Predicting perceptions of crime:
Community residents' recognition and classification of local crime problems

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Abstract: In the scholarship of crime prevention, little is understood regarding the prompts for individual observation and classification of local crime problems. Moreover, studies that evaluate individuals' perceptions of crime tend to emphasize the risk of victimization rather than the probability of crime controller behaviour. In order to predict whether and how a community resident combats neighbourhood crime and disorder, we first require a greater understanding of how individuals recognize and categorise those same neighbourhood phenomena. To explore these processes, the current project uses large-scale multilevel survey data from the Australian Community Capacity Study to test the predictive influence of individual characteristics, local social processes, and suburb features on a resident's identification and categorisation of minor, moderate, and major neighbourhood crime problems. Results indicate that lived experiences with prior victimization and interactions with the police, greater frequencies of neighbouring behaviours but lower levels of collective efficacy, socioeconomic disadvantage, and ethnic homogeneity are all associated with a greater likelihood of reporting serious local crime problems.

Keywords: crime problems, disorder, crime control, community crime prevention, perceptions

Community safety and crime prevention initiatives have proliferated since the 1990s, (Ballintyne, Pease, & McLaren, 2000), premised on the notion that local residents present a line of defence as important as formal criminal justice agents and interventions (Crawford, 1997). Beyond serving as gatekeepers to the police (i.e., reporting observed or experienced crimes), communities themselves are structured in ways that facilitate or hinder crime, and residents take both diffuse and specific actions that have preventative effects (Bursik & Grasmick, 1993; Ramey & Shrider, 2014; Reynald, 2011; Sampson, 2012). Communities may understand their local problems better than professional service organisations or formal agencies (Ballintyne & Fraser, 2000), and are often more familiar with the processes and resources common to that area (Crawford, 1998; Sampson & Raudenbush, 2004; Wilson & Kelling, 1982). Neighbourhood-derived values and norms create expectations among residents about (in)tolerable behaviours that take place there and how to address them (Bursik, 1999; Sampson & Wilson, 1995; Warner & Burchfield, 2011). Those standards for behaviour guide residents' recognition and classification of disorder and crime in their local area, which in turn influence the subsequent decisions of whether to intervene and which route of action to pursue (Anderson, 1999; Bursik, 2000; Carr, Napolitano, & Keating, 2007; Miller, 2008; Sampson & Wilson, 1995; Warner, 2007; Wilkinson, 2007).

Yet for residents to combat disorder and crime in their home neighbourhood, they must first identify their observations as such; an important precursor to crime combative action is for a person to categorise what they see as a crime problem. Within the communities and crime literature, little is understood regarding how neighbourhood residents come to categorise crime as being problematic and thus in need of resolution, with some studies demonstrating that individual assessments of local crime and disorder vary wildly (Perkins, Meeks, and Taylor, 1992). To address this research gap, the current study uses large-scale multilevel survey data from the Australian Community Capacity Study to test the

predictive influence of individual characteristics, local social processes, and suburb features on a resident's identification and categorisation of minor, moderate, and major neighborhood crime problems.

Literature review

The body of scholarship relevant to community crime prevention comes from disparate camps. First, there is the general communities and crime literature, concerned with the social-structural conditions of neighbourhoods that influence crime rates (Bursik & Webb, 1982; Kornhauser, 1978; Sampson & Groves, 1989; Shaw & McKay, 1942). Second, there are a host of studies relevant to informal social control and collective efficacy, examining the group processes related to the impediment of local disorder (Browning, 2009; Morenoff, Sampson, & Raudenbush, 2001; Sampson, 2006; Sampson, Raudenbush, & Earls, 1997). Third, many projects examine crime prevention from an environmental criminology perspective, outlining the ways in which communities and the individuals housed there engage in opportunity reduction and guardianship (Clarke, 1992; Cornish & Clarke, 2003; Jeffery, 1971; Newman, 1972; Reynald, 2011; Wortley 2001). Fourth, several criminological theories detail the role of community conditions and resident relationships on offender propensity (Brown & Altman, 1983; Crawford, 1998; Sampson & Lauritsen, 1994; Tremblay & Craig, 1995). Fifth, victimologists have produced studies that explore how individual and neighbourhood characteristics contribute to victimisation and its prevention as well as perceptions about fear of crime (Brunton-Smith & Sturgis, 2011; Perkins, Meeks, & Taylor, 1992; Scarborough et al., 2010). In our review of the literature and selection of variables for analysis, we borrow from each of these bodies of scholarship in one way or another. We acknowledge that there are areas of conceptual overlap and divergence (see Groff, 2015, and Weisburd, 2012), but reason that each of these streams of research provides an important component to the puzzle of how individuals come to classify crime problems in their communities.

The importance of community in crime control

Residents are uniquely placed to help prevent and reduce neighbourhood crime problems. As described by Reynald (2011), neighbourhood residents are potentially the most effective at guarding against crime in the local area because of their time spent there, knowledge about that space, and the personal investment in the welfare of the area. Individual actions can help to prevent offences and stop minor incivilities from becoming major crime problems. One person might target-harden their home, might provide surveillance of their surroundings, might pursue civic solutions to signs of disorder, or might ring the police upon observing a crime; all of these responses are individual behaviours. Importantly, however, that one person and their decision to act are influenced by the community in which they live (Groff, 2015; Sampson & Raudenbush, 2004). Although crime control as an *outcome* may be manifested as an individual behaviour, crime control as a *process* is often facilitated or catalysed by the characteristics of the neighbourhood (Schaefer & Mazerolle, 2015).

The norms that exist in communities influence the actions of the individuals that live there. Residential communities bring individuals together in ways that “transmit guidance concerning conduct in the locality” (Hope, 1995, p. 21). Both macro- and meso-level neighbourhood factors communicate to individuals how they ought to behave (Wicker, 1987) and what behaviour they should expect from others (Weisburd, 2012). These behavioural standards impact a resident’s recognition of deviant or disorderly observations, which in other settings may be considered normative. Environmental criminology must consider how the external environment impacts the thinking of the potential actor (Robinson, 1996); perhaps only when an observation is considered abhorrent, which is contextually dependent, will the observer take note. As described by Sampson and Wilson, communities have “cognitive landscapes” that guide expectations of conduct, serving as “ecologically structured

social perceptions and tolerances” (1995, p. 50). Thus, the observation of disorder or the classification of an act as criminal is dependent upon the collective perceptions developed there, which are subsequent to the social structures and processes that exist in that neighbourhood (Sampson & Jeglum-Bartusch, 1998; Warner & Burchfield, 2011). The nature of the community itself therefore influences expectations of right and wrong, impacting the exercise of consequent crime control behaviours (Warner, 2003).

Another reason individual crime control behaviour is impacted by the characteristics of the community is because the residents have lived experiences with the resources available there that are necessary to combat crime (Ballintyne & Fraser, 2000; Crawford, 1997, 1998). Although disadvantaged communities benefit more from public social control, they are less inclined to invoke these local resources than more affluent neighbourhoods (Velez, 2001), often due to cynicism or dissatisfaction with government and public officials in the area (Carr, Napolitano, & Keating, 2007; Sampson & Jeglum-Bartusch, 1998). Likewise, individuals may not take crime control action because they may place this responsibility with agents of formal control (Carr, 2012). However, some community residents may feel a heightened call to action because of the ability to exercise control over their own space (see, for example, Foster, 1995; Newman, 1972). Additionally, beyond formal social control, residents may be inclined to tap into relationships and networks with other residents to facilitate crime prevention. However, these associations and a person’s ability to activate them for crime control are influenced by the larger community context (Bellair, 1997; Groff, 2015; Warner, 2007; Warner & Rountree, 1997; Wilkinson, 2007)

The process of community crime control

The majority of studies within the communities and crime literature examine variations in rates of reported crime. Less often, scholars examine differences in the ways residents enact crime control (such as the factors related to the decision to call the police),

still with the focus on action that is expected to prevent crime. In both of these cases, the lead-up to the prevention or redress of crime is often glossed over, with the process of crime control often neglected. Reynald's (2011) work on guardianship has provided an important contribution in this regard, as she has progressed a stepwise model of availability, monitoring, and intervention in crime. Yet still, studies focus on willingness to intervene or actual intervention as an objective, neglecting the cumulative contributions of the previous components. Moreover, studies of resident presence and supervision frequently explore the physical features of the environment and their role in crime prevention, ignoring the social and psychological determinants of guardianship (Robinson, 1996; Weisburd, 2012).

Here we argue that supervision as a step in crime control has been overlooked in the research, and that the idea of monitoring neglects the perceptions that individuals may have during their supervision. Just because someone monitors their space does not mean that they will notice a crime or categorise it as criminal. Two people observing the same condition (e.g., a broken window) may infer its source or classify its severity differently (e.g., vandalism by an outsider versus a homeowner's accident; Wallace, 2015). In identifying the stages of a situation-based model of helping behaviours, Burn (2009) identifies the first barrier to action as the failure to notice, followed by a failure to identify the scenario as containing risk. This is consistent with bystander effect research, which demonstrates that people fail to take action when events are seen as non-dangerous and when no perpetrators are present at the time (Fischer et al., 2011). Indeed then, for communities that are characterised by disorder or incivilities, it may inhibit the recognition that a crime has occurred or that it is problematic and in need of action (Foster, 1995).

Importantly, however, these "socially disorganised" communities are not symbolised by one construct, but represent several social processes by which neighbourhoods maintain stability, including the mechanism of community perceptions (Veysey & Messner, 1999).

Residents frequently underestimate their neighbours' conventional values, which has the consequence of weakening individual efficacy in fighting crime problems and lowering a community's capacity for the exercise of informal social control (Warner, 2003). In this way, projections of neighbourhood social cohesion leads to less crime due to increases in guardianship and active social control, but only due to the perception that community members help each other (Lee, 2000). There may be a belief among residents that they *can* do something to combat crime and disorder in their area, but those beliefs are fragile, requiring reinforcement and support (Foster, 1995). The communities and crime literature has established that various social-structural conditions are not directly linked to rates of crime or prevention, but rather other explanatory mechanisms are needed to account for the ability of neighbourhood residents to *activate* crime control (Sampson, Raudenbush, & Earls, 1997). Social processes and capital (such as interactional networks between neighbours) are necessary for crime control, which are rooted in residents' embeddedness and integration in their community (Bursik, 1999, 2000). In this way, suburbs communicate behaviour settings, in which the social context of the area influences the roles that individuals play and the activity norms they have for others located there (Sampson & Wilson, 1995; Weisburd, 2012; Wicker, 1987). As described by Tilley, we must therefore draw attention to "the mechanisms through which preventive outcomes are achieved, the means of their activation and the contexts needed for these preventive processes to operate" (2009, p. 4).

The classification of local crime problems

Unfortunately, much of the research performed in the area surrounding the recognition of crime relates to an individual's perceptions of victimisation risk and fear of crime. Even when controlling for the crime rate itself, multilevel models of perceptions of disorder differ among residents in the same community, rooted in individual differences and neighbourhood social processes of which the person is a part (Latkin, German, Hua, & Curry,

2009). These differences suggest that the process through which an individual observes and classifies crime problems is not as straightforward as commonly thought. In comparing the objective reports of trained observers to the subjective reports of community residents, Perkins, Meeks, and Taylor (1992) found correlations ranging from .74 to a low of .32, moderated partially by the demography of the area. Yet another study demonstrated that the inter-rater reliability of trained observers of disorder was at times low, with observers exhibiting substantial variation in their measurements (Zenk et al., 2007).

Thus, neighbourhood disorder and crime do not appear to be “know it when you see it” phenomena. Research on residents’ recognition of disorder and crime is lacking, and greater insights are needed into the factors that are associated with these observations. Accordingly, the current study examines the predictors of whether an individual notes a crime problem in their community and the degree of seriousness they categorise the problem as being. This is an important step beyond the guardianship literature that examines an individual’s availability to monitor a space, capacity to notice an offence-in-progress, willingness to intervene, and actual actions taken (Reynald, 2010, 2011; Roncek, 1981). Seeing an offender vandalise a street sign and recognising it as a crime (and then deciding whether and how to intervene) may be entirely different than seeing already vandalised property and categorising it as criminal or problematic. The step of noticing a crime problem is a necessary precursor to taking action against it, so it is important to empirically investigate the facilitators of these classifications. As such, this project explores the personal, social, and neighbourhood variables that correspond with the classification of local crime problems.

Method

In this article we test the influence of individual characteristics, local social processes, and suburb characteristics on individuals’ recognition and classification of neighbourhood crime problems. We analyse these relationships using large-scale multilevel survey data

from the Australian Community Capacity Study with three central hypotheses in mind. First, we speculate that different variables will be influential in predicting the classification of different types of crime. That is, the factors that predict whether an individual notes drug crimes in their community will differ from the variables that predict whether vandalism is a problem in their neighbourhood. Second, we anticipate that social processes will be better predictors than individual characteristics in the classification of area crime problems. Third, we hypothesise that the characteristics of the local suburb will predict individuals' categorisation of crime problems above and beyond the level-1 variables without losing explanatory power. Our methods for investigating these hypotheses are described below.

Australian Community Capacity Study (ACCS) survey

The current project utilises data collected from the Australian Community Capacity Study, a longitudinal survey of neighbourhood processes relevant to crime and disorder. The data here are from the third wave of the ACCS, collected in 2010 through computer-aided telephone interviews with residents of southeast Queensland. Nearly 4400 respondents from 148 Brisbane suburbs answered questions about informal social control, community attachment and engagement, perceptions of police and local government, and community problems. The data are supplemented by census data from the Australian Bureau of Statistics and crime data from the Queensland Police Service. More detailed information about the research methods used in the ACCS survey can be found in the technical report for the study (see Mazerolle, Wickes, Cherney, Murphy, Sargeant, & Zahnow, 2012).

ACCS sample

The data for the third wave of the ACCS survey are hierarchically nested, and were gathered using a three-stage sampling design. First, the 148 suburbs were sampled in an earlier wave of data collection, each of which was purposively chosen according to its land use properties and the characteristics of adjacent suburbs. Next, the study relied on a quota

scheme, derived from power analysis software for multilevel sampling (Raudenbush, Spybrook, Congdon, Liu, & Martinez, 2011) to determine the number of residents that would be surveyed from each suburb. Finally, residents were selected from each suburb to participate in the survey, with approximately half being sampled from previous waves of data collection and the other half selected through random-digit dialling for the selected neighbourhood. The rate of survey completion was 68.5%, with the number of residents in each suburb ranging from 12 to 67 ($M = 30$, $SD = 9$).

Measures

Following from our review of the literature, we regress three sets of independent variables on the classification of crime types. For the descriptive statistics of these data, please refer to Table 1. The measures used in our analyses are described in turn below.

Dependent variables. In this study, we examine how individual residents categorise crime problems in their neighbourhood. The ACCS survey administrator prompted respondents, “I am now going to read a list of things that are problems in some communities. Please tell me how much of a concern the following problems are in your community. Are they no problem, some problem, or a big problem?” The problems read to survey participants included drugs, public drinking, loitering, vandalism or graffiti, speeding traffic or hooning, and young people getting into trouble.

Individual characteristics. We selected nine individual characteristics believed to be associated with the recognition and categorisation of local crime problems. First, we incorporated sociodemographic variables including age ($M = 51.27$, $SD = 15.23$), gender (1 = female, 59%), foreign-born (1 = born in Australia, 72%), and education (1 = high school graduate or higher, 55%). Next, we added two variables reflecting individual stability in the suburb, including home ownership (1 = owns home, 87%) and length of residence (1 = lived in the neighbourhood for five years or longer, 77%). Third, we included two experiential

measures, including past victimisation (1 = been the victim of crime within the past year, 16%) and contact with police (1 = any contact with police officers/agencies within the past year, 43%). Finally, we selected a variable that represents the individual's level of attachment to the community. Place attachment is a mean scale comprised of three five-point Likert items ($\alpha = .790$; 1 = strongly disagree through 5 = strongly agree), asking residents to rate their agreement with the statements, "I feel that I belong to this local community.", "I would like to be living in this local community in three years' time.", and, "I am proud to live in this local community." Taken together, these individual characteristics are indicators of victimisation risk, familiarity with the community, experiences with victimisation and police, and attachment to the community, each of which are associated with the likelihood of guardianship behaviours.

Local social processes. In addition to the individual characteristics described above, an individual's estimation of neighbourhood processes are important here, including how they are situated in the suburb and how residents relate to one another. Five mean scales were selected to represent these individual perceptions of local social processes; the variables comprising each scale and exact question wording can be obtained in the technical report for the survey (Mazerolle et al., 2012). Ecometric place attachment ($\alpha = .813$) includes participants' agreement with three statements about their neighbours' sense of belonging in the community. Social cohesion and trust ($\alpha = .740$) is comprised of the respondent's agreement with four statements reflecting the estimated closeness of residents in that suburb. Willingness to intervene ($\alpha = .845$) measures the respondent's estimation that their neighbours would intervene in twelve different scenarios, ranging from civic disorder to violent crime. Frequency of neighbouring ($\alpha = .750$) includes three items which ask the participant how frequently (a four-point scale ranging from never to often) residents of the community get together or help one another. Intergenerational closure ($\alpha = .799$) represents

the respondent's agreement with four statements about the relationships between adults and children in the community. Collectively, these five scale variables embody the dynamic social processes in the local area that influence recognition and action in community crime problems.

Suburb characteristics. Beyond the reports from the individual about their own experiences and the processes in their community, we estimate that many macro-level features of the neighbourhood will also influence the recognition of crime problems. We include four variables that reflect these suburb characteristics. The Socio-Economic Index for Areas (SEIFA) Score is an index of 16 variables that measure relative advantage/disadvantage, standardized for the nation with a mean of 1,000 and a standard deviation of 100 (for information about the construction of this index, see the report from the Australian Bureau of Statistics by Pink, 2006). Ethnic diversity is calculated with census data using the Blau index for heterogeneity in categorical measures (here using country of birth), reflected as a proportion with higher degrees of diversity nearing a score of one ($1 - \sum p_i^2$; Blau, 1977). Residential instability reflects the percentage of suburb residents who lived in a different place five years ago as reported to the census. To examine whether residents' classification of crime problems is a product of the levels of crime in that neighbourhood (which may be reciprocally linked), we include a measure of the total rate of crime (includes all offences reported to the police) for each suburb from 2007-2009. The averaged rate was log-transformed to produce a more normalised distribution. These suburb characteristics reflect the standard measures of the level of organisation in a community expected to influence perceptions and categorisations of crime problems in the area.

Statistical analyses

The first set of analyses includes multivariate ordinal regression models predicting the classification of crime problems. There are six models, one for each dependent variable.

Ordinal regression is used to reflect the structure of the data: Responses are ordered about local crimes from no problem, somewhat of a problem, to a big problem. For the second set of analyses, suburb characteristics are taken into account using a nested structure. In order to do so, multilevel analyses were performed using *Hierarchical Linear and Nonlinear Modeling 7* (Raudenbush, Bryk, & Congdon, 2011).

The intraclass correlation coefficient (ICC) provides an estimate of the variability between groups at Level-2 (i.e., at the suburb level). For ordinal outcomes, a pseudo ICC can be calculated using Level-1 residuals that follow a logistic distribution (Evans, Hastings, & Peacock, 2000; O'Connell, Goldstein, Rogers, & Peng, 2008; Snijders & Bosker, 1999), which has a mean of zero and a standard deviation of $\pi^2/3$ (≈ 3.29). Thus, the equation for estimating the proportion of variance in the classification of crime problems which is accounted for by the suburb can be expressed as: $\tau_0 / (\tau_0 + 3.29)$. Comparably, a proportion reduction in error (PRE) measure can be calculated for both Level-1 (σ) and Level-2 (π) by subtracting the full model variance component estimate from the unconditional model estimate, then dividing by the variance from the unconditional model (Raudenbush & Bryk, 2002). Taken together, the ICC, Level-1 PRE, and Level-2 PRE measures provide a snapshot of the improvement in prediction that is accounted for by suburb membership, the set of individual and social process variables, and the suburb characteristics, respectively. These estimates are provided in the model information for our analyses reported in Table 3.

Results

Rather than report the results of each model, we instead organise our discussion here around illustrative clusters of findings. In looking first at the multivariate ordinal regression models (see Table 2), with focus on the individual characteristics, we note two important themes. Most notably, there are clear differences in the predictors of how residents classify crime problems in their community. For example, the variable of foreign-born is significant

for drug problems ($b = -.182, p < .05$), but non-significant for the other five crime types. Length of residence was not predictive of the classification of public drinking or loitering problems, while home ownership was not predictive for vandalism or traffic problems. Across all six crime types, the classification of drugs problems had the greatest number of significant individual predictors, and loitering demonstrated the fewest. There thus appears to be a different explanatory process based upon the nature of the crime problem (e.g., person- versus property-based, highly visible versus somewhat hidden).

The second clear pattern is that individual factors are consistently influential across crime types. Past victimisation is reliably, strongly, negatively associated with the classification of all six crime problems; that is, an individual's experience of criminal victimisation in the 12 months prior to the survey diminishes the ordinal odds of recognizing a moderate or major crime problem (this somewhat counterintuitive finding is discussed momentarily). Relatedly, contact with police in the prior year is significant, moderately and negatively, with five of the six crime types (all but loitering), as is age (all but drugs). There are, therefore, some consistent patterns in how individual characteristics influence the observation and categorisation of crime problems, irrespective of the offence type.

Examining the local social processes, one pattern is immediately clear: The dynamics of neighbourhood integration and networks are strongly predictive of crime classifications. Social cohesion and trust and willingness to intervene (the two components of collective efficacy) are both moderately, negatively, and significantly associated with all six crime types; greater bondedness and expectations about the capacity of others to act are associated with a diminished classification of moderate or major crime problems in the area. Frequency of neighbouring was positively, moderately, and significantly associated across all offences, with greater interactions among residents leading to an increased recognition of big crime problems in the area. Intergenerational closure was negatively and significantly associated

with drugs, public drinking, and loitering, but not for the remaining three crime types.

Finally, ecometric place attachment was strongly and significantly negatively associated with the classification of all six crime problems. This is particularly intriguing given that individual place attachment was not predictive. This demonstrates that a community resident's attachment to their neighbourhood is uninfluential, while their estimation of how attached their neighbours are to the community is highly predictive of whether they noted crime problems in the area and how severe they classified them as being; residents who believe that *other community residents* live in the neighbourhood because they want to, feel like they belong to the local community, and are proud to live there are *less likely* to note moderate or severe crime problems in their area – these sentiments about the respondents themselves were not significantly predictive.

Looking at the models in Table 2 as a whole, another pattern is recognizable: Despite many important predictors and sufficient model fit, the proportion of explained variance is low (ranging from Nagelkerke R^2 of .083 for traffic problems to .169 of the proportion of variation explained for loitering problems). Clearly then, there is much more to the story than meets the eye, as the variance in residents' classification of local crime problems still requires a great deal of explanation. We test these same models hierarchically, adding four suburb characteristics at Level-2 (see Table 3 for the results). The pseudo-intraclass correlation coefficients are telling, as suburb membership contributed but a small proportion of explained variation in the dependent variables (ranging from .073 for traffic problems to .149 for loitering problems). Seen as a form of interrater reliability (i.e., the degree to which residents of the same suburb classify a given crime problem as being of the same severity), this suggests that there is little uniformity among reports about the same community.

However, the addition of the suburb characteristics to multilevel ordinal regression models is important, with the highest Level-2 PRE emerging for loitering problems (nearly

84%). Looking at the variables, their influence is mixed. The SEIFA score (an index of relative disadvantage) is strongly and consistently negatively associated with all six crime types, indicating that greater levels of socioeconomic advantage are related to fewer crime classifications of being moderately to majorly problematic. Ethnic diversity is strongly and negatively associated with crime classifications, but is not significant for vandalism or traffic problems; greater ethnic homogeneity in the suburb leads to increased classification of moderate to major problems with youth getting into trouble, in particular ($b = -1.883, p < .01$). Residential mobility is positive and significant, but only for the classification of drugs and drinking problems. The official rate of crime is not predictive of residents' classification of drug or traffic problems, but is positively and significantly associated with the other four crime types; that is, higher rates of crime in a suburb lead to an increased recognition of serious drinking, loitering, vandalism, and problematic youth crimes in the area.

The addition of the suburb characteristics at Level-2 reveals another important finding: While the Level-1 social process variables generally maintained their direction, magnitude, and significance, the direction of effect switched signs for several of the individual characteristics. Specifically, across models, the significant variables of gender, foreign-born, home ownership, length of residence, past victimisation, and contact with police all produce coefficients of the opposite direction when estimated in a hierarchical model. There are two possible reasons for this. The first is a matter of collinearity¹. The second more likely possibility is Yule-Simpson's paradox, a kind of ecological fallacy, in which aggregated data demonstrate a trend that is inverse to the trends of independent observations (Thompson, 2006). These counterintuitive statistical results actually demonstrate the need for a hierarchical model that accounts for the nested nature of the data

¹ When independent variables are too highly associated their effects in the model may become erratic and switch signs erroneously; however, because all of these variables are binary (and none of the variables measured on a continuous scale suffered from this problem), this makes collinearity unlikely. Multicollinearity is not evident in variance inflation (VIF) or tolerance scores (estimated using a linear distribution) or in assessing communalities among predictors using factor analysis.

and the important social-psychological interactions between people and their environments (Goltz & Smith, 2010; Subramanian, Jones, Kaddour, & Krieger, 2009). Indeed, the enhanced goodness-of-fit is further shown in the Level-1 PRE measures, indicating that prediction is improved by estimating a multilevel model.

With this paradox in mind, the estimated coefficients in the multilevel models are accurate, and are certainly more in line with what is predicted by the literature. Using the estimates in the hierarchical model, we see increased proportions in the log odds of reporting moderate to major local crime problems for residents who are female, born in Australia, rent their home, have shorter residence lengths, have been victimised, and have been in contact with the police in the last 12 months. These findings draw further attention to the notion that individuals are impacted by community context; when accounting for suburb membership and the characteristics of the neighbourhood, the influence of individual characteristics on the classification of crime problems is better understood.

Discussion

The current project explored the predictors of community residents' observation and classification of local crime problems. Recent advances in guardianship and crime control research suggest that intervention is premised on availability and monitoring (Reynald, 2011); however, the act of monitoring, including how members of a neighbourhood categorise crime problems, is relatively unstudied. Following from the communities and crime literature, we also suggest that the recognition of crime is dependent upon the person and their experiences, upon the dynamic social processes in their area, and upon the context of the neighbourhood. Using survey data from the Australian Community Capacity Study, we examined the influence of three groups of variables on whether the respondent identified a certain crime as being no problem, somewhat of a problem, or a big problem in their community. Specifically, we used individual characteristics, local social processes, and

suburb characteristics to predict the ordinal categorisation of the presence and seriousness of six crime types: drugs, public drinking, loitering, vandalism or graffiti, speeding traffic or hooning, and young people getting into trouble. In looking at our hypotheses, we find partial support for our predictions.

First, we expected that different variables would predict the classification of the seriousness of crime problems for different crime types. This hypothesis was partially supported. On the one hand, there are some unique differences across the variable offences; for instance, being born in Australia leads to greater odds of noting a serious drug problem (but not any other crime type), as does higher levels of education for vandalism (but no other crime problems), along with renting a home for public drinking problems (but no others). This certainly suggests that there are nuances in the process of how people notice and classify crime problems, even among residents in the same community. Contrarily, there are several consistent trends across crime types (with occasional exceptions). For example, ecometric place attachment, social cohesion and trust, and socioeconomic disadvantage were all negatively and significantly associated to the classification of seriousness across all six crime types, while frequency of neighbouring was positively predictive for the categorisation of all crime problems. There thus appear to be stable trends, unique influences, and specific caveats in the prediction of how residents take note of and rank the seriousness of crime problems. Toward this end, we encourage a merger of scholarship that is generally drawn from two disparate groups of literature: communities and crime research and situational crime prevention research. Future studies should examine how the actions that are taken to block offending opportunities differ by crime type, and how these actions are linked with local community processes.

Second, we estimated that the social processes in the area would be stronger predictors of the classification of local crime problems than the individual characteristics of

the respondent. While generally speaking, the social process variables seemed to outperform the individual characteristics, there are some exceptions. For example, we noted that age was negatively associated with the classification of five types of crime problem; that is, older residents are less likely to note a given crime as being problematic in their community. This finding is somewhat contradictory to the victimology literature which demonstrates that the elderly have increased fear of crime, however, we suggest that age may interact with social dynamics to reduce the recognition of crime problems. In one study, among older persons, an increased fear of crime leads to neighbourly behaviours, and the fostered senses of community attachment and social cohesion and trust that result have the reciprocating effects of reducing perceptions of disorder and victimisation risk (Oh & Kim, 2009). In this way, the individual's routine activities are reorganised to increase the likelihood of crime combative action (Felson & Boba, 2010). Similarly, homeownership demonstrates a robust, indirect effect on the subjective appraisal of neighbourhood crime and disorder, operating through collective efficacy and a stronger "sense of community" (Lindblad, Manturuk, & Quercia, 2013).

Related to this unique amalgamation of individual and social dynamics, we observed that personal place attachment mattered very little, while ecometric place attachment was strongly and negatively associated with the classified seriousness of crime problems. As seen in models of cultural attenuation, irrespective of the individual's values, their estimation of what their neighbours think has large impacts on community social control (Warner, 2003). As discovered by Warner and Burchfield, "regardless of the extent to which there is value consensus in the neighborhood, when residents perceive others' values to be different from their own, they are unlikely to intervene in behaviors which they personally may believe to be inappropriate" (2011, p. 623). There is thus an important mingling of personal and social factors contributing to the categorisation of neighbourhood crime problems.

Third, we envisioned that the neighbourhood context would matter more than individual characteristics or local social processes, but that the addition of these Level-2 variables would not reduce the explanatory power of the Level-1 predictors. This hypothesis was both supported and rejected, depending on the socio-structural feature of the community. We observed an increased goodness-of-fit when estimating the nested models, evidenced further by our encounter of the Yule-Simpson paradox (Goltz & Smith, 2010; Subramin et al., 2009). Residents were more likely to note serious crime problems if they lived in socioeconomically disadvantaged communities, suburbs with greater ethnic homogeneity, areas with higher rates of residential mobility, and neighbourhoods with higher rates of crime. Future research is needed to explore the non-recursive relationship between crime rates and residents' recognition of crime problems. The impact of the suburb characteristics was not as strong as predicted by social disorganisation. In our models, ethnic diversity is associated with fewer classifications of serious crime problems, contrary to many findings within the communities and crime literature. One potentially important explanation for this result is that residents may not be able to establish collective norms of what constitutes a crime if there is culture conflict about standards of behaviour or if ethnic heterogeneity results in a lack of social ties, embeddedness, and communication (Sampson & Raudenbush, 2004). This finding prompts the need for further integrative research that examines the dynamics between individuals and the social fabric of their communities that contribute to crime control.

The contributions of our study aside, the current project is not without limitations. Most notably, we use cross-sectional survey data that relies on the reports from respondents. There is no way to verify if the observations made by participants are accurate. Just because someone notes a crime problem does not mean that there is one, and vice versa. Additionally, the econometric projections made by residents may be skewed (perhaps due to

falsification or recall difficulties), although perceptions of others are important here, irrespective of whether those perceptions are based in some objective reality. Still, additional research will be needed to unpack the psychological processes community residents undergo in recognising crime problems. Next, it is difficult to estimate whether the observation and classification of local crime problems leads to any meaningful resolution of those problems. Although we speculate that noticing a crime problem is a necessary precursor to doing something about it, we are unable to test that tenet directly in this paper. It is possible that the classification of the seriousness of crime is unrelated to crime control behaviour, or that the recognition of crime problems in the neighbourhood has a feedback effect impacting how the individual relates to other residents. These limitations aside, we propose that the observation and classification of neighbourhood crime problems is an integral step in the process of community crime control, although research in this area is scarce. It is important, therefore, that additional studies begin to explore the ways in which people come to take notice of crime, categorise it as problematic, and take action toward control.

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Table 1: Descriptive Statistics

	Minimum	Maximum	Mean	Standard Deviation
Individual Characteristics				
Age	18	93	51.27	15.23
Gender	0	1	.59	.49
Foreign-born	0	1	.72	.45
Education	0	1	.55	.50
Home ownership	0	1	.87	.34
Length of residence	0	1	.77	.42
Past victimisation	0	1	.16	.36
Contact with police	0	1	.43	.50
Place attachment	1	5	3.99	.75
Local Social Processes				
Ecometric place attachment	1	5	4.03	.63
Social cohesion and trust	1	5	3.66	.68
Willingness to intervene	1	5	3.62	.64
Frequency of neighbouring	1	4	2.82	.80
Intergenerational closure	1	5	3.63	.73
Suburb Characteristics				
SEIFA score	753	1154	1030.22	82.26
Ethnic diversity	.25	.76	.46	.10
Residential instability	23.45	79.32	43.05	8.89
Crime rate	1.04	3.84	2.82	.64
Dependent Variables				
Drugs	1	3	1.74	.67
Public drinking	1	3	1.52	.62
Loitering	1	3	1.50	.62
Vandalism or graffiti	1	3	1.70	.63
Speeding traffic or hooning	1	3	1.95	.63
Young people getting into trouble	1	3	1.61	.60

Table 2: Multivariate Ordinal Regression Predicting Classification of Crime Problems

	Model 1: Drugs	Model 2: Public Drinking	Model 3: Loitering	Model 4: Vandalism or Graffiti	Model 5: Speeding Traffic or Hooning	Model 6: Young People Getting Into Trouble
Individual Characteristics						
Age	.000 (.002)	-.009 (.002) ***	-.019 (.002) ***	-.009 (.002) ***	-.009 (.002) ***	-.011 (.002) ***
Gender	-.323 (.065) ***	-.263 (.066) ***	-.273 (.067) ***	-.252 (.064) ***	-.270 (.065) ***	-.122 (.066) †
Foreign-born	-.182 (.072) *	-.044 (.073)	-.104 (.075)	-.038 (.071)	.044 (.072)	.014 (.074)
Education	.152 (.065) *	.145 (.066) *	.097 (.067)	-.070 (.064)	.066 (.065)	.128 (.066) †
Home ownership	.316 (.101) **	.484 (.100) ***	.289 (.100) **	.121 (.100)	.025 (.101)	.328 (.102) **
Length of residence	-.167 (.082) *	-.015 (.082)	.085 (.082)	-.216 (.080) **	-.164 (.081) *	-.195 (.083) *
Past victimisation	-.498 (.088) ***	-.341 (.088) ***	-.761 (.088) ***	-.703 (.089) ***	-.378 (.089) ***	-.584 (.092) ***
Contact with police	-.354 (.065) ***	-.260 (.066) ***	-.126 (.067) †	-.243 (.064) ***	-.198 (.065) **	-.219 (.066) **
Place attachment	-.116 (.063) †	-.017 (.063)	.007 (.064)	.053 (.062)	.010 (.063)	-.074 (.065)
Local Social Processes						
Ecometric place attachment	-.445 (.074) ***	-.342 (.074) ***	-.393 (.075) ***	-.425 (.073) ***	-.217 (.073) **	-.559 (.076) ***
Social cohesion and trust	-.338 (.069) ***	-.392 (.070) ***	-.292 (.070) ***	-.354 (.068) ***	-.374 (.069) ***	-.388 (.070) ***
Willingness to intervene	-.179 (.060) **	-.282 (.061) ***	-.285 (.062) ***	-.269 (.059) ***	-.269 (.060) ***	-.202 (.061) **
Frequency of neighbouring	.268 (.047) ***	.247 (.048) ***	.236 (.048) ***	.243 (.046) ***	.208 (.047) ***	.326 (.048) ***
Intergenerational closure	-.166 (.063) **	-.129 (.064) *	-.220 (.065) **	-.072 (.062)	-.096 (.063)	-.087 (.064)
Model Information						
Intercept ₁ (minor/no problem)	-5.312 (.278) ***	-4.345 (.276) ***	-5.240 (.282) ***	-5.205 (.275) ***	-5.268 (.276) ***	-5.529 (.288) ***
Intercept ₂ (moderate problem)	-2.608 (.266) ***	-1.613 (.268) ***	-2.556 (.272) ***	-2.249 (.263) ***	-2.266 (.263) ***	-2.271 (.274) ***
Log likelihood	7204.060	6683.693	6528.739	7239.408	7488.324	6564.925
Model χ^2	521.825 ***	461.584 ***	614.369 ***	444.590 ***	303.466 ***	538.758 ***
Nagelkerke R^2	.144	.129	.169	.121	.083	.151

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 3: Multilevel Mixed-Effects Ordinal Regression Predicting Classification of Crime Problems

	Model 1: Drugs	Model 2: Public Drinking	Model 3: Loitering	Model 4: Vandalism or Graffiti	Model 5: Speeding Traffic or Hooning	Model 6: Young People Getting Into Trouble
Individual Characteristics						
Age	-.002 (.002)	-.009 (.002) ***	-.020 (.003) ***	-.010 (.003) ***	-.009 (.003) ***	-.012 (.002) ***
Gender	.294 (.066) ***	.256 (.073) ***	.272 (.069) ***	.224 (.067) **	.251 (.061) ***	.105 (.070)
Foreign-born	.198 (.080) *	-.039 (.087)	.127 (.076) †	.054 (.077)	-.059 (.086)	-.033 (.078)
Education	-.015 (.060)	-.046 (.068)	.027 (.068)	.176 (.070) *	.013 (.062)	.021 (.069)
Home ownership	-.134 (.104)	-.355 (.103) **	-.153 (.099)	.028 (.110)	.012 (.113)	-.242 (.126) †
Length of residence	.236 (.079) **	.111 (.082)	-.030 (.088)	.274 (.090) **	.140 (.092)	.298 (.095) **
Past victimisation	.484 (.092) ***	.320 (.098) **	.714 (.102) ***	.660 (.094) ***	.413 (.096) ***	.582 (.097) ***
Contact with police	.360 (.069) ***	.264 (.073) ***	.123 (.073) †	.226 (.065) **	.208 (.067) **	.214 (.072) **
Place attachment	-.101 (.066)	-.046 (.070)	-.026 (.068)	.017 (.067)	.051 (.071)	-.065 (.070)
Local Social Processes						
Ecometric place attachment	-.244 (.081) **	-.180 (.081) *	-.171 (.080) *	-.230 (.079) **	-.183 (.091) *	-.396 (.085) ***
Social cohesion and trust	-.262 (.066) ***	-.326 (.060) ***	-.233 (.076) **	-.292 (.068) ***	-.356 (.072) ***	-.321 (.070) ***
Willingness to intervene	-.052 (.060)	-.210 (.059) ***	-.185 (.064) **	-.175 (.064) **	-.221 (.058) ***	-.113 (.069)
Frequency of neighbouring	.226 (.044) ***	.211 (.047) ***	.215 (.052) ***	.218 (.056) ***	.203 (.046) ***	.286 (.052) ***
Intergenerational closure	-.264 (.071) ***	-.176 (.065) **	-.253 (.060) ***	.094 (.074)	-.157 (.065) *	-.169 (.063) **
Suburb Characteristics						
SEIFA score	-.006 (.000) ***	-.004 (.001) ***	-.003 (.001) ***	-.002 (.001) ***	-.002 (.001) **	-.004 (.001) ***
Ethnic diversity	-1.123 (.498) *	-1.261 (.533) *	-1.216 (.520) *	-.820 (.521)	-.472 (.544)	-1.883 (.533) **
Residential mobility	.011 (.005) *	.014 (.006) *	.004 (.006)	.005 (.005)	-.006 (.005)	.010 (.006) †
Crime rate	.141 (.095)	.343 (.102) **	.649 (.099) ***	.526 (.083) ***	-.077 (.099)	.301 (.101) **
Model Information						
Intercept ₁ (minor/no problem)	-6.589 (.842) ***	-2.525 (.735) **	-1.385 (.880)	-2.278 (.953) *	-4.406 (.862) ***	-4.192 (.817) ***
Intercept ₂ (moderate problem)	2.870 (.072) ***	2.837 (.069) **	2.806 (.071) ***	3.095 (.080) ***	3.098 (.055) ***	3.406 (.080) ***
Log likelihood	7428.051	7525.399	7388.782	7644.962	7838.058	7294.038
Model χ^2	258.864 ***	274.059 ***	254.163 ***	262.983 ***	320.056 ***	293.041 ***
Pseudo ICC	.140	.121	.149	.129	.073	.130
Level-1 (compositional) PRE	.342	.350	.356	.328	.208	.341
Level-2 (contextual) PRE	.793	.773	.838	.762	.303	.715

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$