

# **“Let’s Not Go for That One!” Burglars’ Perceptions of Alarms as Deterrents**

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## **Abstract**

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Burglar alarms have been protecting residences and buildings for over 150 years. For most of this time, their utility in reducing the incidence of burglary has been based on anecdotal and intuitive notions. In recent decades researchers have established qualitative bases for the utility of residential alarms in the reduction of incidents in the United States. Camera systems have arrived more recently as anti-burglary protective measures. This study examines perceptions on the deterrence impact of alarms and other burglary-deterrent measures from 242 convicted burglars serving time in four Ohio prisons. The findings show that evidence of a residential burglar alarm, outdoor cameras, or surveillance equipment are powerful deterrent factors in the decision process of most actors.

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## **Keywords**

alarms; camera systems; burglary; crime mitigation

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## INTRODUCTION

Security is an indisputable necessity for human progress. We define security as the protection of assets from loss (McCrie, 2004) and without it, the safeness of people, possessions, freedom, and progress itself eventually will fail. Protection is advanced through many factors including the use of alarms. From times immemorial animals and human signaling cued the arrival or presence of unknown persons. In modern times mechanical and electronic alarms have contributed to the protection of people, commerce and industry, institutions, and government (Greer, 1991; McCrie, 2006; McCrie & Lee, 2023). In recent times cameras have been added to the residential armamentarium. This study primarily focuses on how alarms impact the to-burglar or not-to-burglar calculation of criminal risk-takers.

The first patent for alarm systems advanced by electro-mechanic technology in the U.S. was granted to Augustus R. Pope in 1853, in Somerville, Massachusetts, a Boston suburb. Pope's electronic alarm would sound a constant tone if a door or window were forced open without authorization. But five years later, without producing a commercial prototype, the patent was sold to Edwin Holmes of Boston, who saw the commercial possibilities of the protective system. Holmes moved his enterprise to New York City to further develop the system where signaling cable could be installed along with conduits for telephoning. By the early 20<sup>th</sup> century, the Holmes Burglar Alarm Company – and plenty of other alarm services businesses – were thriving across the nation for a growing commercial and industrial customer base (Greer, 1979; McCrie, 2004; Tilley et al., 2015). The large alarm companies concentrated on commercial, industrial, and government business: that was to change. Residential alarms could also include a visual component. During the urban crime rise starting in the 1960s, Marie Van Brittan Brown patented an electronic home security system that preceded the familiar door cameras of today. While the Brown patent of 1969 was never developed commercially, it has been cited in 35 U.S. patents since (Hilgers, 2021).

Despite the ubiquitous use of alarm systems in residential and commercial settings, research work on this topic has lacked quantitative analysis for most of its history (Cedar Rapids Police Department, 1971; Lee, 2008). Traditionally, alarm systems – also called burglar alarms – have been chosen to deter, detect, and induce a

response to burglary alarm conditions at residences, commercial settings, institutions, and government structures (Blackstone et al., 2020; Lee, 2008; Roth & Roberts, 2017). Separately, studies focusing on car alarms have also been published (Farrell & Brown, 2016; Farrell, Tilley, & Tseloni, 2014).

Residential burglar alarms are considered as a physical target-hardening protective measure to detect, deter, prevent, and signal the presence of burglars or the attempt of breaking into properties (Cedar Rapids Police Department, 1971; Clarke, 1997, 2002; Farrell et al., 2014; Hakim & Shachmurove, 1996; Scarr, 1973; Tseloni, 2014; Winchester & Jackson, 1982). Most of the previous research studies examined the impact of alarm systems on crime reduction, typically focusing on the overall burglaries, but not on the net effect of alarm systems. Those studies report that alarm systems produce a deterrent effect. The point of view of burglars themselves from those studies offers an insightful way of understanding the nuances of protection and strengthening security systems. Such studies that have been published indicate that the presence of alarm systems is not the sole factor in burglary target determination and that further research inquiries would be salutary (Clarke, 2002; Lee, 2008; Nee et al., 2019; Roth et al., 2018; Scarr, 1973; Vandeviver & Bernasco, 2020). However, most of the studies appear to focus on burglaries, but not on burglar alarm systems, which means alarm systems were considered as part of other home protection measures. The net impact of alarm systems on burglary reduction is rarely examined. The current study evaluates aspects of residential burglar alarms as a primary physical target-hardening protective measure to detect and deter burglaries.

## LITERATURE REVIEW

### **Reactions to Burglaries**

Lively research since the early 1970s has deepened understandings of burglars and their craft. General aspects of burglaries (Scarr, 1973; Shover, 1972) initially appeared, while studies during the 1980s and 1990s tended to focus on both general and specific aspects of burglars and burglaries with different research methodologies (Bennett & Wright, 1984; Buck et al., 1993; Cromwell & Olson, 2004; Hakim & Buck, 1991; Maguire & Bennett, 1982; Mawby, 2001; Nee & Taylor, 1988; Wright & Decker, 1994). More recent works continue to explore aspects of burglars and efforts

to deter and mitigate them (Lee, 2008; Roth, 2017; Roth & Roberts, 2018; Rothstein, 2020).

We know that certain factors influence a property owner or manager's decision to take multiple protective measures to protect their properties (Roth et al., 2018; Tilley et al., 2015). One deterrent measure is never enough. These protective modalities can be separated into two categories—behavioral precautions and physical security applications—which relate to the level of fear of crime and available burglary-resistance resources. Behavioral precautions take the form of constrained or avoidance behaviors or passive steps actions (e.g., leaving a radio on, keeping doors locked in the daytime, staying away from certain areas, and remaining inside after dark), while physical security includes a variety of precautions for home protection [e.g., keeping lights on, locking doors at night, having a dog, strengthening doors and their hardware, securing windows, installing an alarm system, closed-circuit television systems, and (more recently) carrying a cell phone connected to an alarm monitoring system that will alert the homeowner to a call at the door or an untoward event.]

Most studies report that physical security measures produce a sizeable positive effect to reduce the chance of burglary victimization (Bennett & Wright, 1984; Coupe & Blake, 2006; Cromwell & Olson, 2004; Hakim et al., 2001; MacDonald & Gifford, 1989; Roth, 2017; Roth & Roberts, 2017; Scarr, 1973), with a few exceptions; for example, with a dog's presence, there is no relationship with burglary victimization (Buck et al., 1993) or even higher burglary rates (Tseloni et al., 2004). But those exceptions seem to be inconsistent in different settings and circumstances.

Alarm systems remain a widely-adopted option to deter burglary victimization as a form of physical security at both residential and non-residential settings (Clarke, 1997, 2002; Farrell et al., 2014; Lee, 2008; McCrie, 2004, 2006; Rothstein, 2020; Scarr, 1973). A market research firm estimates that revenues for life safety and intrusion alarms in the United States reached \$4.5 billion in 2019, the largest component for external security expenditures following contract security guard services (Freedonia Group, 2020).

### **Burglar Alarms as a Target-Hardening Adoption**

Burglar alarms can be considered like occupancy proxies (e.g., dogs); that is, they are “non-human factors that substitute for residents by drawing attention to intruders” (Roth & Roberts, 2017, p. 126), rather than a solo, stand-alone protective measure at

both residential and non-residential settings (e.g., commercial establishments, school properties, government buildings, churches, museums, etc.) (Bennett & Wright, 1984; Clarke, 2002; Mawby, 2002; Rothstein, 2020; Scarr, 1973). As noted earlier, burglar alarms have been considered crime prevention resources, together with other target-hardening adoptions in various research works employing different data sources (Bennett & Wright, 1984; Hakim et al., 2001; Hearnden & Magill, 2004; Lee, 2008; Maguire & Bennett, 1982; Nee & Meenaghan, 2006; Roth, 2017; Rubenstein et al., 1980; Wright & Decker, 1994).

However, burglars are not equally deterred by all target-hardening measures (Crowell & Olson, 2004; Wright & Decker, 1994). For example, the presence of dogs mostly produces a positive impact against burglaries (Bennett & Wright, 1984; Cromwell & Olson, 2004; Hakim et al., 2001; MacDonald & Gifford, 1989; Roth & Roberts, 2017; Wright & Decker, 1994), but a few counter-effects are reported as well (Buck et al., 1993; Tseloni et al. 2004). External lights and double locks on doors produce a deterrence (Tilley et al., 2015; Tseloni et al., 2017).

Regarding burglar alarms, empirical studies present a strong case that alarm systems are an effective mechanism for detecting and preventing burglaries (Cedar Rapids Police Department, 1971; Clarke, 1997; McCrie, 2006). The earlier studies in the 1970s and 1980s show that, though not many residences had alarms installed at those times, those with burglar alarms were less likely to be victimized and that burglars in the planning stages of their crimes ascertain whether an alarm is installed or not (Conklin & Bittner, 1973; Reppetto, 1974; Rubenstein et al., 1980; Scarr, 1973). Burglars themselves also generally reveal that they check whether alarms are in place among targeted properties before deciding to commit break-ins/burglaries and that, when encountered, they mostly try to bypass those once-considered-targeted properties (Bennett & Wright, 1984; Blackstone et al., 2020; Buck et al., 1993; Cromwell & Olson, 2006; Maguire & Bennett, 1982; Roth, 2017; Wright et al., 1995). Regardless, some professional and/or experienced burglars attempt to disable alarms or quickly complete burglaries before police respond (Clarke, 2002; Coupe & Kaur, 2005; Cromwell & Olson, 2004; Nee & Meenaghan, 2006; Roth et al., 2018; Wright & Decker, 1994).

Therefore, an alarm is an unfavorable factor in positive target selection (Bennett & Wright, 1984), and maybe regarded as a definite deterrent (Cromwell et al., 1991; Hakim et al., 1998), as well as a device to delay an attempt to enter an intended target

(Wright & Decker, 1994). Surveys in communities, including homeowners who were victims of burglaries, established the value of alarm systems in homes and businesses (Hakim, 1995; Hakim & Buck, 1991; Hakim, Rengert, & Shachmurove, 2001; Hakim & Shachmurove, 1996a, 1996b). Overall, their studies show that burglar alarms produce a net benefit and relate to lower odds of burglary victimization. For example, homes without alarms systems are, on average, 2.71 times, and commercial properties are 4.57 times at greater risk of being burgled than homes and businesses with an alarm installed. It is these less protected targets that burglars go for. Audible alarms cause burglars to escape before entry. Of all incomplete burglaries, 74.3% are thwarted by sirens or bells. In addition, the average value of property stolen from homes in which alarms are installed is 74% of that removed from homes without alarms. This indicates that burglars, though successful in breaking into properties, have less time available to commit burglaries at homes with alarms operating. Further, using mapping analysis, Lee (2008) established that the existence of burglar alarms reduces burglaries without displacing burglaries to nearby homes. Neighborhoods with a high density of alarm installations experience fewer burglary incidents occurred.

But British victimization surveys report a counter-intuitive finding that alarm ownership has no effect there and increased burglary risk, depending on other home security measures in place (Tilley et al., 2015; Tseloni et al., 2015). Nevertheless, most studies listed in the previous sections support the positive deterrent effect of burglar alarms.

### **Distinctive Methodologies with Analogous Findings**

Over the last five decades, burglary, in general, has been a subject of research projects, and in particular burglar alarms have also been analyzed as a significant variable for enhanced property protection. Researchers have used distinctive methodologies for data collections and analyses to establish their findings but, by and large, reached similar conclusions that burglar alarms can be an effective burglary deterrent (Tilley et al., 2015).

One methodology to study burglary pursued here is to interview burglars at either correctional facilities or in post-release centers in their neighborhoods. The majority of the convicted burglars in studies by Maguire and Bennett (1982) ( $N = 40$ ), Bennett and Wright (1984) ( $N = 300$ ), and Nee and Taylor (1988) ( $N = 50$ ) responded that they

would avoid homes with alarms installed and that an alarm would have deterred them from their most recent offense. Studies with videotapes and photographs shown to incarcerated burglars by Bennett and Wright (1984) ( $N = 40$ ), Wright et al. (1995) ( $N = 47$ ), and Roth and Roberts (2017) ( $N = 52$ ) found that an alarm could be an unfavorable factor in target selection for burglary and that most burglars are deterred by alarms.

Some earlier studies used a secondary data source, mostly from police incident records. Conklin and Bittner (1973), Scarr (1973), Reppetto (1974), LeBeau and Vincent (1997), and Lee (2008) report that, generally, houses with alarms installed are less likely to be burgled and that, therefore, a burglar alarm can be selected as a means of preventing a burglary or reducing its costly impact.

Ethnographic studies, using mostly a snowball sampling technique common in the 1990s, focused on burglars' perspectives in understanding various aspects of burglaries and environmental or situational factors. These confirm previous research findings that burglar alarms are a deterrent and that burglars avoid houses with an alarm installed (Buck & Hakim, 1993; Cromwell & Olson, 2004; 2006,  $N = 30$ ; Hearnden & Magill, 2004,  $N = 82$ ; Wright & Decker, 1994,  $N = 105$ ; Wright, Logie, & Decker, 1995,  $N = 47$ ). Victimization surveys (Buck et al., 1993; Hakim et al., 2001; Miethe & Meier, 1990) also find that alarms are associated with a reduced risk of burglary.

Perhaps the most interesting research method is to apply an experimental design to test the true effect of alarm systems on burglaries or other crimes. Unlike other well-suited research designs (e.g., inmate interviews, surveys, ethnographical observations, video clips, and photographic showings, and secondary data sources), the experimental and even quasi-experimental research methods are rare in this subject area (Lee, 2008). The only notable experimental study was conducted by the Cedar Rapids Police Department (1971), a landmark research endeavor. Matched pairs of over 100 schools and businesses with previous burglary experience were selected in which one of the pairs in each case is given an alarm system that sounds directly at the police station. The other half remained as the control group. In the experimental endeavor, the findings are substantial in several aspects that: (1) burglar alarms had the effect of significantly reducing attempted offenses with about 55% in burglaries of business places as compared to only 8% for the control group; (2) arrests at the scene were significantly higher (31%) for sites with alarms, while only 6% of the cases in

the control group; (3) clearance rates were also higher for locations with alarms with 46% as compared to 27% for the control group and 31% citywide; and finally (4) schools with alarms installed experienced reduction in burglaries (75%), while less than a 25% reduction occurred among the schools in the control group (Cedar Rapids Police Department, 1971).

Another approach applying a quasi-experimental research design was conducted by Lee (2008) with the concepts of WDQ (weighted displacement quotient) and three nested concentric zones and GIS (geographic information system) mapping techniques, which makes possible a construct for three zones—the target zone with the houses where alarms are installed, a buffer zone next to the target zone, and a control zone next to the buffer zone. Such an approach to test the impact of alarm systems on residential burglaries employs a combination of a quasi-experimental research design, secondary data sources (e.g., police incident records, census data, and alarm permit records), and mapping analyses. The study presents a burglar alarm as a system used to detect the entry or attempted entry of an intruder into protected premises and to signal the detection to others, either locally or remotely. This demonstrates that a negative relationship exists between the presence of a hot spot for burglaries and the presence of a hot spot for alarm installation. It further establishes that the existence of burglar alarms reduces burglaries without displacing them to nearby homes (i.e., no spatial displacement is observed). Neighborhoods or street blocks with high residential alarm density experience fewer burglaries.

### **Key Issues over the Effectiveness of Burglar Alarms**

Several important points should be assessed in determining the deterrent effect of alarms on burglaries. The first relates to the state of knowledge over the net effect of alarm system deterrence. Only in recent years have alarm systems received academic attention as part of burglars/burglaries studies and crime prevention evaluations combined with other security measures (e.g., dogs, window locks, door locks, and indoor and outdoor lighting). Different research methods (e.g., inmate/victim/household surveys, police data analyses, ethnographic studies with snowball sampling, observational studies, in-depth interviews, and experimental studies) are also used to examine the effect of protective security measures. But still too little is known of the net impact of alarm systems as a deterrent on burglaries mainly because of the dearth of independent assessments and experimental research endeavors. Other topics like



target selection or the motivation to commit burglaries have become major research topics and have reached criminology's first paradigm (Felson, 2017). Too few studies have demonstrated that alarm systems function as a strong deterrent against burglaries; even fewer consider the impact of camera systems.

Second, unlike most previous studies, a report based on British Crime Survey data suggests that alarm ownership has no effect or increases the risk of burglary victimization, depending on other home security measures (Tilley et al., 2015). This becomes Sherman et al.'s (2017) conclusion that evidence is still lacking using a five-point scale on what works best in mitigating residential burglary. This conclusion is based on just a few studies (conducted by the same researchers), in which the findings and arguments are provocative and call for further research endeavors while not negating findings from the Cedar Rapids Police Department.

Third, the positive effect of alarms in the prevention and control of burglaries can be offset by the high volume of false alarm activations (Blackstone, et al., 2020; LeBeau & Vincent, 1997; Rothstein, 2020; Tilley et al., 2015). Rates of false alarms are reported as high as 90% to 98%, and the factors that cause such high rates include faulty equipment, poor installation, and human errors or negligence (e.g., incorrect inputting keypad codes, roaming pets, helium balloons, or insects) (Blackstone et al., 2020; Hakim, 2001; LeBeau & Vincent, 1997; Sampson, 2011). This problem relates to a variety of negative consequences that can offset the net effect of alarm systems (e.g., withdrawal of prompt police response, increased fines for false alarms, or negative image of alarms by the public). Despite the problem of false alarms, burglar alarms remain established as a deterrent to a residential burglary.

Fourth, the issue of methodological approach is worth noting that, though assorted research methods as listed above have been used to assess the effectiveness of alarm systems on burglaries, causal experimental or quasi-experimental designs and new analytical tools should be selected to comprehend the net deterrent impact of burglar alarms like an experimental research design combined with mapping techniques (Lee, 2008). This study revisits the first issue; it endeavors to deepen an understanding of alarms' deterrent effectiveness independently from other security measures according to convicted burglars' perspectives of alarms and other deterrent measures.

## METHODS

### Survey Procedure

The research design for this study used a questionnaire survey focusing on burglars, discussing their crimes and implications for crime prevention. The researcher commenced by conducting an in-depth face-to-face interview with one convicted inmate at an Ohio state prison. After this interview, the researcher developed a survey questionnaire for the current study for use with a larger sample of convicted burglars incarcerated at Ohio state prisons. Among a total of 560 inmates (male = 440 and female = 120) who were convicted for burglaries, 242 usable surveys were collected for the current study in 2012. The return used rate of 43.2% is an average percent of what many prison studies produce (Gaes & Goldberg, 2004; Hensley et al., 2000). All inmates were randomly selected from the initial sampling frame; the researcher visited the four prisons to administer and collect the surveys. The sampling frame of the potential inmates for data collection was incarcerated persons convicted for aggravated burglaries (including attempted aggravated burglary) and burglaries (including attempts), who were serving time among these prisons at the time of the survey.

The questionnaire employed a paper-pencil format. The initial questionnaire used for data collection covered various topics of criminal behaviors and crime prevention from the burglars' perspectives, including the effectiveness of various security measures (e.g., dogs, lights, locks, and alarms), burglars' decision-making processes (e.g., decision to commit crimes, target selection, method of entry, and items taken), and characteristics of burglaries (e.g., temporal classifications, co-offending pattern, and drug use). Of 70 questions in the survey, 13 related to alarm systems.

### Research Questions and Variables

The current study examines the effectiveness of alarm systems on burglaries, in particular, focusing on the direct and net impact of alarms on the crime reduction aspect. Thus, three main research questions are as follows: (1) are burglar alarm systems a favorable/unfavorable factor among the convicted burglars in the course of target selection; (2) do burglar alarms produce a direct/net benefit in deterring burglaries; and (3) what is the contextual impact of burglar alarms on burglaries with

other home protection measures (e.g., dogs, cameras, and locks)?

Questions relating to burglar alarms in the survey are divided into three categories: contextual effect, direct effect, and handling attitude. The contextual effect of alarms on burglaries is measured alongside other security applications (e.g., the presence of a dog, cars in the driveway, types of doors and windows, and visible outdoor cameras), by two variables—types of items that burglars are concerned about when deciding whether to enter the target place and any peculiar physical feature to block burglars from proceeding to enter the premises.

The direct effect of alarms on burglaries is measured on four variables—target selection (dichotomous response—*yes, no*), frequency of alarm observation (three-scale response—*always, sometimes, never*), attitude toward an alarm found in the property (three-scale response—*always, sometimes, never*), a number of the property with alarms for burglars to attempt to burglarize (five-scale response—*all, more than half, half, a few, none*).

The last dimension, how burglars respond to an alarm they encounter, is measured by four variables—frequency of attempts to disable an alarm (three-scale response—*always, sometimes, never*), how successful the attempts were (dichotomous response—*yes, no*), whether to cut alarm wires before breaking into a property (three-scale response—*always, sometimes, never*), frequency of tools used to disable an alarm (five-scale response—*all, more than half, half, a few, none*).

### **Statistical approaches**

The main analyses are based on descriptive and crosstab analyses. A series of questions related to burglar alarms are presented with summary tables and findings. SPSS 26 and Stata 16 software are used.

## **ANALYSES AND FINDINGS**

### **Demographic and Criminal Characteristics**

The initial questions in the survey, Tables 1 and 2, gather the 242 sampled inmates’ demographic and criminal information characteristics. The average age of the incarcerated subjects is 30.4 years. Since the survey is administered among adult state prisons, minors under 18 years old are not included. About 53% of respondents are in

their 20s, with about 30% in their 30s. Burglaries are usually a criminal activity of young males. The second category of the “age” variable is the time of the inmates’ first arrest (the first arrest is not necessarily for burglary). The average age of the first arrest is 23.4 years old, seven years younger than that of the incarcerated burglars. Age distributions of the first arrest by survey participants attest that 7% were first arrested at 13 years old or younger. High school ages, typically from 14 to 17 years, are 10%. Late adolescents, 18-19, represent about 20%; 44% were in their 20s, with only 15.7% 30 or older at the time of their first arrest.

Table 1. Difference between the current and first arrest of ages among the survey participants

<i>Age category</i>	<i>Current Age</i>		<i>Age of the 1<sup>st</sup> Arrest</i>	
	<i>Frequency<sup>a</sup></i>	<i>%<sup>b</sup></i>	<i>Frequency<sup>a</sup></i>	<i>%<sup>b</sup></i>
<=13	n/a	n/a	16	6.9
14-17	n/a	n/a	23	10.1
18-19	2	.8	46	20.1
20-24	68	28.1	55	24.0
25-29	60	24.8	46	20.1
30-34	47	19.4	20	8.8
35-39	23	9.5	13	5.7
40-44	18	7.4	9	3.9
45-49	16	6.6	2	.8
50-54	5	2.1	1	.4
>=55	3	1.2	0	.0
Total	242	100.0	229	100.0
Mean age	30.4		23.4	

<sup>a</sup> Total number (*N*) of each variable may not equal due to 13 missing cases of “age of the first arrest.”

<sup>b</sup> Total percentages of each variable may not be exact 100 due to rounding off.

Table 2. Demographic characteristics of the survey participants

<i>Variable</i>	<i>Category</i>	<i>Frequency<sup>a</sup></i>	<i>%<sup>b</sup></i>
Sex	Female	65	27.0
	Male	176	73.0
	Total (N)	241	100.0
Race	Caucasian	162	67.8
	African American	59	24.7
	Others	18	7.5
	Total (N)	239	100.0
Marital status	Married	19	7.9
	Divorced	19	7.9
	Separated	11	4.6
	Single	172	72.0
	Others	18	7.5
	Total (N)	239	100.0

<sup>a</sup> Total number (N) of each variable may not equal due to the missing cases ranging from 1-3 cases.

<sup>b</sup> Total percentages of each variable may not be exact 100 due to rounding off.

Regarding “race,” about 68% of the study subjects are Caucasian, with about 25% Black. “Single” marital status consists of 72%. In short, the current data from the convicted Ohio burglars show that burglaries are crime dominated by Caucasian males in their 20s, while the percentage of Caucasian males in the state is 81.7%, 4.0% Latinos, Blacks 13.1%, and other 1.2% (US Census Bureau, 2019).

Table 3 presents the study participants’ arrest and conviction statistics. The first variable is the number of arrests for burglary, which shows that on average the participants have 2.1 arrest experiences and that about 51% of them have had just one arrest recorded before their current offense. About 87% of the respondents have had 1-3 arrest history incidents. The conviction history for burglary also coincides with that of the arrest. Almost 90% of the convicted respondents have had a pattern of 1-3 previous convictions before the current one.

Table 3. Number of arrests and convictions for burglary

<i># of Arrest for Burglary</i>		<i># of Conviction for Burglary</i>	
Frequency <sup>a</sup>	% <sup>b</sup>	Frequency <sup>a</sup>	% <sup>b</sup>
6	2.6	7	3.0
117	50.6	127	54.0
56	24.2	58	24.7
29	12.6	25	10.6
9	3.9	6	2.6
6	2.6	3	1.3
3	1.3	2	.9
3	1.3	4	1.7
0	.0	1	.4
1	.4	1	.4
1	.4	1	.4
Total	231	235	100.0
Average	2.1	2.0	

<sup>a</sup> Total number of each variable may not equal due to the missing cases ranging from 6-10 cases.

<sup>b</sup> Total percentages of each variable may not be exact 100 due to rounding off.

### Perceptions on Alarms as a Deterrent

Previous research studies assessed the extent to which burglar alarms influence offenders on their planning or target selection process. The assumption was that, once burglars decide to “go for” the properties to be burgled, an alarm does not seem to be a major deterrent in the course of executing the crime. Typically, the discussion of the deterrent effect of alarms tends to be consequential during the planning or target selection processes. Burglars may be aware of the presence of an alarm but either ignore it, because he or she, as an experienced offender, knows how to handle it (i.e., cut the alarm wires or disable its operation), or the burglar enacts unrestrained impulsive behavior. In this study, multiple questions need to be raised to ascertain aspects of burglars’ perceptions to carefully determine the deterrent effect of alarms. For the current study, the questions are grouped into three categories—contextual effects, direct effects, and coping attitude. Regarding the perception of a general deterrent effect on burglaries, several questions were devised to ask directly about alarms’ impact on decision making or to ascertain the impact in the context of other security measures.

### *Contextual Effects of Alarms*

An “alarm” is included as one of the available contextual effects with other common features at and around the properties (e.g., a dog, cars in the driveway, types of doors and windows, outdoor cameras, lightings, nearby neighbors, presence of police patrol cars, the volume of traffic in the area, newspapers piled up in the yard, a mailbox full of mail, and security or no-trespassing signs). Two questions ask (1) types of security measures that the burglars are concerned about when deciding whether to burglarize the place; and (2) what particular feature may cause burglars to desist from acting (see Table 4). Both questions have multiple-checking items. These questions seem alike, but they are constructed to examine what factors might influence burglars during the planning and target selection process. In contrast, the second question underscores the peculiar features to stop burglars from executing steps to commit their crimes. Both inquiries are contemplated in the context of other protective measures.

The most frequent factor mentioned by the study sample in mitigating their desire to burgle was the presence of outdoor cameras or surveillance equipment (75.3%). The next most powerful contextual deterrent is direct occupancy of the residence (about 70.0%). The presence of an alarm comes next (69.7%). The contextual deterrent effect of the alarm systems is even higher than the presence of a dog (68.0%), cars in the driveway or parking lot (66.3%), a police officer parked nearby (62.4%), and closeness of the neighbors (55.1%). Three top-rated features relate to the presence of people at or around the house—residents at the house, police officers on the streets, neighbors, but if these people are not present, the use of other deterrents can produce desired results. Alarms are the most frequently checked features to stop burglars acting feloniously, higher than outdoor cameras or surveillance equipment (48.8%), cars in the driveway or parking lot (44.8%), a dog (41.3%), a security sign (28.5%), steel bars over the windows or doors (27.3%), indoor lights on (21.5%), beware of dog signs (19.2%), neighborhood watch signs (14.0%), and outdoor lights on (13.4%). Visible outdoor cameras and alarm systems are part of the blended security measures taken to protect properties and are exceeded only by direct occupancy indicators and a police officer parked nearby the streets.

Table 4. Contextual residential security deterrent factors (multiple checked items)

Variables	Checking Items	N <sup>a</sup>	% <sup>b</sup>
Types of things when deciding <sup>c</sup>	Outdoor cameras or surveillance equipment	134	75.5
	People are inside	125	70.2
	An alarm	124	69.7
	A dog	121	68.0
	Cars in the driveway or parking lot	118	66.3
	Police officer parked nearby	111	62.4
	How close the neighbors are	98	55.1
	The amount of traffic in the area	96	53.9
	Security sign	93	52.2
	Several possible escape routes	91	51.1
Deterrent factors not to burglarize <sup>d</sup>	Seeing people in the house	134	77.9
	Police officer parked nearby	120	69.8
	Seeing neighbors	106	61.6
	Noise coming from the house	108	62.8
	An alarm	92	53.5
	Outdoor cameras or surveillance equipment	84	48.8
	Cars in the driveway or parking lot	77	44.8
	A dog	71	41.3

<sup>a</sup> N is based on multiple responses with “types of things when deciding (1,900 responses) and “deterrent factors not to burglarize (1,045).

<sup>b</sup> Percentage is based on multiple responses.

<sup>c</sup> Other checking items not included in Table 4 are volume of people walking in the area (48.9%), distance from other houses or businesses (40.4%), indoor lights on (40.4%), a place to hide (38.2%), steel bars over windows or doors (37.1%), distance from a major road (36.0%), neighborhood watch signs (33.7%), types of doors or windows (33.7%), a beware of dog sign (33.1%), newspapers piled up in the yard (29.8%), outdoor lighting (28.7%), mailbox full of mail (28.1%).

<sup>d</sup> Other checking items not included in Table 4 are a security sign (28.5%), steel bars over the windows or doors (27.3%), indoor lights on (21.5%), a beware of dog sign (19.2%), no cover (e.g., bushes) (15.7%), neighborhood watch signs (14.0%), and outdoor lighting (13.4%).

### *Direct Effects of Alarms*

The direct effect of alarm systems on burglaries underscores specific responses from other available security features by the burglars in the study. That is, how an alarm can influence burglars independently as a deterrent. A set of four questions address this issue: focusing on target selection, frequency of alarm observations, attitude toward an alarm on the property, and

perceptions of properties with alarms already installed (not “attempted burglary”) (see Table 5). As noted previously, the alarm factor tends to matter to would-be burglars in two time-points: during planning and target selection steps and during the intervals between the arrival at the site and before entering the property when seeing an alarm. Once burglars successfully enter the property, the alarm seems not to be a



deterrent in the duration between the actual burglary commission and exit from the site. The former time-point is covered by the first two aspects: target selection and frequency of alarm observation, while the latter time-point is addressed by the last two aspects—attitude toward an alarm in the property and number of the properties with an alarm as possible burglary targets.

For the first question of alarm factor on target selection—*whether alarms make a difference to select a target*, 71.3 % of the responses go to “Yes – I prefer *not* to burglarize a place with an alarm” (“No” - 28.7%). For the second inquiry on the frequency of alarm observation—*how often to determine there is an alarm in the property before a burglary attempt*, responses divide into three checking items of “always” (33.3%), “sometimes” (47.7%), and “never” (19%). From the burglars’ point of view, about one-third of properties are equipped with alarm systems and about 20% of the properties targeted for burglaries are not protected by alarms. Therefore, more than half of the properties – considering 47.7% of the “sometimes” category and “always” items together – seem to be protected by the alarms deter burglars from not choosing such properties. In short, an alarm can function as a deterrent during the initial stage of planning or target selection.

Table 5. Alarms as direct deterrents to a residential burglary

Variables	Checking Items	%	N <sup>a</sup>
Target selection	<i>Yes - Prefer not to burglarize a place with an alarm</i>	71.3	195
	<i>Always</i>	33.3	
Alarm observation	<i>Sometimes</i>	47.7	195
	<i>Never</i>	19.0	
Attitude toward alarms found	<i>Always attempt the burglary</i>	12.6	199
	<i>Sometimes attempt the burglary</i>	36.2	
	<i>Never attempt the burglary</i>	51.3	
	<i>All of them</i>	3.1	
Properties with alarms to burglarize	<i>More than half of them</i>	8.7	196
	<i>Half of them</i>	6.6	
	<i>A few of them</i>	35.7	
	<i>None of them</i>	45.7	

<sup>a</sup> N represents the sample size of each “questions” category and excludes the missing cases, which range from 42-46.

The other two questions relate to the second time-point after the decision to commit burglary, yet before deciding whether to enter the selected target (see Table 5). For the question of alarm factor on the attitude toward an alarm in property—*once decided to burglarize a place but learn that there is an alarm in the property, will you attempt the burglary?*, the survey participants respond as follows: “never” (51.3%), “sometimes” (36.2%), and always (12.6%). More than half of the burglars in this study succinctly express to “*never*” attempt to burglarize the property once they observe an alarm installed even though they select and decide to do so. On the other hand, 12.6% of the respondents say to “*always*” burglarize the targeted property even if an alarm is found. This finding indicates that about two-thirds of the even decisive burglars are substantially deterred by the mere presence of alarms (combining 51.3% of “never” and 36.2% of “sometimes”).

The last question of the alarm factor concerns the number of properties with an alarm already installed for determined burglars to attempt breaking (see Table 5). A burglar might choose a target after weighing several factors in and around the property, including an alarm installed at the property after arriving at the site. Thus, that person, in a sense, is a determined burglar, knowing that the selected target has already an alarm. How forcefully alarms can deter this determined actor is a relevant issue. To the question of alarm factor on how many properties with an alarm the burglars attempt to burglarize, the responses are “none of them” (45.9%), “a few of them” (35.7%), “half of them” (6.6%), “more than half of them” (8.7%), and “all of them” (3.1%). About 46% of the convicted burglars answer that, though they are determined, they decide not to select properties with an alarm installed. Combined with the “a few of them” category, about two-thirds of the burglars are forcefully deterred not to burglarize the already chosen targets by the presence of alarms.

### **Handling Burglar Alarms**

How do burglars respond to alarms? The majority of the survey participants perceive that an alarm is a decisive deterrent, discouraging substantial actors in the course of selecting or breaking into the properties with alarms installed. But such a positive effect of alarms by the determined burglar does not guarantee the protection of residences. In particular, for experienced or professional burglars, the presence of alarm systems at the properties can be just another annoying concern, either to simply ignore it or to deal with it by disabling it, then to deter them from executing the next

steps of their criminal activity. Several questions cover this topic, such as the frequency of attempts to disable an alarm, how successful the attempts were, whether to cut alarm wires before breaking into a property and the frequency of tools used to disable an alarm.

The first question is whether burglars attempt to disable an alarm when they encounter it on the property (see Table 6). The responses are “never” (79.8%), “sometimes” (11.9), and “always” (8.3%). With the previous questions of contextual alarm factors on target selection and alarm observation, most burglars are disinclined to act further by the mere presence of alarm systems. Besides occupancy indicators on properties and the presence of a CCTV system, alarms are the top-ranked security measure for convicted burglars to consider avoiding, more effective than dogs, security signs, bars over the windows or doors, indoor lights on, and signs warning about dogs. Additionally, about half of the convicted burglars express that they would “*never*” attempt to burglarize properties when they find an alarm installed. These observations coincide with this question of attempting to disable an alarm when they find it. Though it is not clear with the current data about whether the burglars continue to carry on burglary as planned or give up at this moment, about 80% of the responses indicate that burglars do not attempt to disable alarms on the properties. They are usually in a hurry to complete their work and may not possess the know-how to disable the alarm system.

The next question—*how effective they are in disabling an alarm*—provides some clues to such a high rate of 79.8% is attempting to disable an alarm (see Table 6). A dominant majority of the study participants check “no” (78.2%) that they are not effective in disabling an alarm, while 21.8% indicate “yes,” assuming that the burglars know the presence of an alarm and have tried to disable it. Among the participants who check “yes,” the question asks when they disable an alarm. Though the total number of the respondents is only 39 out of 179, the majority disables alarms “before” they are activated (61.5%), while 38.5% of them disable “after” being activated. This finding indicates that decisive actors who select targets and decide to commit burglaries tend to know that their target has an alarm installed and are prepared to disable the alarm before it is activated. They know how to do it. The other group may not recognize the presence of an alarm at the property but soon realize it once it is activated and successfully disabled. The second group assumes that they might think that an alarm may not be working or that it may be a dummy.

Another question asks about one specific but common method to disable burglar alarms—*cutting alarm wires* (see Table 6). The top category is “never” (78.9%), followed by “sometimes” (17.1%) and “always” (4.0%), which coincides with the previous question that presumably burglars who demonstrate that they *do not* effectively disable an alarm (78.2%) also *do not* attempt to cut alarm wires when they see them on the properties. Except “always” category (4%), when combined “never” (78.9%) and “sometimes” (17.1%), over 90% of the convicted burglars may not try to disable burglar alarms.

Table 6. Responses of how to handle an alarm

Questions	Checking Items	%	N <sup>a</sup>
Attempt to disable an alarm	<i>Always</i>	8.3	193
	<i>Sometimes</i>	11.9	
	<i>Never</i>	79.8	
Effective in disabling an alarm	<i>No</i>	78.2	179
	<i>Yes – disable an alarm BEFORE activation</i>	13.4	
	<i>Yes – disable an alarm AFTER activation</i>	8.4	
Cut alarm wires before entering in	<i>Always</i>	4.0	199
	<i>Sometimes</i>	17.1	
	<i>Never</i>	78.9	

<sup>a</sup> N represents the sample size of each “questions” category and excludes the missing cases, which range from 42–62.

The last question regards how to use tools to disable alarms (see Table 7). This is a contextual query with other items rather than a separate probe. The multiple-checkable items of tools burglars might use in this question include crowbars, screwdrivers, masks/disguises, bump keys, lock picking kits, window punches, hammers, bags/containers to carry the items stolen, electronic tools to disable an alarm, and mechanical tool(s) to disable. Multiple responses by the burglars in this study show that the top-ranked tools are: screwdrivers (54.9%), bags/containers to carry the items stolen (45.8%), masks/disguises (43.1%), and crowbars (38.9%). The mid-ranked tools are lock picking kits (20.1%), hammers (18.8%), and window punches (14.6%). Low-ranked tools include other disabling tools (11.8%), bump keys (10.4%), and electronic tools to disable an alarm (9.7%). The least favorable tool that convicted burglars might carry to commit burglary is an “electronic tool” to assist in disabling an alarm. This observation corresponds with the findings just above that about 80% of the convicted burglars rarely attempt to disable an alarm (79.8%), are not effective in doing so (78.2%), or hardly ever try to cut alarm wires before entering

the targeted properties (78.9%). Burglars largely endeavor not to interact with an alarm when they see it or spot its presence on or around the houses or properties. Thus, they may not need to carry any tools to assist them in disabling alarms. Further, in the event of an arrest, the presence of tools could imply a greater degree of preparation and lead to a stronger case for prosecutors.

These four questions demonstrate how burglars respond to alarms meant to deter them. The overwhelming majority of responses disclose that burglars are not only discouraged from choosing properties with alarms already installed during the stages of planning and selection, but also are deterred by the presence of alarm systems on the properties before entering them. Furthermore, burglars, though arrived at the pre-selected site, generally avoid attempting to disable an alarm or cut alarm wires. The exact reasons why they avoid or do not attempt to disable an alarm are not established.

Table 7. Frequency of types of tools used to commit burglaries

Tool Items	N <sup>a</sup>	% <sup>b</sup>
Screwdriver	79	54.9
Bag/containers in which to carry the items you obtain	66	45.8
Mask/disguise	62	43.1
Lock picking kit	29	20.1
Hammer	27	18.8
Window punch	21	14.6
Hammer	27	11.8
Other tool (s) to assist in disabling an alarm	17	11.8
Bump key	15	10.4
Electronic tool to assist in disabling an alarm	14	9.7

<sup>a</sup> N is based on multiple responses with 386 responses.

<sup>b</sup> Percentage is based on multiple responses.

## Discussion and Conclusion

This study advances the scope of research on burglar alarms as effective deterrents to residential burglary by assessing the opinions of convicted burglars. A wide range of direct questions explored target selection and subsequent decision-making. The questions are grouped into three categories of alarm factors—

contextual, direct, and handling attitude. The data are derived from responses of 242 convicted burglars at four Ohio state prisons. Burglaries are dominated by Caucasian males in their 20s, though Blacks are disproportionately present as actors. These burglars tend to have had long arrest histories and experience with the criminal justice system before their current convictions. Initial engagements in criminal behaviors start much earlier than conviction. On average, burglars in this study before incarceration had 2.1 arrests and 2.0 convictions, with almost 90% having 1-3 re-offending history of burglaries.

Camera systems were slightly more frequently mentioned as deterrents than alarms. Together, camera systems and alarms provide the two most frequently cited easily procurable electronic security measures to protect property from burglary, though having someone home and a police car parked nearby are even more powerful deterrents. As a residential security strategy, keeping someone at home or a police car nearby primarily as an anti-burglar strategy is not realistic options. Security systems require one-time purchase costs and modest monthly recurring monitoring fees. Monitoring can occur at a local office, a central station, on one's handheld, or a combination. Burglars understand the risks they assume if they choose to enter such premises.

Questions in this research centered mostly on the impact of alarms which function as a dissuasive during the initial stages of planning or target selection; about two-thirds of the burglars are forcefully deterred not to enact their crime in the presence of alarms. Furthermore, about two-thirds of the even decisive burglars are substantially deterred by the mere presence of alarms. The overwhelming majority of the burglars in this study deal with alarms, once arrived at the pre-selected site, by not disabling them but by acting and leaving more quickly than in facilities without such measures. Only a few actors cut alarm wires or otherwise disabled them.

A few research studies in the United Kingdom concluded that burglar alarms may have no net effect as a deterrent and that alarms can increase the risk of burglary victimization. However, the current study confirms most of the previous evidence that such alarms are a statistically valid preventative measure against burglaries. Burglar alarms and camera systems produce a true deterrent effect in the opinion of the respondents who have been convicted for this type of crime.

However, as seen in Table 4, depending on alarm systems exclusively as deterrent measures is unwise. Previous work on this topic since the early 1970s shows that in

most cases an alarm can be more effective when combined with other protective security measures, such as locks, better materials on doors and windows, grills over doors and windows, light inside and outside, dogs, and security yard signs. Camera systems now join these security measures. For further burglary mitigation evidence-based approaches, concentrating on burglary hotspots and social-economic and demographic analyses (Lee, 2010a, 2010b), might be productive.

Several limitations linked to the current study are worth noting. For example, the data source for this study came from the survey. Since the surveys were collected from the incarcerated inmates, the truthfulness of their responses cannot be verified. In particular, personal information (e.g., age, criminal history, arrest history, etc.) was not verified with police or courts records. In addition, since the surveys were collected from adult prisons, we do not know about the participants' criminal records as minors if any. This unknown gap can be a future research topic to explore furthermore about minor/juvenile burglars' perception of alarm systems and their deterrent effect.

Despite several limitations of the study, one significant aspect of the current study is that, unlike most of the previous studies which rarely treated a burglar alarm as an independent variable to access its deterrent impact on burglaries, this project examined the direct/net effect of alarm systems on residential crime prevention approaches, being separated from other home protection measures (e.g., camera systems, windows/door locks, light, and dogs). Alarm systems have technologically advanced and become more user-friendly control mechanisms (e.g., smart home security products). This study is one of the first examinations to scrutinize the direct impact of alarms based on the convicted burglars.

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