Guardianship In Action (GIA) Within Brisbane Suburbs: Examining the Relationship between Guardianship Intensity and Crime, and Changes Across Time

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Abstract

Using Reynald's (2009) Guardianship In Action (GIA) model, direct observations of properties along high- and low-crime street segments, within one low-crime and one high-crime suburb of Brisbane, Australia were conducted ($N = 1,113$). Multiple observations of properties were recorded across multiple times of the day, and day of the week, in order to determine (a) the guardianship intensity exhibited by suburban residents, (b) whether areas that experience different levels of property crime were associated with different levels of guardianship intensity, and (c) whether guardianship intensity differed across time of day, and day of week. Results show that guardianship intensity was significantly higher on the high crime street segments. Although levels of occupancy differed significantly in line with expected routine activity patterns, there were no significant differences in monitoring and intervention behaviors observed over time. Current findings are discussed in light of the unique suburban residential context of Brisbane, and avenues for future research are examined.

Keywords: supervision, routine activity theory, suburbs, property crime, observation

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Introduction

Routine activity theory argues that three elements must converge in time and space for crime to occur: a motivated offender, a suitable target/victim, in the absence of a capable guardian (Cohen & Felson, 1979). The convergence of these elements is reliant upon a person's routines activities, which include work, activities undertaken at home, along with leisure and social activities. Further, capable guardianship was originally defined as the act of supervision, undertaken by ordinary citizens, for the purpose of crime prevention (Cohen & Felson, 1979). Within this approach, guardians are defenders of crime, who can discourage crime through their presence, supervision, and intervention (Felson & Eckert, 2016; Reynald, 2009).

Most guardianship studies support the theorised relationship between guardianship and crime: higher levels of guardianship are associated with lower levels of crime (see Hollis-Peel, Reynald, van Bavel, Elffers, & Welsh, 2011). Research from the U.S. and U.K. has found that decreased levels of guardianship was related to increased risk of burglary and direct-contact predatory crimes (e.g., Cohen & Felson, 1979; Garofalo & Clark, 1992; Miethe, Stafford, & Long, 1987; Miethe, Stafford & Sloane, 1990; Sampson & Wooldredge, 1987). Collectively, such studies reinforce the importance of guardianship in protecting people and properties from victimisation.

However, early studies of guardianship relied on aggregate survey measures to operationalize this concept, and often did not directly measure guardianship or supervision (Hollis-Peel et al., 2011). Common indicators of guardianship that were used included female labour force participation and employment (Cohen & Felson, 1979; Massey, Krohn, & Bonati, 1989; Moriarty & Williams, 1996; Sampson & Wooldredge, 1987; Stahura & Sloan, 1988), household composition (Cohen & Cantor, 1980; Miethe & Meier, 1990; Tseloni, Wittebrood, Farrell, & Pease, 2004), and measures of household occupancy (Garofalo & Clark, 1992; Lynch

& Cantor, 1992; Miethe, et al., 1987; Miethe et al., 1990; Robinson, 1999). In addition, such studies originated from the U.S., or the U.K. These measures were used as indicators of household availability and time spent at home, and provided proxies of household guardianship levels (Reynald & Elffers, 2015). However, recent research has questioned the use of some of these measures as valid approximations of residential guardianship and supervision (see Reynald, 2009, 2011a; Reynald & Elffers, 2015).

To provide a more ecologically valid measure of residential guardianship, Reynald (2009) developed the Guardianship in Action (GIA) model. This approach involved the direct observation of guardianship in residential contexts by observing whether residents could be seen in their homes, monitoring their surroundings, and intervening when necessary. The direct observational measures of these three fundamental dimensions of guardianship were used to create a guardianship intensity score at residential properties. To date GIA studies have shown that there is a significant negative association between guardianship intensity and property crime (Reynald, 2009, 2011a; Hollis-Peel & Welsh, 2014), with guardianship intensity emerging as a significant negative factor in explaining the variance in property crime in The Hague, the Netherlands (Reynald, 2011a). To date, existing GIA research has been limited to neighborhoods in and around high-density, inner-cities in the Northern Hemisphere, for example, The Hague and Boston (Hollis-Peel & Welsh, 2014; Reynald, 2009, 2011a), and has only assessed variation in guardianship intensity at different times of the day during weekdays (Reynald, 2011b). In general, there is limited research examining the cross-cultural application and mechanisms of guardianship within different countries, and across different times. Notable exceptions include Hollis-Peel, Reynald, and Welsh (2012), Reynald (2011b), and Tseloni, Wittebrood, Farrell, and Pease (2004).

The current exploratory study makes two unique contributions to the existing GIA literature. First, it measures guardianship intensity through direct observation using the GIA

model in a low-crime, low-density suburban context. This allowed us to test the applicability of the routine activity theory concept of guardianship in a very different environmental context to that of North American cities from which the theory was derived. Without this information, we cannot know if strategies that improve effective guardianship behavior in the American neighborhood context can successfully be translated to the Australian suburban context. Further, examining guardianship in the distinctive context of the Brisbane suburbs adds to the limited cross-cultural research on guardianship. Second, no previous studies have examined how guardianship intensity patterns change on weekends compared to weekdays. We expect changes in routine activity patterns will affect guardianship patterns and this will be manifested in this first-time comparison of GIA on weekends and weekdays. By addressing these two gaps, the current study aims to advance our understanding of guardianship intensity and its relationship with property crime, which has important implications for crime prevention theory, practice, and policy.

Literature Review

Three important conclusions can be drawn from the existing body of literature on guardianship, crime, place, and time. First, guardianship plays an important role in crime prevention. When capable guardians are present, crime is less likely to occur when motivated offenders and suitable targets converge in space and time (Cohen & Felson, 1979). Second, the environmental characteristics of place can influence levels of guardianship exhibited by residents (Hollis-Peel, Reynald, & Welsh, 2012; Reynald, 2011a). Third, the presence or absence of capable guardians is strongly influenced by the time of day and the day of the week, both of which dictate their everyday, routine activities (Cohen & Felson, 1979; Reynald, 2011b).

Capable guardianship is residential areas is critical, as a reduction in guardians can adversely affect crime rates (Cohen & Felson, 1979). For example, Cohen and Felson (1979)

found that lower levels of household guardianship and an increase in activities away from the home were associated with higher levels of burglary and direct-contact predatory crimes in the U.S. Similarly, other U.S. based research found higher levels of household guardianship are associated with a reduction in property crime in residential places (e.g., Garofalo & Clarke, 1992; Lynch & Cantor, 1992; Miethe, Stafford, & Sloane, 1990). Findings from the U.K. also support the relationship between increased guardianship at home and lower burglary rates (Coupe & Blake, 2006; Sampson & Wooldredge, 1987). Whilst important, these studies do not directly observe guardianship directly in space and time, which the GIA model addresses.

Guardianship Within Urban Environments

Previous studies that applied the GIA model examined the relationship between guardianship intensity and crime in two high-density, high-crime cities relative to Brisbane: The Hague (Reynald, 2009) and Boston (Hollis-Peel & Welsh, 2014). In The Hague, approximately 15% of residents were available, 14% monitored, and 9% intervened with the observers (Reynald, 2009). In contrast, in Boston, approximately 75% of residents were available, 8% monitored, and 3% intervened (Hollis-Peel & Welsh, 2014). Further, in The Hague, application of the GIA model indicated that as levels of guardianship intensity increased along a street segment, the average number of property crimes decreased (Reynald, 2009). This relationship was also found in a larger-scale follow-up study (Reynald, 2011a). Similar results were observed in Boston (Hollis-Peel & Welsh, 2014), supporting the theoretical explanation of the role guardians play in the prevention of property crime.

Existing scholarship suggests that the physical, spatial, and social environmental context can influence guardianship behavior (Reynald, 2010, 2011a; Taylor, Gottfredson, & Brower, 1984; Taylor, Koons, Kurtz, Greene, & Perkins, 1995; Weisburd, Groff, & Yang, 2012). There are three contextual differences between urban and suburban areas, which may have implications for levels of guardianship (Dines & Vermeulen, 2013). First, urban areas

have a higher population density and high-rise buildings comparative to suburban areas. Second, urban areas usually fall within inner-city limits, whereas suburban areas sit outside of the city. Third, urban areas tend to have more mixed land use than their suburban counterparts.

High activity, density, and accessibility can diminish effective guardianship from residents living along busier street segments because of increased difficulty in identifying suspicious people and activities (Johnson & Bowers, 2010). Further, mixed land use patterns such as the presence of commercial and non-commercial facilities affects the number of non-residents commuting in and out of an area, creating more activity and reducing the amount of familiarity among residents (Taylor et al., 1995). The relationships between increased mixed land-use, accessibility, activity, and increased crime risk (due to decreased or diminished guardianship) are supported in the literature (Armitage, 2013; Beavon, Brantingham, & Brantingham, 1994; Davies & Johnson, 2015).

While the majority of research on guardianship has been conducted within American and European settings, the authors are aware of one study on guardianship in the Brisbane context conducted by Wickes, Zahnow, Shaefer, and Sparkes-Carroll (2016), which examined neighborhood guardianship and property crime. Based on Reynald's (2009) model and using survey measures of guardianship availability, expectations, and action, they found guardianship availability was significantly associated with neighborhood property crime rates. However, rather than directly measuring this behaviour at micro-places using the GIA method, this study relied upon aggregated survey measures of guardianship. This provides an avenue to conduct guardianship research in Brisbane using the GIA model.

To enhance our understanding of guardianship and its relationship to crime in a low-density context, the current study applies the GIA model to observed guardianship intensity behaviour in the suburban context of Brisbane. Environmental factors could differ from places where guardianship research has predominately been undertaken (i.e., urban U.S. cities) and

outer-city, low-density Brisbane suburbs. These differences may have meaningful consequences for the activities that take place in these areas, including guardianship (Felson, 2006). If so, this will impact the design of crime prevention strategies and policies.

Changes in Guardianship Across Time

Like that of victims and offenders, guardians' movements vary throughout the day, which means residents' guardianship intensity also varies. Fluctuations in guardianship intensity can be attributed to changes in residents' daily, routine activities (Felson & Eckert, 2016; Felson & Poulsen, 2003). For example, Clarke and Eck (2003) assert that commuters leaving residential areas in the morning reduces the number of available guardians during the day. As a result, the number of suitable targets (i.e., unguarded properties) increase, which, in turn, elevates the likelihood that crime will occur. Similarly, the effectiveness of guardianship has been theorized to change throughout the day (Johnson & Bowers, 2013). During morning hours residents who are home will generally have their curtains or blinds open, allowing less obstructed views of the street. During evening hours, on the other hand, residents are more likely to have their curtains or blinds closed, impairing their view of the street. Residents are also more likely to be asleep at night, which decreases levels of supervision (Johnson & Bowers, 2013; Reynald, 2011b).

While theoretically, the influence of time on guardianship is clear, there is limited empirical research in this area. An exception to this is the work of Coupe and Blake (2006) who examined the influence of daylight and night-time guardianship on burglary strategies. Through victim interviews, they found that guardian occupancy was lowest during daylight hours on weekdays. Occupancy rates were significantly higher at night and on weekends.

Further, applications of the GIA model to test whether guardianship is time dependent showed significant differences between daytime (9am-5pm) and night-time guardianship intensity (7pm-11pm) in The Hague (Reynald, 2011b). Specifically, individuals monitored and

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intervened significantly less during night-time hours due to closed curtains or engaging in activities that kept them from monitoring (e.g., watching television, sleeping, etc.). Similarly, Reynald and Elffers' (2015) study of self-reported monitoring by Dutch residents showed differences in guardianship throughout the day, with monitoring more common during mornings and afternoons, comparative to evenings and late-night periods. To date, no study has observed guardianship intensity on weekends and compared intensities across both time of day, and day of week—a research gap that the current study will address.

CURRENT STUDY

Building on this existing empirical knowledge, the current study takes an exploratory approach to directly observe guardianship in action in Brisbane suburbs. This study attempts to uncover how guardianship intensity differs between high-crime and low-crime suburbs. Analysis of guardianship behaviours is conducted at different times of day and days of week to answer three research questions:

1. *What levels of guardianship intensity can be observed in Brisbane suburbs?*

2. *Is there a relationship between guardianship intensity and levels of property crime in Brisbane suburbs?*

3. *How does guardianship intensity differ across days of the week and times of the day, within Brisbane suburbs?*

The Brisbane Context

Brisbane is the capital city of Queensland, situated in southeast of the state. It is Australia's third most populous city consisting of approximately 2.2 million people (Queensland Government Statistician's Office, 2015), and is Australia's largest city geographically, covering over 1.5 million hectares (Australian Bureau of Statistics, 2014). Housing structure in Brisbane differs to other cities in Australia, Europe, and America. Queensland has a vernacular housing style known as "Queenslanders" (see Figure 1), which

are characterised by high-set houses on stilts, with wide verandahs (Fisher & Crozier, 1994; Miller, Buys, & Kennedy, 2013). Potentially, Queenslanders could provide better opportunities for guardianship, due to their extension off the ground and front verandahs which could facilitate the ability to see what's happening in a resident's surroundings.

INSERT FIGURE 1 ABOUT HERE

Due to differences in the Australian suburban context, and the different type of housing design in Brisbane suburbs, observing guardianship intensity by Brisbane suburban residents adds to the developing field of guardianship research.

DATA AND METHODS

Data for the current study were collected through direct observations of 279 properties, across 24 street segments in two Brisbane suburbs. Statistical Area Level 2s (SA2) were used to operationalise suburbs for this study[i]. From an initial 137 SA2s, two were purposively selected using a Conjunctive Analysis of Case Configurations (CACC; Miethe, Hart, & Regoeczi, 2008)[ii]. As Reynald (2011a) showed, socio-demographic factors can influence levels of guardianship; therefore, CACC was used to select two suburbs which had similar socio-demographic profiles, but differed in property crime rates (i.e., one lower-than-average property crime suburb and one higher-than-average property crime suburb). This allowed for the exploration of how guardianship intensity differed across places that experience different levels of property crime.

Suburb Selection

Using CACC, two suburbs were selected that were similar on six socio-demographic characteristics, but differed in property crime rates. Each suburb was compared on: (a) property crime data, (b) population growth, (c) disadvantage, (d) ethnic presence, (e) household composition, (f) residential mobility, and (g) potential offenders.

First, property crime data were gathered through the Queensland Police Service (QPS), using the "Offence Against Property" offence division between December 2010 and December 2013, and included unlawful entry with intent, other property damage, other theft, and unlawful use of a motor vehicle. Second, population growth was measured by the percentage change over a 10-year period, using Annual Population Estimates from 2003-2012 (Australian Bureau of Statistics, 2013a). Third, levels of disadvantage were measured using the Index of Relative Socio-Economic Advantage and Disadvantage from 2011 (Australian Bureau of Statistics, 2011b)[iii]. Fourth, ethnic presence was calculated using the proportion of residents that speak another language other than English at home. The only racial or ethnic identifier included in the Australian Census is Indigenous status. There are also two broader proxy variables of ethnicity: country of birth and language spoken at home. Based on the available data in the Census, language spoke at home was believed to be the closest variable to reflect ethnic heterogeneity. Importantly, as this variable was computed as the proportion of residents who spoke another language, this measure is a better refection of ethnic presence, not heterogeneity. Fifth, the proportion of family households (i.e., a household with two or more residents who were related or in a de-facto relationship/married) was used as the indicator for household composition. Sixth, the proportion of people who lived at a different address five years ago was used to measure residential mobility. Lastly, in order to partially control for the crime rate in each area, a measure that included the proportion of potential offenders was included and operationalised as the percentage of 10-20 year old males living in each suburb.

Street Segment Selection

Stratified random sampling was used to select an equal mix of high property crime street segments and no property crime street segments from each suburb. From the initial 822 segments, non-residential segments were immediately excluded (*n* = 275). Further, due to

budget and time constraints available for data collection, street segments which had more than 16 properties were excluded from the sample ($n = 119$). These exclusions left 428 segments.

Next, street segments were classified based on the amount of crime they experienced—either high crime or no crime. "High crime" street segments were operationalised as a street segment on which a minimum of three property offences were reported across the three year period, one of which was an unlawful entry offence[iv]. From the resulting segments, twelve were randomly selected from each suburb: six high-crime and six no-crime segments. As such, four areas were included in this study: (a) no reported property crime street segments in the low crime suburb (b) high property crime street segments in the low crime suburb, (c) no reported property crime street segments in the high crime suburb, and (d) high property crime street segments in the high crime suburb.

Property crime counts on the selected high crime street segments ranged from three to 13 offences over the three-year period. On average, street segments in the high crime suburb experienced 2.15 ($SD = 3.48$) property crimes during this period. For the low crime suburb, the average number of property crimes during the same period for each street segment was 1.57 ($SD = 2.07$). We acknowledge these are very low crime levels even in the "high crime" suburbs, and this illustrates our argument about the uniqueness of the Brisbane suburb context compared to other US and European cities where similar guardianship studies have been done.

Observations

In total, four observers conducted 1,113 direct observations of 279 properties, across 24 street segments, using an adapted version of Reynald's (2011a) observational protocol. Properties were observed during July and August, 2014. All observers were Caucasian, in their early 20's, and three were female. Following the procedure from prior GIA studies (Hollis-Peel & Welsh, 2014; Reynald, 2009, 2011a), when observers arrived at the street segment, they walked from one end to the other to potentially alert residents to their presence. The observation

of the street segment was rated first, followed by the ratings of each individual property on the street. Observers stood directly outside the house on either the footpath or the street, and carried identification and information sheets for residents if they intervened and questioned their presence. For safety reasons, two observers were required on each street segment and the local police station was notified prior to data collection. As the lead researcher was involved in sample selection and conducting observations, they were aware of which areas where high and low crime. However, the three research assistants were purposefully provided with limited information regarding sample selection. They were not informed of which suburb and street segments were classified as low/high crime, and were not aware that the method involved comparing high and low crime areas. Further, inter-rater reliability testing between the lead researcher and research assistants showed good consistency in observer ratings ($\alpha = .77$).

The observational protocol was used to measure physical, spatial, and social characteristics, along with the guardianship intensity of individual properties and street segments. Observers were trained to use the protocol, and used the iSurvey application on iPads to complete the property and street observations. Guardianship intensity was measured using Reynald's (2009) guardianship intensity levels. For this study, an additional measure of non-visual occupancy was also included. When a person was visibly home, monitoring, and intervened with the observer, this property received the highest possible score for guardianship intensity. Each property was rated as such:

(0) Invisible: no evidence the property is occupied

(1) Non-visual occupancy: non-visual cues the property is occupied (i.e., sound or a door was open)

(2) Visual occupancy: visible evidence the property is occupied

(3) Monitoring: resident(s) monitored observers or carried out general surveillance of their surroundings

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(4) Direct intervention: resident(s) approached observers during observations and questioned their presence

Observation Times

To examine variation in guardianship intensity at different times of day, and days of week, each property was observed four times: (a) weekday morning (7am-9am), (b) weekday afternoon (2pm-4pm), (c) weekend morning (7am-9am), and (d) weekend afternoon (2pm-4pm). Time intervals were selected based on general routine activity patterns of suburban residents (i.e., the morning period corresponds to when residents were likely to be home getting ready and leaving for work, whereas the afternoon period corresponds to when residents were likely to be away from home doing school "pick-ups"). Further, using QPS crime statistics, the "morning" represented the time when property crime was low, compared to the "afternoon", when it was higher. Observations took place during these times on both weekdays and weekends to examine the differences in guardianship intensity. In addition, this allowed the comparison of guardianship intensity in a low crime period and a relatively high crime period.

RESULTS

Overall, 1,113 property observations were conducted of 279 properties[v] to assess guardianship intensity, associations between guardianship intensity across areas that experienced different levels of crime, and how guardianship intensity is influenced by time of day, and day of week in suburban residential areas. Results should be viewed in the context that this study is explorative and descriptive.

Guardianship in a Suburban Context

Frequencies of guardianship intensity levels are presented in Table 1 to address the first research question: *What levels of guardianship intensity can be observed in Brisbane suburbs?* Each property observation was given a guardianship intensity score, ranging from 0-4, where

zero represents no cues of occupancy, and four represents a resident being visible, monitoring, and intervening with the observer.

INSERT TABLE 1 ABOUT HERE

Table 1 shows that approximately two-thirds of observed properties had no cues of occupancy, just higher than 7% of residents engaged in monitoring their surroundings and the observers, and approximately 3% of residents directly intervened with the observers and questioned observers' presence on their street segment. When visible occupancy is controlled for, approximately 77% of available, visible residents engaged in monitoring over their surroundings (7.4% of 9.6%). In addition, approximately half (48%) of residents who monitored then went on to intervene with the observer on their street (3.6% of 7.4%).

Guardianship and Crime

Presented in Table 2 are the frequencies of guardianship intensity across the four areas in the low-crime suburb and the high-crime suburb: (a) no reported property crime street segments in the low-crime suburb (b) high property crime street segments in the low-crime suburb, (c) no reported property crime street segments in the high-crime suburb, and (d) high property crime street segments in the high-crime suburb. Results are presented to address the second research question: *Is there a relationship between guardianship intensity and levels of property crime in Brisbane suburbs?*

Results show that both visible and non-visible occupancy were higher on high-crime street segments in both suburbs. The data also indicate that monitoring is lowest on the no reported crime street segments in the low-crime suburb (5%). Finally, intervention remains consistently low across place (3-4%), according to the data that were collected.

INSERT TABLE 2 ABOUT HERE

In order to test whether significant differences in guardianship intensity scores exist across places, a 2x2 between groups factorial ANOVA was completed. The two categorical

variables were (a) suburb (low-crime vs high-crime suburb), and (b) street segment type (no reported property crime streets vs high reported property crime streets). To create a continuous dependent variable, guardianship intensity was aggregated to the street segment level. Only one significant main effect was found. Differences in guardianship intensity between street segment crime type were tested and significant differences observed ($F(1, 274) = 5.05$, $p = .025$). Unexpectedly, average guardianship intensity was significantly *higher* on the *high* crime street segments. However, the effect size was small, with street type accounting for only 2% of the variation in level of guardianship intensity ($\eta^2 = .018$).

Guardianship and Time

Presented in Table 3 are the frequencies of guardianship intensity across the four time points used in this study to answer research question three: *How does guardianship intensity differ across days of the week and times and times of the day, within Brisbane suburbs?* The time points presented are: (a) weekday mornings, (b) weekday afternoons, (c) weekend mornings, and (d) weekend afternoons. Data indicate that occupancy was highest on weekend afternoons (23% non-visible and 9% visible), while monitoring and intervention was highest on weekday mornings (9% and 5%, respectively). Unsurprisingly, visible occupancy, monitoring, and intervention were all lowest on weekend mornings.

INSERT TABLE 3 ABOUT HERE

To examine whether there were significant temporal differences in guardianship intensity across the four time points considered, a series of Cochran's Q tests were performed. Results are presented in Table 4. As observations were related (i.e., each property was observed four times), Cochran's Q was deemed to be the suitable test as it examines whether differences in categorical variables exist across three or more related groups. Due to missing data on three properties, the sample used in this analysis consisted of 276 properties.

Results of Cochran's Q test show that non-visible occupancy differed significantly across time (χ^2 (3, n = 276) = 12.98, p = .005). Unexpectedly, monitoring levels were not significantly different across time periods. However, differences in visible occupancy (χ^2 (3, n = 276) = 6.87, p = .076) and intervention (χ^2 (3, n = 276) = 6.33, p = .097) across the four time periods approached significance. Post hoc tests were conducted to examine where significant differences in non-visible occupancy existed. A series of McNemar's tests were completed to examine differences in occupancy between two time points (e.g., weekday morning vs. weekday afternoon). Overall, non-visible occupancy was significantly higher on weekend afternoons than weekday afternoons (p < .001).

INSERT TABLE 4 ABOUT HERE

DISCUSSION

This exploratory study has examined guardianship intensity in the distinct environment of suburban areas of Brisbane, Australia. This study assumes the validity of Reynald's (2009) GIA model Reynald's (2009), and uses it to examine guardianship in a unique, low-density, low crime setting. The research specifically investigated the extent to which guardianship intensity differed across place and time, by conducting observations of suburban properties in four areas, across four times of the day/week. Data indicate that guardianship intensity was higher on high crime street segments, and further, results from observations show the time sensitivity of guardianship, and how it fluctuates over the week. Although past research on guardianship shows that increased guardianship is associated with lower levels of property crime (Cohen & Felson, 1979; Hollis-Peel, Reynald, & Welsh, 2012; Reynald, 2009, 2011a), results of the current study were unexpected in four ways.

First, results of the current study suggest that approximately 77% of available, visible residents engaged in monitoring, and roughly half of monitoring residents intervened with the observers. In comparison to previous GIA studies, 91% and 11% of available, visible residents

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monitored their street in The Hague (Reynald, 2009), and the U.S. (Hollis-Peel & Welsh, 2012), respectively. Even in a low-crime area such as Brisbane, residents still engaged in monitoring over their surroundings, and intervened with observers. Potentially, guardians will still operate and engage in supervision even if there is little to no crime. The low-crime context of the Brisbane suburbs offers an interesting insight not addressed in the routine activity conceptualisation of guardianship or previous GIA studies into how guardianship behaviour functions when we compare low-crime environments.

Second, results of the current study suggest that guardianship intensity is significantly *higher* on street segments with a higher level of crime compared to street segments with no crime. Higher levels of guardianship on high crime street segments may lead to higher detection of crime, as residents are available to witness and report suspicious and unfamiliar behaviour of potential offenders. This finding is similar to Stahura and Sloan (1988), who found that suburbs with higher police presence recorded higher crime rates. This does not mean that presence of guardians or police increases crime rates; but rather, that there is a greater awareness of crime when more people are present. Increased guardianship intensity on high crime street segments may also be a reactionary response to prior victimisation. In areas with higher crime rates, residents may respond by being more vigilant of their surroundings; and therefore, more guardianship behaviour was observed on these street segments. Greenberg and Rohe (1984) found that when residents of high crime areas were out in their neighborhood, they were more likely to monitor and watch out for unfamiliar or suspicious people or activities. As such, when a property is victimised, residents would be more cognisant of crime occurring and respond by being more vigilant.

It must be noted that in Brisbane the differences between the high (three reported property crimes over three years) and low (no reported property crime over three years) crime street segments were minimal, and this may provide an explanation for these unexpected

patterns of behaviour. It is probably most appropriate to think of these results as showing that when we compare street segments with no crime with streets that experience some crime in Brisbane, guardianship intensity is higher on those streets that experience some crime. This makes sense when we consider that residents who live in areas that experience no crime will likely not perceive the need to exercise guardianship. Residents in areas that experience some crime are more likely to be motivated to act as guardians. While in Brisbane these were relatively high crime streets, when we compare them to streets in major U.S. or European cities they are actually relatively low crime areas. It is important to keep this in mind when assessing these results.

Third, when guardianship intensity was compared across time in a suburban context, only occupancy emerged as being significantly different over time of day/week. In particular, occupancy was found to be highest on weekend afternoons. This result is not surprising, as you would expect to find more people at home on the weekends when they do not have work obligations, spending their leisure time at home. However, unexpectedly, occupancy levels did not differ significantly between weekday morning and weekday afternoons. Given the differences in crime during morning (low crime) and afternoon (high crime) periods, it was expected that there would be differences in routine activities, and guardianship would be lower on weekday afternoons. However, this result may be explained by the number of people in these suburbs not participating in the workforce. Approximately 30% of adults within each suburb were not involved in the workforce (Australian Bureau of Statistics, 2011). As a result, these residents were available both morning and afternoon as they did not have work commitments.

Fourth, variations in monitoring ranged from 6-9% across the four time periods, but this difference was not large enough to reach statistical significance. Based on the routine activity approach, differences in monitoring across the four time periods were expected, so this

result was surprising. The lack of difference in monitoring may be due to the suburban context, the small number of residents who monitored ($n = 82$), the non-threatening nature of the observers, or the low levels of crime. Importantly, these results corroborate findings from past research which found that availability does not equate to monitoring (Reynald & Elffers, 2015). It appears that although total occupancy was significantly higher on weekends, this does not mean that those residents at home automatically engaged in monitoring.

Limitations and Directions for Future Research

While this study makes a number of contributions to guardianship literature, a number of limitations have been identified. First, the sample size is small and unlikely to be representative of all suburban areas. Street segments with more than 16 properties also were to be excluded due to budgetary and time constraints, and street length could influence usage and activity, and therefore guardianship patterns. The small sample size could also result in low power and be responsible for a lack of significant findings (Everitt, 2002). As a few results approached significance in this study with a small sample, larger sample sizes would be advantageous for future research. In addition, the small number of residents who monitored and intervened could be due to a perceived lack of threat. As all observers were Caucasian, wore casual clothing, majority female, and stood on the street or sidewalk, it is possible that residents did not perceive observers to be particularly threatening, and therefore did not exert visible guardianship behaviours. Further, a resident seeing such a person simply standing on their street could elicit a very different response to if they saw an actual crime occurring.

Methodological limitations stemming from our reliance on recorded crime data also require consideration. It is acknowledged that while unlawful entry and motor vehicle theft have high reporting rates to police in Australia (Australian Bureau of Statistics, 2016), we cannot assume that the no property crime street segments did not actually experience any property crime. Further, testing a causal relationship between guardianship and crime is

difficult, and is not something that could be done in this study due to the cross-sectional and non-experimental design. Rather this study measures the association between directly observed guardianship levels and the amount of crime at the suburb and street segment level. Lynch and Cantor (1992) argue that high guardianship could help maintain an already low crime rate, and Reynald (2011a) asserts that it may be easier for residents to identify suspicious of unusual events in low crime areas as these are far less common than high crime areas. Therefore, it may be that guardianship is easier in low crime areas and that this keeps low crime rates low, and this may be the case in the Brisbane suburban context. Future research calls for longitudinal approaches to studying guardianship to test the causal relationship and causation between guardianship on crime. Understanding the dynamics of the guardianship-crime relationship is critical for improving and establishing best-practice approaches to crime reduction strategies in residential areas.

Future research could also look to comparing guardianship intensity across a number of contexts. This could reveal how guardian activity varies across different settings, and identify factors that facilitate this behaviour in a diverse range of built environments. In particular, it would be interesting to delve deeper into the guardianship mechanisms at work in "no crime" suburb areas as the current study suggests that guardianship intensity is lower in these areas. Further, while a majority of available residents monitored, almost a quarter of residents who were at home did not monitor their surroundings. It could be that residents did not monitor due to design (i.e., blocked visibility), or they did not feel responsibility to do so. It would be important to understand why residents engage in monitoring, as well as why they do not, as this could have important implications for suburban street and housing design, and encouraging residents to act as guardians. In addition, a majority of our understanding of guardianship and surveillance is from within residential settings (see Felson & Eckert, 2016). There are calls for guardianship research in public areas to extend our understanding of this

behaviour, and to uncover how guardians can be effective in public spheres, and what motivates people to act as capable guardians outside of their residential areas (Hollis-Peel & Welsh, 2014).

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Figure 1: Example of a Queenslander house in the Brisbane suburbs. The high setting of these houses may facilitate surveillance over the street.

Table 1

Frequency of Guardianship Intensity Observed in the Brisbane Suburbs (N = 1,113)

Guardianship intensity score	*n*	%
Not visible (0)	700	62.9
Non-visible occupancy only (1)	184	16.5
Visible occupancy only (2)	107	9.6
Visible occupancy + monitoring only (3)	82	7.4
Visible occupancy + monitoring + intervention (4)	40	3.6

Table 2

Frequency of Guardianship Intensity by Suburb and Street Crime Level (N = 1,113)

		Guardianship intensity on streets in —							
		Low crime suburb				High crime suburb			
		No crime		High crime		No crime		High crime	
Guardianship intensity	*N*	*N*	%	*N*	%	*N*	%	*N*	%
Not visible	700	200	67.8	150	57.7	178	67.7	172	58.3
Non-visible occupancy	184	42	14.2	46	17.7	37	14.1	59	20.0
Visible occupancy	107	26	8.8	32	12.3	21	8.0	28	9.5
Monitoring	82	16	5.4	21	8.1	21	8.0	24	8.1
Intervention	40	11	3.7	11	4.2	6	2.3	12	4.1
Total	1113	295	100.0	260	100.0	263	100.0	295	100.0

Table 3.

Frequency of Guardianship Intensity by Day of Week and Time of Day (N = 1,113)

		Percent of GIA in —							
		Weekday				Weekend			
		morning		afternoon		morning		afternoon	
Guardianship intensity	*N*	*N*	%	*N*	%	*N*	%	*N*	%
Not visible	700	175	63.2	182	65.5	186	66.7	157	56.3
Non-visible occupancy	184	38	13.7	34	12.2	49	17.6	63	22.6
Visible occupancy	107	25	9.0	34	12.2	22	7.9	26	9.3
Monitoring	82	24	8.7	21	7.6	17	6.1	20	7.2
Intervention	40	15	5.4	7	2.5	5	1.8	13	4.7
Total	1113	277	100.0	278	100.0	279	100.0	279	100.0

Table 4.

Results of Cochran's Q Tests Comparing Guardianship Intensity Four Time-Points (n =276)

Guardianship category	*Q*	df	*p*
Non-visible occupancy	12.98	3	.005
Visible occupancy	6.87	3	.076
Monitoring	6.05	3	.109
Intervention	6.33	3	.097

ENDNOTES

[i] The Australian Statistical Geographical Standard (ASGS) is the Australian Bureau of Statistics' geographical framework (Australian Bureau of Statistics, 2013b), but does not define suburbs. Instead, they use a hierarchical system of Statistical Area Level 4's to Statistical Area Level 1's. SA2s are the closest approximation of suburbs and are "general purpose medium sized areas" that interact socially and economically, and generally have populations of 3,000-25,000 residents (average 10,000). The initial sampling frame included five SA4s: Brisbane North, Brisbane East, Brisbane South, Brisbane West, and Brisbane Inner City, which collectively consist of 137 SA2s.

[iiii] CACC considers all possible combinations of variable attributes simultaneously. The number of possible case configurations depends on the number of independent variables, and the number of categories associated with each. CACC requires categorical variables therefore the variables were split into quartiles measuring the lowest and highest 25% and the average 50%. For this conjunctive analysis, seven independent variables, each with three categories, were used. This approach resulted in a total of 2,187 possible combinations of unique socio-demographic profiles ($3^7 = 2,187$), and reflect the total number of theoretical contexts that define Brisbane suburbs. However, based on results of CACC, only 99 unique profiles were identified. The most common configuration which had both low and high property crime was average on all factors and low on potential offenders, from which two suburbs were selected. These are neighbouring suburbs; however, they had very different property crime rates. Further, their environmental landscape differed with the high crime suburb having a higher level of mixed land use and accessibility through a main arterial road and two train stations. From these two suburbs, 24 street segments were selected—12 from each suburb, resulting in a sample of 279 properties.

[iii] This is a 25 item scale with measures of advantage weighted positively and measures of disadvantage weighted negatively, therefore the higher the score, the higher the indicator of advantage and less disadvantage. Data from the 2011 Australian Census were used for the remaining factors (Australian Bureau of Statistics, 2011b).

[iv] As crime counts were so low, and street segments were of a similar length, counts of crime rather than standardized rates were used to classify high crime street segments.

[v] As each property was observed four times, 1,116 observations should have been conducted (279 x 4). However, due to missing observations on three properties, the final sample size was 1,113.