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SYSTEMATIC OBSERVATION OF DISORDER AND OTHER NEIGHBORHOOD CONDITIONS IN A DISTRESSED CARIBBEAN COMMUNITY

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There is a growing recognition that physical and social disorder and other neighborhood conditions play an important role in shaping the attitudes, behaviors, and well-being of residents. Most research that seeks to measure neighborhood conditions relies on census or survey data, yet systematic observation often provides a more objective measure of observable neighborhood conditions. However, almost all of the research that has used systematic observation to measure neighborhood conditions has been conducted in developed nations. We describe the conceptual and

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methodological issues that arose during our use of systematic observation to measure disorder and other neighborhood conditions in Trinidad and Tobago, a two-island Caribbean nation. Adapting this methodology for use in a distressed community in a developing nation raised challenges not yet addressed in the literature. We describe these issues and reflect on the applicability of systematic observation techniques and current conceptualizations of disorder across different contexts. © *2016 Wiley Periodicals, Inc.*

INTRODUCTION

Neighborhoods play an important role in shaping the attitudes, behaviors, and health and safety-related outcomes of residents. A growing body of research confirms that neighborhood characteristics influence residents' well-being beyond the effects of individual-level characteristics. For instance, neighborhood conditions have been shown to affect sexual behavior among adolescents (Averett, Rees, & Argys, 2002; Cubbin, Santelli, Brindis, & Braveman, 2005), heart disease (Cubbin et al., 2006; Diez Roux et al., 2001), mental health (Mair, Diez-Roux, & Galea, 2008; Truong, 2006), obesity (Black & Macinko, 2008; Saelens et al., 2012), mortality (Subramanian, Chen, Rehkopf, Waterman, & Krieger, 2005; Winkleby, Cubbin, & Ahn, 2006), violence and victimization (Morenoff, Sampson, & Raudenbush, 2001; Sampson, Raudenbush, & Earls, 1997; Taylor & Covington, 1988), and other health and safety-related outcomes. Various methodologies have been used to measure the neighborhood conditions thought to influence these key outcomes.

The most common types of data used in this research are census data and surveys of residents. Census data are useful for enumerating demographic and economic characteristics and are readily available in many areas. Surveys are useful for measuring people's perceptions and experiences in neighborhoods. Though less common, ethnographic research methods provide rich detail and help to illuminate neighborhood social dynamics that are difficult to reach using census or survey data. Although all of these methods have their strengths, they are less useful for measuring visible neighborhood phenomena like physical and social disorder, land use, and aesthetics (e.g., Sampson & Raudenbush, 1999). Thus, systematic observation by trained observers has become a cornerstone of neighborhood-level research, particularly for measuring physical and social disorder, given disparities in perceptual and observed measures of these phenomena (Hinkle & Yang, 2014; Perkins, Wandersman, Rich, & Taylor, 1993; Piquero, 1999).[1] As we discuss later, the meaning of neighborhood disorder is still being debated. For now, we define disorder, whether physical or social, as "visible cues indicating a lack of order and social control in the community" (Ross & Mirowsky, 1999, p. 413; Skogan, 1990).

Systematic observation is a method for directly observing and recording data on "natural social phenomena" (Reiss, 1971). Systematic observation was first used in the social sciences in the 1930s to study child behavior; since then it has been applied to numerous research questions and has evolved in methodological rigor (McCall, 1984). Applications of systematic observation to the measurement of disorder have emerged primarily from

[1]Systematic observation methods are described across disciplines using different terminology, including direct observation, systematic observation, systematic social observation, environmental audits, and neighborhood audits.

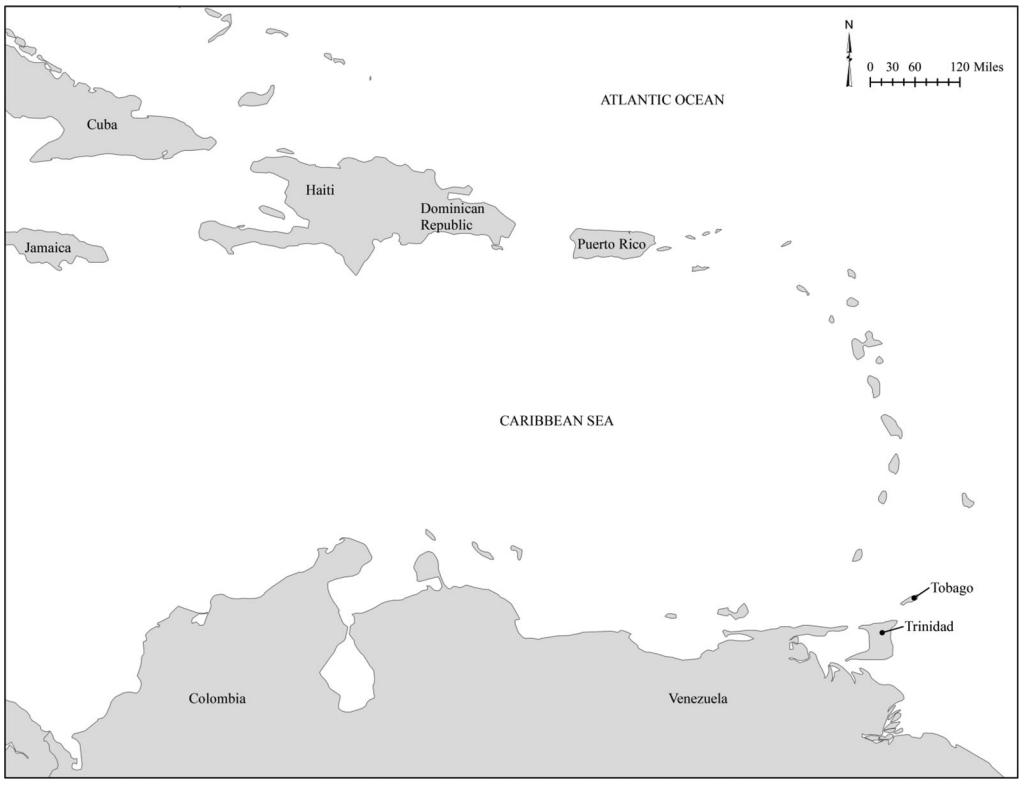

Figure 1. Map of Trinidad and Tobago and the Caribbean Sea.
Note: ArcGIS Continent Layer. Map created by JAH.

research in environmental and community psychology, criminology, sociology, and public health. This interdisciplinary body of research has been useful for examining the linkages between the social and physical characteristics of neighborhoods and a variety of adverse health and safety-related outcomes. Most research that has used systematic observation to measure neighborhood conditions has taken place in developed nations, particularly the United States, though this methodology is now also being used in some developing nations (e.g., Chow et al., 2010; de Freitas, Camargos, Xavier, Caiaffa, & Proietti, 2013). To our knowledge, the only use of systematic observation to measure neighborhood *disorder* in a developing nation took place in Chile (Delva et al., 2014; Sanhueza et al., 2011).

This study examined the methodological and conceptual issues that arose when using systematic observation to measure disorder and other neighborhood conditions in Trinidad and Tobago, a developing nation of the Eastern Caribbean near Venezuela (see Figure 1). The research setting is a distressed urban area located in East Port of Spain, the nation's capital city. Methodological issues emerged as a result of our efforts to measure neighborhood conditions in a community with a variety of challenging aspects, including the threat of violence from street gangs. Conceptual issues arose about the meaning of order and disorder, particularly in the context of a developing nation with a different culture and standard of living than Western nations where measures of observed disorder were established. As we will show, there is considerable overlap between these methodological and conceptual issues.

SYSTEMATIC OBSERVATION OF NEIGHBORHOOD DISORDER

Systematic observation has often been used to measure physical and social disorder in neighborhoods (e.g., Sampson & Raudenbush, 1999; Weich et al., 2002). While concerns about neighborhood disorder can be traced to the Chicago school of urban sociology, Wilson and Kelling's (1982) famous article on "broken windows" renewed interest among scholars on the nature and effects of disorder (Anthony & Perkins, 2013).[2]

To our knowledge, the first use of systematic observation to measure disorder was a study of urban change in Chicago that relied on a "housing and neighborhood appearance instrument" to assess deterioration in residential and commercial blocks in eight neighborhoods (Taub, Taylor, & Dunham, 1984). A major program of research led by Ralph Taylor and Douglas Perkins in the 1980s and 1990s followed. For instance, Taylor, Shumaker, and Gottfredson (1985) used systematic observation to measure physical decay and land use in 808 street blocks in Baltimore. Similarly, Perkins et al. (1993) developed an instrument to measure "physical signs of disorder, territoriality and the built environment" in 48 New York City street blocks. Both Taylor's and Perkins' research was useful for clarifying the meaning, measurement, and effects of neighborhood disorder (e.g., Perkins, Meeks, & Taylor, 1992; Perkins & Taylor, 1996; Taylor, 1996; Taylor et al., 1985; Taylor, Koons, Kurtz, Greene, & Perkins, 1995).

Arguably, the most ambitious use of systematic observation to measure neighborhood disorder was Sampson and Raudenbush's (1999) research from the Project on Human Development in Chicago Neighborhoods (PHDCN). In 1995, PHDCN observers "drove a sport utility vehicle (SUV) at a rate of five miles per hour down every street in 196 Chicago census tracts" (p. 615). Using video cameras mounted in the SUV, the researchers observed and videotaped 23,816 block faces, generating data from both observer logs and coding the video footage. These data were used to develop measures of physical and social disorder.

The present study builds on this previous research and examines the methodological and conceptual challenges associated with the use of systematic observation to measure disorder and other neighborhood conditions in Trinidad and Tobago. These challenges are instructive for reflecting on the meaning and universality of order and disorder, as well as the use of systematic observation methods for measuring neighborhood conditions in developing nations and other impoverished settings.

RESEARCH SITE

This systematic observation study was part of a larger research project that examined crime and justice issues in Trinidad and Tobago. It was one of several data collection initiatives used to evaluate the effect of a community development project in Gonzales, a primarily residential community with a population of 5,650 and a land area of approximately 300 acres.[3] Gonzales is one of several economically distressed but culturally vibrant

[2]Wilson and Kelling argued that untended neighborhood disorder generates more serious problems, including crime. Research has since cast doubt on the broken windows hypothesis, but the scholarship it inspired has helped to clarify the nature and effect of neighborhood physical and social disorder (Sampson & Raudenbush, 1999).

[3]Obtaining accurate population information for Gonzales is difficult because the boundaries are debated and the squatter community is underrepresented in official statistics. The community-identified boundaries of Gonzales used in this project differ from the administrative boundaries used by government agencies (see

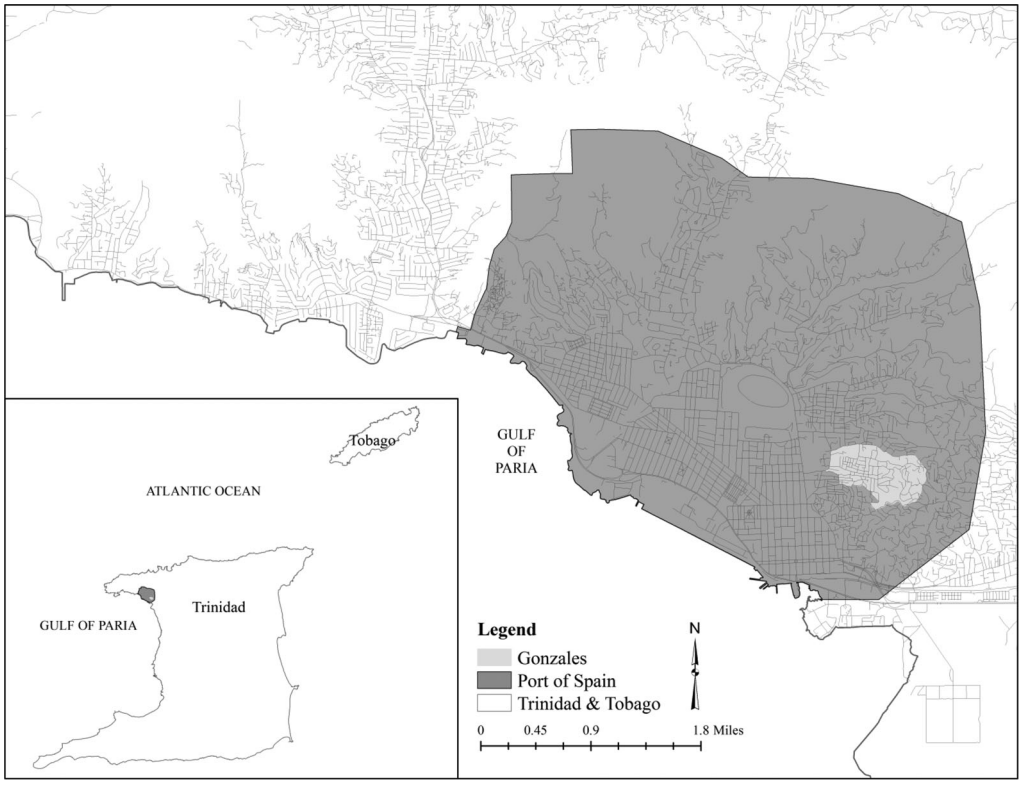

Figure 2. Map of Gonzales and Port of Spain, Trinidad and Tobago.
Note: Shapefiles for the Trinidad and Tobago coastline and streets obtained from the Trinidad and Tobago Central Statistical Office. Port of Spain and Gonzales boundary files obtained from HHB and Associates. Map created by JAH.

communities in the eastern hillsides of Port of Spain (see Figure 2). Residents view the community as having two parts: Upper and Lower Gonzales. This division reflects both the local topography and the differences in levels of development. Lower Gonzales is more of a planned community, with paved roads arranged in a grid pattern and most houses built from standard construction materials. In contrast, Upper Gonzales is largely a squatter community, with dirt roads and footpaths winding around the hillsides and makeshift homes built from leftover materials.

From 2000 to 2005, Gonzales and nearby communities experienced a sharp increase in gang violence (Maguire, Willis, Snipes, & Gantley, 2008). In part as a response to this rise in violence, residents and other stakeholders launched a multifaceted community development initiative called Pride in Gonzales that addressed public safety, youth enrichment, water access, waste management, and other vital community issues (Pride in Gonzales, 2011). As part of the evaluation of Pride in Gonzales, we completed three waves

Pride in Gonzales Committee, 2005). In terms of land use, 84% of the land in Gonzales is used for residential purposes, 9.2% is used for institutional or public purposes, 2.8% is vacant, 1.8% is for commercial purposes, 1.4% is for recreational purposes, and 1% is for industrial purposes (Pride in Gonzales Committee, 2005).

of systematic observation between 2006 and 2008 in Gonzales and bordering portions of Belmont and Laventille.[4]

METHODOLOGICAL ISSUES

Because the use of systematic observation methods to measure neighborhood conditions was developed primarily in the United States, using this approach in a distressed community in a developing nation raised numerous methodological and logistical issues that may arise in other settings as well. This section describes our methodology and discusses these issues.

Researchers have used various observational methods to measure disorder and other neighborhood features. For example, some have coded neighborhood characteristics in real time while walking, bicycling, or driving down streets (e.g., Brown, Werner, Amburgey, & Szalay, 2007; Caughy, O'Campo, & Patterson, 2001; Hinkle & Yang, 2014; Kwate & Saldaña, 2011; O'Neil, Parke, & McDowell, 2001, Perkins & Taylor, 1996; Perkins, Florin, Rich, Wandersman, & Chavis, 1990; Perkins et al., 1990, 1992, 1993; Taylor, 2001); others have videotaped and later coded the video (e.g., Braga et al., 1999; Cohen, Spear, Scribner, Kissinger, & Wildgen, 2000; Sampson & Raudenbush, 1999). Given the significant gang activity in Gonzales and neighboring communities, safety concerns limited our options.

Although a walking survey would have been ideal given the topography and layout of Gonzales, police and community leaders warned that entering the area on foot and without security would have been unsafe. As a result, we collected data while driving in unmarked police vehicles accompanied by plain-clothed officers. Security concerns are likely to arise in many communities in the developing world where researchers would be most inclined to use systematic observation to measure neighborhood conditions.

Our data collection protocol was based heavily on the methodology used in the PHDCN (Earls, Raudenbush, Reiss, & Sampson, 1995). Like the PHDCN researchers, we used video cameras to record neighborhood features. Video recording provides several advantages for observational studies (Smith, McPhail, & Pickens, 1975, p. 537), including "a sequential record of behavior . . . which can be repeatedly viewed for multiple 'codings' and for systematic reliability checks . . . " However, the open use of video cameras can induce reactivity in communities.[5]

PHDCN researchers mounted video cameras inside their SUV (facing out from either side of the back windows), which allowed them to videotape neighborhood features on both sides of the street without significant concerns about reactivity. Had we mounted our cameras in this way, they would have been placed at an angle and distance that would have resulted in incomplete footage of the narrow streets. Instead, we mounted two cameras on the hood of the vehicle, each angled toward one side of the road. Reactivity was likely given that we were driving in a car that residents could easily identify as a police

[4]Gonzales was considered the treatment area for purposes of the evaluation, and portions of Belmont and Laventille that border Gonzales were used as comparison areas. Although the designation of treatment and comparison areas was useful for purposes of the evaluation, it is not relevant for the present article.

[5]Smith et al. (1975) tested the reactivity associated with two systematic observation methods–video recording and pencil and paper notetaking–of people walking into a football stadium. Examining the "gaze direction" of their subjects, they found that video recording did not elicit any greater reactivity than note taking. However, reactivity increased for both data collection methods as the distance between observers and subjects decreased.

vehicle with cameras clearly visible.[6] For this reason, our study is much more suitable for capturing the *physical* characteristics of the neighborhood than the *social* behavior of its residents. Prosaic issues like the width and layout of streets can influence the extent to which video recording methods can be used to construct valid observational measures of social disorder in some settings.

The reactivity associated with the use of videotaping may also raise ethical concerns. For some, videotaping may represent an unwelcome invasion of privacy because the footage may show people who have not provided informed consent to participate in research.[7] For instance, Caughy et al. (2001, pp. 226–227) contend that driving a vehicle through a neighborhood slowly while videotaping "is intrusive and disrespectful of neighborhood residents and their community. Residents are videotaped without their knowledge or consent, which raises interesting legal issues if illegal activities are within view when the SUV drives by . . . ."[8]

Another ethical issue that may arise in observational research is its effect on residents. This issue is particularly salient here because we were accompanied by armed police officers with video cameras mounted openly on unmarked police vehicles. It is unclear how residents perceived the data collection process. On the one hand, it may have led some residents to perceive an increasing and unwelcome level of surveillance by the police. This perspective is consistent with research showing that many residents in the community perceived the police to be abusive (Kuhns & Johnson, 2011). On the other hand, fear of crime was rampant in the area (Johnson, 2006), and residents repeatedly requested increased police patrols. Thus, some residents may have been reassured by the additional police presence during the data collection process. It is important for researchers to consider these issues when conducting systematic observation research in neighborhood settings.

It was challenging but vital for our research to obtain accurate maps and standardized geographic data (i.e., geographic information system [GIS] files) for the study area. Multiple organizations in Trinidad had geographic data and maps at the time of our study, but the information from these sources was inconsistent and often provided no way to distinguish paved roads from the many dirt roads, footpaths, and steep staircases located in these communities. To create an accurate map from which we could derive a route for videotaping that would be replicable in future waves of data collection, we merged GIS maps from three agencies to create one "supermap" of the road network in Gonzales and surrounding communities. Although researchers in developed nations

[6]Qualitative field notes and quantitative results from our study confirm concerns about reactivity. A field note excerpt from Wave 1 reads: "Generally, residents in the area either ignored us, or looked at us curiously. The kids were often very curious, followed us on their bikes, and waved at us from cars or while they were walking." Quantitative results from Wave 1 suggest that when people were visible, they ignored the observers about ten percent of the time and exhibited curiosity about the presence of observers about half of the time.

[7]Note that the Human Subjects Review Board at George Mason University approved all study procedures.

[8]We took a number of steps before data collection to address these concerns. First, we developed relationships with community leaders for a year before the first wave of data collection began. During this time, members of our team regularly attended meetings associated with Pride in Gonzales, met with interested stakeholders, attended community events, and interacted with community-policing officers. As a result, community leaders viewed us as partners and understood that our research was associated with the overall Pride in Gonzales initiative and could provide useful data on issues that were vital to the community (e.g., waste management, physical infrastructure, removal of abandoned vehicles). Second, we notified key community leaders about our research plans in advance so they could brief residents if concerns were raised. Third, our human subjects protection plan involved a pledge not to release any video clips in which people were present; this meant not showing such clips at public events (like conference presentations) and not providing copies of our videotapes to the police for any reason.

often take the availability of accurate maps and geographic data for granted, obtaining this information in developing nations can sometimes be difficult (Ansumana et al., 2010).[9]

The terrain and road network in this community also raised questions about the most appropriate unit of analysis. The units of analysis in past studies have varied widely, with most treating some aspect of blocks as the unit of analysis, though terminology widely varies.[10] Consistent with the PHDCN study (Sampson & Raudenbush, 1999, p. 616), we used the block face (defined as "the block segment on one side of a street") as our unit of analysis. Identifying blocks in a city like Chicago, with its standardized grid-like street pattern, is relatively straightforward. However, in many developing nations, the idea of a "block" can be problematic, particularly in unplanned squatter communities, shantytowns, or slums that may not even have street addresses (Farvacque-Vitkovic et al., 2005).

The street layout in our study area made it difficult to identify blocks (see Figure 3). In many cases (especially in Belmont and Lower Gonzales) it was possible to divide streets into block segments using intersections. As a result, we were able to map and number most block faces on our route through Gonzales and surrounding areas prior to data collection. For these predefined segments, we announced the beginning and the end of a block face during the video recording process to ensure that coders were consistent in their judgments when reviewing the videotapes. In some cases, however, it was necessary to use other physical markers (such as staircases built into the hillsides) to identify the beginning and end of street segments.

In addition, impassable roads and map errors meant that we had to redefine some of the street segments after reviewing the Wave 1 videotapes. Using systematic observation to measure neighborhood conditions in impoverished and unplanned communities in developing nations (particularly in slums) is likely to raise conceptual issues associated with the meaning of basic geographic units such as street blocks.

Wave 1 of our data collection was conducted over five hours on Saturday, May 27, 2006. Police officers drove the researchers in a small SUV with two video cameras mounted on the hood. The researchers directed the driver along the selected route, monitored the video equipment, and provided commentary on the videotapes; a GPS device was used to document the actual route driven and to update the maps as needed. The car was driven slowly (approximately 5 miles per hour) along the preplanned route. In all, 326 block faces were recorded in Wave 1, including 246 in Gonzales (75.5%) and 80 in Belmont and Laventille (24.5%), the comparison areas for our evaluation. This process was repeated on Saturday, April 28, 2007 (Wave 2) and Saturday, June 7, 2008 (Wave 3) at approximately the same time of day.[11]

To develop the coding instrument for our project, we began with the observer log and the videotape coding sheet from the PHDCN study (Earls et al., 1995). Many items in the PHDCN instrument were relevant for measuring neighborhood characteristics in Trinidad, including the presence of fences, security devices, trash and debris, graffiti,

[9]Recall that our data collection occurred from 2006 to 2008, before Google Maps and other online mapping tools were readily available. Even today, however, these tools provide incomplete coverage in the developing world.

[10]Studies have used a variety of terms, including: "block," "street block," "face-block," and "block face." For instance, Franzini, Caughy, Nettles, and O'Campo (2008, p. 85) define a face-block "as both sides of the street of one city block." In contrast, Sampson and Raudenbush (1999, p. 616) use the term block face to refer to "the block segment on *one* side of a street" (emphasis added), such that buildings located across the street from one another comprise separate units.

[11]It was important that data collection occurred on the same day of the week at the same time of day to ensure as much consistency across waves as possible.

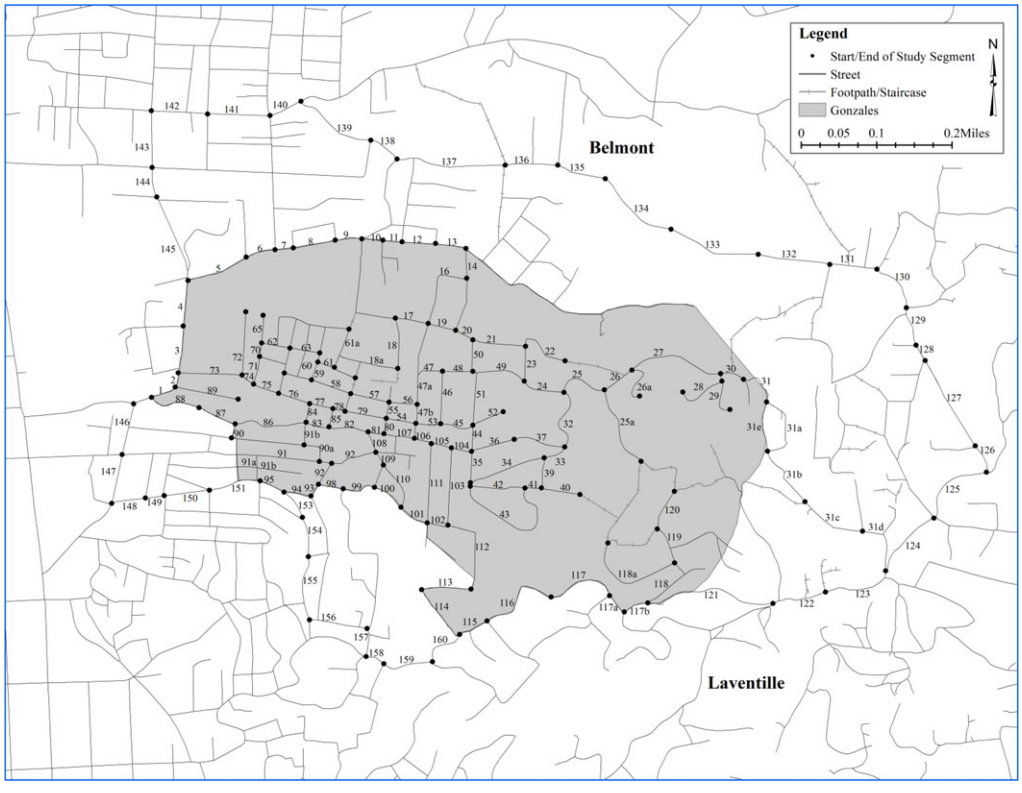

Figure 3. Map of systematic observation route and street segments in Gonzales and surrounding communities. Note: Street files obtained from the Trinidad and Toabago Central Statistical Office. The Gonzales community and Footpath/Staircase shapefiles obtained from HHB and Associates. Map created by JAH.

and empty or overgrown lots. Similarly, we retained items that measured land use (for example, residential, commercial, or recreational space) and the presence and activities of people on the street (e.g., groups of teens loitering, children playing, and people sleeping or selling drugs).

Several items from the PHDCN instrument had to be modified to suit local conditions. For example, the PHDCN instrument included questions about the presence of security devices at homes and businesses, including pull-down metal security blinds, security bars on windows, and barbed-wire fencing. In Trinidad, as in many developing nations, some homes had fences topped with informal security features like protruding nails or shards of broken glass held in place by concrete, so we added these to the coding sheet.

Similarly, although the PHDCN instrument included questions about the condition of the street, we added additional questions, including whether the street was paved or unpaved, the quality of the pavement, whether a sidewalk was present, and the quality of the sidewalk. We also added new items to the coding sheet that did not appear in the PHDCN instrument. These items were intended to tap into neighborhood conditions that are common in impoverished cities in the Global South, but uncommon in the developed nations where such research ordinarily takes place. For example, a portion of Gonzales is essentially a shantytown, with makeshift homes built on squatter property using improvised construction methods. Some residents had also crafted makeshift fences

from interwoven banana leaves and other large plant fronds. Similarly, stray animals were a common presence in the community of study (dogs, cats, chickens, etc). To account for these issues, we included questions about whether buildings and fences were made from standard construction materials and whether freely roaming animals were visible.

Once the coding instrument was created, three research assistants were trained to code the video footage and intra- and inter-observer reliability checks were performed. We minimized the possibility that coders from the United States might introduce bias into the coding process by training them thoroughly and developing a carefully designed coding instrument. The training process involved discussions about the purpose of the research, conditions in the community of study and how they vary from the United States, and methodological issues in the data collection process. The coding instrument comprised questions about specific, objective neighborhood conditions that minimized opportunities for injecting bias into the coding process.[12]

The issues we have outlined in this section involve a mix of basic logistical challenges and more complex methodological issues with implications for conceptual and theoretical development. First, security concerns mean that in the communities where neighborhood physical and social disorder may be most salient, using systematic observation to measure disorder may be challenging. Second, carrying out such research without generating reactivity may be difficult, particularly for measuring social disorder. Third, the use of systematic observation to measure neighborhood conditions is premised on the availability of accurate maps and geographic data; thus, practical constraints are likely to emerge in communities where such resources are unavailable.

Fourth, a key issue in observational research on disorder is selecting the most appropriate unit of analysis. Blocks are commonly used in existing research, but in many unplanned and impoverished communities in the developing world, the meaning of a block may be less clear. Fifth, and most important, instrumentation and coding are particularly challenging because it is unclear whether the meaning of disorder is universal or context dependent. It is easy to rely on the instruments used in previous systematic observation research, but the more challenging issue is determining what conditions constitute disorder in a particular context and adapting the instrument and coding processes accordingly. We turn to these conceptual issues in the next section.

CONCEPTUAL ISSUES

Disorder plays a key theoretical role in scholarship on neighborhoods and is prominently featured in policy debates about reducing crime and fear and improving the quality of life in neighborhoods. Given the importance of disorder for both theory and policy, we attempted to construct observational measures of physical and social disorder for the block faces in our sample based on an examination of the concepts and measures in the scientific literature on disorder. Much of this literature is based on research carried out in a handful of postindustrial U.S. cities, primarily Chicago, Baltimore, and Philadelphia. Challenges associated with applying concepts and measures established in the United

[12]Practice coding sheets were reviewed by the principal investigators and discrepancies in coding were discussed and resolved. Each assistant coded 30 randomly selected block faces from Wave 1 to allow for formal inter-rater reliability tests. Because of logistical circumstances beyond our control, only one research assistant was available to complete the coding. Thus, one assistant coded all 326 block faces in each wave of data collection. To ensure intra-observer consistency in coding across waves and over time, observer drift checks were conducted at multiple stages.

States to distressed neighborhoods in a developing nation quickly became apparent. In this section, we reflect on the meaning of disorder and some of the unique challenges of conceptualizing and measuring it within the context of a developing nation.

Although most of the research on disorder has taken place in a limited number of U.S. cities, debates about the conceptualization and measurement of perceived and observed disorder abound (Harcourt, 2001; Hinkle & Yang, 2014; Kubrin, 2008).[13] Much of the debate has focused on the conceptualization and measurement of *social* disorder, particularly its relationship and potential overlap with other related concepts. For instance, less serious crimes such as loitering, public intoxication, prostitution, and retail drug sales are often conceptualized as disorderly behaviors. Conflating less serious forms of crime with social disorder raises questions about discriminant validity in measures of both crime and disorder (e.g., Maguire, Armstrong & Johnson, 2015; Gau & Pratt, 2008). Additionally, Harcourt (2001, p.17) notes that behavior considered disorderly by some might instead signal "an alternative subculture, political opposition, or artistic ferment." Thus, the conceptual boundaries of social disorder continue to be debated.

In contrast to social disorder, there appears to be greater agreement about the definition of *physical* disorder. Skogan (1990, p. 4) notes that physical disorder "involves visual signs of negligence and unchecked decay: abandoned or ill-kept buildings, broken streetlights, trash-filled lots, and alleys strewn with garbage and alive with rats." Similarly, Ross and Mirowsky (1999, p. 413) note that physical disorder "refers to the overall physical appearance of a neighborhood. Places with high levels of physical disorder are noisy, dirty, and run down; many buildings are in disrepair or abandoned; and vandalism and graffiti are common." Finally, St. Jean (2007, p. 2) notes that physical disorder "refers to conditions that suggest lack of care for the physical environment of a neighborhood. These conditions include abandoned buildings, broken and/or boarded-up windows, graffiti, overgrown lawns, and untidy vacant lots."

Common across these above-mentioned definitions is the idea that certain observable neighborhood conditions serve as visual cues of deterioration, abandonment, negligence, or lack of care. For instance, Ross and Mirowsky (1999, p. 413) argue that physical disorder signals "that social control has broken down" within a neighborhood. These signals play a key role in the causal logic underlying the broken windows hypothesis, which posits a relationship between disorder and crime (Wilson & Kelling, 1982).

In sum, as Anthony and Perkins (2014, p. 20) emphasize: "Researchers have found it relatively simple to define physical disorder.... Broken windows, graffiti, and even cigarette butts in gutters are observable; there would likely be agreement among researchers and residents that most of these are undesirable." Expanding the research to include a more diverse range of settings is likely to inspire greater conceptual debate. Indeed, adopting a more global perspective on the meaning of physical disorder raises important normative and conceptual questions. Is the meaning of disorder universal or culturally relative? Do abandoned buildings and empty lots send the same signals to residents in the urban favelas of Rio de Janeiro as they do for those in the South Side of Chicago? Are trash and litter on the streets of Port au Prince an indicator of disorder and weak informal social control, or do they reflect limited government capacity and a lack of municipal services that are often taken for granted in developed nations?

[13]Indeed, even the terminology used to describe disorderly neighborhood conditions is inconsistent. Most observation studies use the terms "disorder" or "incivilities"; however, other studies refer to neighborhood "problems" or "conditions," "environmental satisfaction," and "deterioration."

Contemplating these issues is useful for thinking about the meaning and universality of physical disorder.[14]

Our research in Trinidad suggests that the conceptual simplicity of physical disorder, as emphasized by Anthony and Perkins (2014), may be a partial function of the narrow range of places where research on this topic has been carried out. Our study of disorder in and around Gonzales raised several important questions about the meaning of disorder. In reflecting on these issues, we draw not only on our observational data but also on surveys, focus groups, and interviews with residents and other community stakeholders. These additional data sources are useful for understanding residents' perceptions of neighborhood conditions (cf. Kubrin, 2008).

Based on these various data sources, we discovered that some conditions considered disorderly in the United States may be perceived quite differently in Gonzales and surrounding communities. For example, our review of over 80 articles in the literature found that the most commonly used indicator of disorder in prior research was the presence of trash and litter on a street block or in a community.[15] Places with higher concentrations of visible trash were rated as more disorderly than areas where less litter was present. Trash and litter was 1 of 10 indicators that Sampson and Raudenbush (1999) used to measure physical disorder in the PHDCN study. They reported that 50.5% of the block faces they observed in Chicago had trash and litter present. In contrast, a full 96.6% of the block faces in our sample had trash and litter present.

Were we to use the operationalization of disorder that is common in the literature, we might conclude that Gonzales had a very high level of physical disorder, which in turn was emblematic of a breakdown in social control or a lack of concern on the part of neighborhood residents. However, residents told us that the presence of trash and litter meant something very different to them–that the government does not provide consistent and adequate rubbish removal services in their community. According to residents, the municipal trucks that service the neighborhood fail to come on a regular schedule and often cannot navigate the hilly, unpaved, and narrow streets.

Moreover, when residents dump their trash properly in designated areas, it is often scattered by stray animals in the community. As one respondent in our focus groups stated: "The garbage people real inconsistent. It will have garbage just pile up, pile up, and dogs and vagrants would be in it." Another noted: "If they come and pick up the garbage when they supposed to, the dogs will not have a chance to scatter it." In a separate analysis supporting this claim, we demonstrate that residents' perceptions of trash and litter are empirically distinct from their perceptions of other neighborhood characteristics commonly used as indicators of physical disorder, such as vacant houses, abandoned cars, and graffiti (Maguire, Armstrong & Johnson, 2015).

Our research suggests that the *mechanisms* that generate potentially disorderly conditions are important to consider when deciding which conditions to classify as disorderly. How people perceive and interpret conditions in their community may depend

[14]We focus on conceptualizing and measuring physical disorder in the remaining discussion because of the reactivity issues associated with our decision to videotape while riding in unmarked police vehicles. We do not believe the observational methods we had to use in this setting allow us to construct valid measures of social disorder. We hope other scholars will similarly examine the universality of social disorder and its indicators in future research.

[15]Other indicators used frequently in the literature include abandoned buildings, vandalism, property upkeep, drug use or drug sales, graffiti, public drinking, gangs, gang members or gang activity, groups of teens hanging out, noisy neighbors, harassment or verbal abuse, noise, street crimes, prostitution, and stray pets.

on whether they attribute these conditions to internal or external causes.[16] Indicators of physical disorder are typically interpreted by scholars as signals of an internal breakdown in social control and an inability to achieve shared norms and values within a community. Such an interpretation is problematic if the presence of these indicators is instead the product of a government's inability to provide basic services for citizens. If government does not have the will or capacity to provide sufficient trash removal, then can overflowing garbage really be interpreted as a sign that residents don't care?

Just as some of the most common indicators of physical disorder in the literature may have different meanings in different contexts, new indicators may also need to be established to suit new contexts. For instance, during one focus group on the meaning of order and disorder, residents reacted dramatically to video footage that showed a chicken running around in a neighborhood. When they watched the footage, several residents yelled "fowl!" and explained that the presence of chickens was a clear sign of a disorderly community. One resident noted that an orderly community was one in which there were "no fowl running up and down." Another resident reacted to a video clip in which there were no chickens: "The best thing you ain't seeing no fowl."

This unexpected reaction to the presence of chickens serves as a useful reminder of the need for researchers to develop contextually meaningful indicators of disorder. For residents of Gonzales and surrounding communities, the most salient indicators of disorder may be different from those that emerge as important in Baltimore, Chicago, or Philadelphia. More generally, the most salient indicators of disorder in the *developing* world may be different from those in the *developed* world. We return to the issue of development below.

The focus groups we convened in concert with our systematic observations suggested that residents of Gonzales and surrounding communities did indeed find neighborhood order and disorder to be meaningful and salient concepts. For them, certain indicators of physical disorder, including vacant lots, abandoned homes, and abandoned vehicles, were closely associated with violent street gangs whose members used these locations to hide drugs and guns (Maguire, Armstrong & Johnson, 2015). The presence of chickens and stray dogs served as further indicators of disorder in the minds of residents. Thus, while the specific *indicators* of disorder may not be the same in the United States and Trinidad, the general *concept* of disorder was meaningful and salient for residents of these communities. One possibility worthy of further research is whether certain indicators of disorder are more universal than others. For instance, our analysis of resident survey data found that some indicators of disorder used commonly in the literature, including graffiti, vacant or abandoned homes and vehicles, poor lighting, and empty or overgrown lots, loaded strongly together on a physical disorder factor (Maguire, Armstrong & Johnson, 2015).

Just as our research in Trinidad and Tobago raises questions about the universality of disorder and its indicators, it also raises questions about theories that link disorderly

[16]Sampson and Raudenbush (1999, p. 610) emphasize that human agency plays an important role in regulating public order. According to this perspective, disorder is not simply a matter of "material circumstances or ecological structures." It is also a function, in part, of a community's latent capacity to mobilize internal and external resources to achieve desired policy outcomes (Sampson & Graif, 2009). These ideas may take on a different meaning in the developing world. There is evidence of mobilization among slum residents in the developing world (see Perlman, 2010). However, it is also well-known that the urban poor in developing nations face significant barriers in their attempts to access public services (Titumir & Hossain, 2004). The idea that disorder reflects a community's latent incapacity to mobilize presumes that external resources or services are accessible. That presumption may be inaccurate in many parts of the developing world, even when residents are able to band together successfully.

neighborhood conditions to outcomes such as crime and fear of crime. As such, it is not yet clear to what extent these theories are applicable outside of the U.S. urban context in which they were initially developed. For example, the theoretical literature from the United States often describes a "spiral of decay"–a longitudinal process in which disorder undermines social control, which then results in higher crime rates (Skogan, 1990; Kelling & Coles, 1996; Wilson & Kelling, 1982).

In these accounts, neighborhoods that were once orderly and well-maintained experience a gradual shift toward physical deterioration, greater social and physical disorder, and increased crime and other social ills. A key conceptual question is whether the temporal processes underlying the spiral of decay thesis are applicable in communities with a deep history of serious social problems and chronically impoverished populations, like many in the developing world. It may be inaccurate to characterize such communities as having experienced a *decline* in neighborhood conditions when they were never fully "developed" in the first place.

Indeed, one issue that emerges when applying the neighborhood disorder scholarship to developing nations is the possibility that level of development and physical disorder may become conflated. Development does not have a precise definition; instead, it is generally concerned with the global distribution of poverty and inequality and has economic, social, cultural, and political dimensions. A key aspect of a nation's level of development is its capacity to provide for its people's needs, including health, education, justice, and security. Development is often thought of as a pathway by which nations can achieve their full economic and human potential.[17] Since gaining independence, the postcolonial nations of the Global South, including Trinidad and Tobago, have "proclaimed development as their primary aspiration" (Sachs, 1992, p. 1).

Our work raises the possibility of conceptual overlap between disorder and development. Certain "objective" indicators of neighborhood conditions common in the Global South may be more associated with levels of development than with the social processes thought to generate disorder. The conceptual overlap between disorder and development may be most pronounced in the world's squatter areas, shantytowns, and slums.[18] While Gonzales and the communities surrounding it are home to several small, impoverished squatter areas, recent estimates suggest that more than *860 million* people in the world now live in slums. In Sub-Saharan Africa, 62% of the urban population is estimated to live in slums (UN Habitat, 2012). How should the conditions in these communities be interpreted? Do these conditions reflect residents' lack of will or capacity to organize or do they exist because the nations are poor and unable to meet the needs of citizens? Furthermore, can squatter homes built haphazardly on public land using plywood scraps and rusty corrugated steel panels ever be viewed as orderly or is the concept of physical disorder meaningless in such intensely resource-deprived environments? Do residents in these makeshift communities perceive a sense of order amidst conditions that outsiders may view as disorderly or would they characterize their neighborhood in a similar manner?

Although the concept of disorder may make sense in the U.S. communities where it has been studied most often, it is clear that disorder (like development) is a social

[17]The idea of development has also faced significant criticism. Some argue, for example, that it is based on the ethnocentric perspectives of wealthy nations in the Global North that are imposed on impoverished nations of the Global South.

[18]Though the term "slum" is often used colloquially in the United States and other developed nations to describe impoverished communities, in the development literature the term refers to densely populated informal settlements located in and around cities (Marx, Stoker, & Suri, 2013). Slums often comprise poorly constructed makeshift homes, often built on public land, which lack basic amenities like water, sewage, and electricity.

construction, and what is considered disorderly varies across individuals and social contexts. As research on disorder and other neighborhood conditions expands globally, scholars will need to wrestle with these theoretical, conceptual, and measurement issues. To date, we know very little about how people in developing nations come to perceive conditions as orderly or disorderly. Moreover, it is not yet clear precisely how the concept of disorder or the theories that make use of this concept apply in the slums, favelas, and shantytowns that are so prominent in the developing world.

Conclusion

This article discussed the use of systematic observation to measure neighborhood disorder in and around a distressed Trinidadian community. The use of systematic observation in this context raised a variety of methodological and conceptual issues. From a methodological perspective, studying disorder in an impoverished community in a developing nation raised a number of logistical issues that are often taken for granted in developed nations. Though we borrowed the basic systematic observation methodology used by researchers to study disorder in Chicago, these methods required adaptation for use in Trinidad.

From a conceptual perspective, the study raised important questions about the meaning of disorder in the context of a developing nation. In establishing our systematic observation protocol, we conducted focus groups with residents in which we learned firsthand about how they think about order and disorder in their communities. Their insights led us to rethink certain common indicators of disorder and to create others anew. While the concept of disorder is a first-world creation, our experience in Trinidad and Tobago suggests that it may be applicable in the developing world as well. However, consistent with the advice of Wallace, Louton, and Fornango (2015, p. 260), it is vital that scholars "seek to elaborate on what disorder means, in general and for particular places, people, and moments in time." Understanding how residents think about disorder will help to improve the conceptualization and measurement of disorder and inform the development of interventions meant to ameliorate disorderly conditions and improve the quality of life for residents.

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