

Full Length Research Paper

Perception and structure of environmental annoyances in a developing world urban setting: A study of Benin City, Nigeria

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Abstract

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Rapid urbanization and weak control of development are changing the character of most cities in Africa and the rest of the developing world. While trends in urbanization have received research attention, the day to day life experiences of people in emerging and diverse physical and social settings in cities, which are beginning to adversely affect the quality of life and the environment, have secured little research interest. Yet appropriate policy response to urban decay will require not only greater understanding of urbanizing trends but how people themselves experience and interpret the deluge of environmental issues associated with urban growth, especially the various contexts in which they either annoy or represent nuisances to their life and the strategies that may be required to halt decay and restore cities. This study explores how residents of Benin City, Nigeria, a fast expanding city, perceive environmental annoyances and the coping mechanisms adopted in face of the identified nuisances. A pre-survey to elicit, describe and validate suitable verbal bi-polar adjectival descriptors of annoyances in the urban setting was first conducted using a limited number of respondents. From an initial list of 100 descriptive constructs some 40 most frequently mentioned items were presented to 320 sampled residents for evaluation. By employing several statistical procedures including Principal Components Analyses, results show that carbon monoxide emissions (automobile smoke), flooding, epileptic power supply, noise from worship centres, foul odour associated with public transport vehicles and the dearth of public motorcycle transportation were seen as some of the most impactful issues in the city. This pattern of response seems to reflect the typical problems of poorly regulated urban activities, weak infrastructure/amenities as well as uncontrolled, unplanned urban growth and expansion, that were affecting life chances of the people and hindering their access to opportunities and comfort. While the study reveals that majority of respondents devote little thought to adaptation and coping mechanisms to manage the crisis of urban development, the study nonetheless recommends that planners and policy makers take seriously the need for more controlled urban development employing indicators of environmental stress and nuisances as bases for city renewal and regulation of the use of public spaces.

Key words: Environmental annoyances, perception, Benin City, quality of life, coping strategies.

INTRODUCTION

Environmental psychologists and humanistic geographers have in over two decades or so, explored the environmental issues and challenges of urban development; although urban stress and adaptive behaviours have received little

research interest in most developing countries (Chokor, 2008; Robin, Matheau-Police and Couty, 2007). This is in spite of the fact that poverty and land degradation are key and related problems (Nesheim, Reidsma, Bezlepina, Verburg, Abdeladhim, Bursztyn, Chen, Cissé, Feng, Gicheru, König, Novira, Purushothaman, Rodrigues-Filho and Sghaier, 2014). Indeed, the enormity of physical distortions in development and disorders in many rapidly growing and expanding cities is not only alarming and may have reached crisis proportion. Evidences point to

behavioural adaptations and challenges associated with urban stress in India (see Rishi and Khuntia, 2012) while some pioneering studies have attempted to frame environmental annoyance as nuisances that impact, in the course of daily activities, on peoples' lives due to the nature of urban settings, their physical attributes, character, form, designs, layout, housing quality etc. Thus it would appear that negative human responses and reactions center essentially on the degree of congruence between the settings of environments and peoples' expectations, goals, attitudes and value systems (Robin *et al*, 2007).

Annoyances are thus usually created by adverse environmental conditions which affect the quality of life and functioning of people. In addition, aversive situations or stressors such as pollution, noise, overcrowding and extreme temperature which may also be associated with urbanization may not only vary in terms of human responses across cultures and settings but may manifest in varying degrees of frustration, irritations, physical turmoil, psychological illness, social interaction, mood, physical health, cognitive function and psychological wellbeing (see Evans and Cohen, 1987; Rishi and Khuntia, 2012 and Robin *et al*, 2007). Some studies, for example, Pierrette, Marquis-Favre, Morel, Rioux, Vallet, Viollon and Moch (2012) have tried to measure objectively the actual level of presence of critical indicators of annoyance, for example, noise, and the perception of annoyance. The results demonstrate a strong correlation between the noise levels measured and the annoyances felt by the respondents. The study showed that even non-acoustical factors such as the fear of industrial sites had an impact on the annoyance felt by respondents; thus annoyance models based on real and a perceptual version were able to better predict total annoyance. The findings point to the value and reliability of peoples' views on annoyances in understanding environmental and social nuisances while drawing the need for increased comparative studies, particularly with developing countries in order to formulate more appropriate policy response for annoyance containment, reduction and management and at the same time strengthening theories, models and concepts of assessment. This research therefore examines how residents of the sprawling traditional city of Benin, Nigeria of historical and traditional architecture and values with modernizing trends (Ekhaese, Taiwo, Izobo-Martins and Adewale, 2015), perceive environmental annoyances in their fast-urbanizing environment and explores the implications for urban planning, design and management, especially in terms of improving the livability and the quality of life in the city.

Environmental Annoyance Studies and Stress Descriptors

Studies of environmental annoyances have largely been targeted at understanding environmental sources of stress-inducing stimuli that affect both psychological and physiological responses in humans, including variations in individual responses and the degree of stress they evoke, employing various scaling mechanisms, although behavioural and physiological disruptions induced by

stressors have not adequately been conceptualized by situation-based models (see Evans and Cohen, 1987, p. 573). Because of such limitations, most researchers within and outside mainstream environmental psychology have adopted more liberal interpretation of stress including focusing on more relational and interactive aspects of how ordinary people experience stress. In this regards, some view stress as a process that occurs when there is seemingly imbalance between environmental demands and response capabilities of the organism involved (see Evans and Cohen, 1987:573). By implication, for stress to occur, the individual must evaluate or understand the nature of this imbalance and whether certain environmental stimuli have tasked or exceeded his or her coping capacities which often is a reflection of the individual's goals and capabilities to cope with that imbalance (Evans and Cohen, 1987, p. 573). At the other extreme are those who argue that stress, like most other psychological constructs, may be inherently relational and may not be reducible to different or distinct personal and environmental components (see Evans and Cohen, 1987, p. 573; Stokols and Altman, 1987;). Stress is here conceptualized as a complex rubric reflecting a dynamic, recursive relationship between the individual, environmental demands and the social and economic resources available to cope with or ameliorate those demands, including the individual's understanding of that relationship. As succinctly observed and vivified by Rishi and Khuntia (2012, p. 2), life in urban settings provides an interface between the adverse physical settings (which include pollution, high population, extreme temperature, crowding, degraded landscape, over-accumulation of solid wastes, etc.) and the individual's characteristics embracing the length of exposure to aversive situations such as time spent in commuting, crowded areas, exposure to polluted air, smoke and high level of noise.

Interest in environmental stressor studies in relation to physical health, well-being and changes in behaviour have also developed since the 1970s with greater focus on large cities that have higher incidents of stress-inducing phenomena such as noise, crowding and environmental decay and pollution (see Robin *et al*, 2000, p. 56). Most studies have identified four major groups of environmental stressors: cataclysmic events, stressful life events, daily hassles and ambient stressors (Evans and Cohen, 1987; Rishi and Khuntia, 2012).

Cataclysmic and claustrophobic events are sudden events that may demand immediate adaptive responses from those directly impacted because of their restrictive and wide-ranging impacts, for example, floods, earthquakes, volcanic eruptions, major storms, nuclear power plant accidents, and toxic wastes. On the other hand, stressful life events are largely situations that require personal adaptive social responses including major changes in family: divorce, marriage, birth and death; or major changes in economic conditions: loss of job, rank or status. (see Evans and Cohen, 1987, p. 574). Daily hassles, on the other hand, are events of everyday life that may cause frustration, tension, or irritation, including environmental events (e.g. noisy party, crowded elevator); work issues (e.g. argument with co-workers) and those related to interpersonal problems

(arguments with a friend or family member); hassles are more common, widely experienced but could be short-lived (see Rishi and Khuntia, 2012, p. 1; Evans and Cohen, 1987, p. 574). Finally, ambient stressors refer to more continuous, relatively stable and intractable conditions of the physical environment, especially the cumulative, physically detectable, environmental conditions with negative chronic effects beyond the control of the individual (Robin *et al*, 2007:56), for example, people living with chronic air pollution which may require high cost of relocation; people may therefore opt for a suboptimal living condition (see Evans and Cohen, 1987 p. 574).

Some more recent studies have focused on a number of key environmental annoyance descriptors such as noise, odour, light, air pollution, vibration, commuting and cataclysmic events (see for example, Dickens, Angulo, Turner, Gill, Abdul and Hirani 2014; Pedersen, 2015; Jakovljevic, Belojevic and Paunovic, 2008; Rishi and Khuntia, 2012; Nishikizawa, Mitani and Murayama, 2013). Robin *et al* (2007) had investigated the perception of residents on the effects of multiple stressors on environmental annoyance using measurement scales on a range of descriptors and their validation. The study is important because it revealed the pattern of response to 68 descriptive items of environmental annoyance scale. By employing Principal Components Analysis (PCA) the items were reduced to 51 from which the factorial structure was extracted under seven principal dimensions, namely, feelings of insecurity; inconveniences associated with using public transport; concern for global ecology; lack of control over time related to using cars; incivilities associated with the sharing of public spaces; lack of efficiency resulting from the density of the population and insecure and run-down living environment. Variations in responses associated with sex, age, occupational category and geographical location of respondents were also explored. While the study is innovative and points to the need for more comparative work especially from developing countries, studies elsewhere reaffirm the value of environmental annoyance to urban planning, design and management. For example, a cross-sectional study of acoustical factors influencing noise by Jakovljevic *et al* (2008) on the adult population of a Belgrade municipality showed significant association between nighttime road-traffic noise and high noise annoyance of urban residents; while the work by Rishi and Khuntia (2012) which assessed the effect of urban environmental stress on the well-being of people in Bhopal City, India revealed that while residents described their city as pleasant, a high level of stress was associated with noise, waste accumulation, polluted air and unhealthy environments in slums and suggested that the planners should give priority to pollution management interventions and proper city planning in order to better resilience. The study by Nishikizawa *et al* (2013) in Japan

focused on the perceptions and feelings of annoyance experienced by residents living near coastal wind turbines. The results demonstrated that residents' perception of the noise depends on their distance from the shoreline and the turbines, as background noise due to waves can eclipse the noise of turbines. The greater sensitivity of women to the nuisances of urban life has been confirmed in some studies (see for example, Rishi and Khuntia, 2012; Robin *et al*, 2007).

In general, it appears that responses to multiple physical stressors from different sources have not been extensively studied (Pedersen, 2015). Further, there is the dearth of studies from developing countries in spite of the vicissitudes of daunting hazardous and adverse environmental problems confronting them due to rapid urbanization, unplanned neighbourhoods, weak urban infrastructural foundation and dearth of basic amenities (see Odemerho, 2014). Indeed some emerging studies indicate that the urban populace are often exposed to unbearable circumstances surging cities to which the planning authorities are hardly responding (see Chokor and Odemerho, 2016). Omoyibo and Okosun (2014), for example, had shown that the impact of noise pollution from the external speakers from prosperity gospel churches in Nigeria though largely designed to advertise their messages to residents had profound effects on community comfort and health. This study therefore is designed to fill in some hiatus in environmental annoyance study by exploring what residents identify in Benin City, Nigeria as stressors or nuisances and how they compare in structure to studies carried out elsewhere.

Statement of the Problem in Context of Urbanization and Environmental Issues

Urbanization has brought with it not only extensive land use changes but growing environmental issues and challenges with adverse consequences on people of developing countries (see Wu, Zhang and Shen, 2011; Odemerho, 2014) which evidently demand robust data, models and monitoring strategies (Musakwa and Niekerk, 2013) to enhance sustainable urbanization and neighbourhood development (Vojnovic, 2014; Shen, Peng, Zhang and Wu, 2012; Luederitz, Lang and Wehrde, 2013). Some have identified demographic urbanization, economic urbanization, social urbanization and spatial urbanization as critical aspects of emerging trends in which environmental pressure, environmental resource level and environmental control are interlinked factors (Li, Zhou, Shi and Zhu, 2012). In Nigeria, for example, population pressure, uncoordinated and unplanned land use changes have exacerbated flooding in cities (Barau, Maconachie, Ludin and Abdulhamid, 2015) in which urbanization and growth patterns appear directly implicated. Stressors associated with overcrowded and polluted environments in many fast expanding developing world cities together with inequities and poverty have created unequal, diversified settings

affecting the life chances of people. Violation of building codes in Nigerian cities or the absence of land use planning has been widely acknowledged by residents themselves as being responsible for some of the environmental problems faced by the people (Odemerho, 2014; Awuah, Hammond, Lamond and Booth, 2014; see also Boamah, 2013; Omuta; 1982). This ultimately can impact significantly on Environment Sustainability Index (ESI) in which environment stress represents a key component (Rishi and Khuntia, 2012). While this may reflect deficiencies in planning, compromised urban management processes, institutional failures, governance limitations and unfair allocation of financial resources relative to environmental challenges, the major issue remains the quality of life of people in these urban settings.

Aim of the Study

With emergent crisis of urban development in many developing countries, there is no doubt the need to develop and build greater consensus between public views and expert opinions in order to prioritize realistic and affordable strategies to address emerging challenges of urbanization and manage the stress posed by fast growing cities (Achillas, Vlachokostas, Moussiopoulou and Baniyas, 2011). Against this backdrop the current work which represents a contribution to the burgeoning interest in environmental annoyance, explores which environmental stressors rank topmost in the annoyance scale of respondents in Benin City, the impact on the quality of life, the coping strategies adopted by residents and the practical measures that can be suggested to contain the problem especially against the backdrop of poor enforcement of official building codes and deficiencies in planning policies and environmental effects of the attitudes of residents themselves. The study also offers some scope for comparison with existing studies.

Study Area

The study area, Benin City, is a fast emerging metropolis located in central southern Nigeria (Figure 1) with over 1.5 million people. Growth in the city has been significantly rapid due to both internal changes and immigration, rising from a mere 53,753 in 1952, 100,694 in 1963, 801,622 in 1991 and 1,147,188 in 2006 to the current projection (see National Population Commission, 2006). The city is strategically placed as a gateway to the western, eastern and northern segments of the country and is situated on a slight elevation of about 85m above sea level. The eastern flank is steeply and tilts towards the Ikpoba River, a major drainage channel in the zone, while the western half slopes gently towards the Ogba River, the second major drainage channel; there are

series of other incised rivulets and small streams (see The Columbia Encyclopedia 2005). This topographic setting makes the city vulnerable to flooding and erosion (Atedhor, Odjugo and Uriri, 2011). The average annual rainfall is in the range of 2000 to 2500mm while the average daily temperature is about 27° C (see Ben-Amos, 1996; 2015).

The city being the capital of Edo State together with oil and gas activities in the Niger Delta has benefited tremendously from financial and industrial activities (see Ben-Amos, 1996; 2015) although government remains the major formal employer while informal sector and trading and hawking activities thrive across the city with women, young boys and girls dominating street trading sector and the local periodic, non-periodic markets. Much of these activities have created a range of associated environmental problems particularly in context of urban defacements, aesthetic blights, slum conditions, and waste management challenges. The city is well suited for the study because of its representative character of Nigerian cities typified by hustle and bustle of city life, a dense and compact urban development, uncontrolled growth, weak development control, poor transport infrastructure, limited collector drains, loss of open and green spaces, congestions in housing especially in the inner city and middle zone, crowding of human population on streets, market places and major commercial nodes/districts capable of generating environmental stressors and annoyances.

Study Methodology

On a map of Benin City with 37 quarters (or neighbourhoods), a stratified random sampling technique was employed to select 6 quarters (or neighbourhoods), two from each of the three major zones in the city: the Inner Core, the Middle segment and the Suburban area of more recent expansion. This permits more detailed examination of annoyances at greater depth. Employing Yard's Formula (Yard, 1973 in Avwokeni, 2004; see also Agbonifoh and Yomere, 1999), a sample size of 278 was initially seen as representative of the diversity of people living in segments of the city.

$$N = \frac{N}{1+\alpha^2 N}$$

Where:

n = the number of subjects to draw from the population (the sample size)

N = population size

α = level of significance

Therefore,

$$n = \frac{N}{1+\alpha^2 N} = \frac{1,147,188}{1+(.06)^2 \times 1,147,188} = \frac{1,147,188}{4,130.8768} = 277.7 \cong 278(320)$$

However, because of the vagaries and unpredictable situations in actual administration of questionnaires and providing for those who may not meet research objectives or goals, the research provided for additional



Fig. 1: Benin City
Source: Ministry of Lands and Survey, Benin City (2013).

42 interviews to the calculated 278 making a total of 320. As noted by Avwokeni (2004:109) the smallest sample possible should be constituted, since it is cheaper, saves time, and yet leads to the same conclusion that a larger sample would have produced. As shown in Figure 1, six indicative and representative quarters or neighbourhoods in the City were purposively selected as reflecting the residential, commercial and institutional land uses within the city, namely, the Inner Core: Ibiwe and Igbesamwan; the Middle Zone: New Benin and Okhoro and the

Suburban Zone: Ugbowo and GRA. As an exploratory study more emphasis was placed on the likely trends in the overall pattern of responses to environmental annoyances. Further, because of intensive movement of people and activities, the accidental technique was used to locate respondents on an impersonal chance basis (see Avwokeni, 2004) across the quarters in the three zones. The use of the accidental technique to administer the research questionnaires is also in consonance with Avwokeni who notes that using random technique could

be cumbersome if the population is large and scattered as in the case of Benin City (Avwokeni, 2004, p. 112) and where census data may be dated and limited. From the series of approaches made to people in the city, final picture of responses was that 304 of the 320 were returned as full and valid, with far fewer people in the core zone making about 11% successful interviews. This is zone of intense commercial and trading activities with people attending to customers or busy or in a rush and so had less to respond time at all or fully to interviews when approached. On the other hand, the suburban neighbourhoods or quarters with university students and more enlightened population and mainly residential and less commercial returned 55% responses while the middle zone returned 34%. There were more females that featured in the interview because they were more readily available or less mobile while majority were aged 45 years or below and over 70% of the sample could be described as low to middle income people reflective of the relative rate of poverty in the city. It is hoped the study will provide some clear direction of the overall pattern of environmental annoyances and the challenges faced in the city.

Data Collection and Analysis

A questionnaire instrument was used to elicit the responses on environmental annoyances in line with some standardized approach adopted in other studies (see Bhattacharjee, 2012, p. 74). Thus a two-stage survey process was employed to generate environmental annoyance descriptors for Benin City in terms of the range and types of lexicon of descriptors before moving to specific evaluation. In the first stage, a pre-survey phase, 100 validated and relevant descriptive environmental annoyances or social nuisances were generated for assessment by asking 'randomly' people in the three major segments of the city: "as you go about your daily life, what situations can you recall that stress you or annoy you the most?"

At the second stage, 40 representative descriptors were selected based on the frequency of recall and inclusion (see Table 1). The 40 descriptors were then evaluated by the 304 respondents. The Summated Rating (Likert) scale was employed to rate the degree to which a descriptive stimuli annoyed or stressed a person. Each respondent was asked to indicate in 'everyday situations' the extent to which typically they were disturbed or annoyed by a phenomenon or activity using a scale of 1-5. People responded to situations they potentially find aversive and evaluated according to the extent of annoyance, with 1 = not sure; 2 = doesn't disturb me at all; 3 = disturbs me a bit; 4 = disturbs me; 5 = disturbs me a lot. The scale was based upon the assumption that each statement/item has equal 'attitudinal value',

'importance' or 'weight' in terms of reflecting an attitude towards the issue in question (Kumar, 2005, p. 145).

Another important section sought to ascertain the effects of annoyances on the quality of life of respondents and their coping or adaptation strategies. Respondents generally greeted the process and the questions with some level of excitement because of their import to their everyday life and routine experiences, and were therefore willing to provide the required answers, when not bugged down by business transactions or commitments.

This study employed both descriptive inferential statistics and multivariate procedure to analyze the data. Simple frequency was used to describe overall pattern of responses while Principal Components Analysis (PCA) was employed to structure ratings of annoyances by reducing the complex matrix of responses to simpler and fewer dimensions of differentiation, enabling the identification of the key pattern of annoyances to compare with results from other parts of the world. As Stallen (1999) noted and concluded, environmental annoyance is a psychological phenomenon of mind and mood and expressions only reflect the right to freedom of thought (United Nations, 1948, p. 4) which may have some significance for urban life and planning globally.

Results and Interpretation

The results of annoyances are segmented into the contents of the descriptive words and phrases used to represent the range of annoyances and the overall structure and dimensions of annoyances elicited in the city.

Descriptive Contents of Environmental Annoyances

The descriptive words and phrases recalled and employed by the respondents to describe environmental annoyances in the city were very varied from physical, environmental to the socio-cultural and psychological. At the pre-survey level respondents used words or phrases that represented the hazards of the physical environment such as flooding and trading on walkways to those that pertained to societal or personal moral codes of behaviour touching on things like pornography and 'immoral' or vulgar music; some also recalled body odour, screaming bus conductors and finding chicken and dogs on streets. However, a critical appraisal and review of the varied environmental annoyances revealed four major groupings of identified everyday life experiences and issues facing city residents, namely, 1. Physical environmental distortions/disturbances linked to urban planning/infrastructure that create discomfort, 2. Societal ethical/morality issues/values in actions of people, 3. Very impactful overt human behaviour or displays by residents and 4. Nuisances from poorly controlled natural and human phenomena (Table 1).

Table 1. Categorization of the 100 Environmental Annoyances in Benin City.

Physical Environmental distortions/disturbances linked to Urban Planning/Infrastructure	Societal Ethical Morality Issues/Values	Impactful overt Human Behavior/Displays	Nuisances from Poorly Controlled Natural and Human Phenomena
1. Traffic jams (hold-up) 2. Dust 3. Overcrowded places 4. Water scarcity 9. Epileptic power supply 10. Poor transport facilities 13. Poor waste disposal 14. Poor communication networks 16. Absence of public toilets 22. Carbon monoxide from vehicles 26. Garbage on the streets and in gutters 27. Double parking by motorists 30. Trading on walkways 31. Dead bodies of rats, cats, lizards, on the streets 36. Street football 37. Chickens and dogs in the streets 38. Numerous churches in the city 39. Power cables lying around carelessly 41. Uncompleted buildings 42. Abandoned buildings 45. Crowds in the market 47. Bad roads 48. Waiting too long for public transport 49. Broken bottles and nails on the ground 50. Poorly-maintained traffic lights 51. Excess sand on the streets 57. Dirty environment 63. Disorganized settings 82. Absence of street lights at night 83. Absence of transport motorcycles 84. The queues at petrol stations 85. Absence of old peoples' homes 89. A leaking roof 98. Landlords who don't maintain their houses	11. People who are arrogant and proud 12. Poor dressing (sagging/low-waist trousers) 15. People who hug and kiss in public places 17. Corruption in government 18. Fake products 19. Immoral music 20. Pornography 21. People who talk too much 46. Drivers who do not respect those walking 53. Dirty children 55. Snobbish behaviour 58. Traders who are dishonest 60. Eye-service 61. People who are always jealous 67. Marriage mates who are unfaithful 68. People who tell lies 69. People who fake sympathy 70. Harsh words 72. People who are too fat 74. People who complain a lot 75. Women who nag 76. Lack of adequate sleep 78. People who share towels, ear-pieces, etc. 79. Being accused wrongly 80. Too many errands 81. Too many rules and questions 91. People who bet 93. Disappointments 97. Night clubs and strip joints 99. Public officers who are rude or impolite	28. People who throw waste on the ground 29. Vehicles on high speed 32. Running children 40. People who walk slowly in public places 35. Screaming conductors 43. Chewed gums under seats in public places 54. Street hawking 64. Rough driving 71. Flashlight from vehicles 87. People who shout while having phone calls 88. A preacher with a loud speaker on your street at 5:00am 92. Loud music 94. People who lack self-control 95. Tenants who quarrel every time 96. People who smoke in public places	5. Noise at reading-time 6. Bad odour from poultry farms 7. Lack of money (being broke) 8. The rate at which diseases spread 23. Noise from churches' loudspeakers 24. Noise from generators 25. Noise from loudspeakers in commercial shops 33. Extreme heat 34. Smoke from burning bushes 44. Noise from construction sites 52. Flooding 56. Offensive body odour 59. Trekking under the blazing sun 62. Bad breath/mouth odour 65. Harsh weather 66. Hunger 73. Sitting close to a sweaty person 77. Too quiet and cold environment 86. The smells in public transport vehicles 90. Being unable to withdraw money from an ATM 100. Wanting to travel out of the country by all means

The first category of things linked to physical environmental distortions, failure of urban planning/management control and infrastructural deficiencies were more dominant with 34 descriptive items that appear to point to the crisis of urban growth and environmental deterioration under rapid expansion and the attenuated level of control of physical development and enforcement of required basic

standards of development and public hygiene. They included notable issues such as: traffic jams or bottlenecks, overcrowded places, water scarcity, epileptic power supply, poor waste disposal, absence of public toilets, carbon monoxide emission from vehicles, trading on walkways, dead bodies of rats, cats, lizards, on the streets, street football, chickens and dogs on the streets, crowds in markets; and interestingly, numerous

churches with loud noises in the city as an issue. They indeed point to a general absence of planned organization that may have accelerated the emergence of diverse physical substandard structures and associated activities which were outpacing official planning and policy response, and creating varying levels of mixed incompatible activities, chaos or disorders in urban space.

The second, descriptive annoyances linked to ethical and moral issues or personal or expected public codes of behaviour are numerically next in line with 30 items that included concern for, or being agitated by: people who are arrogant and proud, poor dressing style (sagging/low-waist trousers), people who hug and kiss in public places, corruption in government, fake products or goods, immoral music, pornography, people who talk too much, dirty children, traders who are dishonest, marriage mates who are unfaithful, people who tell lies, people who fake sympathy, people who are too fat, women who nag, people who share towels, ear-pieces, etc., people who bet, night clubs/strip joints and public officers who are rude or impolite. The third category of annoyances are things related to very impactful human behaviour and overt displays which though the least recalled with only 15 items, can be harmful; and some pertained to security/safety concerns. The list includes: people who throw waste on the ground, vehicles on high speed, running children on pathways and associated risks, people who walk slowly in public places, screaming conductors, street hawking, people who shout while having phone calls, preacher with a loud speaker on your street at 5:00am, loud music, tenants who quarrel every time and importantly, people who smoke in public places. This set of listing appears to indicate poor management of interpersonal conduct and behaviour in public spaces, where people are expected to exercise some restraints. Overall, the trend shows some level of focus not only on unregulated activities but things that impinge on the freedom and comfort of people, or the invasion of public spaces through indiscretions on the part of urbanites outside the ambit of official or unofficial regulations.

The fourth category is more personalized hygiene issues or more unique experiences in a developing world context with 21 annoyances that can be associated with poorly controlled nuisances from both natural and human phenomena such as noise from various sources particularly from electricity generators (there is high dependence of houses on small standalone generating sets for power), busy shops, churches and mosques across the city. People also pointed to lack of money (being broke), rate at which diseases spread, extreme heat, smoke from burning bushes, trekking under the blazing sun, hunger, bad breath/mouth/offensive body odour, sitting close to a sweaty person and smells in public transport vehicles, being unable to withdraw money from an ATM and wanting to travel out of the

country by all means. Some also recalled inclement weather and flooding. These annoyances are thus more related to nature and the human body/hygiene as presented every day and particularly how urban comfort and quality of human life issues can be impinged.

The Structure of Environmental Annoyances in the City

At the next level of assessment, the most frequently recalled descriptors of environmental annoyances from 1 - 40 from the 100 and their rating on a scale of 1 - 5 regarding the extent to which they disturb or affect residents were subjected to principal components analyses (PCAs) to identify the pattern and major dimensions of annoyances and differences, if any, within the city using varimax rotation (see Table 2).

The purpose of the PCAs was to identify which group of aversive situations annoyed residents of Benin City the most and ascertain the percentage of variance accounted for by each of the annoyance descriptors or stressful situations. As the PCAs were run, eliminations were made on items that were redundant and did not account for much of the variance, especially in terms of increased explained variance. However, the exclusion of such redundant items did not reduce or affect the internal consistency of the dimensions of annoyance. The definitive scale consisted of 40 items from which the principal annoyances were extracted. The 40 items were enough to assess the extent of perceived environmental annoyances by the respondents, taking into consideration the overall score of the variance explained.

The first PCA (as indicated by Table 3 and the Scree Plot of Figure 2) showed that while respondents were impacted by all annoyances, some were more significant in explaining the variance. The items listed in the Scree Plot were very significant as indicated by the steep gradient of the line followed by the flattening of the plot from 14-40. However, three additional annoyances were included such that 1-16 may be taken broadly as the most stressful or disturbing situations to residents. The 16 annoyances as extracted are: carbon monoxide from vehicles ($\sigma = 0.61$), offensive body odour/bad breath ($\sigma = 0.49$), flooding ($\sigma = 0.50$), dead bodies of rats, cats, lizards on the streets ($\sigma = 0.40$), rough or reckless driving ($\sigma = 0.54$), people who shout while having phone calls ($\sigma = 0.47$), people who wear low-waist trousers ($\sigma = 0.63$), flashlight from vehicles ($\sigma = 0.55$), marriage partners who are unfaithful ($\sigma = 0.35$), the smells in public transport vehicles ($\sigma = 0.42$), numerous churches in the city ($\sigma = 0.68$), noise from loudspeakers in churches ($\sigma = 0.57$), water scarcity ($\sigma = 0.62$), lack of green spaces near where you live ($\sigma = 0.57$), garbage on the streets and in gutters ($\sigma = 0.46$), and absence of motorcycles ($\sigma = 0.77$). While the list appears mixed, some level of emphasis appears to be placed on fumes,

Table 2. The Forty Most Frequently mentioned Environmental Annoyances

1. Traffic jams (hold-up)	21. Lack of green spaces near where you live
2. Dust	22. Drivers who don't obey traffic lights
3. Water scarcity	23. Flooding
4. Noise at reading-time	24. Offensive body odour/bad breath
5. Epileptic power supply	25. Hunger
6. People who are arrogant and proud	26. Marriage partners who are unfaithful
7. People who wear low-waist trousers	27. Flashlight from vehicles
8. People who talk too much	28. Large houses directly next to each other
9. Carbon monoxide from vehicles	29. Lack of public toilets in the city
10. Noise from loudspeakers in churches	30. Sitting close to a sweaty person
11. Garbage on the streets and in gutters	31. Absence of street lights at night
12. Double parking by drivers	32. Absence of transport motorcycles
13. Rough driving	33. The queues at petrol stations
14. Trading on walkways	34. Absence of old peoples' homes
15. Extreme heat	35. People who shout while having phone calls
16. Numerous churches in the city	36. A preacher with a loud speaker on your street at 5:00am
17. Abandoned and uncompleted buildings	37. The smells in public transport vehicles
18. Chewed gums under seats in public places	38. Being unable to withdraw money from an ATM
19. Waiting too long in the sun for public transport	39. People who smoke in public places
20. Dead bodies of rats, cats, lizards, on the streets	40. Wanting to travel out of the country by all means

Table 3. Factor Analysis of Annoyances Using the Reduced Principal Components

16 Principal Annoyances	Mean	Std. Deviation	Initial	Extraction
Nos. Types of Annoyances				
9. Carbon monoxide from vehicles	4.05	1.140	1.000	0.613
24. Offensive body odour/bad breath	4.03	1.190	1.000	0.493
23. Flooding	4.04	1.145	1.000	0.499
20. Dead bodies of rats, cats ...	3.54	1.322	1.000	0.399
13. Rough driving	4.10	1.111	1.000	0.537
35. People who shout ...	3.64	1.183	1.000	0.471
7. People who wear low waist trousers	3.45	1.336	1.000	0.626
27. Flashlight from vehicles	3.34	1.210	1.000	0.554
26. Marriage partners who are unfaithful	3.57	1.429	1.000	0.346
37. The smells in public transport	3.91	1.103	1.000	0.416
16. Numerous churches in the city	2.74	1.298	1.000	0.677
10. Noise from loudspeakers in churches	3.40	1.319	1.000	0.567
3. Water scarcity	3.73	1.257	1.000	0.623
21. Lack of green spaces near ...	3.08	1.355	1.000	0.572
11. Garbage on the streets and in ...	4.28	2.222	1.000	0.458
32. Absence of transport motorcycles	3.06	1.282	1.000	0.769

odour, garbage or wastes/sanitation issues, noise from various sources especially churches and personal behavioural displays such as reckless driving and the issue of flooding and lack of green spaces which are physical in nature. Apart from some personal idiosyncrasies such as unfaithfulness in marriage and dress codes, most of these annoyances again reflect the absence or weak enforcement of necessary regulations

in a developing city context and the efficacy of the deployment of modern urban planning to manage emerging urban challenges and provision of urban infrastructures such as water, waste clearance and green spaces for residents' comfort.

However, a PCA of all forty items reveals an interesting pattern or structure in environmental annoyances in the city. The dimensions of differentiation are shown in Table

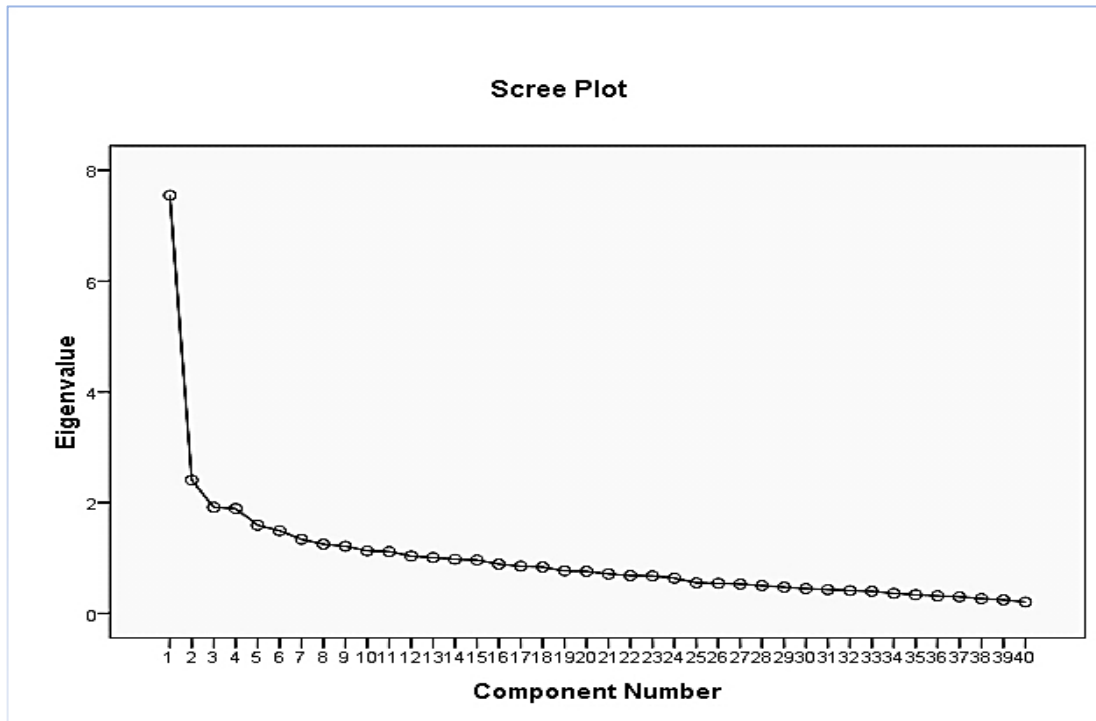


Figure 2. Component Loadings against their Eigenvalues

4 against the percentage of variance accounted for. All initial communalities were 1.000 from which the extracted values were drawn. The interest was in keeping only those principal components whose eigenvalues were greater than 1. Some 13 components with eigenvalues > 1 within the first and second dimensions accounted for 62% of the total variance explained by PCA.

In general, component loadings (correlation coefficients) larger than 0.6 were taken into consideration in the interpretation. The components with larger variances are more desirable since they give more information about the data.

Major Dimensions of Differentiation of Environmental Annoyances

Dimension 1: *Physical Comfort Annoyances and Environmental Concerns:* Most of the items loading highly here have to do with the everyday experiences and physical comfort and quality of life of residents such as water scarcity, epileptic power supply, extreme heat, flooding, CO₂ emissions (from visibly smoking vehicles), garbage on streets, dust, and lack of green space. These can be very discomforting and impinge heavily on the convenience of everyday life and welfare of urban residents. Being the most important dimension from the study, it points clearly to urban infrastructural deficits and environmental decay, poor regulation and management of urban growth that may be associated with a typical fast

expanding developing world city. This leading dimension and the issues or challenges associated with it clearly are absent in studies from more developed countries, often because the provision of basic urban infrastructures and amenities are taken for granted while environmental regulation, monitoring and development control are legally enforced and the informal sector and diverse associated activities are far less if not essentially absent (see Robin *et al* 2007).

Dimension 2: *Inconveniences with Public Urban Transport:* This dimension covers a number of nuisances and inconveniences that were associated with using public transportation (discomfort, smells, absence of motorcycles for public transportation to conveniently convey people with point to point delivery and recurrent traffic jams on roads). Motorcycles were banned over five years ago as means of urban transportation. The dimension also embraced situations in which commuters felt powerless in context of the inability to control the amount of time spent commuting and waiting sometimes long in the hot sun for public transport in a humid tropical environment.

Dimension 3: *Incivilities in Sharing Public Spaces.* This dimension covers some 20 items that loaded highly and point clearly to lack of rules for regulating public civil conducts and behaviours between different groups and individuals in the use of public spaces especially amongst drivers, pedestrians, traders and hawkers. It also concerns vulnerable groups, people like the elderly who

Table 4: Item Coordinates for the Principal Dimensions.

Item No./Dimension	Communalities
Dimension 1: Physical Comfort Annoyances and Environmental Concerns	
3. Water scarcity	0.71
5. Epileptic power supply	0.66
9. Carbon monoxide from vehicles	0.62
15. Extreme heat	0.59
20. Dead bodies of rats, cats, lizards on the streets	0.59
23. Flooding	0.59
2. Dust	0.57
11. Garbage on the streets and in gutters	0.57
21. Lack of green spaces near where you live	0.57
Dimension 2: Inconveniences with Public Transport	
32. Absence of motorcycles	0.65
19. Waiting too long in the sun for public transport	0.61
1. Traffic jams	0.55
37. The smells in public transport vehicles	0.55
Dimension 3: Incivilities in Sharing Public Spaces	
7. People who wear low-waist trousers	0.80
38. Being unable to withdraw money from an ATM	0.73
6. People who are arrogant and proud	0.72
16. Numerous churches in the city	0.72
36. A preacher with a loudspeaker on your street at 5:00 am	0.72
39. People who smoke in public places	0.68
12. Double parking by drivers	0.67
22. Drivers who don't obey traffic lights	0.67
13. Rough driving	0.66
30. Sitting close to a sweaty person	0.66
18. Chewed gums under seats in public places	0.63
8. People who talk too much	0.62
14. Trading on walkways	0.62
29. Lack of public toilets in the city	0.59
34. Absence of old peoples' homes	0.59
10. Noise from loudspeakers in churches	0.57
24. Offensive body odour/bad breath	0.57
27. Flashlights from vehicles	0.54
35. People who shout while having phone calls	0.49
33. The queues at filling stations	0.47
Dimension 4: Rundown Living Environment	
31. Absence of street lights at night	0.63
17. Abandoned and uncompleted buildings	0.60
28. Large houses directly next to each other	0.55
Dimension 5: Other Social Personal Feelings Annoyances	
40. Wanting to travel out of the country by all means	0.58
26. Marriage partners who are unfaithful	0.56
25. Hunger	0.54

are uncared for. Interestingly there are references to people who wear low-waist trousers, being unable to withdraw money from an ATM, people who are arrogant and proud, numerous churches in the city, preachers with loudspeakers in streets at 5:00 am, people who smoke in public places, drivers who don't obey traffic lights,

reckless or rough driving, sitting close to a sweaty person, chewed gums placed on seats in public places, people who talk too much, trading on walkways and lack of public toilets in the city. This dimension is important because it reflects series of deviations from expected norms that can impact adversely on the quality of urban

life and social interactions but often ignored in planning and social regulations of the use of public space. These deviations also reflect level of aggressiveness in public spaces, insalubrity and lack of respect for others as adumbrated in the work of Robin *et al* (2007) on Paris.

Dimension 4: Abandoned Rundown Living Environment: With just three items in this dimension, namely, absence of street lights at night, abandoned and uncompleted buildings and large houses directly next to each other, it demonstrates the common issue of physical decay, poor unregulated planning as well as the absence of street light to support and secure night life.

Dimension 5: Other Social Personal Feelings and Annoyances. This also has three items; the dimension appears to draw from the emotive life experiences of people, including annoyances associated with hunger, marital infidelities and people wanting to travel out of the country by all means to overcome frustrations.

More specific analyses of variations in groupings of people and sectors were not overly significant but revealed that younger people and civil servants with more education were more sensitive to carbon monoxide from vehicles and annoyances having to do with global environmental concerns; younger people have more problems with public transportation while low income category had greater sensitivity to all range of annoyances, since perhaps they commute more and are more directly exposed. Respondents from various quarters and zones of the city from the core to periphery shared the same sensitivity towards carbon monoxide although flooding annoyed residents of the suburbs more, being often less served with drains. Most respondents across board shared similar sensitivity towards incivilities in the use of public spaces and reckless driving behaviour of people.

Quality of Life and Coping Strategies

When asked to rate their quality of life in the face of stressful situations, 15% said it was excellent while a good proportion, 45% described it as good and 30% confirmed that in the face of environmental nuisances their quality of life was fair; 5% said it was poor, with 5% not sure. This shows that residents were overly defensive of their quality of life in spite of inherent urban environmental crises facing them and did not want to be counted as going through adverse environmental challenges or stress, somewhat in contrast to the range and intensity of environmental annoyances thrown up.

With respect to coping strategies 35% said they try to avoid stressful or annoying situations while 24% stated that they try to adapt, considering them as part of normal everyday life but 34% said the best strategy was to react or respond directly to annoyances and annoyers implying that people may be pushed to adopt more aggressive behaviour to stem the challenges they face in the city and

thus planners and policy makers the need to recognize annoyances as critical part of addressing and resolving environmental problems in the course of planning for satisfaction and change.

CONCLUSIONS

The findings from this study appear to confirm some aspects of the findings from the more developed world, for example that by Robin *et al* (2007) which identified the existence of physical, social and functional dimensions of environmental annoyances. However, a very significant difference is the emphasis on physical urban distortions, infrastructural and amenity challenges and uncontrolled urban development that impacted adversely on the quality of life and everyday experiences of people in Benin City, ranging from water scarcity, epileptic power electricity supply to sanitation issues and recurrent flooding. A range of social demands, behaviour and incivilities in public spaces from dress form/style, smoking, sticking chewing gums, ATM withdrawal challenges, trading on walkways, absence of public toilets were also uniquely identified in a developing world context and linked to levels of urban control, amenity gaps and absence of shared public norms and values of conduct; these are different in content from other studies. Seemingly true is that aside from the natural terrain setting of cities, there are strong historical and anthropogenic factors that drive the pattern of environmental and social annoyances in developing world urban settings. For example, two major phases of Nigeria's urban growth with environmental repercussions have been clearly identified (Chokor and Odemerho, 2016; Odemerho, 2014). The first, when indigenous cities and colonial-influenced townships had green belts and planned land use zoning with site and service schemes, urban Infrastructure, approved development, enforcement of development control and monitoring. The second, from 1970s the fusion of indigenous and colonial cities and the emergence of unplanned suburbs, absence of zoning, people building without approvals, mixed, confused and chaotic developments and encroachments of structures into marginal utility lands as well as violation of building codes with a resultant urban maze (see Omuta, 1982; Chokor, 1993; 1986). These no doubt have provided the setting for the kind of environmental annoyances identified by residents. In effect, the pattern of environmental annoyances linked to urban deterioration which in turn are the products of shortcomings in the planning and urban management process, institutional failures, poor urban governance and the inadequate allocation of financial resources to address environmental concerns are the major issues but within which residents are forced to adapt, cope or live with, impacting adversely on their quality of life.

In this context, the study therefore recommends conducting greater public awareness and campaigns on the excesses in personal and interpersonal conduct behaviours that affect urbanites, better structured planning of overall urban land use, strict development control and enforcement of building codes to stem urban chaos, overcrowding, flooding and erosion and general urban deterioration. Embarking on social civilities promotions and maintaining healthy sanitary urban spaces and neighbourhoods to limit social annoyances and improve the quality of urban life are vital and necessary policy responses. The development and protection of green and open spaces appears to be a strong need in cities. Finally, the 100 identified annoyances, and in particular the 40 most recurrent ones, can be used advantageously by urban planners and public officials to improve policies and programmes of sustainable urban development.

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