameworks, NOMBY/Social Dilemma and Integrated Threat Theory. The former will demonstrate how people’s rationality (i.e., negative opinions) is
induced in the course of their decision-making process, and the latter is a theoretical framework that puts emphasis on the role of threats on people’s attitudes.

**NOMBY and Social Dilemma**

Some things are always in the wrong place: Litter and weeds have this property by definition[;] so do taxicabs and policemen… All are generally thought essential to society – and yet widely opposed wherever they threaten to alright. (O’Hare, Bacow, & Sanderson, 1983, p. 1)

From time to time, unwanted projects or infrastructures are placed in or near residential communities. Highways, airports, landfill sites, hazardous waste and renewable energy facilities, or many types of human service facilities (e.g., homeless shelters, drug treatment facilities) have this characteristic, and a common reaction to them is often called “Not In My Backyard (NIMBY).” NIMBY is a pejorative phrase indicating any oppositional attitudes or negative reactions among local residents against unwanted projects in their community (Inhaber, 1998). Ranging from nuclear waste facilities to nursing homes, the framework has generated to empirically identify the role of the social and spatial construction of stigmatization (or known as socio-spatial dilemma) for unwanted projects or developments (Kraft & Clary, 1991; Lake, 1993; Wolsink, 1994; Takahashi, 1997).

The term I may call “Not Over My Backyard (NOMBY)” is an adapted phrase based on NIMBY for the sake of the unique technological capability of UAVs. Police use of UAV technology appears to be the epitome of this characteristic because of the fact that although the general public usually concedes that the UAV technology is necessary (Associated Press, 2012; Eyerman et al., 2013), they tend to show negative opinions about small UAVs flying near or over their own areas; including, literally their own ‘backyard.’ As previously mentioned, it has been demonstrated that these negative opinions resisting police UAVs are highly correlated with concerns related to privacy or surveillance (Sakiyama et al., 2016). Therefore, due to yet
unsolved problems including privacy and safety concerns regarding police utilizing UAVs in their operations, public opposition of UAV use for police operations is therefore conventionally ascribed as the NOMBY syndrome.

For many decades, social and behavioral scientists have been attempting to understand the gap between people’s attitude and behavior (Lemon, 1973; Fishbein & Ajzen, 1975; Wolsink, 1994; Devine-Wright, 2009; Haggett, 2011; Batel & Devine-Wright, 2015). The same criterion applies in reference to the NOMBY syndrome. According to Lake (1993), the NOMBY (i.e., NIMBY) framework demonstrates how “selfish parochialism generates locational conflict that prevents attainment of societal goals” (p. 87). Some scholars have claimed that the explanations to the opposition, however, are often due to their ‘rational’ decision-making process based on their personal interests, such as selfishness, ignorance, irrationality, parochialism, and prudence (Freudenburg & Pastor, 1992; Haggett, 2011; Batel & Devine-Wright, 2015). However, there are some empirical studies that failed to systematically support the NIMBY, and several scholars have urged for the need for a theoretical framework and conceptual variables for a better recognition of this framework (Devine-Wright, 2005; Wolsink, 2006).

Other scholars suggest that the NOMBY (or NIMBY) phenomenon is much more complex and is rather embedded in regional shifts in the economy, in provisions of public services, and in public perception of risks and threats posed to communities and residents (Takahashi, 1997; Lake, 1993; Wolch & Dear, 1993). Whatever the risks or threats, new projects or developments will be rejected if there is no commensurate benefit to the individual or to the community. It is also suggested that a lack of trust and confidence in project sponsors (in this case, police or law enforcement agencies) may also be the cause of the increased level of perceived risks and threats (Kasperson, 1986; Kraft & Clary, 1991). Specifically, distrust in a
project sponsor may lead individuals or a community to disbelieve any information received from the sponsor (including risks) and to reject assurances of safety.

Wolsink (2000) contextualizes NOMBY syndrome as **social dilemmas** from a psychological stand-point when speaking about the provision of ‘public goods’ (in this case, providing police services by using an UAV). **Social dilemmas** help to explain why some public goods are produced and some are not within our society, despite the fact most people in that society have a general consensus in favor of the public good and want them to be provided (Wolsink, 2000). Within a situation where **social dilemmas** occur, individual feels that the reward or payoff to each individual is superior than that of a cooperative one, regardless of what other people do (Smithson & Foddy, 1999). Based on this idea, if people refuse to ‘cooperate’ (or support) at all locations, police UAVs may not be launched anywhere, and this technological capability will be underused as a source for police operations, despite the general consensus in favor of it. The unintended consequence of **social dilemmas** is that, although the whole community might be better off if the public good was produced, this may be hindered due to each individual’s decision not to cooperate (or support). In the individual decision-making process, personal risks and benefits are constantly calculated (Wolsink, 2000), which eventually forms as an **individual rationality** (or self-interest) and is often compared with a **collective rationality** (or group or societal interest).

Given the **social dilemmas** approach, and assuming that law enforcement agencies desire to use the UAV technology in their daily operations, the law enforcement’s interest will be treated as **collective rationality** (or support for the UAV use in police daily operations) for the sake of the present study. This also means that people’s opinions will be treated as **individual rationality** (or self-interest), because as NOMBY is a characterization of public opposition, and
which is the current study’s primary focus. More specifically, the present NOMBY concerns will be seen when the advantages of a public good (e.g., police use of UAVs in daily operations that is publicly recognized as necessary) are, for the potential individuals or neighborhood community in areas where police UAVs are used, outweighed by (perceived) disadvantages (e.g., invasion of privacy, safety and liability concern, security of collected data, etc.).

In the context of the present NOMBY account, an individual rationality most likely overcomes a collective rationality. In this case, the individual rationality is purely based on individual’s concern regarding police using UAVs. What if, however, individual rationality was predominantly based upon personal or neighborhood safety from crimes? People then may have some favorable attitudes regarding police UAVs flying over their residences, as long as the use of the technology is an attempt to keep the community safe, or what can be defined as “Yes Over My Backyard (YOMBY).” In fact, studies suggest that people who express strong belief that their government should emphasize public safety concerns over protecting individual rights show stronger support for police UAV use (Sakiyama, Miethe, Lieberman, Heen, & Tuttle, 2016; Heen, Lieberman, & Miethe, 2017). Alternatively, if community members have a mutual understanding of the issue and reasonable concerns for police UAV use due to some risks or threats to community’s or community members’ welfare (e.g., personal privacy, excessive surveillance), a local opposition serves as a broader public interest. In this case, “Not Over Anybody’s Backyard (NOABY)” protest may be seen, which may potentially influence public policy or on promoting a cooperative search for solutions.

Therefore, the most relevant questions in a social dilemmas situation leading to NOMBY syndrome are either to clarify whether if it is about the individual or situational factors that affect people’s cooperating (or supporting) behavior. More specifically, it is important to ask if there
are any differences in the degree and nature to which individuals care for other people’s well-being compared to their own. The other relevant question is whether it is about the effect of changes in the payoff (e.g., risks, fear, threats) that changes people’s attitudes. In the social dilemmas literature, effects the of greed (for reward) and fear (for payoff) have been studied extensively, and there is a strong consensus that people are more willing to support and cooperate when greed or fear is minimized (Zeng & Chen, 2003). The present research will investigate the incompatibility of individual and collective rationality, as well as examine the perceived risks and threats from the police UAVs in order to determine factors associated with the NOMBY conflict in social dilemmas situation.

**Integrated Threat Theory**

Research indicates that threat is a central explanatory concept in numerous theories in the literature on intergroup bias and relations (Stephan & Stephan, 2000; Riek, Mania, & Gaetner, 2006). The affective component of the NIMBY construct is supported by empirical evidence that people react emotionally when faced with a threat to their community (Bachrach & Zautra, 1985). In the context of a NOMBY conflict, it is reasonable to assume that as the negative emotional reactions (e.g., fear, frustration) on invasion of privacy or personal safety rises so does the level of opposition. The original integrated threat theory (ITT), proposed by Stephan and Stephan (2000), is one of a few theories that describe the factors that lead to perceptions of intergroup threat, which in turn, has an influence on attitudes and behaviors. The fundamental idea of the theory is based on Pettigrew’s (1998) intergroup contact theory which focus on how people perceive societal and situational changes through intergroup contact determines the consequences of contact, particularly affective and behavioral outcomes. Similarly, ITT also presents how outgroup members resource use can cause some change in ingroup members’
attitudes and behaviors. Most importantly, the theory suggests changes in environment may be perceived as threatening because they may affect the well-being of ingroup members. Needless to say, the absence of threat means that people do not see any aspect of a situation or outgroup as negative, according to the theory.

**Original Integrated Threat Theory**

In the original theory (see Stephan & Stephan, 1996; 2000), threats were classified into four different types that play a role in causing prejudice in intergroup relations: *realistic threat*, *symbolic threat*, *intergroup anxiety*, and *negative stereotypes*. *Realistic threat* has its origin in realistic group conflict theory (RGCT) (see Sherif, 1966; Levine & Campbell, 1972) and concerns with perceptions of conflicting goals, competition, and threats to physical and economic well-being of the ingroup. Stephan and Stephan (1996) claim that while RGCT primarily concerns with competition for scarce resources (e.g., wealth, territory, natural resources), ITT encompasses any threat to the welfare of the ingroup in broader way and emphasizes perceived realistic threats because perception of threat can lead to prejudice, whether or not the threat is an actual one. It should be noted that Stephan and Stephan (1993; 2000) state that prejudice is considered to be negative affect associated with outgroups including negative emotional (e.g., hatred, disdain) and evaluative (e.g., disliking, disapproval) reactions towards the outgroup. The greater the perceived threat posed by the outgroup, the more negative attitudes toward the outgroup are expected to occur (Levine & Campbell, 1972; Stephan & Stephan, 2000). Similarly, a *symbolic threat* reflects perceived underlying group differences, such as differences in morals, values, beliefs, and norms. This type of threat is a threat to the “way of life” of the ingroup (Stephan & Stephan, 1996). Again, the more the ingroup’s morals,
values, and beliefs are challenged, the greater the negative attitudes of the ingroup toward outgroup will be.

The third type of threat is called intergroup anxiety, and it involves concerns of negative outcomes for the self, because of uncertainty about how outgroups behave toward the ingroup. This may cause ingroup members’ interaction with outgroups to be threatening (Stephan & Stephan, 2000). For example, in a study involving women’s attitudes toward men, Stephan, Demitrakis, Yamada, and Clason (2000) found that when female respondents feel a greater perceived anxiety when interacting with males, they are more likely to show negative attitudes toward men. The fourth threat is negative stereotypes. It generates threat by creating expectations concerning the behavior of the outgroup members. The relationship between negative stereotypes and negative outgroup attitudes has been observed across various research (Stephan et al., 2002; Pettigrew, 1998; see Hilton & Hippel, 1996). The original theory has been tested for different group relations, such as gender (Stephan, Stephan, Demitrakis, Yamada, & Clason, 2000), race (Stephan et al., 2002), immigrants (Stephan, Ybarra, Martinez, Schwarzwald, & Tur-Kaspa, 1998; Stephan, Ybarra, & Bachman, 1999), and homosexuals (Oswald, 2007). In addition, other target groups have been explained including people with terminal illness, obesity, religious and political outgroups, and the beneficiaries of affirmative action.

**Revised ITT (RITT)**

Although the original ITT has been well supported and applied in many research studies to provide a good understanding of the relationship between threats and outgroup attitudes, the model has been criticized for two main reasons (Riek, Mania, & Gaertner, 2006). First, the original model had lacks of clarity regarding the conceptualization of threats. Stephan and Renfro (2002) claim that the original version has less relevance to intergroup relations, and it
seems that intergroup anxiety occurs only at the individual level, whereas realistic and symbolic threats occur at the group level. Second, the number of antecedents and consequences of threat were too limited (Stephan, Renfro, & Davis, 2008). More specifically, the domains of each antecedent variable in the original theory were strictly limited to direct effect between groups and failed to include factors forming the core value of a group or a situational environment surrounding the groups. Furthermore, only one potential outcome of threats, prejudice, was considered as a consequence of threats in the original model. To address these weaknesses, Stephan and Renfro (2002) expanded the range of the theory with greater conceptual clarity by reconsidering the role of threats. In the revised theory, the new conceptual framework only contains realistic and symbolic threats, and made a distinction between threats to the individual and threats to the ingroup as a whole. Furthermore, various antecedents to intergroup threat (i.e., relations between groups, cultural dimensions, individual differences, situational factors), as well as consequences of threat (i.e., psychological and behavioral reactions) have been added to the original framework. Figure 1 shows the general model of the revised theory.
As noted earlier, realistic threats include any tangible threats to the very existence of the ingroup (e.g., safety, economic and political power), and symbolic threats are nontangible threats to the ingroup’s worldview (e.g., value, moral, belief). According to Neuberg and Cottrell (2002), although some threats can be directed toward the group, others are directed toward the individual. Both intergroup anxiety and negative stereotypes were hence excluded in the revised theory, because the former would appear to apply only at the individual level of threat and the latter may be either group or individual threats depending on perceiver and the context (Stephan & Renfro, 2002). In the present research on police use of UAV technology, the potential perceived threats – regardless of at individual or group level, or both – by police use of UAVs are risks to safety, due to technological/human errors, and/or invasion of privacy from domestic surveillance. Safety issues are considered to be realistic threat since they mainly concern about
ingroup’s physical well-being, whereas privacy concerns can be both realistic and symbolic threat because they may ultimately cause some negative impact on people’s norms and “way of life,” aside from territorial welfare.

In the revised theory, Stephan and Renfro (2002) added four domains of antecedents that can influence the perceived threats from outgroups: Relations between groups, individual difference variables, cultural dimensions, and situational factors. The definitions on each domain are described below:

- **Relations between groups**: As the original theory states, both intergroup conflict and substantial status inequalities may lead to the perception of threat. Although the revised theory adds the size of outgroup relative to the ingroup, this domain is not as applicable in a given relationship between the community and police in the present study, because the number of persons in a community is almost always bigger than the number of officers that serve within the community.

- **Individual difference variables**: In the original theory, strength of ingroup identity, negative personal contact, and outgroup knowledge are the variables to influence the perception of outgroup threats. The revised theory contains social dominance orientation and self-esteem. According to Social Dominance Orientation (see Pratto, Sidanius, Stallworth, & Malle, 1994), those who believe that the society should be hierarchical tend to feel more threatened by subordinate groups (Esses, Jackson, & Armstrong, 1998).

- **Cultural dimensions**: There are two variables that may influence perceived threats: individualism/collectivism and uncertainty avoidance. People from collectivistic society where greater emphasis is placed on status in relation to one another and
power distance tend to be more predisposed to perceived threats from outgroups than people from individualistic society. Also, people from cultures with uncertainty avoidance are prone to perceiving unfamiliar others/groups and uncertain or unknown situations as threatening.

- **Situational factors**: The original theory did not consider the situational factors and the threats were considered to be static in nature. However, in the RITT, Stephan and Renfro (2002) argue that threats are more likely to be highly dynamic and change across situations and over time. This portion of the revised theory was highly influenced by the intergroup contact theory, supporting the principal that a variety of situational dynamics has an effect on the quality of the intergroup contact (see Allport, 1954; see Pettigrew, 1998). Stephan and Renfro (2002) suggest that a number of relevant variables may influence the perceived threats including: the status and structure of ingroup and outgroup, the degree to which norms exist for the relationship, the ratio of ingroup and outgroup members, the setting in which the intergroup interaction occurs, the extent to which the interaction is structured, the goals of the interaction, and the cooperative (or competitive) nature of the interaction.

As previously mentioned, perceived threats can be at a personal or a collective level, or on both. According to Brewer and Gardner (1996), several studies have noted that the self contains two distinct components: individual (or personal) self and social (or collective) self. More specifically, intergroup relations can be broken down to 4 forms: Group-Group, Group-Individual, Individual-Group, and Individual-Individual. In the present study, the differing effects of perceived personal and collective threat by police use of UAVs will be examined. The degree to which a threat is salient is more likely to depend on how the intergroup relations are
constructed in any given context (Stephan & Renfro, 2002). For example, perceived collective threats are most likely to be salient than personal threats when the intergroup relations are constructed at the Group-Group level. Because police are not generally an individual entity, but instead are a group or organization formed by individual members called police officers, this form of outgroup will be measured as Group. Consequently, this study will only focus on two forms of relationships: perceived personal threat (Individual-Group) and perceived collective threat (Group-Group).

Although the original theory was developed to explain how prejudice is formed by threats, the RITT contains a much broader range of consequences. Leung and Stephan (1998) have noted that the consequences may be either psychological or behavioral in nature. Psychological reactions are predominantly internal and may contain both cognitive and emotional responses. Some of the cognitive responses are “changes in outgroup stereotypes, perceived homogeneity, or opposition to policies favoring the outgroup” (Stephan, Renfro, & Davis, 2008). Common emotional responses to threat include conflict, dissatisfaction, mistrust, hostility, anger, fear, and resentment. On the other hand, behavioral reactions are overt behaviors against outgroup or outgroup members, such as withdrawal, submission, negotiation, retaliation, aggression, strikes, and class action lawsuits (Stephan & Renfro, 2002; Stephan, Renfro, & Davis, 2008). Because the present study is only concerned with community members’ attitudinal reactions toward police, it will attempt to elaborate only on the psychological responses generated by perceived threats in a given context.

Although the general effects of threats are widely recognized, only a few studies have been conducted on the differing effects of personal and collective threats. In studies concerning national security and attitudes toward immigrants, perceived personal threat has more impact on
emotions compared to *collective* threat (Renfro & Stephan, 2002; Arian & Gordon, 1993). The results from a study on men’s attitudes toward women (Renfro & Stephan, 2005) found perceived *personal* threats made against individuals were directly associated with men’s negative attitudes toward women, while perceived *collective* threats were not. For example, those male respondents who pose greater perceived political/economical threats and value/belief differences from women, expressed more negative attitudes toward women. Ultimately, perceived reactions can be classified based on where attention is focused (Stephan & Renfro, 2002). Emotional reactions to *personal* threats are generally more likely to cause higher level of emotional anxiety and lead to inwardly focused emotions (e.g., fear, helplessness) that typically motivate intension to avoid or escape (Neuberg & Cottrell, 2002), or may result in some form of cognitive shutdown. In contrast, *collective* threats may result in more outwardly focused emotions (e.g., anger, resentment) that are directed toward the source of the threat (Stephan & Renfro, 2002).

*Collective* threat, therefore, may have more impact on policy formation or developing solutions to the threat, because the consequences of threat against the *collective* as a whole may reduce personal bias (Huddy, Feldman, Capelos, & Provost, 2002).

Despite the fact that several past research using the ITT framework have distinguished two types of threats – realistic and symbolic – and its impact on prejudice (see Stephan & Stephan, 1996; Stephan et al., 1998; Stephan, Stephan, & Gudykunst, 1999; Stephan, Ybarra, & Bachman, 1999; Curuseu, Stoop, & Schalk, 2007; Gonzalez, Verkuyten, Weesie, & Poppe, 2008), the present research primarily concerns about the directionality of threats. More specifically, the focus of the study is on the differing effect of *personal* and *collective* threats. Huddy, Feldman, Capelos, and Provost (2002) conclude that *personal* threats are more likely to arouse emotion, elicit fear, and motivate individual behavior designed to reduce risk. On the other hand, Sears
and Funk (1991) argue that people are in reality not driven strongly by self-interest, but rather they are able to separate self-interest and their support for a wide array of social and political issues. In situations involving police UAV use, it is yet unclear whether the directionality of perceived threats have an impact on people’s NOMBY (“Not Over My Backyard”) or NOABY (“Not Over Anybody’s Backyard”) attitudes. In contrary, it is also unclear whether YOMBY (“Yes Over My Backyard”) syndrome would ever occur depending on the situational differences. Therefore, there are competing predictions about the impact of perceived personal versus collective threats. An ‘other’ category (neither personal nor collective) was added to the design as a control condition in an attempt to confirm the imminent effect of both perceived personal and collective threat. For instance, other refers to some group in which people do not belong neither personally nor collectively. In the context of neighborhood and community, one’s own place where they reside is considered to be personal and their neighborhood is their collective area, whereas an area or neighborhood they have no personal connections would be other.

Finally, and importantly, the RITT model is more circular than linear. The consequences of threats contribute to the antecedents of threat and repeat in the model as the intergroup relations evolve (Stephan & Renfro, 2002). That is to say, people with negative attitudes toward outgroup and with a higher level of perceived threat may establish negative stereotypes and increase the strength of ingroup identification, which also may become a component of intergroup conflict and influence future perceptions of threats and its consequences, called prejudice.
CHAPTER 3

RESEARCH METHODS

This proposed study focuses on U.S. citizens’ perceptions regarding the effect of their world views on attitudes toward police and their level of receptivity to police UAV use. Using a sample collected through an online survey, participants answered a series of questions regarding their perceptions toward police, reactions to a given scenario, as well as their demographic characteristics. Detailed information about sample and methodology are presented in this section.

Research Procedures and Design

Participants and Procedures

The participants of the current study were recruited via Amazon’s Mechanical Turk (MTurk), a subsidiary of Amazon.com, for a nominal payment of $0.50. The electronic survey platform creates a sampling frame through their labor work force with a large panel of potential respondents. Although these samples are not perfectly representative of the general population, the demographic profile of MTurk’s samples are “at least as diverse and more representative of non-college populations” and “at least as representative of the U.S. population” compared to those from traditional samples and other online web-based platforms (Buhrmester, Kwang, & Gosling, 2011, p. 5; Paolacci, Chandler, & Ipeirotis, 2010, p. 411). Furthermore, Heen, Lieberman, and Miethe (2014), in their study about different online sampling approaches, conclude that online sampling platforms (i.e., Survey Monkey, Qualtrics, and MTurk) generally provide samples with “demographic attributes that are often within a 10% range of their corresponding values in the U.S. population,” but MTurk has the “lowest average discrepancy rate” across acquired demographic variables (p. 6). Those respondents who agreed to participate
in the research were redirected to *Qualtrics*, a web-based survey software, to complete the survey.

The national survey was administered during a 10-day period from April 19th to 28th. Data was collected from a total number of 574 respondents. Sixty-seven cases were excluded from the study due to incomplete answers. In addition, 5 respondents who answered that they were either currently police officers at the time of the survey or were previously police officers were removed from the sample, because they are threats to both validity and reliability in the context of ingroup/outgroup relations. Among 502 respondents, after excluding the incomplete response, 229 (45.6%) respondents identified themselves as female and 269 (53.6%) of them identified themselves as male, with the largest group of age category of 20-29 (33.3%) followed by 30-39 (29.9%). The largest race or ethnicity category was white or Caucasian (77.5%) followed by Asian (7.4%), black or African American (6.6%), and Hispanic (4.8%). More than half of the respondents (57%) stated that they acquire college degree or higher (e.g., MS, JD, PhD), and a slight majority of them (76.5%) were employed (either part- or full-time) at the time of the survey. They also tend to reside in urban areas (40.1% Pop. < 50,000 vs. 59.9% Pop. > 50,000) and live in low to medium income households (53.8% < $50,000 vs. 36.3% > $50,000).

**Research Design**

Once participants got to the website (www.qualtrics.com), they were given a questionnaire that began with instructions, followed by a consent form. On the consent form page, participants were asked to click the “Next” button if they affirm the information provided about the survey, agree to participate in the study, and are at least 18 years of age. They were first given a series of questionnaire items designed to measure *antecedent* variables, then an experimental scenario about police using a UAV for an operation, and were asked to answer
several questions indicating their reactions to police UAV use and their attitudes toward police. A socio-demographic questionnaire and questions measuring fear of crime were also included at the end. After completion of the item, participants were thanked and given a nominal payment for their participation. The series of questionnaire instruments are found in Appendix 1.

Measures

**Independent variables.** Based on the RITT model, there are four main exogenous antecedent variables (see Stephan & Renfro, 2002) that are believed to be associated with the increased level of prejudice.

**Antecedents.** Stephan and Renfro (2002) have classified the antecedents of threat into four major categories: *Intergroup relations, individual differences, cultural dimensions, experimental manipulations* (i.e., situational factors). Participants indicated their agreement with a list of 26 statements. All items were rated on a 7-point Likert scale anchored with 1 (*Strongly Disagree*) and 7 (*Strongly Agree*) or 1 (*Never*) and 7 (*Very Frequently*), respectively. Each type of antecedent and its items are discussed below.

**Intergroup relations.** Both original and RITT contain the ‘intergroup conflict’ and ‘status inequalities’ as antecedents of threat. A total of 7 items were drawn from several previous studies. Five of these items measure ‘intergroup conflict (IRIC)’ (Stephan et al., 2002; Rahim, 1983) and 2 items measure ‘status inequalities (IRSI)’ (Stephan et al., 2002). For example, the first question to each of the first-order latent variables are as follows: “Relationships between our community and police have always been characterized by conflict,” and “[p]olice have too much power in today’s society.” Respondents were asked to answer their level of agreement using a 7-point scale ranging from 1 (*Strongly Disagree*) and 7 (*Strongly Agree*).
**Individual differences.** To assess the individual differences, respondents answered questions regarding outgroup knowledge, social dominance orientation, and negative personal contact. A 6-item measure was employed to assess both ‘outgroup knowledge (IDOK)’ and ‘social dominance orientation (IDSDO).’ Research has shown that positive intergroup contact or relationships such as having trust or friendships are good indicators of greater level of outgroup knowledge, and it effectively contributes to reductions in intergroup prejudice (Pettigrew & Tropp, 2008; White & Abu-Rayya, 2012). The first 3 questions that focus on their perceptions of trust and ties in police are treated as indicators for outgroup knowledge (e.g., “In general, I trust the police,” “there are dependable ties between police and public”) (see Hurst & Frank, 2000; Reisig & Giacomazzi, 1998). The remaining 2 questions capture the level of social dominance orientation (e.g., “We have gone too far pushing equal rights in this country”) (see Sidanius, Liu, Shaw, & Pratto, 1994). The response format of the 6-item measure also consisted of a 7-point scale ranging from 1 (Strongly Disagree) and 7 (Strongly Agree).

Negative personal contact (IDNPC) with police were measured with a set of 6 items selected from the negative contact scale developed by Stephan et al. (2000; 2002). Respondents were asked to indicate the frequency that they have experienced a wide range of contact with police. Using a 7-point Likert scale, ranging from 1 (Never) to 7 (Very Frequently), participants were asked to indicate the frequency of the following types of negative contact with police: been treated as inferior, been insulted, been discriminated against, being harassed, been verbally abused, been threatened. Two positively worded items are also added to the scale in order to avoid bias (e.g., Being treated with dignity and respect), and these items were reverse coded.

**Cultural dimensions.** Variables including ‘individualism/collectivism (CDIC)’ and ‘uncertainty avoidance (CDUA)’ are the two major first order latent variables used to measure
the cultural dimensions variable. A 3-item measure of ‘individualism/collectivism’ was drawn from the Triandis’ Attitudes Scale (see Uleman & Lee, 1996; Triandis 1991; 1995). Although the original scale consisted of 6 items, 2 items were dropped because they were specifically referring to family members as the ingroup (i.e., “Aging parents should live at home with their children” and “When faced with a difficult personal problem, one should consult widely with one’s relatives”), and 1 item was dropped due to redundancy. Thus, 3 items were provided to respondents using the same 7-point Likert scale ranging from 1 (Strongly Disagree) and 7 (Strongly Agree). Two of the items that measure ‘individualism’ (e.g., “One should live one’s life independently of others as much as possible”) were reverse coded to reflect ‘collectivism’ (e.g., “One of the pleasures of life is to relate interdependently with others”). This is, because collectivists tend to place greater importance of their ingroups and hence more disposed to perceive threats from outgroups.

To capture ‘uncertainty avoidance,’ a measure that consisted of 3 items was used (e.g., “I tend to avoid uncertain or unknown situations”), and presented with the same 7-point scale (Hofstede, 1991; Jung & Kellaris, 2004). It might be expected that people from cultures that are heavily bound by laws, regulations, and social conventions where social environment is predictable are particularly prone to perceive threats toward unfamiliar people, groups, or situations. According to Stephan and Renfro (2002), “[i]n cultures where strong uncertainty avoidance is combined with strong collectivism, perceptions of outgroup threats would be expected to be very high” (p. 201).

Experimental Manipulations. Situational factors were experimentally manipulated in the present study. As previously noted, although threats were considered to be relatively static in the original ITT theory, the revised theory suggests the importance of the role of the setting in
creating threats. Vescio, Sechrist, and Paolucci (2003) also argue that situational factors are a strong and reliable mediator of antecedents and attitudes. In the context of public perceptions of UAV use by police, although it has been demonstrated that the public attitudes significantly vary by the context of its use, it is yet unclear whether people’s attitudes would be consistent depending on the circumstance (i.e., situational factors) that they are in and/or the degree and directionality of what they perceived as a threat (i.e., personal vs collective) from the police UAV use. Therefore, it is important to consider and incorporate the situational aspects to better understand the impact of police use of this particular technology.

To measure the differing effect of situationally unique conditions on people’s attitudes toward police and receptivity to police UAV use, a 2 (Situational Factors: Reactive vs. Proactive) × 3 (Threat Direction: Personal vs. Collective vs. Other) × 3 (Outcome: Positive vs. Negative vs. Ambiguous) experimental design was used. These experimental conditions were provided to participants with a paragraph-length scenario format about police using a UAV. The original story is based on an actual incident involving a UAV use by the Amory Police Department in Mississippi to catch a wanted suspect and all conditions were modified based on this story. All participants were asked to carefully read a short story regarding police using a UAV for their operation. All scenarios are kept as rigidly standardized as possible and only words that create distinct experimental conditions were changed. Participants were randomly assigned to condition using Qualtrics’ random assignment algorithm.

When distinguishing reactive versus proactive situations in policing strategies, two types of policing activities were incorporated into the current study: (1) Reactive Situation – “Locating apprehending fugitives” (e.g., suspect on the run) and (2) Proactive Situation – “Detecting criminal activities in open public places” (e.g., using UAVs to control high crime areas). These
scenarios were chosen because they are conceptually similar but constructively different, and hence appropriate for comparison in the current study. More specifically, these two types of policing activities tend to share a similar concept in a sense of the idea that crimes, in which people could feel fearful for their personal safety, may be occurring or have occurred near or around them. Nonetheless, they are constructively different because given the fact that one of the goals of proactive policing is to reduce fear of crime (see Moore & Brown, 1981; Moore & Trojanowicz, 1988), it is reasonable to assume that the fear among individuals would be greater when police are responding reactively to an existing crime situation, rather than when responding proactively.
Figure 2: Hypothesized RITT Model

Independent Variables
- 4 Antecedents Variables (Exogenous)
  - Intergroup Relations (i.e., intergroup conflict, status inequality)
  - Individual Differences (i.e., negative personal contact, outgroup knowledge)
  - Cultural Dimensions (i.e., individualism/collectivism, uncertain avoidance)
    * Situational Factor
  - Situational Factors (Endogenous)
    Level of Perceived Threats (e.g., excessive surveillance, violates personal privacy)
    ** Directionality of Threats

Dependent Variables
- Emotional State (e.g., hostility, resentment)
- Receptivity to Police UAVs (e.g., specific and general support)

* Situational Factor
  - Situational Factors (e.g., reactive v. proactive)
  ** Directionality of Threats (e.g., personal/individual v. collective v. other)
  - Outcome of the Situation (e.g., positive v. negative)
In terms of the directionality of threat, *personal, collective, and other* threat are treated as the second layer of experimental manipulations. These conditions were manipulated to determine whether the differing directions of potential threats (directed to an individual or a group) would have any contributions to participants’ attitudes towards police and police use of UAVs. ‘*Other*’ category (neither *personal* nor *collective*) was added to the design as a control condition in an attempt to confirm the imminent effect of both perceived *personal* and *collective* threat. These three conditions were distinguished by locations where actions occur in the story. For instance, the *personal* threat condition was delivered in a scenario as when police activities (whether *reactive* or *proactive* situation) occur “near your residence” and UAV is last seen near or over “your backyard,” whereas *collective* threat condition occurred “in your neighborhood” and UAV seen over “a resident’s backyard.” For the *other* category, the two distinct locations of the activity and UAV location are changed to “in a neighborhood; a resident’s backyard”, respectively. In addition, “[y]our local police department…” is changed to “A police department…,” in order to make the occurring story sound less personal and as remotely as possible. The hypothesized model is in Figure 2, where threats are broken into the three categories.

Finally, 3 types of outcome scenarios, *positive, negative, or ambiguous* were also added to the design. More specifically, the *positive* condition was assessed based upon the idea that a police UAV was successfully able to spot a criminal or criminal incident (regardless of policing strategies), whereas *negative* condition failed to do so. The *ambiguous* condition was added as a control condition in which no outcome information were specified to participants. According to Baron and Hershey (1998), human decisions or evaluations are often impacted by outcome information and it can play as an indirect role. Although the present research is interested in the
differing effect of policing strategies on people’s attitudes, the outcome information may also contribute to people’s decision making process.

Therefore, if a participant receives a condition of *Reactive Situation*, the scenario would be as follows:

[Your local police department / A police department in the U.S.] is chasing a robbery suspect [near your residence / in your neighborhood / in a neighborhood] on a Sunday night. They used a drone to help catch the wanted man. The police unit flew the drone over [your / the] neighborhood, and a local resident spotted the police drone flying over [your backyard / a resident’s backyard]. [After several minutes, the drone spotted the suspect, and police successfully apprehended the robber / After several minutes of the drone search, the police were unable to spot the suspect, which let the operation unsuccessful / The police used the drone for the several minutes in the capacity].

The description of the *Proactive Situation* read as follows:

[Your local police department / a police department in the U.S.] is trying to detect potential criminal activities [near your residence / in your neighborhood / in a neighborhood] on a Sunday night. They used a drone to control high crime areas. The police unit flew the drone over [your / the] neighborhood, and a local resident spotted the police drone flying over [your backyard / a resident’s backyard]. [After several minutes, the drone spotted a suspicious criminal activity, a potential break-in, and police successfully apprehended the suspect / After several minutes of the drone search, the police were unable able to spot any suspicious activity, which let the operation unsuccessful / The police used the drone for the several minutes in the capacity].

The main difference between *reactive* and *proactive* situation is that the crime occurrence has happened and a police is looking for the suspect in the former *reactive scenario*, whereas a police is proactively looking for potential criminal activities that have not yet occurred in the latter scenario.
**Perceived threats.** In the ITT framework, perceived threats are treated as independent variable endogenous to respondents’ reactions to police UAV use and police in general. After participants read the scenario, they were asked to indicate their level of concerns regarding perceived threats from police use of UAVs in each condition. To eliminate respondents’ potential bias and also to see the effects of perceived benefits from the police UAV use, some positively worded statements are also added to the scale. These items include whether the police UAV use in a given situation (1) increases public safety, (2) increases your own personal safety, (3) is an effective way of monitoring people’s activities, (4) is excessive surveillance, (5) violates personal privacy, (6) is an injury threat because of user errors, and (7) is an injury threat because of hackers (see Lieberman et al, 2014). A 7-point scale ranging from ranging from 1 (Strongly Disagree) and 7 (Strongly Agree) was used to measure responses.

**Manipulation checks.** In order to ensure the effectiveness of the manipulation of the experimental conditions, three questions were asked. First, participants were asked what the police department was doing in a given scenario. They chose from the options of (1) locating a fleeing robbery suspect, (2) detecting criminal activities, and (3) shooting crime scene photos. Participants were then asked where was the drone last seen in the scenario and asked to select from (1) over your backyard, (2) over a resident’s backyard in your neighborhood, and (3) over a resident’s backyard in an unspecified neighborhood. Finally, they were asked if the police operation using a UAV was either (1) successfully apprehended the suspect, (2) unable to spot anyone/anything, or (3) the scenario did not specify.

**Socio-demographic characteristics.** At the end of the survey, a series of demographic characteristic questions as well as other relevant items were asked and they were used as control variables in multivariate analyses. These items included participant’s gender, age, race or
ethnicity, education attainment, current employment status, urban and regional residency, residential mobility and characteristics, political affiliation and ideology, household income, general technological knowledge.

**Control variables.** In order to acknowledge and control pre-existing awareness, knowledge, and attitudes toward both drone technology and police in general, questions regarding respondents’ awareness, experience, and ownership of UAVs, along with short attitudinal questions (i.e., trust, effectiveness, confidence) about both UAVs and police were asked to participants. A question asking whether participants themselves or their immediate family members are police officers (see Frank, Smith, & Novak, 2005) were also asked and screened. Additional relevant questions include fear of crime (see Taylor & Hale, 1986), victimization experience (see Smith & Hawkins, 1973), and residential mobility and characteristics (see Sampson & Groves, 1989).

**Dependent variables.** In order to measure people’s attitudes toward police and police UAV use, participants answered a series of questions, including their emotional state and receptivity to police drone use.

**Emotional state.** Measure of attitudes toward police were adapted from the scales used in research testing both original and RITT (Stephan et al., 2002; 2002). Using a 7-point scale ranging from 1 (Not _____ At All) and 7 (Extremely _____), participants were asked to indicate the degree to which they felt 10 emotional and evaluative feelings toward police using a UAV in a given situation. These concepts include hostility, respect*, dislike, acceptance*, trust*, fear, helplessness, anger, optimism*, and resentment. Four positively worded items (words listed above with asterisk*) were reverse coded in order to form an index reflecting negative attitudes toward police.
Receptivity to police UAVs. Participants were also asked 2 sets of questions regarding their’ attitudes on a specific UAV activity by police and are distinguished by specific and general. The first question is whether they believe police should be allowed to fly UAVs in the scenario they were presented with. Responses were given using a 5-point scale ranging from 1 (Definitely SHOULD NOT BE Allowed) and 5 (Definitely SHOULD BE Allowed). This was also reverse coded to conceptually reflect the term ‘receptivity.’ The second set question requires participants to indicate their level of opposition toward different police UAV applications in a general format which is unrelated to the scenario they were given. The response options ranged from 1 (Strongly Oppose) and 5 (Strongly Support). These applications have been used in a number of previous studies (see Heen et al., 2017; Miethe et al., 2014; Sakiyama et al., 2016) and include (1) tactical operations, (2) detecting criminal activities in open public places, (3) locating or apprehending fugitives, (4) crowd monitoring at large public events, and the overall operational use as in (5) all areas of police work. Each application, except the last item indicating “all areas of police work,” was provided with a contextual example of how the UAV would be used. For example, “search and rescue operations” was provided with an example of “finding missing/injured persons” (see Appendix 1 for more detail). Lastly, after respondents completed the questionnaire, they were thanked and compensation was provided.
CHAPTER 4
RESULTS

The proposed research attempts to examine whether or not people’s attitudes toward police are affected by potential antecedents and/or level and type of threats created in the contexts of police UAV use. Based on the revised integrated threat theory (RITT), the present model was analyzed and evaluated using a series of three-way analyses of variance (ANOVA), confirmatory factor analyses (CFA), and structural equations modeling (SEM). First, a series of ANOVAs were conducted to measure the effect of the experimental manipulations (i.e., situational factors, threat direction, outcome) on the perceived threats, emotional state (i.e., hostility, respect, dislike, acceptance, trust, fear, helplessness, anger, optimism, and resentment) and receptivity to police UAV use for the given condition, as well as to different general police UAV activities. Next, a CFA was conducted in order to validate the constructs of the antecedents variables based on the RITT. Lastly, to capture the complete picture of the RITT model in the context of police UAV use, a series of SEMs were assessed including all major variables along with the socio-demographic characteristics. All preliminary analyses including ANOVA were conducted using SPSS 24, and both CFA and SEM were assessed by Mplus 7.4.

Manipulation Checks

First, manipulation checks were conducted to ascertain whether respondents perceived each experimental condition (i.e., situational factors, threat direction, and outcome) in the provided scenario as intended for this study. Chi-Square tests confirmed that all of the manipulations were successful, indicating that the majority of participants perceived all of the three conditions accurately. However, a total of 209 (42% of the total sample) participants were excluded from the subsequent data analyses due to participants providing incorrect answers or
not being able to accurately identify the given condition they were in. Although it may seem that large number of cases were excluded, it is imperative for participants to accurately perceive all conditions for the sake of this study. For Situational Factors ($\chi^2 [2, N = 497] = 288.77, p < .001$), 64 cases were removed (Reactive [13]; Proactive [48]; control category [3]), for Threat Direction ($\chi^2 [4, N = 501] = 415.17, p < .001$), 126 cases were removed (Individual [30]; Collective [33]; Other [63]), and for Outcome ($\chi^2 [4, N = 500] = 612.07, p < .001$), 79 cases were removed (Positive [10]; Negative [16]; Ambiguous [53]). This procedure generated 292 cases and they were used for further analyses. Although quite large number of cases were excluded from the sample, it was a necessary consequence and step in order to provide an accurate reflection of the situation to the dataset. This will be further discussed in detail in the discussion section and the Endnote$^5$.

**Factorial ANOVA**

In order to measure the effectiveness of the experimental manipulations, a series of three-way factorial ANOVAs were conducted. More specifically, based on the 2 (Situational Factors: Reactive vs. Proactive) $\times$ 3 (Threat Direction: Personal vs. Collective vs. Other) $\times$ 3 (Outcome: Positive vs. Negative vs. Ambiguous) model, the present analyses intend to examine the effects of the experimental conditions (i.e., situational factors, threat direction, and outcome) on respondents’ receptivity and attitudes toward police UAV use. Receptivity and attitudes to participants, referred emotional state, and specific and general receptivity to police UAVs$^6$. In addition, perceived threats was also added to the analyses because it is one of the variables that could be directly affected by the manipulations despite the fact that RITT treats this variable as an endogenous independent variable. Three composite dependent measures (perceived threats [ranging from 7 to 49], emotional state [10 to 70], general receptivity to police UAVs [4 to 20])
were created for this analysis. For example, on the *emotional state* composite scale, scores range from 10 (lowest negative emotional state) to 70 (highest negative emotional state). Although composite score variables were not used in the subsequent SEM analyses, they were used for these ANOVAs to construct each set of indicators as dependent measures.
Table 1: Three-Way ANOVAs for Attitudes toward Police UAV Use.

<table>
<thead>
<tr>
<th>Experimental Conditions</th>
<th>Perceived Threats</th>
<th>Emotional State</th>
<th>Specific Receptivity</th>
<th>General Receptivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$F$</td>
<td>$F$</td>
<td>$F$</td>
<td>$F$</td>
</tr>
<tr>
<td>Situational Factors</td>
<td>11.71 ***</td>
<td>13.19 ***</td>
<td>20.14 ***</td>
<td>0.19</td>
</tr>
<tr>
<td>Threat Direction</td>
<td>0.97</td>
<td>0.03</td>
<td>0.56</td>
<td>0.31</td>
</tr>
<tr>
<td>Outcome</td>
<td>8.35 ***</td>
<td>4.66 **</td>
<td>3.48 *</td>
<td>0.00</td>
</tr>
<tr>
<td>Interactive Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sit. Fact. × Threat Dir.</td>
<td>2.87 †</td>
<td>4.03 *</td>
<td>6.41 †</td>
<td>4.72 **</td>
</tr>
<tr>
<td>Sit. Fact. × Outcome</td>
<td>2.29</td>
<td>3.62 *</td>
<td>2.16</td>
<td>0.71</td>
</tr>
<tr>
<td>Threat Dir. × Outcome</td>
<td>0.46</td>
<td>0.70</td>
<td>0.94</td>
<td>0.10</td>
</tr>
<tr>
<td>Sit. Fact. × Threat Dir. × Outcome</td>
<td>0.56</td>
<td>1.79</td>
<td>0.93</td>
<td>1.07</td>
</tr>
</tbody>
</table>

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$. 
Main Effects

As Table 1 reveals, there were some significant effects on respondents’ receptivity to police UAV use. For example, the situational factors (reactive vs. proactive) showed statistically significant effects on all of the scenario related variables including perceived threats, emotional state, and specific receptivity to the police UAV ($p < .001$), indicating that people’s receptivity level was greater when the police UAV use was for reactive purposes. For example, the mean values for specific receptivity (scores from 1 to 5) between reactive and proactive situation were 3.66 and 2.94, respectively. This is consistent with previous research (see Sakiyama et al., 2016; Heen et al., 2017).

Surprisingly, the threat direction (individual vs. collective vs. other) had no main effect of people’s attitudes and receptivity across all measures ($p > .38$) (see Table 1). That is to say, the difference in the level of connection to the target of surveillance alone did not make a significant impact on participants’ reactions and receptivity, which does not support the hypothesis regarding threat direction.

The outcome (positive vs. negative vs. ambiguous), on the other hand, had some significant main effects on 3 of the 4 main dependent measures (i.e., all dependent variables except general receptivity to police UAVs) ($p < .001$), suggesting that the reactions and receptivity level was the lowest when the outcome of the scenario was unsuccessful because the police failed to apprehend the suspect. For example, the level of perceived threats was the greatest when the police UAV activity resulted in a negative outcome ($M = 28.28$), followed by ambiguous ($M = 26.85$), and positive ($M = 23.20$).
Interaction Effects

Although the threat direction had no main effect, there were significant two-way interaction effects between situational factors and threat direction on all of the dependent measures \((p < .01)\). It should be noted that the patterns and magnitudes of the interaction effects across all of the three variables that are related to the scenario appear to be remarkably consistent: perceived threats \([F (2, 271) = 2.874, p = 0.058, \eta^2_p = .021]\); emotional state \([F (2, 267) = 4.029, p = 0.019, \eta^2_p = .029]\); specific receptivity to police UAVs \([F (2, 274) = 6.413, p = 0.002, \eta^2_p = .045]\) (see Table 1). Thus, the overall effect of the interaction indicates that respondents in the other threat condition were far more likely to be receptive to police UAV use in a reactive situation and unreceptive in a proactive situation.
Table 2: The Effect of Situational Factors and Threat Direction on Primary Dependent Measures.

<table>
<thead>
<tr>
<th>Dependent Measures by Situational Factors</th>
<th>Individual</th>
<th>Threat Direction</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$ (SD)</td>
<td>$M$ (SD)</td>
<td>$M$ (SD)</td>
</tr>
<tr>
<td>Perceived Threat (7-49)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reactive</td>
<td>25.62 (8.66)</td>
<td>24.26 (10.62)</td>
<td>23.58 (8.69)</td>
</tr>
<tr>
<td>Proactive</td>
<td>28.34 (9.19)</td>
<td>25.56 (9.28)</td>
<td>30.08 (8.61)</td>
</tr>
<tr>
<td>Emotional State (10-70)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reactive</td>
<td>32.08 (13.05)</td>
<td>32.94 (14.66)</td>
<td>29.84 (13.97)</td>
</tr>
<tr>
<td>Proactive</td>
<td>39.02 (17.47)</td>
<td>34.69 (16.23)</td>
<td>41.09 (15.56)</td>
</tr>
<tr>
<td>Specific Receptivity (1-5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reactive</td>
<td>3.78 (1.21)</td>
<td>3.41 (1.42)</td>
<td>3.82 (1.25)</td>
</tr>
<tr>
<td>Proactive</td>
<td>2.94 (1.49)</td>
<td>3.27 (1.37)</td>
<td>2.43 (1.34)</td>
</tr>
<tr>
<td>General Receptivity (4-20)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reactive</td>
<td>15.43 (3.96)</td>
<td>14.51 (3.83)</td>
<td>15.29 (3.74)</td>
</tr>
<tr>
<td>Proactive</td>
<td>14.62 (4.00)</td>
<td>16.24 (3.74)</td>
<td>14.06 (3.96)</td>
</tr>
</tbody>
</table>

a Ranges of each (composite) score.
Table 2 compares the means for all the possible combinations for the situational factors and the threat direction interaction variable. Although all categories of threat direction had positive reactions toward the police (i.e., emotional state) and police UAV use (i.e., perceived threats and specific receptivity to police UAV) in a reactive situation, the degree of the differences between each category in the threat direction was widely varied. More specifically, respondents in the other condition generally had the most positive attitude in the reactive situation and the most negative attitudes in the proactive situation. As Table 2 shows, the mean differences were significantly smaller for both individual (M = 32.08 for reactive vs. M = 39.02 for proactive) and collective (M = 32.94 vs. M = 34.69) conditions compared to other condition (M = 29.84 vs. M = 41.09). As noted previously, this pattern was consistent for perceived threats and specific receptivity to police UAVs, indicating that respondents in the other condition had the most positive reactions toward police and the highest receptivity to police UAV use in a reactive situation and had the most negative reactions and the lowest receptivity in a proactive situation. The effect of this interaction on the general receptivity to police UAVs was mixed, though it was significant (p < .01). More specifically, although both individual and other conditions resulted in higher receptivity in a reactive situation and lower receptivity in a proactive situation, only the collective condition reveled the opposite effect.

Moreover, the outcome had an interactive effect with situational factors on the emotional state, F (2, 267) = 3.617, p = 0.028, η² = .026, indicating that attitudes toward police in response to police UAV use in the given proactive situation with negative (M = 41.26) or ambiguous (M = 40.43) outcomes are significantly more likely to be negative compared to positive outcomes (M = 30.90), regardless of who are being affected by the activity. Interestingly, however, the extreme mean difference was true only for the proactive situation and not for the reactive
scenario. The means in this condition were very similar ($M = 30.83$ for positive; $M = 33.10$ for negative; $M = 30.24$ for ambiguous).

**Post Hoc Comparisons**

Post hoc tests were conducted for *threat direction* and *outcome* because they both contain more than two categories. Tukey’s Honest Significant Difference (HSD) was used to verify the significance between each experimental category across all dependent measures. Because *threat direction* had no main effects on any of the dependent variables, the post hoc analysis showed no clear difference between *individual, collective, and other*. In contrast, a post hoc analysis for the *outcome* condition suggests that the overall mean differences were seen between *positive* versus *negative* and *ambiguous* throughout all dependent measures except *general receptivity to police UAVs* ($p < .05$). Not surprisingly, people’s receptivity and attitudes were far greater when the outcome was *positive* than when it was *negative* or *ambiguous*. The mean difference between *negative* and *ambiguous* did not differ significantly across all measures.

**Descriptive Statistics and Confirmatory Factor Analysis**

The descriptive analysis and confirmatory factor analysis (CFA) were used to understand and confirm the factor structure of the *antecedents* variables based on the RITT. Table 2 presents the latent variables of *antecedents* with each of their observed variables. The descriptive statistics results of the *antecedents* variables revealed normality of distribution for all of the measurements used in the current dataset. Although the attitudinal scale was slightly negatively skewed, it is common for attitude related measures (see Petty & Cacioppo, 2012). In terms of the *intergroup relations* between the public and police, the respondents seemed slightly more optimistic about their police in their community (i.e., “Relations between our community and police have always been characterized by conflict,” $M = 3.77$) compared to police in the U.S.
as a whole (e.g., “There is a police-citizen battle going on in this country,” \( M = 4.59 \)).

Nevertheless, at least a handful of respondents reported that they had “very frequently” experienced some form of negative contact (e.g., threatened, insulted, verbally abused) with police officers. Overall, the respondents in the current sample scored lower in the level of social dominance orientation, and leaning more toward individualism and higher level of uncertain avoidance.
Table 3. Latent Constructs of Antecedents and its Observed Variables' Descriptive Statistics and Standardized Factor Loadings.

<table>
<thead>
<tr>
<th>Latent Variables and Observed Antecedents Variables</th>
<th>Mean (SD)</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>Factor Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intergroup Conflict (IRIC)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relation conflict between community and police. (^b)</td>
<td>3.77 (1.68)</td>
<td>.08</td>
<td>–.99</td>
<td>–</td>
</tr>
<tr>
<td>Police-citizen battle in this country. (^b)</td>
<td>4.59 (1.64)</td>
<td>–.36</td>
<td>–.65</td>
<td>–</td>
</tr>
<tr>
<td>Cooperation between community and police. (^a)</td>
<td>4.53 (1.47)</td>
<td>–.27</td>
<td>–.37</td>
<td>0.91</td>
</tr>
<tr>
<td>Harmonious relationship to attain societal goals. (^a)</td>
<td>4.10 (1.55)</td>
<td>.03</td>
<td>–.66</td>
<td>0.83</td>
</tr>
<tr>
<td>Lack of mutual assistance.</td>
<td>4.13 (1.73)</td>
<td>–.23</td>
<td>–.98</td>
<td>0.73</td>
</tr>
<tr>
<td><strong>Status Inequality (IRSI)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Police have too much power.</td>
<td>4.20 (1.90)</td>
<td>–.13</td>
<td>–1.10</td>
<td>0.90</td>
</tr>
<tr>
<td>Great difference in status.</td>
<td>4.65 (1.69)</td>
<td>–.43</td>
<td>–.64</td>
<td>0.72</td>
</tr>
<tr>
<td><strong>Negative Personal Contact (IDNPC)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Been treated with dignity and respect. (^a) (^b)</td>
<td>5.26 (1.54)</td>
<td>–.83</td>
<td>.99</td>
<td>–</td>
</tr>
<tr>
<td>Been helped and received assistance. (^a) (^b)</td>
<td>5.13 (1.72)</td>
<td>–.76</td>
<td>–.27</td>
<td>–</td>
</tr>
<tr>
<td>Been treated as inferior.</td>
<td>2.87 (1.87)</td>
<td>.67</td>
<td>–.79</td>
<td>0.75</td>
</tr>
<tr>
<td>Been insulted.</td>
<td>2.51 (1.85)</td>
<td>.94</td>
<td>–.47</td>
<td>0.87</td>
</tr>
<tr>
<td>Been discriminated against.</td>
<td>2.13 (1.64)</td>
<td>1.44</td>
<td>1.06</td>
<td>0.87</td>
</tr>
<tr>
<td>Been harassed.</td>
<td>2.37 (1.85)</td>
<td>1.15</td>
<td>0.01</td>
<td>0.87</td>
</tr>
<tr>
<td>Been verbally abused.</td>
<td>2.20 (1.73)</td>
<td>1.41</td>
<td>.87</td>
<td>0.91</td>
</tr>
<tr>
<td>Been threatened.</td>
<td>2.12 (1.67)</td>
<td>1.40</td>
<td>.80</td>
<td>0.90</td>
</tr>
<tr>
<td><strong>Outgroup Knowledge (IDOK)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I trust the police.</td>
<td>4.37 (1.83)</td>
<td>–.31</td>
<td>–.91</td>
<td>0.90</td>
</tr>
<tr>
<td>I like the police.</td>
<td>4.73 (1.72)</td>
<td>–.49</td>
<td>–.67</td>
<td>0.94</td>
</tr>
<tr>
<td>Dependable ties between police and public.</td>
<td>4.51 (1.54)</td>
<td>–.31</td>
<td>–.41</td>
<td>0.84</td>
</tr>
<tr>
<td><strong>Social Dominance Orientation (IDSDO)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Too much equal rights.</td>
<td>2.57 (1.86)</td>
<td>1.01</td>
<td>–.14</td>
<td>0.73</td>
</tr>
<tr>
<td>Not a big deal if some have more chance than others.</td>
<td>2.45 (1.72)</td>
<td>1.10</td>
<td>.29</td>
<td>0.92</td>
</tr>
<tr>
<td><strong>Individualism/Collectivism (CDIC)</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Pleasure to be a part of a large group of people. (^b)</td>
<td>4.15 (1.63)</td>
<td>–.30</td>
<td>–.44</td>
<td>–</td>
</tr>
<tr>
<td>Decide what to do yourself. (^a)</td>
<td>4.58 (1.45)</td>
<td>–.41</td>
<td>–.07</td>
<td>0.79</td>
</tr>
<tr>
<td>Should live one's life independently. (^a)</td>
<td>4.55 (1.52)</td>
<td>–.33</td>
<td>–.40</td>
<td>0.56</td>
</tr>
<tr>
<td><strong>Uncertain Avoidance (CDUA)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prefer structured situations.</td>
<td>5.00 (1.57)</td>
<td>–.70</td>
<td>–.10</td>
<td>–</td>
</tr>
<tr>
<td>Avoid uncertain or unknown situations.</td>
<td>4.77 (1.63)</td>
<td>–.52</td>
<td>–.48</td>
<td>0.88</td>
</tr>
<tr>
<td>Feel stressful when not being able to predict consequences.</td>
<td>4.48 (1.67)</td>
<td>–.37</td>
<td>–.60</td>
<td>0.77</td>
</tr>
</tbody>
</table>

Note: Parentheses indicate labels for each latent construct.  
\(^a\) These items were reverse coded for CFA.  
\(^b\) These items were dropped from the final scales.
A CFA was conducted on all of the items for each construct of antecedents including intergroup conflict (IRIC), status inequality (IRSI), negative personal contact (IDNPC), outgroup knowledge (IDOK), social dominance orientation (IDSDO), individualism/collectivism (CDIC), and uncertainty avoidance (CDUA). The maximum likelihood method of estimation was carried out, which is appropriate for normally distributed dataset. As Table 2 illustrates, not all indicators loaded significantly on their respective latent construct variables. One item from the individualism/collectivism was removed because of a poor factor loading score (.234), which is far lower than the recommended value of .40 (see Hair, Anderson, Tatham, & Black, 1998). Five other items (see Table 2) were also excluded for a better goodness of fit after they were assessed not only throughout the entire model, but also within each construct and relative items for that construct to determine by particularly weak items, which is a recommended method by Hooper, Coughlan, and Mullen (2008). As a result, the individualism/collectivism scale was reduced from five to three, negative personal contact scale was reduced from eight to six, and uncertainty avoidance scale was reduced from three to two. The detailed information on the observed items and latent constructs of antecedents are displayed in Table 2.

In terms of reporting indices, Boomsma (2002) and Kline (2005) suggest to include Chi-Square statistics, the root mean square residual (RMSEA), the standardized root mean square residual (SRMR), and the comparative fit index (CFI). The current measurement model included seven latent variables, and the fit indices for the final measurement model provide evidence of plausible and stable. A Chi-Square test for goodness of fit revealed significant results, $\chi^2 (149, N = 292) = 458.17, p < .001$, which indicated an inadequate model fit. However, due to the restrictiveness of the Chi-Square tests that are sensitive to sample size, the decisions regarding model rejections should not be made solely based on its $p$-value (see Hooper, Coughlan, and
Mullen, 2008). Instead, one of the alternative indices to assess model fit using Chi-Square is Wheaton, Muthen, Alwin, and Summer’s (1977) relative/normed (i.e., $\chi^2/df$) Chi-Square. The recommended ratio value is as low as 2.00 (Tabachnick & Fidell, 2007) and the current model’s ratio is 3.07, hence it is adequate model fit. The CFI value of .93 indicates an acceptable fit, which is greater than the cut off criterion of CFI $\geq .90$ (Hu & Bentler, 1999). The RMSEA for the measurement model was .08, which is not excellent but acceptable fit (see MacCallum, Brown, & Sugawara, 1996). The SRMR value, defining the standardized differences between the observed correlation and the predicted correlation, was .06. The SEMR values less than .08 are considered good fit (Hu & Bentler, 1999). Taken together, the fit of measurement model indicates that these latent variables can be considered distinct constructs and provide convergent validity of the measures.
Table 4: Intercorrelations between Latent Constructs and Other Measures.

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<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. IRIC</td>
<td>1</td>
<td></td>
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<tr>
<td>2. IRSI</td>
<td>.57</td>
<td></td>
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<tr>
<td>3. IDNPC</td>
<td>.42</td>
<td>.53</td>
<td></td>
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<tr>
<td>4. IDOK</td>
<td>-.65</td>
<td>-.72</td>
<td>-.55</td>
<td></td>
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<tr>
<td>5. IDSDO</td>
<td>-.14</td>
<td>-.30</td>
<td>-.11</td>
<td>0</td>
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<tr>
<td>6. CDIC</td>
<td>.08</td>
<td>-.10</td>
<td>-.14</td>
<td>0</td>
<td>-.05</td>
<td></td>
<td></td>
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<tr>
<td>7. CDUA</td>
<td>.07</td>
<td>.08</td>
<td>-.05</td>
<td>0</td>
<td>.03</td>
<td>-.08</td>
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<td>8. Situational Factors (P)</td>
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<td>9. Threat Direction (O)</td>
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<td>10. Outcome (N)</td>
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<td></td>
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</tr>
<tr>
<td>11. Perceived Threats</td>
<td>.27</td>
<td>.38</td>
<td>.37</td>
<td>-.1</td>
<td>-.07</td>
<td>-.05</td>
<td>-.02</td>
<td>.17</td>
<td>-.03</td>
<td>.23</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Emotional State</td>
<td>.33</td>
<td>.42</td>
<td>.46</td>
<td>-.1</td>
<td>-.08</td>
<td>-.09</td>
<td>-.02</td>
<td>.20</td>
<td>-.02</td>
<td>.16</td>
<td>.82</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Spec. Receptivity</td>
<td>-.22</td>
<td>-.33</td>
<td>-.37</td>
<td>.05</td>
<td>.14</td>
<td>.12</td>
<td>.06</td>
<td>-.26</td>
<td>-.05</td>
<td>-.12</td>
<td>-.76</td>
<td>-.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Gen. Receptivity</td>
<td>-.35</td>
<td>-.46</td>
<td>-.46</td>
<td>.6</td>
<td>.08</td>
<td>.02</td>
<td>.10</td>
<td>.00</td>
<td>.03</td>
<td>.00</td>
<td>-.63</td>
<td>-.67</td>
<td>.65</td>
<td></td>
</tr>
</tbody>
</table>

*p < .10, **p < .05, ***p < .01.
a The correlations between latent (antecedents) and experimental variables were omitted because these experimental conditions were randomly assigned. Parentheses indicate labels for each condition.

Note: IRIC = intergroup conflict; IRSI = status inequality; IDNPC = negative personal contact; IDOK = outgroup knowledge; IDSDO = social dominance orientation; CDID = individualism/collectivism; CDUA = uncertainty avoidance.
Table 3 presents bivariate correlations among the constructs and other relevant measures. Because participants were randomly assigned to the experimental manipulations, the correlations within the manipulation conditions and with antecedents variables were omitted. More specifically, respondents’ pre-existing perceptions of police have no relation to them receiving any versions of the scenario, because they had no control over the random assignment. Therefore, the correlations between the antecedents variables and experimental conditions are meaningless. It is also important to note that due to the nature of the statistical analysis in which the directionality of causal relationship is tested, categories in ‘outcome’ experimental conditions were recoded. For instance, positive remained as 1, ambiguous was recoded to 2, and negative was also recoded to 3. All of the constructs within intergroup relations (intergroup conflict and status inequality) and individual differences (negative personal contact, outgroup knowledge, and social dominance orientation) were correlated with each other, indicating the more negative relations individuals have with the police, the greater the perceived individual differences between themselves and the police. Furthermore, they were all strongly correlated with perceived threats, emotional states, specific and general receptivity to police UAVs ($p < .001$) except social dominance orientation. Interestingly, cultural dimensions (individualism/collectivism and uncertainty avoidance) was not only uncorrelated with the majority of the other constructs (except individualism/collectivism, status inequality, and negative personal contact), but was also weakly correlated with the expected variables. Consistent with the previous ANOVA results, both situational factors and outcome were correlated with the expected variables except general receptivity ($p > .94$ and $p > .99$, respectively).
Although not presented in a table, there were some notable correlations between several socio-demographic characteristics, control variables, and antecedents variables. For instance, younger non-white males with lower household income identified negative intergroup relations (intergroup conflict and status inequality) and individual differences (negative personal contact, outgroup knowledge, and social dominance orientation) about police in their community. Consistent with the results of earlier studies, respondents who prefer a government that puts greater emphasis on individual rights over public safety also reported negative perceptions and experience with the police in their community. In addition, Republicans claimed the opposite and expressed positive perceptions and experience with the police, and they strongly believe in social dominance orientation. The correlation between the government preference that puts greater emphasis on individual rights and the Republican affiliation was negative but not significant ($p = .09$). Respondents who reside in areas with greater social disorganization, have higher fear of crime, and with previous victim experience also showed negative perceptions and experience of police. However, cultural dimensions (individualism/collectivism and uncertainty avoidance) had almost no correlations with the socio-demographic and other control variables.

**Structural Equation Modeling (SEM)**

In an effort to understand the underlying structural relations among the constructs and other variables, a series of SEMs were performed. As the results from the previous CFA showed, the goodness of fit in the following SEM analyses were evaluated based on the $\chi^2/df$ ratio, CFI, SRMR, and SEMR. The first tested model, Model 1, was based on the RITT model described by Stephan and Renfro (2002) without the inclusion of the experimental conditions (i.e., situational factors) to see the effect of the non-controlled antecedents variables. That is, each of the antecedent (intergroup conflict [IRIC], status inequalities [IRSI], negative personal
contact [IDNPC], outgroup knowledge [IDOK], social dominance orientation [IDSDO], individualism/collectivism [CDIC], uncertainty avoidance [CDUA]) latent variable served as the independent variables to predict reactions and receptivity toward police and police UAV use via the hypothesized mediator perceived threats.

The overall model fit of the proposed structural model (see Figure 3) was good ($\chi^2 = 507.64; df = 201; \chi^2/df = 2.53; CFI = .94; RMSEA = 0.07; SRMR = 0.06$), and therefore is appropriate for explaining the relationship between the variables. As shown in the Figure 3, all lines and arrows indicate significant relationships at $p < .05$. The standardized path coefficients from the perceived threats are significantly associated with emotional state, specific and general receptivity to police UAVs ($p < .001$). More specifically, as suspected, respondents with greater level of perceived threats from the police UAV use reported negative emotional state toward the police described in the scenario, and are less likely to be receptive to the specific police UAV use as well as to the general use for various activities by police.

In terms of the effect of antecedents variables on the explained variables, individual differences (containing negative personal contact, outgroup knowledge, and social dominance orientation) was strongly associated not only with perceived threats but also with emotional state and general receptivity. Specific receptivity was, however, only affected by perceived threats (standardized coefficient $= -.70, p < .001$). Negative personal contact was positively related to negative emotional state and general receptivity to police UAVs, outgroup knowledge had a negative association with perceived threats and positive association with general receptivity to police UAVs, and social dominance orientation was negatively associated with general receptivity to police UAVs. The results for these particular latent variables were consistent with the hypotheses derived from the RITT.
Figure 3: Model 1 (Path diagram with uncontrolled antecedents and its effect on perceived threat and other dependent variables)

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Note: Path coefficients are estimated standardized regression weights and bootstrap standard errors in parentheses; non-significant ($p < .05$) paths are not shown. IRIC = intergroup conflict; IRSI = status inequality; IDNPC = negative personal contact; IDOK = outgroup knowledge; IDSDO = social dominance orientation; CDID = individualism/collectivism; CDUA = uncertainty avoidance.
Within intergroup relations, only intergroup conflict obtained a significant relationship with perceived threats. Surprisingly, although intergroup conflict was positively correlated with perceived threats, its relationship flips when other variables are taken into account in the model. The maximum variance inflation factor was no more than 2.5, indicating low collinearity between the observed variables within the construct. Status inequalities had no significant effect on either perceived threats, emotional state, or specific or general receptivity to police UAVs. Similarly and as expected, based on the correlation results, neither of the latent variables within cultural dimensions (containing individualism/collectivism and uncertainty avoidance) had no associations with any of the explained variables.

The second model, Model 2 was based on the complete RITT and is also the hypothesized model that include experimental manipulations. Although the model strictly contained the reflective constructs as latent variables as recommended, estimation showed that the model was not identified. The modification indices in Mplus suggested that the standard errors of the model parameter could not be computed because of the problem associated with the uncertainty avoidance. As a result, uncertainty avoidance was excluded from the subsequent models because of its poor fit in the measurement model. As a result of this problem, Model 2 and the remaining models were computed without the inclusion of uncertainty avoidance, and individualism/collectivism became the only latent variable to serve as cultural dimensions.
Figure 4: Model 2 (Path diagram with antecedents variables including the experimental conditions, and its effect on perceived threat and other dependent variables)

Note: Path coefficients are estimated standardized regression weights and bootstrap standard errors in parentheses; non-significant ($p < .05$) paths are not shown. IRIC = intergroup conflict; IRSI = status inequality; IDNPC = negative personal contact; IDOK = outgroup knowledge; IDSDO = social dominance orientation; CDID = individualism/collectivism; Proactive = situational factors (reactive vs. proactive); Other = threat direction (individual vs. collective vs. other); Negative = outcome (positive v. negative).
The overall model fit of Model 2 after the removal of uncertainty avoidance was good ($\chi^2 = 504.91; df = 222; \chi^2/df = 2.27; CFI = .94; RMSEA = 0.07; SRMR = 0.05$). In this model, the association between intergroup conflict with perceived threats was eliminated, and all associations with perceived threats were made via individual differences (negative personal contact, outgroup knowledge, social dominance orientation) (see Figure 4). Among experimental conditions, situational factors had significant associations on all of the explained variables, indicating the proactive situation, in which privacy threat (or any other risks associating with the police UAV use) is presumptively greater, led to negative reactions to police and police UAV use. As expected (based on ANOVA results), threat direction had no effect on any of the expected measures. However, outcome had associations with perceived threats and general receptivity to police UAVs, which was slightly different from the results from ANOVA for its main effect.

Although the effects of the threat direction on perceived threats or all dependent measures were not expected, based on the aforementioned ANOVA results, the relationships between the interaction variable of situational factors $\times$ threat direction and the rest of the variables were anticipated. Therefore, the third model (Model 3) was assessed with the inclusion of the interaction variable ($P \times O$). Based on the ANOVA and Post Hoc results, considering the fact that other category produced the widest difference between responses to reactive and proactive UAV use, a composite variable of this interaction variable ($P \times O$) was created by multiplying recoded situational factors ($\text{reactive} = -1; \text{proactive} = 1$) by threat direction ($1 = \text{individual}; 2 = \text{collective}; 3 = \text{other}$).
Figure 5: Model 3 (Path diagram with all antecedents variables including the experimental conditions, and its effect on perceived threat and other dependent variables)

Note: Path coefficients are estimated standardized regression weights and bootstrap standard errors in parentheses; non-significant ($p < .05$) paths are not shown. IRIC = intergroup conflict; IRSI = status inequality; IDNPC = negative personal contact; IDOK = outgroup knowledge; IDSDO = social dominance orientation; CDID = individualism/collectivism; Proactive = situational factors (reactive vs. proactive); Other = threat direction (individual vs. collective vs. other); Negative = outcome (positive v. negative); $P \times O$ = interactive variable of situational factors (i.e., Proactive) and threat direction (i.e., Other).
The overall model fit was very good ($\chi^2 = 517.73; \text{df} = 240; \chi^2/\text{df} = 2.16; \text{CFI} = 0.95; \text{RMSEA} = 0.06; \text{SRMR} = 0.05$), especially because CFI values of 0.95 or above are considered a strong fit (Hooper, Coughlan, & Mullen, 2008). As shown in Figure 5, the associations between the antecedents and expected variables remained the same as Model 2. Negative outcome was also associated with perceived threats and general receptivity to police UAVs. Lastly, the interaction variable ($P \times O$) was positively associated with perceived threats, suggesting that respondents tend to express higher level of perceived threats from the police UAV use when other people are affected in a proactive situation.

**Direct and Indirect Effects**

Based on the RITT, perceived threats mediate the impact of expected variables on attitudes toward outgroup (see Stephan & Renfro, 2002). One of the major advantages of using SEM is the ability to identify all the relevant paths while ANOVA fails to do so (see Baron & Kenny, 1986). Therefore, in order to examine the mediating role of perceived threats on all dependent variables in the context of police UAV use, indirect effects were also compared with direct effects among latent constructs as well as experimental manipulations, which are all part of the antecedents affecting perceived threats according to the theory. Table 3 illustrates the unstandardized and standardized direct and indirect effects on reactions and receptivity toward police and police UAVs for the last two models (i.e., Model 2 and Model 3).
Table 5: Unstandardized and Standardized Direct and Indirect Effects on Attitudes toward Police and Police UAV Use.

<table>
<thead>
<tr>
<th></th>
<th>Model 2</th>
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<th>Model 3</th>
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<tr>
<td></td>
<td>$b$ (S.E.)</td>
<td>$\beta$</td>
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<td>$b$ (S.E.)</td>
<td>$\beta$</td>
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<td>Direct Effects</td>
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<tr>
<td>IDOK $\rightarrow$ Perceived Threats</td>
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<td></td>
<td>-3.24 (0.61)</td>
<td>-0.57 ***</td>
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</tr>
<tr>
<td>IDSDO $\rightarrow$ Perceived Threats</td>
<td>0.87 (0.41)</td>
<td>0.12 *</td>
<td></td>
<td>0.87 (0.40)</td>
<td>0.12 *</td>
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</tr>
<tr>
<td>Proactive $\rightarrow$ Perceived Threats</td>
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<td>0.17 ***</td>
<td></td>
<td>-1.51 (2.30)</td>
<td>-0.08</td>
<td></td>
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<tr>
<td>Outcome $\rightarrow$ Perceived Threats</td>
<td>2.64 (0.52)</td>
<td>0.24 ***</td>
<td></td>
<td>2.74 (0.52)</td>
<td>0.25 ***</td>
<td></td>
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<tr>
<td>P×O $\rightarrow$ Perceived Threats</td>
<td></td>
<td></td>
<td></td>
<td>1.23 (0.56)</td>
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<tr>
<td>Perceived Threats $\rightarrow$ Emotional State</td>
<td>1.13 (0.07)</td>
<td>0.69 ***</td>
<td></td>
<td>1.13 (0.07)</td>
<td>0.69 ***</td>
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<tr>
<td>IDNPC $\rightarrow$ Emotional State</td>
<td>1.30 (0.49)</td>
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<td>1.29 (0.49)</td>
<td>0.12</td>
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<tr>
<td>IDOK $\rightarrow$ Emotional State</td>
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<td>-0.19 *</td>
<td></td>
<td>-1.79 (0.87)</td>
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<tr>
<td>Proactive $\rightarrow$ Emotional State</td>
<td>1.13 (0.07)</td>
<td>0.69 ***</td>
<td></td>
<td>0.97 (2.61)</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>Perceived Threats $\rightarrow$ Specific Receptivity</td>
<td>-0.10 (0.01)</td>
<td>-0.68 ***</td>
<td></td>
<td>-0.10 (0.01)</td>
<td>0.69 ***</td>
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<tr>
<td>Proactive $\rightarrow$ Specific Receptivity</td>
<td>-0.34 (0.11)</td>
<td>-0.12 ***</td>
<td></td>
<td>-0.25 (0.27)</td>
<td>-0.09</td>
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<tr>
<td>Perceived Threats $\rightarrow$ General Receptivity</td>
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<td>-0.45 ***</td>
<td></td>
<td>-0.19 (0.02)</td>
<td>-0.45 ***</td>
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<td>IDNPC $\rightarrow$ General Receptivity</td>
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<td>-0.40 (0.16)</td>
<td>-0.14</td>
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<td>IDOK $\rightarrow$ General Receptivity</td>
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<td>1.01 (0.28)</td>
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<td>Proactive $\rightarrow$ General Receptivity</td>
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<td>0.43 (0.20)</td>
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<td>Indirect Effects</td>
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<tr>
<td>IDOK $\rightarrow$ Emotional State</td>
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<td>-0.39 ***</td>
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<td>-3.65 (0.84)</td>
<td>-0.39 ***</td>
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<tr>
<td>IDSDO $\rightarrow$ Emotional State</td>
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<td>0.98 (0.46)</td>
<td>0.08</td>
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<tr>
<td>Proactive $\rightarrow$ Emotional State</td>
<td>3.60 (1.04)</td>
<td>0.12 ***</td>
<td></td>
<td>-1.70 (2.59)</td>
<td>-0.06</td>
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<tr>
<td>Outcome $\rightarrow$ Emotional State</td>
<td>2.98 (0.62)</td>
<td>0.16 ***</td>
<td></td>
<td>3.09 (0.61)</td>
<td>0.17 ***</td>
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<tr>
<td>P×O $\rightarrow$ Emotional State</td>
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<td></td>
<td>1.39 (0.63)</td>
<td>0.19</td>
<td></td>
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<tr>
<td>IDOK $\rightarrow$ Specific Receptivity</td>
<td>0.33 (0.08)</td>
<td>0.39 ***</td>
<td></td>
<td>0.33 (0.08)</td>
<td>0.39 ***</td>
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<tr>
<td>IDSDO $\rightarrow$ Specific Receptivity</td>
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<td>-0.08 *</td>
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<td>-0.09 (0.04)</td>
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<tr>
<td>Proactive $\rightarrow$ Specific Receptivity</td>
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<td>0.15 (0.23)</td>
<td>0.05</td>
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<tr>
<td>Outcome $\rightarrow$ Specific Receptivity</td>
<td>-0.27 (0.06)</td>
<td>-0.16 ***</td>
<td></td>
<td>-0.28 (0.05)</td>
<td>-0.17 ***</td>
<td></td>
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<tr>
<td>P×O $\rightarrow$ Specific Receptivity</td>
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<td>-0.13 (0.06)</td>
<td>-0.18</td>
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<td>IDOK $\rightarrow$ General Receptivity</td>
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<td>0.25 ***</td>
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<td>0.60 (0.15)</td>
<td>0.26</td>
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<tr>
<td>IDSDO $\rightarrow$ General Receptivity</td>
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<td>-0.05 *</td>
<td></td>
<td>-0.16 (0.08)</td>
<td>-0.05</td>
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<tr>
<td>Proactive $\rightarrow$ General Receptivity</td>
<td>-0.59 (0.18)</td>
<td>-0.08 ***</td>
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<td>0.28 (0.43)</td>
<td>0.04</td>
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<tr>
<td>Outcome $\rightarrow$ General Receptivity</td>
<td>-0.49 (0.11)</td>
<td>-0.11 ***</td>
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<td>-0.51 (0.11)</td>
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<tr>
<td>P×O $\rightarrow$ General Receptivity</td>
<td></td>
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<td></td>
<td>-0.23 (0.11)</td>
<td>-0.12</td>
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*p < .05. **p < .01. ***p < .001.
The effects of *outgroup knowledge* (IDOK), *social dominance orientation* (IDSDO), *situational factor*, *outcome*, as well as the interaction variable of *situational factor* and *threat direction* (P×O) were all mediated by *perceived threats*. The greater the *outgroup knowledge*, constructed by the level of trust and likability toward police (i.e., *outgroup knowledge*), the lesser the *perceived threats* from the police UAV use in any given contexts. The indirect effect of *outgroup knowledge* led to positive *emotional state* and greater *specific and general receptivity to police UAV* use. Greater level of *social dominance orientation* caused a higher level of *perceived threats*, and *perceived threats* mediated the effect of *social dominance orientation* on all dependent variables, indicating negative reactions toward police and lower receptivity to police UAVs.

In terms of the experimental conditions, *proactive situation* and negative *outcome* tend to result in negative attitudes and are also mediated by *perceived threats*, which is consistent with the RITT except for *threat direction* (see Model 2 in Table 3). Although *threat direction* alone was not a predictor, the results for Model 3 indicated that the interaction variable of *situational factor* and *threat direction* (P×O) also had both direct and indirect effects on all of the dependent variables. It suggests that people tend to show more negative *emotional state* and lower receptivity to police and police UAV use in a *proactive situation* when the people being impacted by the UAV use are from an unspecified community (i.e., *other*) and not related to respondents in any clear matter. Taken together, the findings indicate that the people’s reactions and receptivity toward police UAVs are influenced mainly by *individual differences* and *situational factors* (i.e., experimental conditions), both directly and indirectly via *perceived threats*, consistent with RITT.
Alternative Model with Socio-Demographic Characteristics

To answer the last part of the final research question regarding the influence of the socio-demographic variables, an alternative model of SEM was assessed with 9 relevant socio-demographic variables based on the aforementioned correlation results. These variables are gender (Male), age (Age), race (White), income (Income), social disorganization (SD), political affiliation (Republican), political ideology (PI), fear of crime (FC), and victimization experience (VE) (the texts in the parentheses represent each variable in Figure 6). With the inclusion of these variables, the first model assessed the structural relationship with the uncontrolled antecedents variables that were kept until the final model (see Model 3) (intergroup conflict [IRIC], status inequality [IRSI], negative personal contact [IDNPC], outgroup knowledge [IDOK], social dominance orientation [IDSDO], individualism/collectivism [CDIC]). The model fit was satisfactory ($\chi^2 = 547.90; df = 228; \chi^2/df = 2.40; CFI = 0.92; RMSEA = 0.07; SRMR = 0.05$).

As Figure 6 demonstrates, the two strongest indicators were one’s political affiliation and political ideology, the belief in government that emphasizes more on individual rights or personal safety. More specifically, those who claimed themselves to be Republicans identified more positive intergroup relations (intergroup conflict and status inequality) and lesser individual differences (negative personal contact, outgroup knowledge, social dominance orientation) with police, while those who prefer a government that emphasizes individual rights voiced the opposite ($p < .01$). Further, younger respondents tend to recognize more intergroup conflict and showed less trust or likability (i.e., outgroup knowledge) toward police ($p < .05$). In terms of other socially influenced variables, the results suggest that both social disorganization
and fear of crime are associated with intergroup conflict ($p < .05$), and those with victimization experience tend to identify more negative personal contact with police ($p = .003$).
Figure 6: Model 4 (Direct path diagram with socio-demographic variables and the uncontrolled antecedents variables)

* $p < 0.05; \quad ** p < 0.01; \quad *** p < 0.001$

Note: Path coefficients are estimated standardized regression weights and bootstrap standard errors in parentheses; non-significant ($p < .05$) paths are not shown. IRIC = intergroup conflict; IRSI = status inequality; IDNPC = negative personal contact; IDOK = outgroup knowledge; IDSDO = social dominance orientation; CDID = individualism/collectivism.
Although the primary motive for the alternative model was to examine whether these socio-demographic variables would have moderating effect on the remaining response variables, the model fit was too weak to yield the overall prediction ($\chi^2 = 1170.13; \text{df} = 399; \chi^2/\text{df} = 2.93; \text{CFI} = 0.85; \text{RMSEA} = 0.08; \text{SRMR} = 0.12$). Yet, there are some important variables to mention that have an influence on the remaining variables. For perceived threats, white females with a greater belief on that individual rights should be emphasized by government perceived greater threats from police UAV use regardless of the situation. Interestingly, however, neither gender nor race had an indirect effect with perceived threats via any of the antecedents variables. Nonetheless, political ideology had some significant indirect effects on the level of perceived threats through negative personal contact and outgroup knowledge ($p < .05$), indicating that the stronger the belief people have in a government that emphasizes individual rights, the more likely for it is them to identify negative personal contact with police and show less trust and likability for police, which leads to a greater likelihood of perceiving threats from police UAV use. In contrast, Republicans with greater outgroup knowledge were less likely to feel threatened by police UAV activity.

Finally, and because of these significant effects of political ideology and political affiliation, the direct and indirect effects of these variables were further investigated on the remaining three dependent variables: Emotional state, specific and general receptivity to police UAVs. Political ideology had indirect associations with all dependent variables ($p < .05$). In consistent with the previous structural relationship regarding the indirect effect of political ideology on perceived threat, the present model further suggests that political ideology also leads to negative emotional reactions toward police, and lower level of both specific and general receptivity to police UAV use, and that these effects are mediated by negative personal
contact/outgroup knowledge and perceived threat. This was also true for Republicans (i.e., political affiliation) but only via outgroup knowledge \((p < .01)\). Although no direct effect of political ideology was found on emotional state and specific receptivity to police UAV use, it directly affected the general receptivity \((p = .02)\), which is consistent with previous research (see Sakiyama et al., 2016). No direct effects of political affiliation were found on any of the dependent variables.
CHAPTER 5
DISCUSSION

The primary purpose of this research was to investigate whether different forms of intergroup antecedents and perceived threats were associated with people’s reactions and receptivity toward police UAV use. These issues were explored in the context of RITT by Stephan & Renfro (2002). The present section provides a summary of the results, limitations and future directions of the study, as well as a general discussion including practical contributions and policy implications.

Findings

The present research provides some important findings to the following research questions: (1) Does a perceived threat to privacy have an impact on people’s attitudes toward police and police UAV use? (2) Are there any attitudinal differences when the privacy or any other relevant threats from police UAV use are directed personally versus collectively? (3) Are people’s attitudes toward police and police UAV use affected by situational factors (e.g., policing strategies, outcome), and if so, do these factors have a direct or indirect impact on people’s perceptions on police? and (4) After controlling for the influence of the structural relationships between perceived threats, antecedents (i.e., relations between groups, individual difference variables, cultural dimensions, situational factors) to intergroup threat, and people’s perceptions, will public attitudes be moderated by demographic or other socio-economic factors?

As expected, the level of perceived threats from police UAV use revealed a strong relationship between respondents’ negative reactions to police and lower level of receptivity to police UAV use. The results are consistent with previous literature involving threats and intergroup relations (e.g., Tajfel, 1982; Levine & Campbell, 1972), suggesting that threats
represent important predictors of negative attitudes toward outgroup (or prejudice). Nonetheless, although the level of perceived threats was expected to be higher when people feel a greater connection to the target of surveillance (i.e., perceived personal threat), the perceived closeness or direction of threat alone had no effect on any of the dependent variables. Instead, the direction of threat was significant only when it was combined with the situational factors, that is, the police intend to use the UAV for either reactive or proactive purposes. This is discussed in more detail below.

In terms of the structural model as a whole, the results from CFA and SEM analyses partially supported the theoretical and empirical propositions. First, observed latent variables from both intergroup relations and individual differences were highly correlated, indicating that the more participants possess negative views of intergroup relations between community and police, the more likely they are to have negative personal perceptions and experiences toward police. However, cultural dimensions had no associations with intergroup relations or individual differences suggesting that individualistic or uncertain avoidance features had no effect on people’s perceptions of police as an outgroup.

Surprisingly, the results from SEM indicate that only individual differences had a significant impact on perceived threats, as well as all the dependent measures. That is to say, pre-existing personal perceptions of police (e.g., direct experience, likability or trustworthiness) are a powerful effect on whether people will perceive a threat from police UAV use, and their overall receptivity toward police and police UAV use. When situational conditions were incorporated in the model, both situational factors and outcome showed strong net effects on subsequent variables, both directly and indirectly with perceived threats serving as a mediating factor. This suggests that when police use UAVs in a proactive manner, but are unable to
successfully accomplish the mission with a UAV, people tend to feel threatened by the UAV activity and express more negative reactions to police UAV use. This finding regarding situational factors (i.e., police strategies) is consistent with previous research (Sakiyama et al., 2016; Heen et al., 2017).

Most unexpectedly, as mentioned earlier, although threat direction had no direct or indirect effect on dependent variables, the situational factor and threat direction interaction had a significant effect on all key dependent variables, indirectly via perceived threats. Specifically, the level of perceived threats that occurs when police use UAVs proactively in neighborhoods that are not connected to respondents (i.e., other) was far greater, compared to situation when UAVs are used in areas directly connected to respondents (i.e., individual and collective). However, the level of perceived threats was the least when UAVs are used reactively to conduct surveillance in an area that respondents are not connected to. This finding contradicts the hypothesized argument that higher perceived personal threats (i.e., greater level of connection to the target of surveillance) is likely to elicit effects associated with threat, and its heightened sensitivity to threat will produce negative and oppositional attitudes toward police and police UAV use.

Finally, although there are several socio-demographic variables that had direct associations with antecedents variables, the political perception variables (i.e., political affiliation and ideology) were the only ones that had a moderating effect on the expected reaction variables, via antecedents (i.e., negative personal contact and outgroup knowledge) and perceived threats. For example, the more respondents support a government that emphasizes individual rights over personal safety, the more they report negative personal contact with police and less favorable attitudes toward police, which then leads them to perceive a greater level of
threat from police UAV use, and hence express more negative attitudes toward police, and have lower receptivity to police UAV use.

**Limitations and Recommendations for Future Research**

Because the current research design used MTurk for the sampling frame and Qualtrics for the survey platform, the many limitations of the current study are similar to previous studies’ limitations that have used a similar methodology. Factors such as sampling bias, time frame of the survey, and the particular wording of the survey items may implicit responses (see Miethe et al, 2014; Lieberman et al, 2014; Sakiyama et al., 2016; Heen et al., 2017). For example, by using a Web-based sampling technique, the results are often over or under representative of the true population. These self-selected group of representatives tend to be more educated and males (see Fricker & Schonlau, 2002). However, it should be noted that more recent studies suggest that the skewness in some demographic characteristics has been closing, especially in developed nations (Evans & Mathur, 2005). Nevertheless, future researchers might want to consider demographically balanced panels when utilizing web-based sampling frames. Despite some drawbacks that are common to web-based surveys, continuous efforts to improve the representativeness of web-based surveys have been offering a valuable approach to public opinion researchers and enormous potential in academic research and other relevant fields. The increased availability and popularity of the Internet, considerable reductions in both time and cost, as well as a variety of attractive features offered by the existing survey platforms have been producing quality data in various ways, and it will continue to do so.

Other limitations of the survey include timing and question wording. Pre-exposure to related topics or any form of distorted experience related to UAVs may produce biased opinions. When technological innovation is rapid, especially in this type of high-profile industry, some
level of pre-exposure is inevitable. During statistical analysis (ANOVAs), additional tests were conducted after controlling for some items that may reveal respondents’ pre-existing beliefs about UAVs including questions regarding their awareness, experience, and ownership of UAVs. However, controlling for these factors did not change the overall results.

Questions wording could also influence the validity of the survey. For example, Sakiyama et al. (2016) mentioned that some wording differences, such as ‘drone’ versus ‘UAV’ may affect survey responses, but they also report that their recent research found no major differences as a function of survey language. Similarly, although the ultimate goal of the RITT (and ITT) was to examine negative outgroup attitudes, the questionnaire presented to respondents contained many negatively worded items and questions. For example, in order to measure a latent variable of negative personal contact respondent might had experienced with police officers, the most questions were worded negatively (e.g., I have… “been insulted,” “been discriminated against,” or “been harassed”). Unlike other previous studies that utilized and tested this theory, however, the present research added more positively worded items and questions in every construct in an effort to negate the possibility of response bias.

**Additional Limitations**

In addition, there are some practical and theoretical limitations with existing measures that are unique to this research. First, after the manipulation checks, approximately 40% of the sample was excluded from the prospective analyses due to failure of the manipulations. Respondents may had a difficult time correctly identifying the other condition (from threat direction), followed by ambiguous (from outcome), resulted in deletions over 50 cases. Perhaps, the omissions may be due to the wording of manipulation check questions that correspond to each condition. More specifically, respondents who were provided the other condition and their
correct manipulation check answer to identify where the drone was last seen, would be “over a resident’s backyard in an unspecified neighborhood.” Similarly, those who received the ambiguous condition were supposed to answer “unspecified” to a question which they were asked whether the police operation using the drone was successful or not in the scenario. In both of these cases, when respondents were presented with unspecified information, they might have mistakenly assumed some type of condition or outcome was given, and selected one of the other response options. Although the instrument was pilot tested multiple times, and several changes to the wording and format were made, there appears to be some degree of confusion on these part of respondents. However, the explicit distinction between each condition within each manipulation was necessary in order to understand relationships between the situational context of police UAV use and its effect on the subsequent measures, as detail as possible. Therefore, the exclusions of these cases were inevitable and a necessary procedure.

Second, although the present research has examined negative attitudes toward police in the context of UAV use, it also examined the receptivity to police UAV use. A fundamental aspect of the (R)ITT is to study the cause of prejudice (or negative attitudes) toward outgroup or outgroup member(s), based on the level of perceived threats, as well as personal and intergroup characteristics. In other words, the theory has used to measure general attitudes toward outgroup, and not to measure attitudes toward particular activities by outgroup or outgroup members. In the present study, however, because the nature of the attitudes investigated were strictly limited to a particular contextual situation of police UAV use, it is only reasonable for the measures to be associated with the situation. Moreover, Pettigrew and Tropp (2006) argue that by concentrating on certain types of intergroup situations, it is possible to eliminate any potential attitudinal confounds resulting from situational or circumstantial differences and provide a clear
indication of the causal relationship between intergroup relations and negative attitudes. Therefore, the focus on the situational specificity in the present study may be a strength rather than a weakness.

Third, although there were strong relationships between perceived threats and a number of variables examined (e.g., intergroup relations, experimental conditions, emotional state), the relationships between cultural dimensions (individualism/collectivism, uncertain avoidance) and key dependent measures were weak. However, such cultural attributions and prejudice have been long known to be closely associated with each other (see Tajfel, 1982; Tajfel & Forgas, 2000). There may be a number of reasons for the discrepancy in the findings.

Primarily, poor item selection for both individualism/collectivism and uncertain avoidance scales may be responsible for the weak associations with all expected variables. In fact, even after one observed variable was removed from each latent variable due to a poor loading score during the CFA phase, the remaining observed variables’ loading scores remained lower than other sets of variables. The RITT, however, suggests that the people from collectivist and high uncertainty avoidance cultures are more prone to perceived threats from outgroup. Because the U.S. is known to be a much more individualistic and low uncertainty-avoidance culture (see Hofstede, 1984), we expected to see reverse relationships between cultural dimensions and key dependent measures. However, it is possible that collectivism and higher uncertainty avoidance could produce the expected negative relationship with perceived threats (according to the theory), but that may not mean that individualistic and low level of uncertainty avoidance will cause the reverse effect. Or perhaps, this particular construct of cultural dimensions may not be deemed suitable or reliable when studying attitudes toward police in the context of intergroup relations, because police are typically considered to be an authority
figures. Future research should further explore the effect of cultural dimensions and take these possibilities into consideration.

Lastly, the present research was unable to distinguish whether the attitudinal difference on situational factors – reactive and proactive policing strategies – was caused by the nature of policing strategy by itself or the level of perceived crime threats within each situation, or both. For instance, although we found a significant effect of situational factors on perceived threats, emotional reactions to police, and receptivity to police UAV use, indicating that respondents expressed more positive attitudes in a reactive situation, the present study failed to identify whether or not an alternate factor such as fear of crime potentially impacted responses. Therefore, it might be worthwhile in future research to break down the cause of perceived threats into different components.

Conclusion

Taken together, the findings of this research provide considerable support for the importance of perceived threats in the formation of negative attitudes toward outgroups (i.e., police), within the setting of intergroup relations between police and community. The present research also indicates that the more individuals perceive police as a threatening social group, the more likely that people are to have negative attitudes toward police and be less receptive police UAV use. Furthermore, from the NOMBY perspective, the present research has demonstrated that this phenomenon is far more complex due to the involvement of public perceptions of both direct and indirect risks and threats to community members, as well as trust and confidence in the outgroup (i.e., the police in this context) (see Takahashi, 1997; Lake, 1993; Wolch & Dear, 1993).
However, unlike previous research that has studied threats in intergroup relations, the present research was able to provide a unique perspective for several reasons. First, police were considered to be an outgroup in this research. Police are generally recognized as publicly respected authority figures. In contrast, previous research involving outgroup threats has focused on certain social minorities (e.g., Muslims, Mexican immigrants, LGBT, etc.). Nonetheless, the RITT’s theoretical model was able to adequately describe the structural relations of the police-community intergroup relations, and the role of threats in those relations. Second, the situational condition in the present experimental study was more specific with the use of the scenario-based experimental study, and hence the study was able to measure the level of receptivity to an activity of the outgroup along with the general attitudes toward the outgroup. Following the recommendations presented by Riek, Mania, and Gaertner (2006), the present study controlled the situational environment surrounding the group, which in this experiment consisted of multiple situational factors regardless of how UAVs were used, who was affected by their use, and what the outcome of using the UAVs was. Ultimately, the study produced three interesting and important findings in the context of police-community relations and the implementation of UAVs.

First, the present study found that individual differences were the most powerful cause of the perceived threats level, and ultimately negative reactions towards the police. The latent variable of Individual differences, constructed by negative personal contact, outgroup knowledge, and social dominance orientation, was designed to measure the quality of interpersonal relations rather than intergroup relations. The results, therefore, suggest that people tend to make attitudinal judgments about the police based on their personal view and quality of their previous intergroup interactions with the police, rather than the awareness of
existing intergroup conflict or status inequality (i.e., intergroup relations), or any other culturally associated factors. The finding strongly support the arguments of Sunshine and Tyler (2003) and Tyler and Bies (1990) that the quality of interpersonal treatment is salient to people’s support and cooperation for the police (and police activities), suggesting that there is a strong association between public support and police performance.

Second, the findings suggest that evaluations of police and police UAV use were also made on the basis of the outcome of the UAV activity, in so far as positive outcome (i.e., police apprehended criminals) produced positive attitudes among respondents. This is particularly interesting because, as previously mentioned, although people rely on their attitudinal judgment based on their interpersonal treatment, their evaluations are also impacted by activity outcome. From a utilitarian perspective, people tend to accept police UAV technology when they believe the police will use the UAVs in a way that is beneficial to the community or themselves despite the risks and threats caused by it. Furthermore, some scholars have argued that people view a project as effective when the project meets the original goals (Carroll, Ben-Zadok, & McCue, 2010; Poister, 1978; Skogan, 1976), which, in the present context, means apprehending criminals.

Finally, and perhaps most important of all, although the effect of threat direction (i.e., the level of connection to the target of surveillance) had no direct effect on the prospective variables, it became significant when it interacted with policing strategy (i.e., situational factors). More specifically, people’s attitudes become more extreme when the level of connection to the target of surveillance was farther away from them (i.e., other versus individual or collective). Thus, police UAV use to deter and manage crimes, like all other technologies, is a double-edged sword – it may be a beneficial to police as a crime fighting tool, but there might be some risks and
consequences, such as invasion of privacy. Depending on how people perceive these benefits and risks in a notion of “who is affected, and how?” people’s reactions to police and receptivity to police UAV use varies. There are some social psychological possible explanations for the motivations underlying people’s decision making process.

The fundamental underlying assumptions in people’s judgement value system when understanding collective action in social dilemmas are often explained by rational choice theory (see Ostrom, 1998) and social exchange theory (Yamagishi & Yamagishi, 1994). Both theories support the idea that people’s decision making process is based on maximizing personal gains and minimizing losses. In the present context, the willingness to support police UAV use is linked to perceived personal benefits and risks. Based on our findings, it can be understood that as people tend to support police UAV use when their own safety from crime is at stake; and vice versa, people tend to oppose police UAV use when their own privacy (or any other risks and threats potentially caused by police UAV use) is at stake. This type of self-interest bias is somewhat similar to people’s attitudes and beliefs about capital punishment. That is, some may support the movement to abolish capital punishment, but their view might change if a loved one was murdered. On the other hand, others may favor retention of capital punishment, but their view could change if a loved one (or they) were wrongfully convicted. The differences lie entirely in who the offender and victim were, and how one can be personally affected by consequences. Unlike Michael Dukakis’ second presidential debate in 1988, when he gave an emotionless yet consistent response to a capital punishment question that indicated his view on the capital punishment would not change even if his wife was raped and murdered, people’s attitudes may be much more circumstantial, inconsistent, and irrational.
In addition to the self-interest bias or gain-loss arguments, it is also possible that respondents in the survey may have been inclined to provide their own views as more in line with what they perceived as the ‘correct’ position. People say and do ‘socially desirable’ things at any given time. Attitudes are often used to demonstrate a desired social identity rather than a desire for a social change (Pratkanis & Turner, 1994; 1996). As Cooley’s (1902) concept of looking-glass self would argue, we may develop our correct (or desirable) and incorrect (or undesirable) perceptions on how others see us or how we perceive others see us. In the context of police UAV use in particular, people may have perceived that expressing more negative attitudes toward police and police UAV use in a proactive situation would be more appropriate. Although this study may not provide a solid evidence in support of the attitudinal gap between ‘self’ versus ‘others’ in the given circumstance, I argue that these findings contain important socio-psychological implications concerning police-community intergroup relations.

**Policy Implications**

The research findings contribute to our knowledge of the functional and enhanced relationship between the community and police in our society. In the context of police UAV use, a consideration of the role of threats from such technological use has important implications for changing negative attitudes toward police and police UAV use. Considering the fact that people had lower levels of perceived threat and greater receptivity for police UAV activity in proactive situations when they and/or their neighborhood were directly affected by it. Thus, people might sometimes view UAVs as an effective crime fighting technology rather than a privacy invading tool. Therefore, it might be helpful for local police departments to advertise the technological effectiveness of UAVs and educate their local community members about how this technology
can be useful for keeping the community safe. This approach may not only be effective in reducing the perceived threat, but also in increasing the receptivity level for UAV use by police.

However, because respondents exhibited lower receptivity to police UAV use in reactive situations, in which UAVs hover around respondents’ houses or in their neighborhoods, it can be argued that people may feel more threatened by the potential consequences from the aforementioned UAVs’ technological risks and limitations (i.e., privacy, user errors), when they perceive that the police UAVs can directly and negatively impact them. Therefore, it is exceedingly important for police departments to consider and implement countermeasures in response to the potential risks prior to the integration of this technology. For example, motion privacy functions such scrambling, pixelation, or encryption-based technology can be installed to the attached cameras depending on an environment and/or circumstance of the UAV usage. The use of these technologies would allow greater reductions of identifiable information collected from citizens. In terms of human errors and liability concerns, Dorset, Devon and Cornwall police departments (in UK) – colloquially called the “flying squad” – established the country’s first specialized drone unit with trained UAV pilots (First UK police drone unit launched in Devon, Cornwall and Dorset, 2017). By having a dedicated unit for UAVs with professional UAV pilots, police departments may able to reduce accidents and errors.

A bigger concern for police departments around the nation, however, may lie early on in the police-community intergroup relations. That is, to gain support for any policing activities or police in general from a group of people with an attitude of ‘NOABY (Not Over Anybody’s Backyard), because I don’t like the police.’ Our results strongly support the existence of this group of people. Unfortunately, we are living in an increasingly polarized society and the public is more divided over their feelings for the police (Worrall, 1999; Sunshine & Tyler, 2003), with
many racial and ethnic minority members expressing negative attitudes toward the police. From the intergroup relations perspective, the quality of contact is indeed a key in predicting evaluations of outgroup or outgroup members, as well as their activities. Sunshine and Tyler (2003) also suggest that people’s attitudes and their level of cooperation are strongly linked to their basic social values, the police legitimacy. They further note that procedural fairness is the primary antecedent of police legitimacy. The message that police departments might want to take into consideration is that community members may attribute more positive attitudes and greater support for policing activity, including police UAV use, when they perceive that they are treated with dignity and respect.
ENDNOTE

1While there should be a newer set of data available, the FAA has not updated their list of COA holders since 2013. The given information regarding the numbers of COA holders are the most current one that was available to the public.

2Freedom of Information Act (5 U.S.C. § 552) is a law that provides the public right to access for a full or partial disclosure of records from any federal agency. Upon request, the requester will receive the material in preferred format (e.g., printed, electronic form).

3After a respondent completes the questionnaire, an authentication code will be provided on the last page of the survey. The code will be used for a quality assurance purpose to make sure participants complete the survey. Once a ‘Requester’ (i.e., investigator) approves a submission, the Mechanical Turk automatically transfers their earning ($0.50 for this survey) to the participant’s account.

4The original story was released by WCBI, a local TV news station from North Mississippi (see Tally, 2016). Their website covered a story about a UAV being able to successfully assist a police operation on catching a criminal fugitive. The story included an actual statement from the Armory Police Chief, Ronnie Bowen, describing their actual UAV operation: “We put the drone in the air at 9:21 p.m., and did all of the area search on the west side of the highway, and then we crossed over, was unsuccessful there, so we crossed over the highway to the east side, and within two minutes of crossing over the highway, we had him spotted.” Each scenario was modified from his statement to fit the specific context of the experimental conditions.

5After the exclusion of the sample, several major analyses using ANOVA and SEM were conducted. The results were largely similar across all analyses, but dataset with the inclusion of
all respondents resulted in more number of significant dependent measures (or paths). It could argue that respondents might had perceived the manipulations correctly, but answered incorrectly on the manipulation check questions. As a result, the dataset without those respondents might had been largely impacted by the sample size.

For the general receptivity to police UAVs’ composite score variable in the three-way ANOVA, the first four items of the questionnaire (i.e. tactical operations, detecting criminal activities in open public places, locating or apprehending fugitives, crowd monitoring at large public events) were combined to form a composite score. The last item on the overall operational use in ‘all areas of police work’ should be conceptually weighted differently, and hence, was excluded from the measure.

Previous studies measuring prejudice or negative attitudes within intergroup relations never studied an authority figure like police as an outgroup. Outgroups have generally been societal minorities (e.g., Muslims, homosexuals, AIDS patients, etc.). Therefore, it is possible that cultural dimensions have no influence on perceived threats or negative attitudes if an outgroup has some level of societal power.
APPENDIX

Instruction for the survey as well as the consent form are available upon request.

Aerial drones are now used in several U.S. police departments for various police activities. These aerial drones are small, unmanned remote-controlled aircraft that provide eyes in sky for local police agencies.

First, we would like to ask a few things about your opinions about your opinions and views on police.

Q-1. Aerial drones are being increasingly used to monitor various types of activities in the United States. These areas of drone use include documenting land use patterns, aerial photography of climatic and vegetation conditions, monitoring highway traffic flow and crowd behavior, and observing people's activities for security purposes in public and private places.

Have you read or heard about using aerial drones for any of these activities?

   A. No, none of them.
   B. Yes, some of them.
   C. Yes, most of them.
   D. Yes, all of them.

Q-2. Please provide your general opinions about drone technology and police in your society, and indicate your level of agreement with the following statements: (1 = STRONGLY DISAGREE [SD] to 7 = STRONGLY AGREE [SA]).

<table>
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<tr>
<th>In general…</th>
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<th>1</th>
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<th>5</th>
<th>6</th>
<th>7</th>
<th>SA</th>
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<tbody>
<tr>
<td>a. I trust drone technology.</td>
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<td>b. I believe drone technology is effective.</td>
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<td>c. I have a confidence in drone technology.</td>
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<td>d. I trust the police.</td>
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<td>e. I believe the police are effective.</td>
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<td>f. I have a confidence in the police.</td>
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</tbody>
</table>
Q-3. Using a scale of 1 to 7, please indicate your level of agreement with the following statements: (1 = STRONGLY DISAGREE [SD] to 7 = STRONGLY AGREE [SA])

- g. Relations between our community and police have always been characterized by conflict.

- h. There is a police-citizen battle going on in this country.

- i. There is cooperation between our community and police.

- j. The relationship between our community and the police is harmonious in attaining the overall societal goals.

- k. There is lack of mutual assistance between our community and police.

- l. Police have too much power in today’s society.

- m. There is a great difference between the status of citizens and police in this society.

- a. In general, I like the police.

- b. There are dependable ties between police and public.

Q-4. Using a scale of 1 to 7, please indicate frequency of the following types of contact you have had with the police officers: (1 = NEVER [NV] to 7 = VERY FREQUENTLY [VF])

I have…

- a. been treated with dignity and respect.

- b. been helped and received assistance when needed.
c. been treated as inferior.  

d. been insulted.  

e. been discriminated against.  

f. been harassed.  

g. been verbally abused.  

h. been threatened.  

Q-5. Using a scale of 1 to 7, please indicate your level of agreement with the following statements: (1 = STRONGLY DISAGREE [SD] to 7 = STRONGLY AGREE [SA])

a. We have gone too far pushing equal rights in this country.  

b. This country would be better off if we worried less about how equal people are.  

c. It is really not that big a problem if some people have more of a chance in life than others.  

d. One of the pleasures of life is to be related interdependently with others.  

e. One of the pleasures of life is to feel part of a large group of people.  

f. When faced with a difficult personal problem, it is better to decide what to do yourself, rather than follow the advice of others.  

g. One should live one’s life independently of others as much as possible.  

h. I prefer structured situations to unstructured situations.
i. I tend to avoid uncertain or unknown situations.

j. I feel stressful when I cannot predict consequences.

Q-6. Please carefully read the following situation involving police using a drone and answer questions below.

_Situational Manipulation:_ 2 (Situational Factors: Reactive vs. Proactive) × 3 (Threat Direction: Individual vs. Collective vs. Other) × 3 (Outcome: Positive vs. Negative vs. Ambiguous)

**Reactive Situation:**

[Your local police department / A police department] is chasing a robbery suspect [near your residence / in your neighborhood / in a neighborhood] on a Sunday night. They used a drone to help catch the wanted man. The police unit flew the drone over [your / the] neighborhood, and a local resident spotted the police drone flying over [your backyard / a resident’s backyard]. [After several minutes, the drone spotted the suspect, and police successfully apprehended the robber / After several minutes of the drone search, the police were unable to spot the suspect / The police used the drone for the several minutes in the capacity].

**Proactive Situation:**

[Your local police department / a police department] is detecting potential criminal activities [near your residence / in your neighborhood / in a neighborhood] on a Sunday night. They launched a drone to control high crime areas. The police unit flew the drone over [your / the] neighborhood, and a local resident spotted the police drone flying over [your backyard / the resident’s backyard]. [After several minutes, the drone spotted a suspicions criminal activity, a potential break-in, and police successfully apprehended the suspect / After several minutes of the drone search, the police were unable able to spot any suspicious activity, which let the operation unsuccessful / The police used the drone for the several minutes in the capacity].
Q-7. Using a scale of 1 to 7, please indicate your level concerns with the following statements: (1 = STRONGLY DISAGREE [SD] to 7 = STRONGLY AGREE [SA])

In a situation you just read, the use of a drone by the police…:

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<th>SD</th>
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<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. increases public safety.</td>
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<td>b. increases your own personal safety.</td>
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<td>c. is an effective way of monitoring people’s activities.</td>
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<td>d. is excessive surveillance.</td>
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<td>e. violates personal privacy.</td>
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<td>f. is an injury threat from user errors.</td>
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<td>g. is an injury threat from hackers.</td>
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Q-8. Using a scale of 1 to 7, please indicate your feelings toward the police using the drone in the situation you just read: (1 = NO ______ AT ALL [NAA] to 7 = EXTREME ______ [E])

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<tr>
<th></th>
<th>NAA</th>
<th>1</th>
<th>2</th>
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<th>E</th>
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<tbody>
<tr>
<td>a. Hostility</td>
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<td>b. Respect</td>
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<td>c. Dislike</td>
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<td>d. Acceptance</td>
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<td>e. Trust</td>
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<td>f. Fear</td>
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<td>g. Helplessness</td>
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</table>
h. Anger

i. Optimism

j. Resentment

Q-9. Should the police be allowed to fly drones in the situation you read?

1. Definitely SHOULD BE Allowed
2. Probably SHOULD BE Allowed
3. Neutral
4. Probably SHOULD NOT BE Allowed
5. Definitely SHOULD NOT BE Allowed

Q-10. In general, do you OPPOSE or SUPPORT using these aerial drones in the following activities by police agencies? (1 = STRONGLY OPPOSE [SO] to 7 = STRONGLY SUPPORT [SS])

<table>
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<tr>
<th></th>
<th>SO</th>
<th>1</th>
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<tbody>
<tr>
<td>a. Tactical Operations for Officer Safety (e.g., active shooting situation, bomb scares).</td>
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<td>b. Detecting Criminal Activities in Open Public Places (e.g., patrol high crime areas).</td>
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<td>c. Locating or Apprehending Fugitives (e.g., suspect on the run).</td>
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<td>d. Crowd Monitoring at Large Public Events (e.g., sporting events, concerts).</td>
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<td>e. Aerial drones should be used in all areas of police work.</td>
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Q-11. Please answer the following questions about the scenario you read:

a. What was the police doing in the given scenario?
   1. Locating a fleeing robbery suspect.
   2. Detecting potential criminal activities.

b. Where was the drone last seen in the scenario?
   1. Over your resident’s backyard.
   2. Over a resident’s backyard in your neighborhood.
   3. Over a resident’s backyard in an unspecified neighborhood.

c. Was the police operation using the drone successful or unsuccessful?
   1. Successful
   2. Unsuccessful
   3. Unspecified

Q-12. Finally, a few questions about yourself and your personal opinions:

Q-12.1. Gender:
   A. Male
   B. Female

Q-12.2. Age Group:
   A. 19 or under
   B. 20 – 29
   C. 30 – 39
   D. 40 – 49
   E. 50 – 59
   F. 60 – 69
   G. 70 and older

Q-12.3. Race or Ethnicity:
   A. American Indian or Alaska Native
   B. Asian
   C. Black or African American
   D. Hispanic
   E. Native Hawaiian or Other Pacific Islander
   F. White or Caucasian
   G. Other (Please Specify: __________________)
Q-12.4. Highest Level of Education Completed:

A. Less Than High School Graduate  
B. High School Graduate or The Equivalent (e.g., GED)  
C. Some College  
D. College Graduate  
E. Post-Graduate Degree (e.g., MA, MS, JD, MBA, MD, PHD)

Q-12.5. Primary Employment/Activity Status:

A. Full Time Employed (30 or more hours)  
B. Part Time Employed (less than 30 hours)  
C. Unemployed  
D. Retired  
E. Student  
F. Volunteer  
G. Other (Please Specify:______________)

Q-12.6. Live in an Urban or Rural Area?

A. Large Urban Area (greater than 1 million population)  
B. Medium Size Urban Area (50,000 to 1 million population)  
C. Smaller Urban Area (2,500 to 50,000 population)  
D. Rural Area (less than 2,500 population)

Q-12.7. Length of time living in your current neighborhood:

A. Less than 1 year  
B. 1 to 5 years  
C. Over 5 years

Q-12.8. Please rate your current neighborhood on the following characteristics:

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neighbors helping and watching out for each other.</strong></td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td><strong>Physical decay and deterioration (rundown/vacant building, litter/garbage on street).</strong></td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td><strong>Frequency of residents moving in/out of neighborhood.</strong></td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td><strong>Ethnic/racial diversity of residents.</strong></td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Q-12.9. Place of Residency:

U.S. STATE

Q-12.10. Zip Code of Residence:

(XXXXX)

Q-12.11. Political Party Orientation – lean toward Democrat, Republican, or Independent?

E. Democrat
F. Republican
G. Independent
H. Other (Please Specify:________________)

Q-12.12. Would you prefer a government that puts greater emphasis on public safety or individual rights?

A. Public Safety
B. Individual Rights

Q-12.13. Annual Household Income:

A. Less Than $30,000
B. $30,000 to $50,000
C. $50,000 to $75,000
D. $75,000 to $100,000
E. $100,000 or More

Q-12.14. Rate your general knowledge of technology (e.g., computers, electronics, audio/visual technology):

A. Low Knowledge (e.g., I use this technology but don't know how it works).
B. Medium Knowledge (e.g., I use this technology and know a little about how it works).
C. High Knowledge (e.g., I use this technology and know how it works).
Q-12.15. How concerned are you about the following crimes happening to you? (1 = NOT CONCERNED [NC] to 5 = EXTREMELY CONCERNED [EC])

<table>
<thead>
<tr>
<th>Crime</th>
<th>NC</th>
<th>MC</th>
<th>EC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being robbed or mugged in the street.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Having someone break into your home.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Having your property damaged by vandals.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Having your car stolen.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Q-12.16. Have you been a victim of crime in the past 3 years?

A. No
B. Yes

Q-12.17. Has a family member and/or relative been a victim of crime in the past 3 years?

A. No
B. Yes

Q-12.18. Are you or any of your immediate family members a police officer?

A. No
B. Yes, I Am/Was A Police Officer
C. Yes, A Family Member Is/Was A Police Officer

Q-12.19. Have you ever had a positive or negative experience with drones?

A. Positive
B. Negative
C. Neutral
D. No Experience

Q-12.20. Do you own a drone?

A. No
B. Yes

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REFERENCES


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Saint Leo University. (2015). *More than one-third of Americans say they'd like to have a drone.* Pasco County, FL: Polling Institute at Saint Leo University.


CURRICULUM VITAE

MARI SAKIYAMA

EDUCATION

2011-Present  Ph.D. Public Affairs. University of Nevada, Las Vegas
2011           M.A. Criminal Justice/Criminology, University of Nevada, Las Vegas
2008           B.A. Criminal Justice/Criminology, University of Nevada, Las Vegas
2005           A.A. College of Southern Nevada
                A.S. College of Southern Nevada

EMPLOYMENT

2010-Present  Research Project Coordinator and Part-time Instructor, Department of Criminal Justice, University of Nevada, Las Vegas
2009-2010     Graduate Assistant (Part-time instructor for distance education), Department of Criminal Justice, University of Nevada, Las Vegas

PUBLICATIONS

Articles


Works in Progress

Sakiyama, M., Miethe, T. D., Lieberman, J. D., & Heen, M. S. J. Manipulated location of drone pictures and presentation of legal standards. (Target: Police Quarterly)

Sakiyama, M., Sousa, W., & Miethe, T. D. Transparency and trust on public perceptions about police use of body worn cameras. (Target: Police Quarterly)

Koetzle, D., Lieberman, J. D., Sakimaya, M., & Hurst, A. Policing in a web 2.0 world: A content analysis of police departments’ use of Twitter. (Target: Justice Quarterly) Technical Reports and Monographs

Technical Reports and Monographs


2014 Miethe, T. D., Lieberman, J. D., Sakiyama, M, & Troshynski, E. I. “Public attitude about aerial drone activities: Results of a national survey.” Submitted to the Center for Crime and Justice Policy, University of Nevada, Las Vegas, NV.

### ADDITIONAL TRAINING

2012  Inter-University Consortium for Political and Social Research (ICPSR) Summer Program  
Courses: Regression Analysis II: Linear Models, Methodological Issues in Quantitative Research on Race and Ethnicity, Data Mining, Missing Data

### RESEARCH and GRANT EXPERIENCE


2009-Present  Project Coordinator. *Patterns and Consequences of Police Departments’ Use of Social Media.* Principle Investigator: Deborah K. Shaffer. (University of Nevada).


### PRESENTATIONS

**Professional Presentations**

2017  **Sakiyama, M.,** Lieberman, J. D. & Miethe, T. “Not over my backyard!!! An experimental study of privacy issues and situational factors related to receptivity of police drone use” Accepted and will be presented at the Annual Meeting of the American Society of Criminology, Philadelphia, PA.

2016  **Sakiyama, M.,** & Lieberman, J. D., & Miethe, T. “Does location matter? The concept of privacy and public perceptions of UAV use for domestic surveillance” Presented at the Annual Meeting of the American Society of Criminology, New Orleans, LA.

2015  Olivia Tuttle, Lieberman, J. D., Miethe, T., **Sakiyama, M.,** & Heen, M. “Power of perspective: The effects of public perceptions of police and fear of crime on attitudes towards aerial drone use” Presented at the Annual Meeting of the American Society of Criminology, Washington, DC.
2015 Sakiyama, M., & Lieberman, J. D., & Miethe, T. “Big hover or big brother? Public attitudes on using drone technology for visual surveillance activities” Presented at the Graduate Research Symposium, University of Nevada, Las Vegas, NV.

2014 Sakiyama, M., & Lieberman, J. D., & Miethe, T. “Big hover or big brother? Public attitudes on using drone technology for visual surveillance activities” Presented at the Annual Meeting of the American Society of Criminology, San Francisco, CA.

2013 Sakiyama, M., & Lieberman, J. D. “Juror typologies and DNA comprehension: Who benefits from jury innovations?” Presented at the Graduate Research Symposium, University of Nevada, Las Vegas, NV.

2012 Sakiyama, M., & Lieberman, J. D. “Juror typologies and DNA comprehension: Who benefits from jury innovations?” Presented at the Annual Meeting of the American Society of Criminology, Chicago, IL.

2012 Sakiyama, M., Lu, H., & Liang, B. “Violent capital offenses and execution decisions in China: Are there any gender disparities?” Accepted at the International Conference on Law and Society, Honolulu, HI.

2012 Sakiyama, M., Shaffer, D. K., & Lieberman, J. D. “Status update: How campus police are using Facebook to communicate with the public” Presented at the Academy of Criminal Justice Sciences, New York. NY.


2011 Sakiyama, M., Shaffer, D. K., & Lieberman, J. D. “Facebook and the police: Communication in the social networking era.” Presented at the Graduate Research Symposium, University of Nevada, Las Vegas, NV.

2011 Lieberman, J. D., Shaffer, D. K., & Sakiyama, M. “Police departments’ use of Facebook: Is there social psychology behind the use of social media?” Presented at the 4th International Congress on Psychology and Law, Miami, FL.


2010 Sakiyama, M., Hurst, A. Shaffer, D. K., & Lieberman, J. D. “Facebook and the police: Communication in the social networking era.” Presented at the Annual Meeting of the American Society of Criminology, San Francisco, CA.
2010 Hurst, A., Sakiyama, M., Shaffer, D. K., & Lieberman, J. D. “Moving beyond the police blotter: Crime reports in the social media era.” Presented at the Annual Meeting of the American Society of Criminology, San Francisco, CA.

2010 Sakiyama, M., Hurst, A., Shields, D., Melchior, O., Shaffer, D. K., & Lieberman, J. D. “Following the lead of Barack Obama, CNN, and Ashton Kutcher: Police departments’ use of Twitter.” Presented at the Graduate Research Symposium, University of Nevada, Las Vegas.

TEACHING EXPERIENCE

Undergraduate Courses

- Introduction to Administration of Justice, University of Nevada, Las Vegas (Distance education)
- Quantitative Applications in Criminal Justice, University of Nevada, Las Vegas
- Research Methods in Criminal Justice, University of Nevada, Las Vegas (Distance education)
- Psychology and Legal System, University of Nevada, Las Vegas (Distance education)

ACTIVITIES and SERVICE

Service to the Department

- UNLV Department of Criminal Justice Alumni Association Council (2013-Present)
- Graduate & Professional Student Association: Criminal Justice Department Representative. (2010-2012)

Service to the Profession

- American Society of Criminology: Session Chair. (2010)

Reviewer

- Criminal Justice and Behavior
- International Journal of Offender Therapy and Comparative Criminology
- Law and Human Behavior (Student Editorial Board)
- Policing: A Journal of Policy and Practice

Activities

- The Honor Society of Phi Kappa Phi: Active Member (2013-Present)
- Honor Society Alpha Phi Sigma: Alumni Member. (2010-2011)
AWARDS and HONORS

2014  Dean’s Associates’ Funds, University of Nevada, Las Vegas
2014  Graduate & Professional Student Association, University of Nevada, Las Vegas
2013  Dean’s Associates’ Funds, University of Nevada, Las Vegas
2012  Dean’s Associates’ Funds, University of Nevada, Las Vegas
2012  Graduate & Professional Student Association, University of Nevada, Las Vegas
2011  Tuition Fellowship to attend University of Michigan ICPSR, 2011
2011  Outstanding Student Award, University of Nevada, Las Vegas
2010  Graduate & Professional Student Association, University of Nevada, Las Vegas
2010  Travel Award, University of Nevada, Las Vegas
2009  Recipient of Graduate Assistantship, University of Nevada, Las Vegas
2003  Honor Student Scholarship, Youth for Understanding, Tokyo, Japan

PROFESSIONAL AFFILIATIONS

Academy of Criminal Justice Sciences
American Society of Criminology
Law and Society Association
American Psychology – Law and Society