

Exploring Factors of Support for Red Light Cameras and Perceived Officer Quality

*Ji Seun Sohn, Ph.D.**

Associate Professor

*Criminal Justice, Department of Government and Sociology
Georgia College & State University*

Phillip Lyons, Ph.D.&J.D.

Professor, Dean and Director

*College of Criminal Justice
Sam Houston State University*

Jihong (Solomon) Zhao, Ph.D.

Professor

*College of Criminal Justice
Sam Houston State University*

David Webb, Ph.D.

Director

*Center for Advanced Policing, Henry C. Lee College of Criminal Justice
and Forensic Sciences
University of New Haven*

Scott Menard, Ph.D.(retired)

Professor and Researcher

*College of Criminal Justice, Sam Houston State University Criminal Justice
Institute of Behavioral Science, University of Colorado at Boulder*

Abstract

The purpose of this study is to explore the role of individual, geographic, and police service variables in predicting 1) residents' support of red light cameras and 2) residents' perceptions of officer quality through ordinary least squares analyses (OLS). Further, with confirmatory factor analysis (CFA) utilizing structural equation modeling,

* Correspondence concerning this article may be addressed to Ji Seun Sohn, Ph.D., Associate Professor Criminal Justice, Department of Government and Sociology, Georgia College & State University; e-mail: jiseun.sohn@gcsu.edu

* <http://dx.doi.org/10.36889/IJCJ.2020.12.2.2.005>

* Received 5 November 2020; Received in revised form 15 December 2020; Accepted 15 December 2020

the study retests previously identified significant relationships to consider a hypothesized link between the two latent variables (residents' support for the camera and their perceptions of officer quality). The study uses data from a 2008 survey of Houston residents. The results suggest, first, that police service variables are more predictive of both residents' perceptions than are individual and geographic variables (OLS results). Second, a significant link exists between the two perceptions (CFA results). Thus, the results indicate that if residents offer greater support of red light camera enforcement, their perceived quality of life becomes secure, leading to a better evaluation of the police. Red light camera enforcement has not been frequently observed in the context of quality of life. The findings add empirical evidence to the body of literature regarding traffic camera enforcement and residents' perceptions of police.

Keywords

Residents' Perceptions of Police, Officer Quality, Red Light Cameras, Traffic Enforcement, Disorder, Quality of Life

INTRODUCTION

Quality of life remains an ongoing agenda in the policing scholarship. The focus on quality of life problems has emerged from broken windows order maintenance strategies that regulate minor incidents, assuming a spiraling escalation from minor social disorders to more serious crime incidents (Wilson & Kelly, 1982). Further, the community policing philosophy transformed the role of police to one involving more social regulation and soft power, from the previous authoritative role they held (Goldstein, 1990). Therefore, the role of police today in ensuring residents' safe life experiences extends to a caregiving role. Many police departments focus on regulating both major crimes and minor problems in communities. For instance, the police are supposed to check residents' home security and be present in meetings with community members (Dansie & Fargo, 2009). Kelly and Moore (1988) expressed their regret that police had downplayed their order maintenance role, and researchers did not realize until the early 1980s that residents care more about disorders than crime.

Studies measured quality of life issues from disorders in neighborhood environments, such as abandoned cars/buildings, drug sales, vandalism, graffiti, vagrancy, public drunkenness, or loitering, which are not serious crimes (e.g., Dansie & Fargo, 2009; Reisig & Parks, 2000; Scheider, Rowell, & Bezdikian, 2003). Findings from England suggest that residents' confidence level in policing is rooted in neighborhood disorders, not residents' fear of crime. Thus, public perceptions of the police depended more on non-criminal disorders in the neighborhoods (Jackson & Bradford, 2009; Jackson, Bradford, Hohl, & Farrall, 2009), consonant with studies that found that minor disorders that affect the quality of life correlated with residents' opinions about the police (Innes, 2007; Innes, 2004; Scheider et al., 2003). A few, albeit interesting, studies point out that traffic problems are a core aspect of quality of life. One Canadian study reported that residents feared reductions in quality of life more than violent crime (Ruddell & Ortiz, 2015). Approximately half of the residents from this study identified traffic safety issues, particularly speeding and aggressive driving, as top priorities in need of police intervention. A similar finding has been reported in the U.S., where traffic enforcement aiming at speed control and aggressive driving

were identified as serious problems that concern residents the most (Boise PD, 2007; Coleman, 2005).

Non-criminal aspects that do not necessarily pertain to concerns about serious crime itself, but that pertain to concerns about disorders in neighborhoods have a stronger influence on residents' perceived quality of life. Thus, it is obvious that the police should be observant and address the quality of life related-problems to lessen residents' worries. Although limited scholarship directly addressed traffic disorders in the context of quality of life, to us, it is sufficient to make a hypothesized link that maintaining orders by traffic cameras is likely to increase the quality of life of residents and potentially lead to improved public satisfaction with the police. We have not encountered a wealth of evidence suggesting any relationship between residents' view of red light cameras and their opinion of police. If residents approve automated red light cameras to achieve greater security in their quality of life matters, is there a possibility that residents' perceptions of police become better? To answer these questions, we reviewed the key literature regarding residents' perceptions of police and traffic enforcement via red light cameras. We also searched for a link between residents' support of red light cameras and their perceptions of the police.

A Link Between Residents' Perceptions of Police and Red Light Cameras

For the past four decades, a rich body of literature has enhanced our understanding of residents' perceptions of the police (for reviews, see Avdija, 2010; Lai & Zhao, 2010; Luo, Ren, & Zhao, 2017; Orr & West, 2007; Sampson, 2006; Schafer, Huebner, & Bynum, 2003; Skogan, 2005; Weitzer & Tuch, 2005; Zhao, Lai, Ren, & Lawton, 2011). Since the beginning of community problem-solving era, a broader reform aimed at improving the entire neighborhood has been implemented. Thus, any problems that have affected the quality of life are potentially under scrutiny through a policing research lens. Theoretical concerns aside, an empirical question remains regarding whether greater traffic safety is attainable with red light camera enforcement.

Traffic safety is a concern of residents in almost all communities (e.g., Boise PD, 2007; Coleman, 2005; Kamyab, McDonald, Stribiak, Storm, & Anderson-Wilk, 2000; Scheider et al., 2003). Residents in Idaho identified traffic issues as the second most important service priority, after solving major crimes

(Coleman, 2005). One police department survey revealed a negative relationship between the public's view of traffic problems and their satisfaction with the police (Boise PD, 2007). In another study in Iowa, both residents and the police supported the use of red light cameras to reduce accidents to enhance the quality of life (Kamyab et al., 2000). In a survey of 12 cities in the United States, residents' ratings of the quality of life positively associated with their opinions of the police (Scheider et al., 2003). In Canada and England, traffic safety (Ruddell & Ortiz, 2015) and social disorders (Jackson & Bradford, 2008; Jackson et al., 2011) were the primary concerns of residents in respect of problems that affect the quality of life. Skogan (2019) empathized that police are a "public safety" function and wrote "during 2017, 17,284 Americans were murdered but more than 40,000 were killed in traffic accidents. Many lives are at risk daily on the traffic front, where the fundamental causes of concern are offenses involving speed and alcohol" (p. 163). As such, it is not surprising that residents' assessments of traffic problems (i.e., disorders on roads that can affect the quality of life) have a link to their opinions about police, because residents believe that police are responsible for taking care of such problems. To the best of our knowledge, there is little information on this relationship in the literature.

Residents' Perceptions of Police

There is a growing body of research on levels of residents' engagement in their communities (Gibson, Zhao, & Lovrich, 2002; Gibson, Zhao, Lovrich, & Gaffney, 2002; Sampson, 2006; Sampson, Raudenbush, & Earls, 1997; Schafter et al., 2003). Collective efficacy concerns the public's willingness to intervene when there is a need. It is assumed that in neighborhoods with high collective efficacy, the residents are more willing to collaborate with the police. Other related issues included informal control (e.g., controlling youths' behaviors, etc.), social cohesion (e.g., knowing one's neighbors' names, talking with neighbors, etc.), and integration (e.g., trusting neighbors, returning favors, etc.) (Gibson, Zhao, Lovrich, 2002; Gibson, Zhao, Lovrich, et al., 2002; Sampson et al., 1997). The results consistently suggest that residents who perceive fewer problems in their neighborhoods tend to have positive sentiments about the police. A weak support system in a neighborhood, however, often leads to poor evaluations of the police. The residents' sense of safety is another crucial predictor of the overall

satisfaction with police. Residents who believed they were safe in their neighborhoods during the day or at night were more likely to have positive ratings of the police (Reisig & Parks, 2000; Payne & Gainey, 2007; Weitzer & Tuch, 2005).

The variety and frequency of interactions between residents and police have been one of the most significant predictors of residents' satisfaction with the police (Adams, Rohe, & Arcury, 2002; Cao, Frank, & Cullen, 1996; Eck & Rosenbaum, 1994; Ren, Cao, Lovrich, & Gaffney, 2005; Skogan, 2005; Skogan, 2009). Walker and Archbold (2013) noted the importance of the internal review process to enhance police accountability. The authors write, "[T]he new police accountability involves more than the creation of new bureaucratic procedures, although they are important, but also the development of a new organizational culture willing to ask hard questions about its own operations" (p. 203). There is little doubt that a police department's ability to investigate its own employees would relate to a positive rating of it. Features measuring officers' attentive attitudes, prompt response time, and the provision of adequate staffing were likely to be significant predictors of residents' positive views of the police (Skogan, 2005; Weitzer & Tuch, 2005). Residents supported the police's more aggressive approach to traffic enforcement and crime fighting (Chermak, McGarrell, & Weiss, 2001; Weiss & Freels, 1996; Wilson & Boland, 1978), whereas police at traffic stops invited negative perceptions of the police (Madon, 2018; Reisig & Correia, 1997).

Another area that has attracted researchers' collective attention is demographic factors that predict residents' perceptions of police. In this regard, race or ethnicity has been the most researched demographic predictor. It has been well established that Whites rated police more positively than African Americans or Hispanics (Avdija, 2010; Cao, 2011; Lai & Zhao, 2010; Weitzer & Tuch, 2005; Weitzer, Tuch, & Skogan, 2008). Women were likely to be more supportive than men (Avdija, 2010; O'Connor, 2008; Weitzer & Tuch, 2005), and relatively older residents tended to hold more positive attitudes than their younger counterparts (Schafer et al., 2003; Weitzer & Tuch, 2005; Wu, 2014). Individuals with relatively higher educational attainment rated the police more positively than their counterparts (Weitzer & Tuch, 2005; Weitzer et al., 2008). Both direct and indirect victimization experiences were found to have negative effects on residents'

attitudes toward the police (O'Connor, 2008; Payne & Gainey, 2007; Ren et al., 2005; Zhao, Lawton, & Longmire, 2010). While a positive relationship with the media associated with positive public opinions of the police (Brown & Benedict, 2002; Jefferis, Kaminski, Holmes, & Hanley, 1997; Otto, 2000; Parrish, 1993; Weitzer & Tuch, 2005), unfavorable media coverage generally increased residents' skeptical opinions of the police (Lai & Zhao, 2010; Ren et al., 2005; Weitzer & Tuch, 2005).

Residents' Perceptions of Red Light Cameras

A study that evaluated red light cameras in U.S. cities reported that camera availability has led to a decline in traffic accidents (Hu, McCartt, & Teoh, 2011). The cameras were found to have improved public safety by reducing accident rates in two Virginia studies (Garber et al., 2005; Ruby & Hobeika, 2003). One systematic review has concluded that red light camera enforcement was effective in reducing traffic accidents and personal injury (Retting, Ferguson, & Hakkert, 2003). Studies in European countries reported equivalent findings, particularly with the use of automated speed and red light cameras (Blais & Dupont, 2005; Tavares, Mendes, & Costa, 2008).

To date, little research has incorporated residents' perceptions about red light cameras installed in the city streets in the context of policing study. An important goal of policing is to improve residents' quality of life by removing problems that can negatively affect the quality of life in neighborhoods. Road disorders, such as traffic infractions, speeding, and aggressive driving, are important aspects that can negatively affect the quality of life. The above studies reported that residents worried about disorders more than crime rates (Jackson et al., 2011; Scheider et al., 2003). Effective traffic policing has reduced accidents and fatalities (Bates, Soole, & Watson, 2012; Makowsky & Stratmann, 2011; Tay, 2009), which presumably increases residents' satisfaction with the police. Reducing accident rates was viewed as an important public safety agenda that police are responsible for (Skogan, 2019). Yet, few studies viewed the camera enforcement as a form of reducing disorders, thereby increasing quality of life.

Unlike findings about residents' perceptions of police based on actual interactions, traffic cameras may not require consideration of race/ethnicity and victimization experience because the automated nature of camera enforcement does

not rely on personal decision-making. One recent study noted that camera enforcement might not only ease the racial profiling issue, but also address concerns for socioeconomically marginalized residents (Eger, Fortner, & Slade, 2015). Relevant studies reported that the support of red light cameras was positively associated with age and that female residents were more likely than males to perceive the camera positively (Egbendewe-Mondzozo, Higgins, & Shaw, 2010; McCartt & Eichelberger, 2011; Porter & Berry, 2001). A few studies included residents' education in the analysis. Educational attainment negatively associated with support of traffic cameras (Higgins, Shaw, & Egbendewe-Mondzozo, 2011), and relatively educated people seemed to be cynical about traffic safety (Failde-Garrido et al., 2016). Researchers have also pointed out the media effect in determining residents' attitudes toward the police (e.g., Brown & Benedict, 2002; Lai & Zhao, 2010; Nix & Wolfe, 2016). We now live in the social media era; thus, many people actively post happenings in their life, whether those events are positive or negative. In this current social climate, the media's portrayal of the police as a predictor of residents' perception of red light cameras can be informative.

Research Purposes and Hypotheses

The first purpose of the study is to identify significant predictors of residents' support for red light cameras and their perceptions of officer quality. Demographic/individual predictors: (1) White, relatively older, female, relatively educated residents, residents who perceive media portrayal of the police to be fair, and residents who have not experienced crimes (either directly or indirectly) are more likely to have positive perceptions of officer quality. Geographic predictor: (2) There will be a difference in the five geographic locations (see details in Method) in residents' perceptions of officer quality. Neighborhood integration predictors: (3) Residents who perceive relatively higher neighborhood strength (commonly referred as collective efficacy) and neighborhood safety are more likely to have positive perceptions of officer quality. Service predictors: (4) Residents who have interacted with the police, who consider the police's ability to investigate its own employees, who think police has adequate staffing, and who are satisfied with traffic and drug/narcotic enforcement are more likely to have positive perceptions of officer quality.

We addressed residents' perceptions of red light cameras corresponding to the previous hypotheses for officer quality. Demographic/individual predictors: (5) Nonwhite, relatively older, female, relatively uneducated residents, and residents who perceive media portrayal of the police as fair are more likely to support red light cameras. Geographic predictors: (6) There will be a difference between the central downtown and noncentral areas in residents' perceptions of red light cameras (see details in Method). Service predictors: (7) Residents who have interacted with the police, who consider the police's ability to investigate its own employees, who think the police employed adequate staffing, and who are satisfied with traffic and drug/narcotic enforcement are more likely to support red light cameras.

The second purpose of this study is to explore a hypothesized linkage between these two perceptions. There is little research available regarding a link between residents' perceptions of the police (officer quality) and red light cameras as an important policing practice to reduce traffic accidents and improve residents' quality of life. To the best of our knowledge, a link between the two perceptions has not been studied, but there is empirical evidence (e.g., Kamyab et al., 2000; Ruddell & Ortiz, 2015; Skogan, 2019) that traffic safety can be a key means to enhance residents' quality of life. Thus, we posit that (8) there will be a positive association between residents' support of red light cameras and their perceptions of the police.

METHOD

Participants

A telephone survey of Houston residents was undertaken between May 1 and June 3, 2008 by the College of Criminal Justice at Sam Houston State University, located Huntsville, Texas. The Precision Research, Inc. data collection facility, located in Glendale, Arizona, conducted all telephone interviews using random digit dialing (RDD) via computer-assisted telephone interviewing (CATI) technology. The study used 834 cases that resided within the city limit. The residents were asked about their interactions with the police, neighborhood nature, satisfaction, and anticipation level of professionalism of the Houston Police Department (HPD).

Measures

Dependent variables

The two dependent variables were created from six ordinal variables (1=strongly disagree to 4=strongly agree): (1) the HPD officers are honest; (2) the HPD officers are hardworking; (3) the HPD officers are well trained; (4) the HPD officers are able to answer residents' questions; (5) I support the current use of red light cameras in the city; and (6) I approve the use of red light cameras at more intersections. By factoring these ordinal variables into two dependent variables, we attempt to create more scaled variables for later applications of OLS and CFA. The two new factors were associated with Houstonians' views on their police's characters and the usages of red light cameras (see Table 1). Eigenvalues of both factors were greater than 1. The two factors accounted for 74.19% of total variability.

Officer quality. The first component was created by the first four items, (3) well trained, (1) honest, (4) answer residents' questions, and (2) hardworking, accounted for 49.47% of the variance. The Cronbach's alpha for this scale was .82, indicating these four items have a high level of congruence to be one single item. The first factor was titled "officer quality."

Support the camera. The second component was created by the two items, (6) cameras at more intersections and (5) support the current use of cameras, accounted for 24.72%. The Cronbach's alpha for this scale was .91. The second factor was titled "support the camera."

Table 1. Exploratory Factor Analysis for the Dependent Variables

	Factor 1	Factor 2
Residents' evaluations on:	"Officer Quality"	"Support the Camera"
HPD officers are well trained	.817	.084
HPD officers are honest	.810	.181
HPD officers answer residents' questions	.793	.046
HPD officers are hard working	.769	.177
Eigenvalue = 2.97, % of variance = 49.47%, Cronbach's alpha = .82		
Approve more cameras at intersections	.124	.951
Support red light cameras in the city	.154	.944
Eigenvalue = 1.48, % of variance = 24.72%, Cronbach's alpha = .91		
Cumulative % of variance = 74.19%		

Note: Factor analysis with varimax rotation

Independent variables

Individual predictors. (i.e., demographic, victimization experience, and media). Ethnicity/race, gender, age, and education are demographic variables. Direct or vicarious victimization experience for the past 12 months was asked as a dichotomous variable. Residents' perceptions on the fairness of media portrayal of the HPD is an ordinal variable.

Geographic predictors. The study adopted both the HPD's patrol beat standard and the two main state highways dividing the Houston area into east and west (I-45) and south and north (I-10) to decide on the five areas. Thus, the study

organized Houston into the five areas, downtown central, northwest, northeast, southwest, and southeast to assess perceptions of officer quality. To evaluate residents' perceptions of red light cameras, the study compared the downtown central to the outside areas (northwest, northeast, southwest, and southeast) as dichotomous because red light cameras were installed in the outside more than central area.

Neighborhood integration predictors. The variable of neighborhood strength consisted of six ordinal variables, asking degrees of collective efficacy or social integration (e.g., Sampson et al., 1997; Zhao et al., 2010). The higher scores of this variable mean a higher neighborhood strength (Cronbach's Alpha=.72). Safety is a combination of two ordinal variables, asked if residents feel safe when residents were outside during day and night. The higher scores indicate higher perceived safety (Cronbach's Alpha=.63).

Police service predictors. Interactions with the police is a combination of three dichotomous variables, asking whether residents perceived the HPD officers' response as prompt and their level of involvement with residents and business owners. The higher scores of this variable indicate higher levels of interactions (Cronbach's Alpha=.64). Investigation is an ordinal variable asking the police's ability to investigate their own employees. Staffing is an ordinal variable about adequacy of police service. Satisfaction with traffic and narcotics/drug enforcement is a combination of two ordinal variables (Cronbach's Alpha=.61), questioning the police practices about traffic and narcotic/drug enforcements.

Research Design and Analytic Strategy

We need two approaches to solve the two central aims. First, the study identified significant predictors for Houston residents' perceptions of officer quality and their support of red light cameras using ordinary least squares analyses (OLS). Second, the study sought to clarify whether residents' support of red light cameras had an association with their perceptions of the police, while retesting all the previously identified significant predictors (from OLS models) simultaneously, using confirmatory factor analysis (CFA) completed by Mplus.

RESULTS

Descriptions of Independent Variables

Table 2 describes univariate analyses of independent variables. Approximately a half of residents were Whites ($n = 423$), the other half consisted of African Americans ($n = 203$), Hispanics ($n = 136$), and Others/ Asians ($n = 72$). More residents resided in the SW ($n = 288$) than NW ($n = 180$), Central ($n = 164$), SE ($n = 132$), and NE ($n = 70$). Numbers of male ($n = 422$) and female ($n = 412$) residents were similar. Residents' age (asked as an ordinal variable) averaged around forty (median:4, range:1-5). Most residents ($n = 633$) did not have victimization for the past 12 months, and more residents perceived the media portrayal of the police as fair (ordinal) (median: 3, range:1-4). More residents scored neighborhood strength higher (interval) (median: 19, range: 6-24) and perceived they were safe at day and night (interval) (median:5, range:2-6). More residents thought the police interacted with residents (interval) (median:2, range: 0-3) and trusted the police would investigate their own employees (ordinal) (median: 3, range: 1-4). While residents disagreed with the police's adequate staffing (ordinal) (median:2, range: 1-4), more residents satisfied with traffic and narcotic/drug enforcement (interval) (median:6. Range: 2-8).

Table 2. Descriptions of Independent Variables

Categorical Variables	Values	N	Percentage
Ethnicity/race	White	423	50.7
	African American	203	24.3
	Hispanic	136	16.3
	Others	72	8.6
Houston areas	Central	164	19.7
	Northwest (Outside)	180	21.6
	Northeast (Outside)	70	8.4
	Southwest (Outside)	288	34.5
	Southeast (Outside)	132	15.8
Gender	Female	412	50.6

Categorical Variables	Values	N	Percentage
Direct or vicarious victimization	Male	422	49.4
	Yes	171	20.5
	No	633	79.5
Metric Variables		Median	M (S.D.)
Age	Ordinal (1 - 5)	4	3.60 (1.17)
Education	Ordinal (1 - 6)	4	3.96 (1.58)
The media	Ordinal (1 - 4)	3	2.60 (0.73)
Neighborhood strength	Interval (6 - 24)	19	18.83 (3.07)
Safety	Interval (2 - 6)	5	4.76 (1.04)
Interactions	Interval (0 - 3)	2	1.63 (1.08)
Investigation	Ordinal (1 - 4)	3	2.58 (0.94)
Staffing	Ordinal (1 - 4)	2	2.27 (0.84)
Traffic and Narcotic/Drug	Interval (2 - 8)	6	5.60 (1.20)

Note: White=1, Black=2, Hispanic=3, Others=4/ Central=1, Outside=0 (Northwest=2, Northeast=3, Southwest=4, Southeast=5): Dummy coding was applied when these variables were entered into the OLS model / Gender: Male=0, Female=1 / Direct or vicarious victimization: Yes=1, No=0 / Age: 1=24 and younger, 2=25-34, 3=35-49, 4=50-64, 5=65 and older / Education: 1=less than high school or GED, 2=high school or GED, 3=training school certification, 4=associate's degree or some college, 5=college graduate, 6=professional or graduate degree / Media: The HPD is portrayed fairly by the media, from 1=strongly disagree to 4=strongly agree / Neighborhood strength: a combination of six variables / Safety: a combination of two variables/ Interactions: a combination of three dichotomous variables / Investigation: an ordinal variable measuring HPD's ability to investigate employees, from 1=strongly disagree to 4=strongly agree / HPD's staffing: The HPD has adequate staffing to provide adequate services, from 1=strongly disagree to 4=strongly agree / Traffic and narcotic/drug enforcements: a combination of two variables.

Residents' Perceptions of Officer Quality

Table 3 provides Houston residents' perceptions of officer quality. The model was significant, $F(18, 409) = 16.32$, $p < .001$ and accounted for about 42% of the variance of officer quality. Only three predictors, being female ($b^* = .084$, $p < .05$), interactions ($b^* = .193$, $p < .001$), and traffic and drug/narcotics enforcement ($b^* = .425$, $p < .001$), significantly predicted officer quality. Residents who thought that the police interacted with them and satisfied with traffic and drug/narcotic policing evaluated officer quality higher, consistent with studies (Adams et al., 2002; Chermak et al., 2001). Female residents assessed officer quality highly, similar to the previous studies (e.g., Lai & Zhao, 2010; Ren et al., 2005). Other

ethnic groups ($b^* = -.077$, $p < .1$), northwest region ($b^* = -.086$, $p < .1$), and investigation ($b^* = -.080$, $p < .1$) all demonstrated a trend toward statistical significance. Other ethnic groups' unfavorable attitudes toward the police has been reported (e.g., Avdija, 2010; Cao, 2011; Weitzer et al., 2008). The northwest residents' less favorable attitudes toward the police was a new finding.

Table 3. Residents' Perceptions of "Officer Quality"

Predictors	Officer Quality		
	b	s.e.	b*
<i>Individual predictors</i>			
White	excluded		
Black	-.151	.098	-.071
Hispanic	-.122	.111	-.051
Others	-.278	.147	-.077†
Age	.035	.035	.043
Gender	.161	.076	.084*
Education	.035	.025	.058
Victimization	-.082	.095	-.034
Media	.045	.052	.035
<i>Geographic predictors</i>			
Central	-.050	.104	-.022
Northwest	-.208	.107	-.086†
Northeast	-.122	.134	-.040
Southwest	excluded		
Southeast	-.144	.117	-.042
<i>Neighborhood integration predictors</i>			
Neighborhood strength	.012	.012	.042
Perceived safety	.047	.038	.051
<i>HPD's service predictors</i>			
Interactions	.173	.040	.193***
Investigation	.085	.050	.080†
Staffing	.002	.054	.001
Traffic and drug/narcotic	.340	.037	.425***
<i>F</i>		16.32***	
R-squared (Adjusted R-squared)		.418 (.392)	

Note: b is unstandardized coefficient, s.e. is standard error, and b* is standardized coefficient.

No multicollinearity among variables was found.

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$

Residents' Perceptions of Support the Camera

The prediction model of residents' perceptions on support the camera is presented in Table 4. The model was significant, $F(12, 415) = 5.33$, $p < .001$ and accounted for 13.4% of the variance in residents' supportive opinions of red light cameras. The five predictors significantly contributed, age ($b^* = .147$, $p < .01$), gender ($b^* = .120$, $p < .05$), the central area ($b^* = -.092$, $p < .05$), investigation ($b^* = .185$, $p < .001$), and staffing ($b^* = .130$, $p < .05$). Residents who thought the police's ability to investigate their employees, staffing adequacy, comparatively older, female residents, and those who reside in the noncentral area supported the cameras more. Female and older residents' more supportive attitudes toward the camera use were reported (Egbendewe-Mondzozo et al., 2010; Higgins et al., 2011; Porter & Berry, 2001). Marginally significant results were found in Hispanic ($b^* = .101$, $p < .1$) and the media's portrayal ($b^* = -.082$, $p < .1$). Hispanic residents' more supportive attitude toward traffic cameras was not reported before. Regarding the media, the result that was contrary to the hypothesis. Residents who perceived the media portrayal of the HPD to be unfair tended to support the cameras more.

Table 4. Residents' Perceptions of "Support the Camera"

Predictors	Support Red Light Cameras		
	b	s.e.	b*
<i>Individual predictors</i>			
White	excluded		
Black	.009	.117	.004
Hispanic	.249	.135	.101†
Others	.035	.181	.009
Age	.112	.041	.147**
Gender	.237	.091	.120*
Education	.002	.031	.004
Media	-.108	.064	-.082†
<i>Geographic predictors</i>			
Central	-.222	.112	-.092*
<i>HPD's service predictors</i>			
Interactions	.010	.049	.101

Predictors	Support Red Light Cameras		
	b	s.e.	b*
Investigation	.204	.062	.185***
Staffing	.156	.067	.130**
Traffic and drug/narcotic	.012	.045	.015
<i>F</i>		5.33***	
R-squared (Adjusted R-squared)		.134 (.109)	

Note: b is unstandardized coefficient, s.e. is standard error, and b* is standardized coefficient.
No multicollinearity among variables was found.

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$

Hypothesis testing thus far has relied on OLS to predict Houstonians' perceptions on officer quality and support the camera. Although some hypotheses were understood based on previous studies, some were equivocal. Hence, we sought to reassess all significant relationships found in OLS. We used more robust weighted least squares procedure through CFA to better analyze the two latent variables. In particular, we sought to test whether there is a link between the two latent variables to address the hypothesis 8. In diagrams, circles represent factors (latent variables), and rectangles represent measured variables (indicators). Only significant predictors from the two OLS regression results (in Tables 3 and 4) were entered into the CFA model. Those predictors are Hispanic, Others, age, gender, the media, central, northwest, interactions, investigation, staffing, traffic and drug/narcotic enforcement (from $p < .001$ to $p < .10$).

A Link between Residents' Perceptions of Support the Camera and Officer Quality

The predicted patterns of hypothesized model were tested (Figure 1). The absence of a line connecting variables implies no hypothesized direct effect. Only significant variables with their standardized coefficients ($p < .05$) were presented. The variables, as previously described, were used as indicators for officer quality and support the camera. The two latent factors were simultaneously regressed onto each of the significant predictors. The model resulted in excellent fit (assessed by CFI = .97, TLI = .96, RMSEA = .04). For the officer quality, residents' satisfaction with traffic and drug/narcotic enforcement ($b^* = .48$), interactions

($b^* = .24$), investigation ($b^* = .15$), and gender ($b^* = .11$) showed positive associations with officer quality. Dissimilar to the OLS (see Table 3), Others ethnic category ($b^* = -.05$, n.s.) and Northwest ($b^* = -.05$, n.s.) were no more significant to predict residents' perceptions of officer quality. For the support the camera, investigation ($b^* = .25$), staffing ($b^* = .12$), age ($b^* = .15$), gender ($b^* = .13$), and Hispanic ($b^* = .10$) showed positive associations, whereas the central area ($b^* = -.08$, $p < .1$) negatively related to support the camera. Dissimilar to the OLS results (see Table 4), residents' thought on the fair media portrayal of the police ($b^* = -.00$, n.s.) was not a significant predictor. The predictors account for 52 and 16 percent of the variances found in officer quality and support the camera, respectively. The hypothesis (8) seeking an association between the two latent concepts was supported ($r = .19$, $p < .001$). Therefore, residents who supported red light cameras were more likely to perceive officer quality higher.

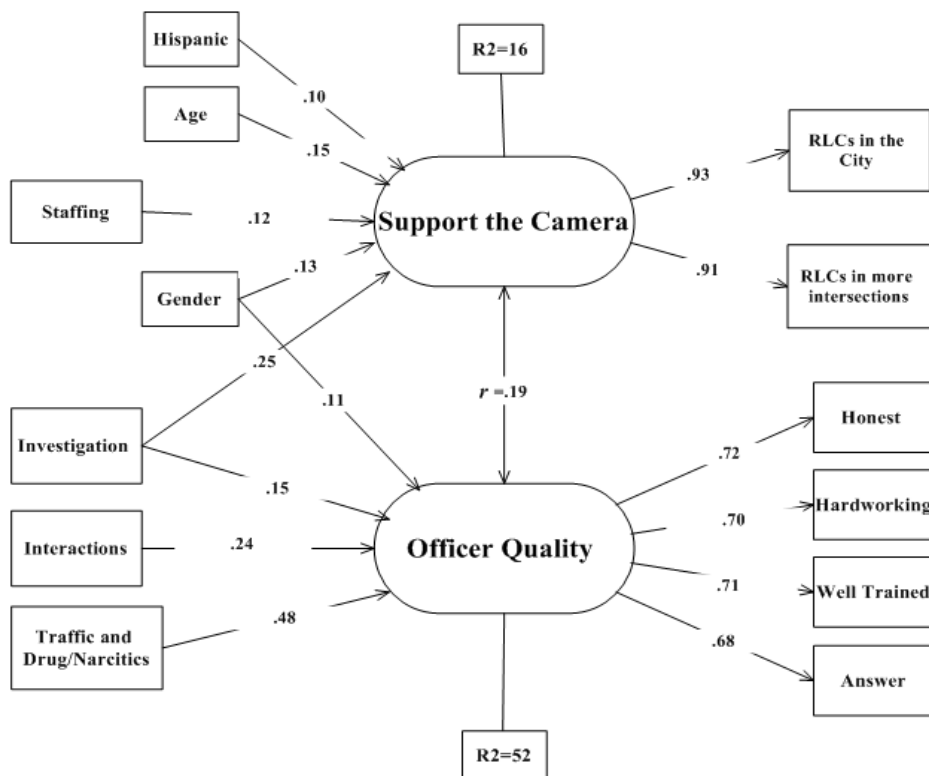


Figure 1. The Link between Residents' Perceptions of the Camera and Officer Quality

Note: Only significant variables with standardized coefficients were presented ($p < .05$).

DISCUSSION

The overarching purpose of this study was to determine whether individual, geographic, neighborhood integration, and police service factors predict Houston residents' perceptions of officer quality and their support of red light cameras (OLS), and to identify the link between these two perceptions by confirming the significant relations found in OLS (CFA). The four predictors measuring police services emerged as more predictive than individual, geographic, and neighborhood integration predictors. Thus, the police service was the most crucial factor predicting residents' positive perceptions of the police over conventionally emphasized predictors (i.e., race/ethnicity and neighborhood strength/collective efficacy). This result has made us recall that policing is a service function, which extends to practical and policy implications. Better police services will generate positive perceptions of the police even in communities with many minorities and neighborhoods where bonds among residents are weak. Officer quality is about residents' perceptions of the nature of individual officers (if they are honest, hardworking, etc.), whereas police service predictors relate more to the department's overall performance. Stronger associations between the two indicate that overall department policy affects how residents perceive officers' characters.

The present study poses the following theoretical implications. Disparity among ethnic or racial minorities is one of the most researched topics in policing research. Studies regarding residents' perceptions of the police have depended heavily on assumptions about differential enforcement as a function of race and/or ethnicity, whereas red light cameras rely on color-blind enforcement approaches. Very few researchers have studied this link. The available literature has not frequently studied the utility of red light cameras in terms of their role in policing, especially in quality of life research. Considerations of residents' quality of life have never been limited to a narrow scope. These have included not only physical disorders (i.e., vandalism, abandoned buildings, etc.), but also public health and residents' aspirations for improved safety (Skogan, 2015; 2019) for every aspect of community life that can potentially be obtained by securing safer roads.

The findings in the literature on the relationship between traffic tickets (not

based on automated camera enforcement) and residents' perceptions of police are not always consistent. Nevertheless, the most researched topic in the policing literature is the use of police discretion in traffic stops, which can be based on racially motivated factors. In light of the present results, police might do well to consider ways of alleviating residents' negative views by having a form of automated enforcement akin to cameras. Cameras do not differentiate color of skin, immigrant status, or other potentially biasing factors, and thus may provide services to residents that are fairer and more adequate—or at least produce perceptions of such. One recent study reported that red light cameras may play a mitigating role for deeply rooted racial profiling concerns in the U.S. (Eger et al., 2015).

The primary limitation of the study was that not all hypotheses were equally established to measure predictive relationships for the two dependent variables. Different strategies were applied to test the hypotheses regarding the two DVs (two constructs in the structural equation model) due to the study's exploratory nature in predicting residents' support of traffic cameras. That is, the victimization experience was not used as a predictor to test residents' support for the cameras because cameras are automated, and there is a weak basis for assuming that the attributions residents make toward discretionary decisions by police officers would be the same as attributions they make toward an automated camera triggered without human involvement. Similarly, the study also did not include neighborhood integration predictors (i.e., neighborhood strength and safety), since no existing literature has examined any relationship between neighborhood integration and residents' perceptions of traffic cameras. Because of these different strategies to utilize predictors, residents' support for cameras has lower predictive power compared to that of officer quality. A second limitation was that we tested predictors both significance levels at less than .05 (conventional) and .10 ($.05 < p < .10$) (marginal) because the search of residents' perceptions of red light cameras was exploratory in nature. A third limitation was that the city of Houston started relocating cameras from 2010, and camera locations of the study were based on the data obtained in 2008. Therefore, it does not reflect the current camera allocations and associated residents' support for the cameras may vary, thus limiting generalizability. Despite observed quality of life effects from red light cameras, the most commonly expressed sentiment was based on the belief that the

cameras were installed to generate city revenue rather than to promote road safety.

Another limitation is that it was challenging to address traffic cameras in the quality of life context because most published studies focus mainly on physical/social disorders (i.e., graffiti, loitering, etc.) rather than traffic disorders (i.e., speeding, etc.). Few studies (i.e., Coleman, 2005; Ruddell & Ortiz, 2015; Skogan, 2019) have addressed controlling aggressive driving/drivers in the context of the quality of life study. Because of this deficit, we were unable to review many studies reporting that traffic enforcement (i.e., red light cameras) enhances residents' quality of life and perceptions of police. Skogan (2015) has concluded that disorder has broader implications that affect residents' stress, health, and safety, and the current study offers evidence that residents' perceived traffic safety vis-à-vis cameras does relate to their perception of the police. Finally, the current study was undertaken within the context of a large body of studies reporting mixed results about the effectiveness of traffic cameras. Some researchers found a reduction in accidents where cameras were installed (e.g., Fox, 1996; Hu et al., 2011), whereas others did not (e.g., Walden & Bochner, 2011). The present study attempted to suggest some theoretical and practical links pertaining to the cameras in hopes of providing some insights to future policing and within the transportation literature.

Questions remain for future research. The city of Houston is the fourth largest city in the United States and is ethnically diverse. The results of our exploratory observation suggest one interesting note pertaining to ethnic and geographic features, insofar as the relations between the two perceptions differed in various parts of the city. Other and Hispanic groups and the northwest and central areas were predictive of the two latent concepts (review Tables, 3, 4 and Figure 1). This shows that residents' perceptions may vary across neighborhoods and ethnicities in one city. Revisiting the current results based on different ethnic groups and geographic areas with updated data can provide further insight into this topic. This will assist policy makers in resolving issues creating negative perceptions of technology-driven policing strategies, including the camera enforcement that future policing will increasingly adopt in this era. Although we will live in a time that is more interconnected and technology-oriented than ever, there is little doubt that one of the ultimate purposes of having a policing system

in society is to secure better safety to improve the quality of life, and this purpose will not change. Thus, resolving any problem as it relates to quality of life matters should be addressed by research that will improve residents' perceptions of police in the long run. However, few policing studies have addressed the use of red light cameras; thus, future research should seek to address this gap.

Acknowledgements

* Ji Seun Sohn expresses her appreciation for the Faculty Scholarship Support Program of GC&SU to earn the time to write this manuscript.

References

- Adams, R. E., Rohe, W. M., & Arcury, T. A. (2002). Implementing Community-Oriented Policing: Organizational Change and Street Officer Attitudes, *Crime & Delinquency*, 48 (3), 399-430.
- Avdija, A. S. (2010). The role of police behavior in predicting citizens' attitudes toward the police. *Applied Psychology*, 6 (2), 76-89.
- Bates, L., Soole, D., & Watson, B. (2012). The effectiveness of traffic policing in reducing car crashes. In T. Prenzler (Ed.), *Policing and security in practice: Challenges and achievements* (pp. 90–109). New York: Palgrave Macmillan.
- Blais, E., & Dupont, B. (2005). Assessing the capability of intensive police programmes to prevent severe road accidents: A systematic review. *British Journal of Criminology*, 45, 914-937.
- Boise Police Department (2007). *Boise police Department: 2007 Neighborhood survey report*. Boise City of Trees.
- Brown, B., & Benedict, W. R. (2002). Perceptions of the police: Past findings, methodological issues, conceptual issues and policy implications. *Policing: An international Journal of Police Strategies & Management*, 25, 543-580.
- Cao, L. (2011). Visible minorities and confidence in the police. *Canadian Journal of Criminology and Criminal Justice*, 53, 1-26.
- Cao, L., Frank, J., & Cullen, F. T. (1996). Race, community context and confidence in the police. *American Journal of Police*, 15, 3-22.
- Chermak, S., McGarrell, E. F., & Weiss, A. (2001). Citizens' perceptions of aggressive traffic enforcement strategies. *Justice Quarterly*, 18, 365-392.
- Coleman, M. (2005). City of Boise (Executive summary). Northwest research group. Boise, ID.
- Dansie, E. J., & Fargo, J. D. (2009). Individual and community predictors of

- fear of criminal victimization: Results from a national sample of urban U.S. citizens. *Crime Prevention & Community Safety*, 11, 124-140.
- Eck, J. E., & Rosenbaum, D. P. (1994). The new police order: Effectiveness, equality, and efficiency in community policing. In D. P. Rosenbaum (Ed.), *The challenge of community policing: Testing the promises* (pp. 3-23). Thousand Oaks, CA: Sage.
- Egbendewe-Mondzozo, A., Higgins, L.M., & Shaw, W.D. (2010). Red light cameras at intersections: estimating preferences using a stated choice model. *Transportation Research Part A: Policy and Practice*, 44, 281–290.
- Eger III, R. J., Fortner, C. K., & Slade, C. P. (2015). The policy of enforcement: Red light cameras and racial profiling. *Police Quarterly*, 18, 397-413.
- Failde-Garrido, J. M., Garcia-Rodriguez, M. A., Rodriguez-Castro, Y., Gonzalez-Fernandez, A., Fernandez, M., & Fernandez, M. V. (2016). Psychological determinants of road traffic offenses in a sample of Spanish male prison inmates. *Transportation Research Part F: Psychology and Behavior*, 37, 97-106.
- Fox, H. (1996). *Crashes at Signal Controlled Junctions and Pelican Crossings in Glasgow*. Scottish Office Central Research Unit, Glasgow.
- Garber, N. J., Miller, J. S., Eslambolchi, S., Khandelwal, R., Mattingly, K. M., Sprinkle, K. M., & Wachendorf, P. L. (2005). An evaluation of red light camera (photo-red) enforcement programs in Virginia: A report in response to a request by Virginia's secretary of transportation. Virginia Transportation Research Council, Charlottesville, Virginia.
- Gibson, C. L., Zhao, J., & Lovrich, N. P. (2002). Social integration, individual perceptions of collective efficacy, and fear of crime in three cities. *Justice Quarterly*, 19 (4), 793-808.
- Gibson, C. L., Zhao, J., Lovrich, N. P., & Gaffney, M. J. (2002). Social integration, individual perceptions of collective efficacy, and fear of crime in three cities. *Justice Quarterly*, 19 (3), 537-564.
- Goldstein, H. (1990). *Problem-oriented policing*. New York: McGraw-Hill.
- Higgins, L. M., Shaw, W. D., & Egbendewe-Mondzozo, A. (2011). Attributes affecting preferences for traffic safety camera programs. *Accident Analysis and Prevention*, 43, 1042-1048.
- Hu, W., McCartt, A. T., & Teoh, E. R. (2011). Effects of red light camera enforcement on fatal crashes in large US cities. *Journal of Safety*

Research, 42, 277–282.

- Innes, M. (2004). Signal crimes and signal disorders: Notes on deviance as communicative action. *British Journal of Sociology*, 55, 335-355.
- Innes, M (2007). The reassurance function. *Policing: A Journal of Policy and Practice*, 1, 132-142.
- Jackson, J., & Bradford, B. (2009). Crime, policing and social disorder: on the expensive nature of public confidence in policing. *The British Journal of Sociology*, 60, 493-521.
- Jackson, J., Bradford, B., Hohl, K., & Farrall, S. (2009). Does the fear of crime erode public confidence in policing? *Policing: A Journal of Policy and Practice*, 3, 100-111.
- Jefferis, E. S., Kaminski, R. J., Holmes, S., Hanley, D. E. (1997). The effect of a videotaped arrest on public perceptions of police use of force. *Journal of Criminal Justice*, 25, 381-395.
- Kamyab, A., McDonald, T., Stribiak, J. J., Storm, B., & Anderson-Wilk, M. (2000). *Red light running in Iowa: The scope, impact, and possible implications*. Center for Transportation Research and Education, Iowa State University.
- Kelling, G. L., & Moore, M. H. (1988). The evolving strategy of policing. *Perspective on Policing*, 4, 1-15. Washington, D. C.: U. S. Department of Justice.
- Luo, F., Ren, L., & Zhao, J. S. (2017). The effect of micro-level disorder incidents on public attitudes toward the police. *Policing: An international Journal of Police Strategies & Management*, 40, 395-409.
- Lai, Y. L., & Zhao, J. (2010). The impact of race/ethnicity, neighborhood context, and police/citizen interaction on residents' attitudes toward the police. *Journal of Criminal Justice*, 38, 685-692.
- Madon, N. S. (2018). Re-examining the relationship between age and confidence in the police in Canada. *Canadian Journal of Criminology and Criminal Justice*, 60, 122-135.
- Makowsky, M. D., & Stratmann, T. (2011). More tickets, fewer accidents: how cash-strapped towns make for safer roads. *Journal of Law and Economics*, 54, 863–888.
- McCartt, A. T., & Eichelberger, A. (2011). *Attitudes toward red light camera enforcement in cities with camera programs*. Insurance Institute for highway safety.
- Nix, J., & Wolfe, S. E. (2016). Sensitivity to the Ferguson effect: the role of

- managerial organizational justice. *Journal of Criminal Justice*, 47, 12-20.
- O'Connor, C. D. (2008). Citizen attitudes toward the police in Canada. *Policing: An International Journal of Police Strategies & Management*, 31, 578-595.
- Orr, M., & West, D. M. (2007). Citizen evaluations of local police: Personal experience or symbolic attitudes? *Administration and Society*, 38, 649-668.
- Otto, P. (2000). The importance of building strong media relations: They will tell the story with or without you. *ACJS Today*, 19, 8-9.
- Parrish, P. (1993). Police and the media. *FBI Law Enforcement Bulletin*, 62, 25-25.
- Payne, B. K., & Gainey, R. R. (2007). Attitudes about the police and neighborhood safety in disadvantaged neighborhoods: The influence of criminal victimization and perceptions of a drug problem. *Criminal Justice Review*, 32, 142-155.
- Porter, B., & Berry, T. (2001). A nationwide survey of self-reported red light running: measuring prevalence, predictors, and perceived consequences. *Accident Analysis and Prevention*, 33, 735-741.
- Reisig, M. D., & Correia, M. E. (1997). Public evaluations of police performance: An analysis across three levels of policing. *Policing: An International Journal of Police Strategies & Management*, 20, 311-325.
- Reisig, M. D., & Parks, R. B. (2000). Experience, quality of life, and neighborhood context: A hierarchical analysis of satisfaction with the police. *Justice Quarterly*, 17, 607-629.
- Retting, R. A., Ferguson, S. A., & Hakkert, A. S. (2003). Effects of red light cameras on violations and crashes: A review of the international literature. *Traffic Injury Prevention*, 4, 14-23.
- Ren, L., Cao, L., Lovrich, N., & Gaffney, M. (2005). Linking confidence in the police with the performance of the police: Community policing can make a difference. *Journal of Criminal Justice*, 33, 55-66.
- Ruby, D., & Hobeika, A. (2003). Assessment of red light running camera in Fairfax County, Virginia. *Transportation Quarterly*, 57, 33-48.
- Ruddell, R., & Ortiz, N. R. (2015). Boomtown blues: Long-term community perceptions of crime and disorder. *American Journal of Criminal Justice*, 40, 129-146.
- Sampson, R. J. (2006). Collective efficacy theory: Lessons learned and directions for future inquiry. In Francis T. Cullen, John Paul Wright, & Kristie R. Blevins (Eds.), *Taking Stock: The status of criminological theory* (pp.

- 149-167). Transaction Publisher, New Brunswick, New Jersey.
- Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science*, 277, 918-924.
- Schafer, J. A., Huebner, B. M., & Bynum, T. S. (2003). Citizen perceptions of police services: Race, neighborhood context, and community policing. *Police Quarterly*, 6, 440-468.
- Scheider, M. C., Rowell, T., & Bezdikian, V. (2003). The impact of citizen perceptions of community policing on fear of crime: Findings from twelve cities. *Police Quarterly*, 6, 363-386.
- Skogan, W. G. (2005). Citizen satisfaction with police encounters. *Police Quarterly*, 8 (3), 298-321.
- Skogan, W. G. (2009). Concern about crime and confidence in the police: Reassurance or accountability? *Police Quarterly*, 12, 301-318.
- Skogan, W. G. (2015). Disorder and decline: The State of Research. *Journal of Research in Crime and Delinquency*, 52, 464-485.
- Skogan, W. G. (2019). The future of CCTV. *Criminology & Public Policy*, 18, 161-166.
- Tavares, A. F., Mendes, S. M., & Costa, C. S. (2008). The impact of deterrence policies on reckless driving: The case of Portugal. *European Journal on Criminal Policy and Research*, 14, 417-429.
- Tay, R. (2009). The effectiveness of automated and manned traffic enforcement. *International Journal of Sustainable Transportation*, 3(3), 178-186.
- Walden, T., & B. Bochner. (2011). Effectiveness of Red Light Cameras- Texas Statewide Evaluation. *ITE Journal*, 81, 30
- Walker, S. & Archbold, C. A. (2013). *The new world of police accountability* (2nd ed). Sage Publications.
- Weiss, A., & Freels, S. (1996). The effects of aggressive policing: The Dayton traffic enforcement experiment. *American Journal of Police*, 15, 45-64.
- Weitzer R., & Tuch, S. A. (2005). Determinants of public satisfaction with the police. *Police Quarterly*, 8 (3), 279-297.
- Weitzer, R., Tuch, S. A., & Skogan, W. G. (2008). Police-Community relations in a majority-black city. *Journal of Research in Crime and Delinquency*, 45, 398-428.
- Wilson, J. Q., & Boland, B. (1978). The effect of the police on crime, *Law and Society Review*, 12, 367-390.
- Wilson, J. Q., & Kelling, G. L. (1982). Broken windows: The police and neighborhood safety. *Atlantic Monthly*, 249, 29-38.

- Wu, Y. (2014). Race/ethnicity and perceptions of the police: A comparison of White, Black, Asian and Hispanic Americans. *Police & Society*, 24, 135-157.
- Zhao, J., Lai, Y. L., Ren L., & Lawton, B. (2011). The impact of race/ethnicity and quality-of-life policing on public attitudes toward racially biased policing and traffic stops. *Crime & Delinquency*, 1-25.
- Zhao, J., Lawton, B., & Longmire, D. (2010). An examination of the micro-level crime-fear of crime link. *Crime & Delinquency*, 1-26.