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Social Fabric and Fear of Crime: Considering Spatial Location and Time of Day

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Abstract

Criminologists have long noted that social networks play a role in influencing residents' fear of crime, but findings vis a vis the exact nature of that role have been mixed. More social ties may be associated with less fear of crime through their role in collective action, trust, and emotional support, but also with more fear of crime because of their role in the diffusion of information on local crime patterns. In what follows, we suggest temporal and spatial distinctions in how social ties matter for fear of crime with respect to these different mechanisms. Analysis of data from a large scale egocentric network study in Southern California provides evidence for these claims.

Keywords: neighborhoods, social networks, spatial effects, time of day, fear of crime

Bio

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Social Fabric and Fear of Crime: Considering Spatial Location and Time of Day

Fear of crime is a long-standing policy issue of great importance in the U.S., and a large body of literature has emerged on the question of its determinants (Ferraro, 1995; Skogan and Maxfield, 1981; Warr, 1990). One recurrent theme in this literature is that social networks play an important role in influencing residents' fear of crime (e.g., see Bursik and Grasmick, 1993); however, there is considerable debate about the *nature* of that role. For instance, residents who have more local alters might have more information about criminal activities in the area and hence express *more* fear, but residents with more local alters might also perceive more potential for collective action in the neighborhood, and therefore express *less* fear (Bursik and Grasmick, 1993; Skogan and Maxfield, 1981).[1] The importance of alter locations for the types of ties ego is likely to have to them, and the types of exchanges taking place through those ties, suggests that the spatial dimension of network structure (itself a topic of growing interest e.g., see Butts et al., 2012) may help disambiguate the relationship between personal networks and fear of crime. In particular, we posit that different mechanisms of social ties for fear of crime have distinct spatial implications. As most research in this area either ignores space or implicitly presumes that alters are only of interest when located in the area nearby ego, little consideration has been given to the effects of alters who are located farther away. In this paper, we examine alter distance on ego's fear of crime, explicitly testing for the effects of both proximate and distant alters.

While the spatial distribution of alters may matter for perceptions of fear of crime, we further posit that these spatial patterns have distinct temporal consequences for fear of crime. A strand of the criminology literature posits that fear of crime is higher at night due in part to darkness providing cover for offenders and reducing the availability of guardianship (Felson,

[1] As Wasserman and Faust (1994) note on page 42: "An ego-centered network [i.e,, a personal network] consists of a focal actor, termed ego, as set of alters who have ties to ego."

2002; Ferraro, 1995). Nonetheless, most studies do not explicitly test fear of crime at different times or examine how fear may change over the course of the day (e.g., see Liska and Baccaglini 1990). In this paper, we suggest that some mechanisms through which social ties influence fear of crime likely differ from day to night, whereas others may be time invariant. For example, some alters may only be available to watch over the neighborhood and help with activities during the nighttime suggesting less fear at night than during the day, while confiding ties for emotional support may vary little at different times of day.

The general public has a longstanding interest in fear of crime, with ongoing demands for effective treatments, policies, or changes in behaviors to quell it. To the extent that such fear is sensitive to temporal, spatial, or socio-structural factors, understanding of the relevant social processes seems crucial for informing potential interventions. To examine these potential relationships, we use data from the American Social Fabric Project (Butts et al., 2014), a large-scale egocentric network study with data on ego/alter locations and ego's self-reported fear of crime, along with other data on actual crime patterns in both ego's and alters' neighborhoods (Hipp and Kubrin, 2012). Our main foci for this study are 1.) how personal networks affect fear of crime between night and day and 2.) how the spatial location of alters and the crime rate in their neighborhoods impact ego's own fear of crime. We begin by first discussing how social ties are expected to relate to fear of crime through collective action, support, trust, and information on crime patterns. We then turn to explaining how these mechanisms might vary as a function of the location of alters, as well as time of day. We test these proposed relationships by modeling egos' self-reported fear of crime as a function of contextual factors. In our models, we examine a variety of spatial scales of distance to alters, including a general measure of distance to alters, a measure of alters isolated to the home, a measure of alters only in the local

neighborhood, and more distance alters located in the broader region. In addition, we examine how crime patterns in both ego and alters' neighborhoods have consequences for ego's fear of crime. We test predictions involving relative levels of fear during the day and night (respectively), as well as predictions involving differences in levels of fear from day to night.

Mechanisms Through Which Social Ties Could Influence Fear of Crime

Although there are a variety of potential mechanisms for how social ties may have an impact on fear of crime, we focus on four key potential mechanisms in this paper: 1.) more local social ties facilitate collective action in response to local problems; 2.) more social ties provide a greater level of familiarity and trust with persons in the areas in which alters reside; 3.) more social ties provide greater access to emotional and social support; and 4.) more social ties create the opportunity for more exposure to and hence awareness of information about crime. In what follows, we argue that the first 3 mechanisms will be associated with reduced fear of crime, whereas the latter mechanism will be associated with enhanced fear of crime. We now discuss each of these mechanisms in turn as they make general predictions about fear of crime, and in the next section we discuss more explicitly how these mechanisms might differ depending on the spatial location of alters and time of day.

For the first mechanism, research in criminology on social networks as a determinant of fear of crime stems most notably from Shaw and McKay's social disorganization theory, which argues that social ties are useful for *collective action* within the neighborhood (Shaw and McKay, 1942). In this literature, neighborhoods with more residential instability and ethnic/racial heterogeneity are expected to have fewer ties among residents in the neighborhood. When residents have more local social ties per capita, they are expected to have more potential

for mobilizing to address local problems (Bursik and Grasmick, 1993).[2] Few studies in this literature have directly measured the personal networks of residents, and most studies use proxies for the number of social ties that residents have (i.e., degree) such as length of residence, with the idea being that residents who have lived in the neighborhood for a longer time will have more social ties and be able to more easily collectively organize with residents to solve problems. In this paper, we directly measure residents' degree, and we posit that residents with higher (local) degree will have more potential for collective action and therefore generally express less fear of crime. Nonetheless, depending on the type of actions taken, what the actions are trying to accomplish, where alters are located, and when they are expected to have consequences, there may be differential consequences for fear of crime at different times of day, a possibility that we discuss in the next section..

As a second mechanism for fear of crime, residents with more local social ties may have more *familiarity and trust* with their neighbors and therefore less fear of crime. These residents likely feel a sense of cohesion with their neighborhood that can result in reductions in fear (Markowitz et al., 2001; Scarborough et al., 2010). When residents know more of their neighbors, they are expected to feel more familiar with and trusting of others in the area, and this may make them less fearful of crime (Merry, 1981; Taylor, 2002). Other research suggests that it is not necessarily trust or familiarity per se but the presence of unknown "other" groups, such as immigrants (Merry, 1981), racial minorities to which ego does not belong (Chiricos et al., 1997; Moeller, 1989; Skogan and Maxfield, 1981; St. John and Heald-Moore, 1996), or others differing from ego on ethnic or other lines (Covington and Taylor, 1991) that is relevant for fearfulness. One study found that residents who live near others with whom they are more

[2] Alternatively, one study recently found that more collective efficacy in neighborhoods actually led to an increased fear of burglary (Yuan and McNeeley, 2015).

socially distant (based on various social status dimensions) perceive more crime (Hipp, 2010). When residents feel more trust and familiarity with others, they may perceive that other residents are less threatening and therefore report generally less fear of crime, regardless of the time of day.

A third mechanism for fear of crime is that social ties may be used for *support* and thus higher degree on support-relevant relations will again be associated with less fear of crime. Residents may perceive that they can draw upon their ties for support in times of need (Heaney and Israel, 2008; Viry, 2012; Wellman and Wortley, 1990), including for protection, emotional support, and guardianship. Residents who have higher degree may feel more supported and less vulnerable to crime, and therefore less fearful of crime. Nonetheless, one possibility is that support may change at different times of day due to differences in availability of these alters, and thus fear may also change at different times of day, an issue we note shortly.

A fourth mechanism for how fear of crime may be impacted by social ties is through *information* on crime patterns. While most research posits that fear of crime is reduced when egos have more social ties, it has been argued that higher degree may actually create *heightened* concern for crime via enhanced exposure to information on criminal acts transmitted via alters, and thus more awareness and exposure to more information on crime events leads to more fear of crime overall (e.g., see Bursik and Grasmick 1993).[3] On the one hand, the official crime rate in ego's neighborhood may be related to fear of crime.[4] This may occur because the actual crime

[3] Research on gossip and urban legends also suggests that fear can develop from socially communicated information not because of actual risk, but because of the message's direct emotional impact (Heath et al., 2001). Moreover, there is evidence to suggest that messages carrying more emotionally extreme information (if arousal inducing) are more likely to be passed to others (Berger and Milkman, 2012). To the extent that higher-degree individuals are more likely to be exposed to widely circulating messages regarding crime in their communities (or other communities regarded as comparable by ego to his or her own), they are expected to obtain information that is biased in a fear-inducing direction.

[4]Numerous national surveys have also found that residents' fears of crime are not driven entirely by crime rates (Saad, 2010; Warr, 1993), suggesting that other factors beyond crime in ego's neighborhood might motivate fear.

rate in egos' neighborhood is a major source of perceptions of crime patterns (Hipp, 2013), and these perceptions of crime would likely translate into a fear of crime. On the other hand, ego's fear of crime is not only due to his/her own personal experience with crime (Bursik and Grasmick, 1993; Skogan and Maxfield, 1981; Taylor and Hale, 1986), but also by the crime experienced by one's alters, since information about crime is expected to come in part from those alters.

Skogan and Maxfield's (1981) 'crime problems model' likewise suggests that the level of crime in a person's egocentric environment affects their fear, but also because of what they call 'vicarious experience' (see also 'indirect victimization model'). A consequence is that information about crime events has a much wider reach than simply the individuals who are themselves victims of crime (Skogan and Maxfield, 1981). If a crime event occurs in alters' neighborhoods (regardless of whether they are personally victimized), these alters might pass this information along to ego in order to warn them about potential issues for their own safety, to provide a point of comparison with their neighborhood, and/or simply to employ criminal activity as a subject for gossip (Hipp and Boessen, 2013). The above imply that that fear of crime should be influenced by crime patterns in both ego *and* alters' neighborhoods and that residents with higher degree may have generally more fear of crime; nonetheless, this approach assumes there are no differences for when this information on crime patterns has consequences for ego or when different types of crime occur. However, there may be varying consequences for people's fear of crime at different times of day.

An important consideration that is typically overlooked in the criminology literature regarding fear of crime is the content of social ties. As social network scholars are well aware, social ties can have distinct properties and serve different functions (Wasserman and Faust,

1994; Wellman and Wortley, 1990). Scholars studying the relationship between social ties and fear of crime have often treated "ties" as a generic construct or only focused on socializing ties. It is not clear that socializing ties are the only, or even the primary, ties that are important for influencing residents' fear of crime. We argue that a more appropriate type of tie to consider are the ties that residents would turn to if concerned about a neighborhood issue—an etically defined relation that we term *neighborhood safety ties*. While there are numerous possibilities to test different relationships depending on the mechanisms of interest, we suggest that safety ties will be relevant for all of the mechanisms noted earlier.

Spatial Location of Alters and Fear of Crime at Different Times of Day

As the above suggest, the role of ego's social relationships in influencing his or her fear of crime is unclear (and possibly mixed). We have described three mechanisms implying that more (in some cases local) safety ties will increase the ability to solve neighborhood problems, the perceived trustworthiness of neighbors, and access to social support, and therefore result in less fear; in the fourth mechanism, however, safety ties may increase exposure to information on criminal activity, which can result in more fear. In this paper, we focus on two important dimensions for these different mechanisms for fear of crime: 1.) The spatial location of alters and 2.) The time of day. We now turn to discussing each of these possibilities.

The vast majority of neighborhood research focuses only on local alters within ego's neighborhood (Warner and Rountree, 1997), or a short distance of approximately a 15 minute walk (Sampson and Groves, 1989). This nearby approach is prima facie defensible given that we expect spatially nearby effects to have more salience (Tobler, 1970), and propinquity is well known as associated with processes of forming and maintaining social ties (Hipp and Perrin,

2009; Verdery et al., 2012). [5] One study used a series of simulated social networks for entire cities based on the well-documented tendency for social ties to form based on a distance decay function, and found that alters in the immediate neighborhood are considerably more important than alters farther away for explaining actual crime patterns (Hipp et al., 2013) suggesting a local proximity effect. More recently studies have posited that more distant ties outside of the neighborhood may have local consequences for neighborhood processes (Bellair, 1997; Boessen et al. 2014). As we will note shortly, depending on the particular mechanism, the importance of distant versus local alters may vary. A natural next step in this line of research is to consider whether these spatial patterns have different consequences for fear of crime in the evening as opposed to the daytime.

A large body of research has shown that residents' fear of crime is higher at night than during the day (Ferraro, 1995; Nasar and Jones, 1997; Saad, 2010; Warr, 1990). This temporal distinction in fear of crime is not surprising given that darkness can enhance concealment for offenders (Felson, 2002; Ferraro, 1995), which makes crime more likely at night. Nonetheless, few studies have examined the determinants of this temporal distinction. One of these studies showed similarity in the determinants of fear of crime at different times of day (Taylor and Covington, 1993). Another study found that when residents know more of their neighbors (i.e., have higher degree within their neighborhoods), they have less fear at night (Kanan and Pruitt, 2002), but it is an open question whether these ties are associated with less fear during the day or even the change in fear from night to day. In this paper, we posit that fear of crime differs between daytime and nighttime in part because of differences in the structural, spatial, and temporal context of the four mechanisms mentioned earlier. We now turn to discussing each of

[5] One study found that more frequent interaction with neighbors is associated with less fear of crime (De Donder et al., 2012), although another study did not find this effect (Kanan and Pruitt, 2002). Given propinquity effects, it is possible that this frequency of interaction effect is due in part to the spatial distribution of alters.

the four mechanisms and their consequences for the spatial location of alters and fear of crime at different times of day.

First, the collective action mechanism implies a micro spatial process, in part because the collectivity of interest is local. Local people are likely more invested in their local area than are other residents who live farther away, and thus they are most likely to provide collective action benefits. Moreover, some kinds of action to suppress crime (e.g., providing effective guardianship) require an ongoing presence in the affected area, and cannot be performed over long distances. Nonetheless, key neighborhood safety alters for collective action may not be present in the neighborhood during the day (e.g., when at work), and thus they may be unavailable to provide their watch over the neighborhood, resulting in more fear of crime during the day when these actors are not present. Alternatively, when these actors return home at night, this pattern may suggest they will have maximum impact during the nighttime and therefore reduce fear at night. That said, once these residents are asleep at night, they may not be that effective for collective action implying potentially more fear. Thus, we suspect differences in how fear of crime may change over the day occur in part because of the presence of key actors for this guardianship process. This will also likely depend on the action of interest (and the key actors involved), and the time scale of the process: some effects might vary over the day (e.g. guardianship) while others are more long term and therefore invariant over the day (e.g. neighborhood watch).

To the extent that collective action processes are associated with organizational meetings or other external resources to the local area, Hunter (1985) argues that alters from both the local area and the broader region can impact the neighborhood (see also Bellair, 1997). These organizational meetings may serve to organize collective action to reduce victimization, possibly

for a particular type of victimization (i.e., violent vs. property), organize a neighborhood watch, increase in public services from the city or county, or coordinate to fix damage to local infrastructure. Similar to the point in the prior paragraph, depending on the particular action/resource, what is expected to be accomplished, the key actors involved, their availability, and when it is expected to take effect, there will be differences in the spatial location of alters used for these actions, as well as differences in perceptions of fear of crime at different times of day.

Second, the enhancement of ego's sense of trust and familiarity with persons in his or her neighborhood due to a greater number of local ties a spatially local process, but one whose effects we would expect to be invariant to time of day. To the extent that ego trusts others in his or her community, he or she is likely to have (1) reduced suspicion that these persons will attempt to victimize him or her, and (2) enhanced trust that third parties would come to his or her aid should victimization be attempted. These considerations would be expected to apply to a broad range of crimes and victimization scenarios, including both those conventionally associated with daytime (e.g., burglarization of one's house while away at work) and nighttime (e.g., mugging and/or assault while walking alone).[6] Thus, we expect reductions in fear due to trust and familiarity with neighbors to be associated with spatially local ties and to be equally strong for night versus daylight scenarios.

Third, when considering the impact of personal ties for obtaining social or instrumental support, this mechanism suggests few spatial distinctions and unclear temporal distinctions. There is little reason to suspect that either local or more distant alters cannot provide many forms

[6] Another possibility is that ego's sense of trust might differ depending on the spatial presence of known and unknown/ "other" groups (i.e., ethnic/racial minorities) at different times of day that have been shown to increase fear when present in the neighborhood. Nonetheless, there are likely few differences in the presence of these "other" groups at different times of day since activity patterns are segregated (Krivo et al., 2013), implying invariance and similarity over the day for residents' familiarity with others.

of social (and even instrumental) support (Viry, 2012), and thus support can in many cases be obtained regardless of distance to alters. Similarly, to the extent that the availability of support from alters reduces fear of crime by bolstering ego's general sense of resilience, there is little reason to assume that this effect will vary by time of day. On the other hand, even though distance may not matter for the ability of alters to provide emotional and social support, certain types of support (e.g., physically coming to ego's aid) require physical presence and/or temporal availability, which may be time varying. Where these types of support are paramount, their impact on ego's fear of crime may vary by time of day.

A mechanism that may be related to social support is when residents do not have any safety ties to alters outside of their home, and they may feel socially (and spatially) isolated and more vulnerable (Wilson, 1987). The consequences of this for fear of crime over the day are unclear in part because this isolation has unclear consequences for how it may affect ego's behavior. When residents do not have ties they may avoid going out in public and this withdrawal result in more fear (Miethe, 1995), and these patterns of avoidance may result in different levels of fear of crime at different times (Doran and Burgess, 2011). Liska et al. (1988) argued that this isolation effect has unclear consequences for fear of crime since many people avoid going out at night because they feel more vulnerable to strangers, but on the other hand, not going out should also make people feel safer since they are much less likely to be victimized. Thus, this isolation has unclear temporal implications for fear of crime.

Finally, the location of alters and time of day are likely key considerations for information on crime patterns. Alters who are located in higher crime areas have more exposure and awareness to crime patterns, and thus ego is expected to have a heightened concern for crime when tied to these "high crime" alters. When considering the time of day, we suspect that the

content of information on crime will be more strongly associated with fear at night in part because people generally feel an enhanced concern for crime at night rather than during the day (Ferraro, 1995; Nasar and Jones, 1997; Saad, 2010; Warr, 1990), and it is hence a more attractive topic for discussion and message-passing than daytime victimization (i.e., minor property crimes occurring when the victim was absent).

Current Study Overview

In this paper, we posit that safety ties may influence fear of crime through their role in providing collective action, social support, trust, and/or information on crime patterns. Following the above arguments, we use the predicted variation in alter impact by geographical location and the time of day during which fear is experienced to shed light on the particular mechanisms at work. Specifically, we examine the extent to which fear of crime is associated with residents' personal networks of *safety ties*, and we test whether crime rates in ego's neighborhood or alters' neighborhoods, as well as whether the number of ties and spatial distribution of alters affects fear of crime at different times. We examine these ideas with a large-scale sample of egocentric networks in Southern California on residents' perception of fear of crime at night, during the day, and the difference in fear between night and day.

Data and Methods

We use data from several different sources to test our research questions. First, the main source of data comes from a large-scale egocentric network study that contains spatial locations of both egos and alters: the American Social Fabric Project (ASFP). The AFSP contains a population sample of Los Angeles, a population sample of the two communities in Southern California, a spatially stratified sample of Southern California, and a spatially stratified sample of the Western United States (for more extensive details on data collection see Butts et al. 2014

and Smith et al. 2014). We use data from the Southern California respondents to test our research questions for this study in part because we are able to link these data with micro crime data in neighborhoods (N = 1,359). This includes a total of 494 unique census tracts, with less than 3 respondents per tract on average; as with most other egocentric network studies (and unlike most saturated, census, and/or link-trace network study designs), the ego nets studied here can be treated as non-overlapping and independent net of contextual factors (e.g., similar location).

The second key source of data is the neighborhood crime data from the Southern California Crime Study (SCCS) (Hipp and Kubrin, 2012). In that study, the researchers made an effort to contact each police agency in the Southern California region[7] and request address-level incident crime data across multiple years. Many of the agencies were willing to share their data. As a consequence, there is crime data for 2,740 of the 3,852 tracts in the region for the years 2010-12, which cover 219 of the 341 cities and 83.3 percent of the region's population. The data come from crime reports officially coded and reported by the police departments. Crime events are classified into six Uniform Crime Report (UCR) categories: homicide, aggravated assault, robbery, burglary, motor vehicle theft, and larceny. Crime events were geocoded for each city separately to latitude–longitude point locations using ArcGIS 10.2, and subsequently aggregated to census tracts for this study. The average geocoding match rate was 97.2% across the cities, with the lowest value at 91.4%. These data have been used in several prior studies (Kubrin and Hipp 2016; Hipp and Kubrin Forthcoming). Third, we also use city-level crime data collected from the Uniform Crime Reports from the Federal Bureau of Investigation for neighborhoods in which we did not have crime data. Fourth, we include several tract-level measures from the American Community Survey (ACS) 5-year estimates from 2007-2011. Finally, we include retail

[7]The region is defined as including five counties: San Bernardino, Riverside, Los Angeles, Orange and San Diego.

land use data from the Southern California Association of Governments.

Dependent Variables

We focus on three key outcome variables: 1.) fear of crime during the night, 2.) fear of crime during the day, 3.) the difference in fear of crime between night and day. The fear of crime during the day and during the night were asked in the same way as questions from the National Crime Survey: "How safe is it to walk alone in your neighborhood during the daytime", or "How safe is it to walk alone in your neighborhood after dark".[8] These questions were asked of all egos and were rated on a 5 point Likert-scale, ranging from "very safe" to "very unsafe" with higher values indicating more fear. We created a measure of the change in fear of crime from night to day by subtracting the level of fear in the day from the level of fear at night, and thus higher values indicate how much more fear ego perceives at night than during the day.[9]

Independent Variables

We created our key independent variables by using the egocentric network data from the ASFP in tandem with the spatial locations of egos and alters. As it is well known in the social networks literature that not all ties are equally useful (Butts, 2009), in this study, we focus on *neighborhood safety ties*, which are the ties that residents indicate that they would use when concerned about crime. The network generator for this questions was: "Imagine that you personally observed a crime or other event taking place near your home which made you concerned about the safety of your neighborhood. Is there anyone whom you would you seek to contact to discuss this issue?" Respondents could list as many names as necessary when

[8] We use these questions given their long history in the National Crime Survey and many other studies. Some studies in the criminology literature have challenged these questions (e.g., a need to use measures related to specific crimes, general vs. personal fear, single item vs. multiple items, etc.); for an excellent discussion of different operationalizations of fear of crime see Schafer, Huebner and Bynum (2006).

[9] Nearly all respondents indicated more fear at night than during the day (greater than 97.8% of respondents), and the respondents who did not were excluded from this set of models (N=20).

responding to this question (i.e., free response), including alters also named on other relations (e.g., kin, friendship, confiding, etc.). With this question, we created a measure of the count of "safety ties" to which ego indicates he or she could turn, i.e. *degree (safety ties outside of the home).*[10] We also created a dummy variable to indicate whether ego had *no safety ties outside of the home,* to capture social isolation.

Respondents provided spatial information on their location and that of their alters. Using the latitude and longitude coordinates of ego and alters, we created several spatial measures. We created a measure of the average *distance to safety alters* by using the distance between ego and alters' residences. While this average distance to safety ties measure captures distances to all safety ties, we also assess whether there are differences between nearby alters and more distant alters (e.g., as suggested by Hunter 1985). We created a tie degree measure of the number of *safety alters within 1.6 kilometers* of ego's home who live outside of the home (i.e., in the micro area nearby the home), *between 1.6 kilometers and 80.4 kilometers* (i.e., within the meso region), and finally alters who live *beyond 80.4 kilometers* (i.e., a long range macro scale).[11]

Two other key predictors were created by linking the spatial locations of egos and alters with local crime data. First, we capture *ego's crime rate* by linking in data on the total number of crimes (violent and property) in their census tract. We then divide this count of crimes by the tract's population to create a crime rate. We used a similar process for creating a measure of crime for alters. We then took an average of the alters' crime rates to create our measure of *mean crime rate for safety alters*. For approximately a third of respondents, we were unable to

[10] The correlation between safety ties degree outside of the home and all safety ties degree (i.e., inside and outside the home) is .96.

[11] While there is no clear agreed upon distance for what represents 'nearby', we choose the 1.6 kilometer distance due to its relationship with the walkability of neighborhoods (1.6 kilometers is approximately a 20 minute walk, see Talen and Koschinsky, 2013) and 1.6 kilometers is also the basis for neighborhood perceptions from the General Social Survey. Also, Fischer (1982) in his classic survey of personal networks in Northern California suggested three categories: within a 5 minute drive, between a 5 minute and hour drive, and over one hour away. Accordingly, the 80.4 kilometers [50 miles] is approximately an hour drive.

link in tract crime data from city and county police departments, and this was mostly due to these respondents being located in small rural cities or rural areas. For these respondents, if they lived in cities we used the city crime rate, and this is reasonable since many smaller cities are essentially the same population size as census tracts. For the rural respondents not in incorporated cities, we computed a crime rate using a distance weighted average crime rate in the three nearest cities. We include a dummy indicator in our models as a flag to assess whether crime rate data coming from cities instead of tracts has consequences for the models (it was never significant).[12] We also include a measure of the mean distance to nearby cities for each respondent.

Control Variables

We include several individual and neighborhood control variables to reduce the possibility of spurious results. The individual measures come from the ASFP data. We capture the demographics of ego with a measure of whether ego is *female or male* since prior research has shown females are more likely to express fear of crime (Clemente and Kleiman, 1977; Ferraro, 1995; LaGrange and Ferraro, 1989; Stanko, 1995). We also include an indicator for *race/ethnicity* by including an indicator for whether ego is Black, and another indicator whether ego is Latino (the reference group is white, Asian, or other race/ethnicity). Since older residents are expected to express more fear of crime (Doran and Burgess, 2011), we also include a measure of ego's *age* in years. More wealthy residents have been shown to express greater fear (Scarborough et al., 2010), and ego's economic resources were thus captured with a measure of *income*.[13] We also assess ego's *length of residence* by asking about the number of years ego has

[12] To further examine this issue, we also tested models that only included cases with tract crime data. The results were substantively the same.

[13]This was based on 16 categories that match those used by the U.S. Census: Less than $10,000 (1); $10,000 to $14,999 (2); $15,000 to $19,999 (3); $20,000 to $24,999 (4); $25,000 to $29,999 (5); $30,000 to $34,999 (6);

lived in the residence (Clampet-Lundquist, 2010). Given that participation in community meetings may lead to more public social control (Hunter, 1985), we include a measure of the number of *organized group meetings* that ego attended that were non-work related. Finally, prior work has suggested that disorder perceptions are linked with fear of crime (Ferguson and Mindel, 2007; LaGrange et al., 1992; Markowitz et al., 2001; Perkins and Taylor, 1996; Robinson et al., 2003; Ross and Jang, 2000; Scarborough et al., 2010; Skogan, 1990; Wyant, 2008; Yuan and McNeeley, 2015), and we include an index of ego's perception of *disorder* in their neighborhood by taking the mean of six questions that assess disorder in the neighborhood This measure is similar to measures found in Sampson and Raudenbush (2004) and Skogan (1990). This index assessed the extent of problems with litter, graffiti, rundown buildings, vacant buildings, adult disturbances, and teenager disturbances that were rated on a 4 point Likert-scale ranging from "not at all" to a "very serious problem."

We also include several tract-level control variables from the American Community Survey. Higher incomes have been shown to be associated with more fear of crime (Scarborough et al., 2010), and we capture the economic resources of the neighborhood with the *average household income* of residents. We capture the *racial/ethnic heterogeneity* of the neighborhood with a Herfindahl index of five racial/ethnic groupings (White, Black, Latino, Asian, Other), and we expect heterogeneity will be positively associated with fear (Covington and Taylor, 1991). Neighborhoods with more immigrants might also increase fear among residents (Merry, 1981), and we created a measure of the *percent of residents who are immigrants* by using data on foreign born residents in the neighborhood. Since residents who have lived in the area longer are expected to have more familiarity and ability to fight crime

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$35,000 to $39,999 (7); $40,000 to $44,999 (8); $45,000 to $49,999 (9); $50,000 to $59,999 (10); $60,000 to $74,999 (11); $75,000 to $99,999 (12); $100,000 to $124,999 (13); $125,000 to $149,999 (14); $150,000 to $199,999 (15); Greater than $200,000 (16).

(Shaw and McKay, 1942), we measure the *average length of residence in the neighborhood* in years. Given the changes in population density across the Southern California landscape and studies finding that rural residents have less fear of crime (Clemente and Kleiman, 1977; Moeller, 1989), we include a measure of *population density*.

To account for spatial effects in which the nearby areas also have consequences for residents' perceptions of fear of crime, for all of our demographic variables from the American Community Survey we also included a series of spatial lag variables with a 5-mile inverse distance decay function. The inverse distance decay captures the expected effect in which characteristics of closer neighborhoods will have a stronger impact than those farther away.

Finally, the built environment may influence fear of crime, since residents often perceive business areas as unsafe at night (Fisher, 1991), and thus we capture the retail land use of neighborhoods with data from the Southern California Association of Governments with a measure of the *proportion of commercial/retail land uses* out of all land uses by area.

<<<Table 1 about here>>>

Methods

We estimate a series of ordered logit models given that our outcomes are Likert-scales. The standard errors for our models are adjusted with robust standard errors to account for the clustering of respondents within Census tracts. We did not detect any issues with collinearity or outliers.[14] For each of our three outcomes – fear of crime at night, fear of crime during the day, and the change in fear of crime between day and night – we estimate six models. All models

[14] We tested for collinearity using the 'collin' Stata ado file write by Philip Ender at UCLA. All variance inflation factors were under 10, except % immigrants and the spatial lag of % immigrants, but these were in the low teens and somewhat expected given the inclusion of spatial lags. These variables were also not of much interest given they are controls. We estimated a model without the spatial lag for percent immigrants, and the results were unchanged. In regards to outliers, we did find one person with an excessive number of ties in the nearby area, and when this person was dropped from the sample it did not alter the results.

include all control variables. Our baseline model is the classic approach in the fear of crime literature that simply uses the crime rate in ego's neighborhood. The second model focuses on the crime rate in alters' neighborhoods.[15] The third model includes our measures of no safety ties to assess any differences of social isolation, and the fourth model includes the safety ties degree measure. Finally, we assess the spatial distribution of these alters in the fifth model by including a measure of the distance to all safety alters and in the sixth model by including a measure of safety alters within the nearby area, the meso area, and the broader macro area.[16] [17]

Results

Fear of Crime at Night

We begin by discussing the results from our fear of crime at night models in Table 2. Verifying the prediction that fear of crime has some relationship to actual risk levels, we see that for all of the models egos who live in higher crime neighborhoods report more fear at night (see 'crime rate ego' results; b=.1291, $p < .01$). On the other hand, we have no evidence that the crime rate in *alters'* neighborhoods is associated with fear of crime at night (model 2). This result is contrary to what would be expected if ego's perceptions were being shaped by information passed to him or her by his or her alters regarding crime rates in their own neighborhoods.

<<<Table 2 about here>>>

When including the personal network measures starting in model 3, there is no evidence of social isolation – egos with no safety ties outside the home - impacting fear of crime at night,

[15] Rather than just focus only on the mean, we also estimated models that included a measure of the variance of the alters' crime rates, and it was not significant in any of the models, and thus we excluded it from the tables.
[16] We also tested models that included a logged distance squared term in the model, and none of these squared terms were significant, and thus excluded from the models.
[17] If high crime alters live in closer proximity, then ego's fear of crime may be further enhanced as they may perceive a greater risk for victimization. We tested this possibility with an interactions between distance to safety alters and alters' crime rates, and none of the interactions were significant.

but we do see that residents who have higher degree are consistently associated with approximately 5.8% lower fear of crime at night for each additional tie (model 4). When ego reports more distant safety alters (i.e., higher mean distance to safety alters), they report more fear of crime at night, suggesting that distance to social alters may provide a barrier for social support, or alternately that the primary mechanism of fear reduction may be increases in trust and familiarity with neighbors (model 5). Further, in the final model (model 6) we see a pattern consistent with the neighborhoods literature in which each additional safety alter in the area immediately nearby ego's home (i.e., within 1.6 kilometers [1 mile]) is associated with a 7.5% decrease in fear of crime.[18] We also see a pattern where safety alters in the meso region have a slightly stronger negative association with fear of crime than those in the nearby area, as well as an additional benefit for more distant safety alters beyond 80.4 kilometers.

Fear of Crime during the Day

Turning to the fear of crime during the day models in Table 3, we again see a pattern similar to the fear at night models in which more crime in ego's neighborhood is consistently associated with more fear during the day. Nonetheless, we do see two distinct patterns when including the crime rate in alters' neighborhood. First, when we include our measures of alter crime in model 2, we see that the effect for ego crime nearly doubles in size. Second, we see that more crime in alters' neighborhoods is consistently associated with *less* fear of crime. This finding suggests that respondents may *compare* their own neighborhood to information received from their alters. If alters live in a higher crime neighborhood, ego perceives their own neighborhood as less fearful during the day. The fact that we obtain a qualitatively different

[18] One possibility is that the impact of nearby alters might differ depending on the population density in the neighborhood. We tested this possibility with an interaction between population density and safety ties within 1.6 kilometers and none of these interactions were significant, suggesting no differences between settlement patterns (e.g., urban vs. rural) for this association with fear of crime.

pattern for day versus night also suggests that alters may be passing different information regarding different types of crime.

<<<Table 3 about here>>>

We also see a distinct daytime fear of crime pattern when looking at the social network measures. Whereas the nighttime fear models showed no difference for isolates (that is, egos who have no safety alters outside of the home), we see that these isolates report more fear during the day. Thus, these isolates report 68% more fear of crime than others (exp(.5168)=1.677). Although we see no evidence that the total *number* of safety ties (i.e., safety ties degree) irrespective of distance is related to levels of fear of crime in the day, there is evidence that the presence of more safety ties within 1.6 kilometers is associated with lower reported fear of crime in the day. In fact, the size of this effect of nearby safety ties in the micro area is approximately 4 times stronger than the nighttime models, although the effect is present in both cases. We also see that the isolates association is no longer significant once the distance to ties is included in the model, suggesting no differences for isolates for fear of crime at night and day. Nonetheless, whereas the nighttime fear of crime models showed benefits for distant safety alters in the meso or macro area, there is no evidence of these more distant safety alters having consequences for fear of crime during the day.

Difference in Fear of Crime for Day Versus Night

Finally we discuss the models that examine the within-subject difference in fear of crime between night and day in Table 4. Bearing in mind that fear of crime rises at night, these models in practice capture how much *more* fearful ego is at night than during the day. When looking at the crime measures, we see that more crime in ego's neighborhood is associated with a larger increase in fear at night compared to fear during the day. Thus, it appears that the level of crime

in ego's neighborhood more strongly impacts their fear of crime at night compared to their fear of crime in the day. However, this significant association disappears once we account for the crime rate in *alters'* neighborhoods in model 2: higher levels of crime in alters' neighborhoods result in a larger increase in ego's fear of crime from daytime to nighttime. Triangulating these results with the previous models, we can conclude that this occurs because ego is less fearful of crime in the daytime when they compare their own neighborhood to higher levels of crime in alters' neighborhoods, but there is no impact on ego's fearfulness of crime at night.

Turning to the social network measures, we see that when ego has more safety ties (i.e., higher safety ties degree), there is less of a difference between daytime and nighttime fear, when controlling for the other measures in the model (b= -.05). However, when we consider the spatial distribution of safety alters, we see that more distance to safety alters is associated with a greater increase in fear from daytime to nighttime. When we unpack our average distance measure in model 6, we see that more safety alters located in the meso region and at even longer distances away from ego is associated with a smaller increase in fear from daytime to nighttime. Thus, when considering the results from the earlier models, the presence of these more distant alters outside of the local area appears to be driving the change in fear of crime between daytime and nighttime. When residents have more distant alters from outside the local neighborhood, they perceive their neighborhood with less change in fear from daytime to nighttime.

<<<Table 4 about here>>>

Control Variables

We now briefly discuss the control variables. Many of the control variables do not change during different times of day, and these egos with higher or lower levels of these variables consistently reported more or less fear regardless of the time of day. Higher income

residents consistently reported less fear of crime, both in the daytime and nighttime. Residents who perceive more disorder in their neighborhood consistently reported more fear of crime during the daytime and nighttime. Residents living in more rural areas (i.e., a greater distance from the city) generally reported less fear, which confirms the impression that cities are often perceived as being dangerous. We also point out that two common proxies in the literature for neighborhood processes related to social ties – ethnic heterogeneity and length of residence – do not have a significant association with fear of crime, suggesting the benefits of using our approach of capturing safety ties and their spatial location.

Some of the effects were specific to a particular time of day. Compared to males, females consistently report more fear of crime at night, but do not differ for the daytime. And residents living nearby higher income neighborhoods report *less* fear of crime in the daytime than residents living nearby lower income neighborhoods, as shown by the significant spatial lag of income in the neighborhood, but there were no significant differences between such residents for nighttime fear. Residents who live nearby more people (i.e., the spatial lag of population density) reported more fear of crime at night.

Four control variables were associated with the change in fear of crime from nighttime to daytime. Residents who lived farther away from cities (i.e., more rural areas) consistently reported less of an increase in fear of crime in the nighttime compared to the daytime, which suggests that they do not see the nighttime as being particularly more fearful compared to the daytime. And residents who were surrounded by areas with higher population density report a greater increase in fear of crime from daytime to nighttime. Females consistently reported a greater increase in fear of crime from daytime to nighttime, which implies that females perceive nighttime as a particularly threatening time in which to fear crime. Finally, more disorder in a

neighborhood was associated with greater increase in fear of crime from the daytime to the nighttime, which is consistent with the idea that many disorderly spaces have quite different activity patterns at night compared to daytime.

Supplemental Analyses

A question arises whether different types of crime may have varying consequences for fear of crime at night or day. To assess this possibility, we disaggregated our total crime measure into a measure for violent crime and another measure for property crimes, and we again estimated our models for each of these different crime types for egos and alters. Due to the abundance of models (3 outcomes * 6 different models for each outcome * 2 types of crime = 36 total models), we only comment on the crucial results and do not show the tables. The results for our social network and spatial network measures are largely unaffected by this crime type distinction, and thus we only comment on the ego and alter crime measures.

When considering fear of crime at night, the results are similar when using a measure for total crime, violent crime, or property crime, and similar to before, this association is only for the crime rate in ego's neighborhood. There is evidence that violent crime has a stronger effect during the nighttime implying that residents have greater fear of violent crime at night.

When looking at the results for daytime fear of crime, we see a pattern in which daytime fear of crime is driven more by property crime and not violent crime. In fact, none of the violent crime measures for egos or alters are significant predictors for daytime fear of crime. More property crime in egos' neighborhoods are associated with *more* fear of crime during the day, but more property crime in alters' neighborhoods is associated with *less* fear of crime during the day. If alters live in higher property crime neighborhoods, ego perceives their own neighborhood as less fearful during the day.

In regards to the change in fear from daytime to nighttime, the strongest increase in fear from daytime to nighttime occurs when ego lives in a high violent crime neighborhood. More violent crime in alters' neighborhoods is also associated with a greater increase in fear from daytime to nighttime. When considering the property crime measures, a larger increase in *alters'* property crime is associated with a greater increase in fear from daytime to nighttime, but there is no evidence that more property crime in *egos*' neighborhoods are associated with an increase in fear from daytime to nighttime. The results suggest that more property and violent crimes in alters' neighborhoods are both associated with increases in fear from daytime to nighttime, but only violent crime in egos neighborhoods (not property crime) are associated with increases in the change in fear from daytime to nighttime.

Discussion

The role of residents' social networks in their fear of crime has long been debated in criminology. Whereas one view is that safety ties provide information about crime events and therefore may increase fear, another view is that they provide the capability to address neighborhoods problems, social support, and familiarity with others and therefore can reduce fear. In this paper, we used a large survey of Southern California residents, paired with crime data, to show that crime patterns in both ego and alters' neighborhoods affect fear of crime differently over the course of the day. Our results also highlighted a distinction for the structure of resident's safety networks, as well as the spatial location of alters. We now discuss three key findings and their implications for future research.

First, our findings suggest distinct consequences of crime levels in both ego's and alters' neighborhoods for fear of crime, as well as a temporal distinction for different times of day. While it is not surprising that the actual crime rate in egos' neighborhood was a determinant of

their fear of crime (Hipp, 2013), we also showed that when alters live in a higher crime neighborhood ego tends to view their own neighborhood as *safer* during the day. Even though ego's fear is likely to be less during the day, on average, the increased crime in alters' neighborhoods made ego feel even better about their own neighborhood, suggesting that ego evaluates their fear of crime due in part to how their own neighborhood compares with their alters' neighborhoods. Although nearly all respondents reported more fear in general at night, the crime rate in alters' neighborhoods had few consequences for nighttime fear. But, our findings also found that more crime in alters' neighborhoods is associated with a greater increase in fear from daytime to nighttime.

An important implication of our results is that residents' social ties contribute to the spatial dimension of fear of crime by serving as conduits of information. Whereas researchers sometimes treat spatial correlation as a statistical nuisance, our results highlight that for fear of crime this spatial pattern may be driven explicitly by the spatial distribution of residents' safety ties. Thus, the level of crime in other neighborhoods can impact a residents' assessment of fear of crime in their own neighborhood *when they have safety ties in those other neighborhoods*. Thus, it appears that these safety ties serve as the conduit that make what is occurring in these outside neighborhoods salient to residents, and not simply the "nearness" of neighborhoods. This pattern was also supported by the lack of evidence for the interaction between distance to safety ties and alters' neighborhood crime rates.

A novel finding from our supplemental analyses is that violent crime appears mostly of consequence in shaping ego's neighborhood for fear at nighttime, while property crime in alters' neighborhoods is mostly a consequence for influencing daytime fear of crime. Ego was generally more fearful at night when there are higher rates of all crime types in their

neighborhood, but alters' neighborhood property crime appears to be only of consequence during the day and the change from day to night. When alters have more property crime, ego appears to feel better about their own neighborhood during the day. The finding suggests that future research may need to more explicitly consider *the content of information* from alters when assessing fear of crime and *when* alters might use this information.

More research is needed on how spatial network ties enable characteristics in more distant neighborhoods to impact the local neighborhood. We noted four distinct mechanisms - collective action, trust, emotional support, and information on crime patterns – and future research will want to explicitly measure these mechanisms. For example, the content of the actual messages and information received from alters may further provide insight into how these more distant alters matter for ego's fear. For example, it is unclear whether alters discuss crime with ego in order to warn ego, inform them how to take action, gossip, or provide information on activities of others to address this problem in the neighborhood. In addition, although we found that neighborhood safety contacts are key, it is unclear where alters get this information and how it is transmitted. One possibility is that this information may come the media (Doran and Burgess, 2011; Lee and Ulmer, 2000; Liska and Baccaglini, 1990), although others have not found this effect (Skogan and Maxfield, 1981). It may be important to understand the media consumption of alters, not just ego. Future researchers may want to test this possibility using data from Twitter or other social media data (e.g., see Sutton et al., 2015).

A second key finding from our study is that certain personal network structures have varying consequences for fear of crime between day and night. We found that residents with more safety ties (i.e., higher degree) reported less fear at night, which is consistent with the idea that such socially integrated residents have more potential for social support and collective action

and therefore less fear of crime as posited by social disorganization theory (Gibson et al., 2002). Interestingly, the presence of these ties did not make a difference in assessing fear during the daytime; so it appears that such ties are most effective for reducing fear at night. This pattern suggests that these ties may be most useful for collective action problems with neighbors.

Third, our findings not only demonstrated temporal distinctions, but also a spatial process in regards to the presence of alters in relation to ego. On the one hand, we see a pattern similar to other work in the neighborhoods literature in which more local alters are associated with less fear of crime because they potentially can provide more direct support for ego, collaborate to address problems, and increase trust (Sampson and Groves, 1989; Warner and Rountree, 1997). We find that this pattern holds regardless of the time of day. On the other hand, we saw that when considering distance to all alters, the presence of more distant alters diminished the otherwise negative effect of alters on fear at night, and also diminished the otherwise negative effect on the difference in fear from day to night. The presence of more distant alters may indicate that ego is less attached and less attuned to local issues in their neighborhood (Boessen et al., 2014). Furthermore, the presence of more distant alters may imply that ego is spending more time outside of the local area with these more distant alters. The alters' physical distance from ego may enhance a reliance on urban legends and stereotypes about criminal activities when discussing crime with ego, in which case these distant alters may only stoke the fires of fear.

Nonetheless, when we unpacked our "average distance" measure to capture alters in the micro, meso and macro area, we saw a pattern where alters located in the broader region and at much longer distances from ego's home were only effective during the nighttime for reducing fear. One possible explanation is when residents return home at night from their routine

activities, they are available to take part in collective action problems and provide other support from the local area but also the broader region. This finding in tandem with the finding on safety ties degree only having consequences at night suggests that some relationships may have differing consequences at different times of day. One implication is that the spatial distribution of people in the neighborhood, the particular mechanism of interest, and when it is expected to have an effect may provide insight to why prior research has not found protective effects for social ties in regards to crime control (Browning et al., 2004; Pattillo, 1998). The findings also suggest a need for future research to explicitly consider other approaches to capture distance to alters than simply average distance, to capture a more heterogeneous spatial pattern (e.g., see Butts et al. 2011).

We briefly mention some of the limitations of this study, which provide some possible directions for future research. First, while we have culled together a rich database with information on egocentric networks, crime rates, fear of crime at different times, and the locations of both egos and alters, we do not know the locations of egos and alters at different times. This information would provide insight into when alters and egos are in close proximity, and we see this as an exciting opportunity for future research with the advent of georeferenced locational information from cell phones and other devices. Second, our data is cross-sectional, and thus it is possible that fear of crime might be a determinant instead of a consequence. For example, when residents know someone who is victimized in an area at night, residents will often avoid this area (Ferraro, 1995), and a consequence is that ego is less likely to have ties in these areas of the city. Future research might explore this possibility by studying networks and fear longitudinally. Finally, Ferraro (1996) suggests that some gender differences in fear of crime may be due to perceptions of the possibility of being raped (see also Jackson 2011), and

this may be important for the gender differences observed in our study that future research may want to test.

We focused on the role of *safety ties* in this paper, and we argued that these are particularly salient ties for understanding fear of crime. It would be useful for future research using other types of ties to confirm whether these safety ties are indeed more important for understanding fear of crime. Another direction for future research might examine not just ego's personal fear, but also ego's fear for other people and how this might change their responses to crime. Prior research has suggested this possibility when considering personal fear vs. altruistic fear for kin (Warr and Ellison 2000), and one possibility for future research would explore other relationships beyond kin, including social friendship ties and neighbors. The extent that ego changes their protective behavior may depend in part on the spatial proximity of these different alters.

In conclusion, our study shows that social networks and their spatial distribution play a crucial role in residents' fear of crime. Fear of crime changes over the day, and this pattern appears to be determined in part by the spatial location of alters, the number of safety ties, and crime rates in both ego and alter neighborhoods. The findings also highlight that considering different contents of ties may be useful for understanding individual and neighborhood processes, as well as the social process associated with different mechanisms. Although criminologists have often focused on the role of one context or one person, the findings remind us that many aspects of fear of crime are fundamentally relational and have both spatial and temporal components. How residents perceive their local neighborhood is not entirely contained by activities in one local area or necessarily stable over the day, but in part through their social networks and their spatial distribution.

References:

Bellair, P.E., 1997. Social Interaction and Community Crime: Examining the Importance of Neighbor Networks. Criminology 35, 677-703.

Berger, J., Milkman, K.L., 2012. What makes online content viral? Journal of Marketing Research 49, 192-205.

Boessen, A., Hipp, J.R., Smith, E.J., Butts, C.T., Nagle, N.N., Almquist, Z., 2014. Networks, Space, and Residents' Perception of Cohesion. American Journal of Community Psychology 53, 447-461.

Browning, C.R., Feinberg, S.L., Dietz, R.D., 2004. The Paradox of Social Organization: Networks, Collective Efficacy, and Violent Crime in Urban Neighborhoods. Social Forces 83, 503-534.

Bursik, R.J., Grasmick, H.G., 1993. Neighborhoods and Crime. Lexington, New York.

Butts, C., Hipp, J.R., Nagle, N., Boessen, A., Acton, R., Marcum, C., Lickfett, J., 2014. The American Social Fabric Study.

Butts, C.T., 2009. Revisiting the Foundations of Network Analysis. Science 325, 414-416.

Butts, C.T., Acton, R.M., Hipp, J.R., Nagle, N.N., 2011. Geographical Variability and Network Structure. Social Networks 34, 82-100.

Chiricos, T., Hogan, M., Gertz, M., 1997. Racial composition of neighborhood and fear of crime. Criminology 35, 107-131.

Clampet-Lundquist, S., 2010. "Everyone Had Your Back": Social Ties, Perceived Safety, and Public Housing Relocation. City & Community 9, 87-108.

Clemente, F., Kleiman, M.B., 1977. Fear of Crime in the United States: A Multivariate Analysis. Social Forces 56, 519-531.

Covington, J., Taylor, R.B., 1991. Fear of crime in urban residential neighborhoods. The Sociological Quarterly 32, 231-249.

De Donder, L., De Witte, N., Buffel, T., Dury, S., Verté, D., 2012. Social Capital and Feelings of Unsafety in Later Life A Study on the Influence of Social Networks, Place Attachment, and Civic Participation on Perceived Safety in Belgium. Research on Aging 34, 425-448.

Doran, B.J., Burgess, M.B., 2011. Putting fear of crime on the map: Investigating perceptions of crime using geographic information systems. Springer Science & Business Media.

Felson, M., 2002. Crime and Everyday Life, Third Edition ed. Sage, Thousand Oaks, CA.

Ferguson, K.M., Mindel, C.H., 2007. Modeling fear of crime in Dallas neighborhoods a test of social capital theory. Crime & Delinquency 53, 322-349.

Ferraro, K.F., 1995. Fear of crime: Interpreting victimization risk. SUNY press.

Ferraro, K.F., 1996. Women's Fear of Victimization: Shadow of Sexual Assault? Social Forces 75, 667-690.

Fisher, B., 1991. A Neighborhood Business Area is Hurting: Crime, Fear of Crime, and Disorders Take their Toll. Crime & Delinquency 37, 363-373.

Fischer, C. S. 1982. To Dwell Among Friends: Personal Networks in Town and City. Chicago: University of Chicago.

Jackson, J., 2011. Revisiting Risk Sensitivity in the Fear of Crime. Journal of Research in Crime and Delinquency 48, 513-537.

Gibson, C.L., Zhao, J., Lovrich, N.P., Gaffney, M.J., 2002. Social integration, individual perceptions of collective efficacy, and fear of crime in three cities. Justice Quarterly 19, 537-564.

Heaney, C.A., Israel, B.A., 2008. Social networks and social support. Health behavior and health education: Theory, research, and practice 4, 189-210.

Heath, C., Bell, C., Sternberg, E., 2001. Emotional selection in memes: the case of urban legends. Journal of Personality and Social Psychology 81, 1028.

Hipp, J.R., 2010. Micro-structure in Micro-Neighborhoods: A New Social Distance Measure, and its Effect on Individual and Aggregated Perceptions of Crime and Disorder. Social Networks 32, 148-159.

Hipp, J.R., 2013. Assessing Crime as a Problem: The Relationship between Residents' Perception of Crime and Official Crime Rates over 25 Years. Crime & Delinquency 59, 616-648.

Hipp, J.R., Boessen, A., 2013. Neighborhoods, social networks, and crime, in: Cullen, F., Wilcox, P., Sampson, R. (Eds.), Challenging criminological theory: The legacy of Ruth Kornhauser. Piscataway: Transaction.

Hipp, J.R., Butts, C.T., Acton, R.M., Nagle, N.N., Boessen, A., 2013. Extrapolative Simulation of Neighborhood Networks based on Population Spatial Distribution: Do they Predict Crime? Social Networks 35, 614-625.

Hipp, J.R., Kubrin, C.E., 2012. Crime in Metropolitan America: Patterns and Trends across the Southern California Landscape. National Institute of Justice (2012-R2-CX-0010).

Hipp, J.R., Perrin, A.J., 2009. The Simultaneous Effect of Social Distance and Physical Distance on the Formation of Neighborhood Ties. City & Community 8, 5-25.

Hunter, A., 1985. Private, parochial and public social orders: The problem of crime and incivility in urban communities, in: Suttles, G.D., Zald, M.N. (Eds.), The challenge of social control: Citizenship and institution building in modern society. Ablex, Norwoord, NJ, pp. 230-242.

Kanan, J.W., Pruitt, M.V., 2002. Modeling Fear of Crime and Perceived Victimization Risk: The (In)Significance of Neighborhood Integration. Sociological Inquiry 72, 527-548.

Krivo, L.J., Washington, H.M., Peterson, R.D., Browning, C.R., Calder, C.A., Kwan, M.P., 2013. Social Isolation of Disadvantage and Advantage: The Reproduction of Inequality in Urban Space. Social Forces 92, 141-164.

LaGrange, R.L., Ferraro, K.F., 1989. Assessing Age and Gender Differences in Perceived Risk and Fear of Crime. Criminology 27, 697-719.

LaGrange, R.L., Ferraro, K.F., Supancic, M., 1992. Perceived Risk and Fear of Crime: Role of Social and Physical Incivilities. Journal of Research in Crime and Delinquency 29, 311-334.

Lee, M.S., Ulmer, J.T., 2000. Fear of crime among Korean Americans in Chicago communities. Criminology 38, 1173.

Liska, A.E., Sanchirico, A., Reed, M.D., 1988. Fear of Crime and Constrained Behavior: Specifying and Estimating a Reciprocal Effects Model. Social Forces 66, 827-837.

Liska, A.E., Baccaglini, W., 1990. Feeling Safe by Comparison: Crime in the Newspapers. Social Problems 37, 360-374.

Markowitz, F.E., Bellair, P.E., Liska, A.E., Liu, J., 2001. Extending social disorganization theory: modeling the relationships between cohesion, disorder, and fear*. Criminology 39, 293-319.

Merry, S.E., 1981. Urban danger: Life in a neighborhood of strangers. Temple University Press Philadelphia.

Miethe, T.D., 1995. Fear and Withdrawal from Urban Life. The Annals of the American Academy of Political and Social Science 539, 14-27.

Moeller, G.L., 1989. Fear of Criminal Victimization: The Effect of Neighborhood Racial Composition. Sociological Inquiry 59, 208-221.

Nasar, J.L., Jones, K.M., 1997. Landscapes of fear and stress. Environment and Behavior 29, 291-323.

Pattillo, M.E., 1998. Sweet mothers and gangbangers: Managing crime in a black middle-class neighborhood. Social Forces 76, 747-774.

Perkins, D.D., Taylor, R.B., 1996. Ecological Assessments of Community Disorder: Their Relationship to Fear of Crime and Theoretical Implications. American Journal of Community Psychology 24, 63-107.

Robinson, J.B., Lawton, B.A., Taylor, R.B., Perkins, D.D., 2003. Multilevel Longitudinal Impacts of Incivilities: Fear of Crime, Expected Safety, and Block Satisfaction. Journal of Quantitative Criminology 19, 237-274.

Ross, C.E., Jang, S.J., 2000. Neighborhood Disorder, Fear, and Mistrust: The Buffering Role of Social Ties with Neighbors. American Journal of Community Psychology 28, 401-420.

Rountree, P.W., Warner, B.D., 1999. Social ties and crime: Is the relationship gendered? Criminology 37, 789-813.

Saad, L., 2010. Nearly 4 in 10 Americans Still Fear Walking Alone at Night. Gallup-Well Being November: http://www.gallup.com/poll/144272/nearly-americans-fear-walking-alone-night.aspx.

Sampson, R.J., Groves, W.B., 1989. Community Structure and Crime: Testing Social-Disorganization Theory. American Journal of Sociology 94, 774-802.

Sampson, R.J., Raudenbush, S.W., 2004. Seeing Disorder: Neighborhood Stigma and the Social Construction of "Broken Windows". Social Psychology Quarterly 67, 319-342.

Scarborough, B.K., Like-Haislip, T.Z., Novak, K.J., Lucas, W.L., Alarid, L.F., 2010. Assessing the relationship between individual characteristics, neighborhood context, and fear of crime. Journal of Criminal Justice 38, 819-826.

Schafer, J.A., Huebner, B.M., Bynum, T.S., 2006. Fear of crime and criminal victimization: Gender-based contrasts. Journal of Criminal Justice 34, 285-301.

Shaw, C., McKay, H.D., 1942. Juvenile Delinquency and Urban Areas. University of Chicago Press, Chicago.

Skogan, W.G., 1990. Disorder and Decline: Crime and the Spiral of Decay in American Neighborhoods. Free Press, New York.

Skogan, W.G., Maxfield, M.G., 1981. Coping with Crime: Individual and Neighborhood Reactions. Sage, Beverly Hill, CA.

Smith, E.J., Marcum, C., Boessen, A., Almquist, Z., Hipp, J.R., Nagle, N.N., Butts, C.T., 2014. The Relationship of Age to Personal Network Size, Relational Multiplexity, and Proximity to Alters in the Western United States. Journals of Gerontology, Series B: Psychological Sciences and Social Sciences 70, 91-99.

St. John, C., Heald-Moore, T., 1996. Racial Prejudice and Fear of Criminal Victimization by Strangers in Public Settings. Sociological Inquiry 66, 267-284.

Stanko, E.A., 1995. Women, Crime, and Fear. The Annals of the American Academy of Political and Social Science 539, 46-58.

Sutton, J., Gibson, C.B., Phillips, N.E., Spiro, E.S., League, C., Johnson, B., Fitzhugh, S.M., Butts, C.T., 2015. A cross-hazard analysis of terse message retransmission on Twitter. Proceedings of the National Academy of Sciences 112, 14793-14798.

Swatt, M.L., Varano, S.P., Uchida, C.D., Solomon, S.E., 2013. Fear of crime, incivilities, and

collective efficacy in four Miami neighborhoods. Journal of Criminal Justice 41, 1-11.

Talen, E., Koschinsky, J., 2013. The walkable neighborhood: A literature review. International Journal of Sustainable Land Use and Urban Planning (IJSLUP) 1.

Taylor, R.B., 2002. Fear of Crime, Social Ties, and Collective Efficacy: Maybe Masquerading Measurement, Maybe Deja vu All Over Again. Justice Quarterly 19, 773-792.

Taylor, R.B., Covington, J., 1993. Community Structural Change and Fear of Crime. Social Problems 40, 374-397.

Taylor, R.B., Hale, M., 1986. Testing alternative models of fear of crime. The Journal of Criminal Law and Criminology (1973-) 77, 151-189.

Tobler, W.R., 1970. A Computer Movie Simulating Urban Growth in the Detroit Region. Economic Geography 46, 234-240.

Verdery, A.M., Entwisle, B., Faust, K., Rindfuss, R.R., 2012. Social and Spatial Networks: Kinship Distance and Dwelling Unit Proximity in Rural Thailand. Social Networks 34, 112-127.

Viry, G., 2012. Residential mobility and the spatial dispersion of personal networks: Effects on social support. Social Networks 34, 59-72.

Warner, B.D., Rountree, P.W., 1997. Local Social Ties in a Community and Crime Model: Questioning the Systemic Nature of Informal Social Control. Social Problems 44, 520-536.

Warr, M., 1990. Dangerous situations: Social context and fear of victimization. Social Forces 68, 891-907.

Warr, M., 1993. Fear of Victimization. The Public Perspective 5, 25-28.

Warr, M., Ellison, C., 2000. Rethinking Social Reactions to Crime: Personal and Altruistic Fear in Family Households. American Journal of Sociology 106, 551-578.

Wasserman, S., Faust, K., 1994. Social Network Analysis: Methods and Applications. Cambridge University Press, New York.

Wellman, B., Wortley, S., 1990. Different Strokes from Different Folks: Community Ties and Social Support. American Journal of Sociology 96, 558-588.

Wilson, W.J., 1987. The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy. University of Chicago Press, Chicago.

Wyant, B.R., 2008. Multilevel Impacts of Perceived Incivilities and Perceptions of Crime Risk on Fear of Crime. Journal of Research in Crime and Delinquency 45, 39-64.

Yuan, Y., McNeeley, S., 2015. Social Ties, Collective Efficacy, and Crime-Specific Fear in Seattle Neighborhoods. Victims & Offenders, 1-23.

Table 1. Summary Statistics

	Mean	Std. Dev.
Fear of Crime Daytime	0.37	0.77
Fear of Crime Nighttime	0.97	1.12
Fear of Crime Change from Nightime to Daytime	0.65	0.82
Crime Rate Ego (divided by 1000)	2.06	1.60
Mean Crime Rate for Alters (divided by 1000)	2.28	2.01
No Safety Ties Outside of the Home	0.31	0.46
Safety Ties Degree (outside of the home)	2.17	3.09
Mean Distance to Safety Alters (logged)	1.34	1.71
Safety Alters within 1.6 km of Home	0.41	1.45
Safety Alters between 1.6 km and 80.4 km	0.91	1.72
Safety Alters more than 80.4 km	1.07	2.23
Ego is Female (dummy variable)	0.46	0.50
Ego is Latino (dummy variable)	0.23	0.42
Ego is Black (dummy variable)	0.04	0.19
Ego's Age (years)	51.82	16.61
Ego's Income (per $10,000)	7.40	5.84
Ego's Length of Residence in Neighborhood (years)	11.37	10.99
Ego's Meeting Attendance (logged)	0.56	0.74
Ego's Perception of Disorder (index)	0.48	0.50
Mean Income in Neighborhood (per $10,000)	7.32	3.79
Ethnic Heterogeneity in Neighborhood (Herfindahl index)	49.37	14.31
% Immigrants in Neighborhood	25.40	15.74
Mean Length of Residence in Neighborhood (years)	9.03	3.58
Population Density in Neighborhood (per square mile)(divided by 1000)	5.18	8.07
Street Intersection Density in Neighborhood (multiplied by 1000)	0.33	0.41
Proportion Retail Land Use in Neighborhood	0.06	0.08
Spatial Lag: Mean Income in Neighborhood (per $10,000)	7.18	2.64
Spatial Lag: Ethnic Heterogeneity in Neighborhood	54.58	12.52
Spatial Lag: % Immigrants in Neighborhood	25.97	14.03
Spatial Lag: Mean Length of Residence in Neighborhood (years)	8.68	2.86
Spatial Lag: Population Density in Neighborhood	3.60	4.67
Crime Data for Tract (dummy variable)	0.64	0.48
Mean Distance to Nearby Cities (logged)	1.44	1.58

Table 2. Fear of Crime at Night Models

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)
Crime Rate Ego (divided by 1000)	0.1291**	0.1281*	0.1257*	0.1242*	0.1367**	0.1257*
	(0.0478)	(0.0506)	(0.0515)	(0.0510)	(0.0525)	(0.0518)
Mean Crime Rate for Alters (divided by 1000)		0.0039	0.0077	0.0072	-0.0049	0.0099
		(0.0191)	(0.0185)	(0.0186)	(0.0229)	(0.0185)
No Safety Ties Outside of the Home			0.2691	0.0906	0.2264	0.0528
			(0.1378)	(0.1538)	(0.1665)	(0.1576)
Safety Ties Degree (outside of the home)				-0.0589***	-0.0629***	
				(0.0152)	(0.0164)	
Mean Distance to Safety Alters (logged)					0.0739*	
					(0.0372)	
Safety Alters within 1.6 km of Home						-0.0771**
						(0.0298)
Safety Alters between 1.6 km and 80.4 km						-0.0902*
						(0.0358)
Safety Alters more than 80.4 km						-0.0418*
						(0.0190)
Controls						
Ego is Female (dummy variable)	0.3533**	0.3285**	0.3678**	0.3998***	0.4091***	0.4084***
	(0.1105)	(0.1146)	(0.1173)	(0.1154)	(0.1160)	(0.1162)
Ego is Latino (dummy variable)	0.1887	0.2004	0.2007	0.2058	0.2328	0.1937
	(0.1483)	(0.1478)	(0.1480)	(0.1528)	(0.1522)	(0.1526)
Ego is Black (dummy variable)	0.3072	0.3074	0.3323	0.2880	0.3088	0.2667
	(0.2743)	(0.2958)	(0.2951)	(0.3012)	(0.2941)	(0.3020)
Ego Age (years)	0.0026	0.0045	0.0055	0.0057	0.0065	0.0056
	(0.0045)	(0.0049)	(0.0049)	(0.0049)	(0.0049)	(0.0049)
Ego' Income (per $10,000)	-0.0226*	-0.0222	-0.0222*	-0.0196	-0.0188	-0.0192
	(0.0107)	(0.0114)	(0.0113)	(0.0114)	(0.0115)	(0.0114)
Ego's Length of Residence in Neighborhood (years)	-0.0019	-0.0040	-0.0045	-0.0049	-0.0044	-0.0044
	(0.0058)	(0.0060)	(0.0061)	(0.0059)	(0.0060)	(0.0059)
Ego's Meeting Attendance (logged)	-0.1671*	-0.1587	-0.1545	-0.1585	-0.1568	-0.1476
	(0.0816)	(0.0827)	(0.0826)	(0.0813)	(0.0816)	(0.0819)
Ego's Perception of Disorder (index)	1.7889***	1.7968***	1.8103***	1.8314***	1.8439***	1.8277***
	(0.1610)	(0.1706)	(0.1686)	(0.1693)	(0.1709)	(0.1705)
Mean Income in Neighborhood (per $10,000)	0.0174	0.0186	0.0191	0.0191	0.0191	0.0182
	(0.0279)	(0.0280)	(0.0280)	(0.0283)	(0.0282)	(0.0284)
Ethnic Heterogeneity in Neighborhood	0.2379	0.2571	0.2271	0.1876	0.1430	0.1412
	(0.8209)	(0.8560)	(0.8535)	(0.8443)	(0.8349)	(0.8453)
% Immigrants in Neighborhood	0.0176	0.0180	0.0182	0.0191	0.0198	0.0196
	(0.0111)	(0.0127)	(0.0126)	(0.0126)	(0.0126)	(0.0126)
Mean Length of Residence in Neighborhood (years)	-0.0105	0.0026	0.0013	-0.0001	0.0022	0.0015
	(0.0302)	(0.0325)	(0.0329)	(0.0326)	(0.0328)	(0.0328)
Population Density in Neighborhood	-0.0271	-0.0268	-0.0271	-0.0292	-0.0290	-0.0291
	(0.0146)	(0.0204)	(0.0203)	(0.0197)	(0.0195)	(0.0195)
Proportion Retail Land Use in Neighborhood	0.9361	1.4418	1.1691	1.1074	0.9051	1.0064
	(1.6635)	(1.7445)	(1.7361)	(1.7549)	(1.7471)	(1.7472)
Spatial Lag: Mean Income in Neighborhood (per $10,000)	-0.0804	-0.0736	-0.0744	-0.0758	-0.0725	-0.0744
	(0.0545)	(0.0552)	(0.0554)	(0.0561)	(0.0565)	(0.0565)
Spatial Lag: Ethnic Heterogeneity in Neighborhood	-0.0019	-0.0020	-0.0017	0.0001	0.0004	0.0003
	(0.0114)	(0.0116)	(0.0116)	(0.0116)	(0.0115)	(0.0117)
Spatial Lag: % Immigrants in Neighborhood	-0.0081	-0.0105	-0.0107	-0.0132	-0.0134	-0.0133
	(0.0162)	(0.0172)	(0.0172)	(0.0171)	(0.0172)	(0.0172)
Spatial Lag: Mean Length of Residence in Neighborhood (years)	0.0052	-0.0180	-0.0141	-0.0091	-0.0076	-0.0085
	(0.0428)	(0.0445)	(0.0446)	(0.0445)	(0.0446)	(0.0450)
Spatial Lag: Population Density in Neighborhood	0.0958**	0.0937*	0.0957*	0.1007**	0.1015**	0.1008**
	(0.0361)	(0.0396)	(0.0394)	(0.0389)	(0.0389)	(0.0390)
Mean Distance to Nearby Cities (logged)	-0.2173**	-0.2005*	-0.1980*	-0.2022*	-0.2092**	-0.2056*
	(0.0778)	(0.0798)	(0.0794)	(0.0798)	(0.0803)	(0.0812)
Crime rate from tract (dummy variable)	-0.1715	-0.1352	-0.1410	-0.1567	-0.1540	-0.1607
	(0.2380)	(0.2490)	(0.2472)	(0.2493)	(0.2504)	(0.2501)

Note: ***p < .001, **p<.01, *p< .05. Standard errors in parentheses.

Table 3. Fear of Crime Day Models

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)
Crime Rate Ego (divided by 1000)	0.1009*	0.2251***	0.2238***	0.2249***	0.2349***	0.2350***
	(0.0454)	(0.0621)	(0.0647)	(0.0651)	(0.0667)	(0.0628)
Mean Crime Rate for Alters (divided by 1000)		-0.2102***	-0.2014**	-0.2025**	-0.2170**	-0.2087***
		(0.0607)	(0.0636)	(0.0644)	(0.0697)	(0.0603)
No Safety Ties Outside of the Home			0.5168**	0.3740	0.4385	0.3177
			(0.1840)	(0.2133)	(0.2279)	(0.2083)
Safety Ties Degree (outside of the home)				-0.0496	-0.0517	
				(0.0310)	(0.0335)	
Mean Distance to Safety Alters (logged)					0.0366	
					(0.0654)	
Safety Alters within 1.6 km of Home						-0.3023**
						(0.0953)
Safety Alters between 1.6 km and 80.4 km						-0.0291
						(0.0534)
Safety Alters more than 80.4 km						-0.0299
						(0.0292)
Controls						
Ego is Female (dummy variable)	-0.0290	-0.0261	0.0424	0.0666	0.0710	0.0866
	(0.1572)	(0.1678)	(0.1747)	(0.1715)	(0.1742)	(0.1766)
Ego is Latino (dummy variable)	0.2934	0.3382	0.3386	0.3415	0.3561	0.3063
	(0.1845)	(0.1859)	(0.1874)	(0.1882)	(0.1929)	(0.1882)
Ego is Black (dummy variable)	0.7024	0.8663	0.9266*	0.8951	0.8919	0.8865*
	(0.4324)	(0.4480)	(0.4572)	(0.4641)	(0.4566)	(0.4519)
Ego Age (years)	-0.0009	0.0001	0.0020	0.0022	0.0026	0.0029
	(0.0065)	(0.0064)	(0.0066)	(0.0065)	(0.0066)	(0.0066)
Ego' Income (per $10,000)	-0.0448**	-0.0410*	-0.0415*	-0.0397*	-0.0393*	-0.0415*
	(0.0166)	(0.0168)	(0.0169)	(0.0171)	(0.0171)	(0.0174)
Ego's Length of Residence in Neighborhood (years)	-0.0026	-0.0048	-0.0061	-0.0062	-0.0061	-0.0059
	(0.0071)	(0.0075)	(0.0077)	(0.0076)	(0.0076)	(0.0077)
Ego's Meeting Attendance (logged)	-0.2524**	-0.2253*	-0.2053*	-0.2099*	-0.2084*	-0.2025*
	(0.0929)	(0.1018)	(0.0981)	(0.0990)	(0.0999)	(0.1011)
Ego's Perception of Disorder (index)	1.3691***	1.4594***	1.4957***	1.5048***	1.5096***	1.5184***
	(0.1437)	(0.1542)	(0.1525)	(0.1514)	(0.1521)	(0.1476)
Mean Income in Neighborhood (per $10,000)	-0.0007	0.0001	0.0036	0.0059	0.0061	0.0040
	(0.0555)	(0.0582)	(0.0580)	(0.0561)	(0.0564)	(0.0540)
Ethnic Heterogeneity in Neighborhood	0.1595	-0.0243	-0.0773	-0.1099	-0.1267	0.0158
	(0.7701)	(0.8306)	(0.8158)	(0.8249)	(0.8250)	(0.8325)
% Immigrants in Neighborhood	0.0163	0.0135	0.0139	0.0145	0.0148	0.0129
	(0.0122)	(0.0134)	(0.0131)	(0.0131)	(0.0132)	(0.0132)
Mean Length of Residence in Neighborhood (years)	0.0074	0.0282	0.0278	0.0266	0.0282	0.0284
	(0.0416)	(0.0445)	(0.0447)	(0.0452)	(0.0453)	(0.0444)
Population Density in Neighborhood	-0.0243	-0.0087	-0.0101	-0.0110	-0.0109	-0.0109
	(0.0173)	(0.0198)	(0.0194)	(0.0193)	(0.0193)	(0.0192)
Proportion Retail Land Use in Neighborhood	2.6280	2.1479	1.7953	1.7431	1.6678	1.4297
	(2.1003)	(2.2631)	(2.1964)	(2.2267)	(2.2291)	(2.2107)
Spatial Lag: Mean Income in Neighborhood (per $10,000)	-0.1972*	-0.1829*	-0.1889*	-0.1921*	-0.1915*	-0.1869*
	(0.0820)	(0.0839)	(0.0838)	(0.0830)	(0.0830)	(0.0816)
Spatial Lag: Ethnic Heterogeneity in Neighborhood	0.0112	0.0110	0.0117	0.0132	0.0133	0.0127
	(0.0113)	(0.0117)	(0.0116)	(0.0118)	(0.0118)	(0.0118)
Spatial Lag: % Immigrants in Neighborhood	-0.0071	-0.0063	-0.0061	-0.0078	-0.0081	-0.0036
	(0.0191)	(0.0198)	(0.0196)	(0.0196)	(0.0197)	(0.0202)
Spatial Lag: Mean Length of Residence in Neighborhood (years)	-0.0081	-0.0522	-0.0450	-0.0402	-0.0401	-0.0400
	(0.0575)	(0.0574)	(0.0572)	(0.0575)	(0.0573)	(0.0573)
Spatial Lag: Population Density in Neighborhood	0.0584	0.0494	0.0522	0.0547	0.0556	0.0515
	(0.0443)	(0.0464)	(0.0447)	(0.0449)	(0.0448)	(0.0451)
Mean Distance to Nearby Cities (logged)	-0.1942	-0.2282*	-0.2231*	-0.2251*	-0.2299*	-0.2360*
	(0.0999)	(0.0948)	(0.0954)	(0.0954)	(0.0955)	(0.0975)
Crime rate from tract (dummy variable)	-0.1918	-0.3093	-0.3225	-0.3380	-0.3446	-0.3616
	(0.2674)	(0.2723)	(0.2709)	(0.2746)	(0.2729)	(0.2730)

Note: ***p < .001, **p<.01, *p< .05. Standard errors in parentheses.

Table 4. Change in Fear of Crime from Day to Night Models

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)
Crime Rate Ego (divided by 1000)	0.1457*	0.0970	0.0962	0.0945	0.1082	0.0948
	(0.0578)	(0.0622)	(0.0623)	(0.0622)	(0.0631)	(0.0627)
Mean Crime Rate for Alters (divided by 1000)		0.0728**	0.0738**	0.0738**	0.0608**	0.0771**
		(0.0227)	(0.0232)	(0.0230)	(0.0206)	(0.0247)
No Safety Ties Outside of the Home			0.0540	-0.0978	0.0530	-0.1385
			(0.1443)	(0.1523)	(0.1805)	(0.1547)
Safety Ties Degree (outside of the home)				-0.0500**	-0.0549**	
				(0.0180)	(0.0182)	
Mean Distance to Safety Alters (logged)					0.0839*	
					(0.0384)	
Safety Alters within 1.6 km of Home						-0.0345
						(0.0294)
Safety Alters between 1.6 km and 80.4 km						-0.0834*
						(0.0363)
Safety Alters more than 80.4 km						-0.0466*
						(0.0233)
Controls						
Ego is Female (dummy variable)	0.4279***	0.4469***	0.4546***	0.4818***	0.4933***	0.4874***
	(0.1204)	(0.1262)	(0.1255)	(0.1271)	(0.1267)	(0.1271)
Ego is Latino (dummy variable)	0.1861	0.1775	0.1767	0.1830	0.2152	0.1842
	(0.1618)	(0.1716)	(0.1714)	(0.1747)	(0.1762)	(0.1739)
Ego is Black (dummy variable)	-0.0259	-0.1643	-0.1578	-0.2001	-0.2054	-0.2221
	(0.3401)	(0.3574)	(0.3562)	(0.3613)	(0.3622)	(0.3646)
Ego Age (years)	0.0053	0.0067	0.0069	0.0071	0.0080	0.0070
	(0.0053)	(0.0056)	(0.0056)	(0.0056)	(0.0057)	(0.0056)
Ego' Income (per $10,000)	-0.0125	-0.0101	-0.0102	-0.0081	-0.0070	-0.0078
	(0.0121)	(0.0126)	(0.0126)	(0.0126)	(0.0126)	(0.0125)
Ego's Length of Residence in Neighborhood (years)	-0.0023	-0.0030	-0.0031	-0.0032	-0.0028	-0.0029
	(0.0067)	(0.0069)	(0.0069)	(0.0068)	(0.0068)	(0.0068)
Ego's Meeting Attendance (logged)	-0.0564	-0.0809	-0.0804	-0.0834	-0.0785	-0.0720
	(0.0870)	(0.0895)	(0.0893)	(0.0884)	(0.0879)	(0.0879)
Ego's Perception of Disorder (index)	1.3047***	1.2649***	1.2676***	1.2779***	1.2910***	1.2769***
	(0.1387)	(0.1421)	(0.1415)	(0.1432)	(0.1449)	(0.1413)
Mean Income in Neighborhood (per $10,000)	0.0172	0.0169	0.0170	0.0166	0.0166	0.0167
	(0.0244)	(0.0246)	(0.0247)	(0.0248)	(0.0250)	(0.0249)
Ethnic Heterogeneity in Neighborhood	0.2900	0.2618	0.2574	0.2236	0.1642	0.1491
	(0.8282)	(0.8637)	(0.8627)	(0.8519)	(0.8440)	(0.8562)
% Immigrants in Neighborhood	0.0130	0.0140	0.0140	0.0145	0.0148	0.0153
	(0.0117)	(0.0133)	(0.0133)	(0.0133)	(0.0134)	(0.0133)
Mean Length of Residence in Neighborhood (years)	-0.0222	-0.0177	-0.0179	-0.0194	-0.0167	-0.0190
	(0.0284)	(0.0301)	(0.0301)	(0.0300)	(0.0301)	(0.0300)
Population Density in Neighborhood	-0.0220	-0.0326	-0.0326	-0.0343	-0.0342	-0.0346
	(0.0148)	(0.0186)	(0.0185)	(0.0184)	(0.0179)	(0.0184)
Proportion Retail Land Use in Neighborhood	-1.3320	-0.2301	-0.2741	-0.3034	-0.5249	-0.3050
	(1.4575)	(1.5341)	(1.5370)	(1.5452)	(1.5607)	(1.5449)
Spatial Lag: Mean Income in Neighborhood (per $10,000)	-0.0184	-0.0187	-0.0189	-0.0191	-0.0155	-0.0196
	(0.0489)	(0.0509)	(0.0510)	(0.0512)	(0.0517)	(0.0516)
Spatial Lag: Ethnic Heterogeneity in Neighborhood	-0.0057	-0.0045	-0.0045	-0.0031	-0.0030	-0.0024
	(0.0108)	(0.0112)	(0.0112)	(0.0112)	(0.0110)	(0.0113)
Spatial Lag: % Immigrants in Neighborhood	-0.0030	-0.0055	-0.0055	-0.0074	-0.0073	-0.0084
	(0.0159)	(0.0173)	(0.0172)	(0.0172)	(0.0173)	(0.0172)
Spatial Lag: Mean Length of Residence in Neighborhood (years)	0.0347	0.0269	0.0276	0.0321	0.0330	0.0344
	(0.0375)	(0.0398)	(0.0398)	(0.0398)	(0.0398)	(0.0401)
Spatial Lag: Population Density in Neighborhood	0.0826*	0.0883*	0.0885*	0.0925*	0.0937*	0.0934*
	(0.0338)	(0.0373)	(0.0373)	(0.0371)	(0.0367)	(0.0371)
Mean Distance to Nearby Cities (logged)	-0.1882**	-0.1609*	-0.1600*	-0.1611*	-0.1691*	-0.1617*
	(0.0663)	(0.0693)	(0.0689)	(0.0691)	(0.0701)	(0.0705)
Crime rate from tract (dummy variable)	-0.0889	-0.0420	-0.0428	-0.0500	-0.0461	-0.0661
	(0.2452)	(0.2639)	(0.2638)	(0.2649)	(0.2667)	(0.2654)

Note: ***p < .001, **p<.01, *p< .05. Standard errors in parentheses.