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Urban dwellers experiences regarding loss of natural environments due to rapid urbanization

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Abstract

Urban Dwellers Experiences Regarding Loss of Natural Environments

Due to Rapid Urbanization

by

Erica Montanye

MS, Walden University, 2014

BAAS, Texas A & M University, 2010

Dissertation Submitted in Partial Fulfillment

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Abstract

Little is known about how residents of rapidly growing cities are impacted by the loss of natural environments. Large cities are expanding at an exponential rate, reducing the presence of, and access to, natural environments for urban dwellers. Many benefits to human health regarding the presence of natural environments near where people live and work are known, but impacts of the loss of natural environments for urban dwellers are unknown. The purpose of this qualitative investigation was to understand residents' experiences regarding the loss of natural environments and related impacts. Attention restoration theory and place attachment were the theoretical lenses used to examine this problem. Data were collected via in-depth interviews from a purposive sample of 20 San Antonio residents. Using interpretative phenomenological analysis procedures, 7 themes emerged: (a) environment (b) health (c) safety (d) finance (e) community and culture (e) factors related to deprivation of nature, and (f) recommendations for improvements. Residents expressed concerns for their health, mental health, the environment, wildlife, byproducts of urbanization, social well-being, personal safety, and finances. Other possible key factors related to the process of deprivation of nature included experiencing a loss of freedom, associated with emotional impacts similar to sadness. Residents of San Antonio, city planners, and policy makers could benefit from understanding these impacts on residents. Data from this study may contribute to possible implications for social change and new knowledge and insights in the areas of health, mental health, social responsibility, urban planning, land conservation, and environmental psychology.

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Chapter 1: Introduction to the Study

Introduction

Despite scientific evidence that explains the known physiological and psychological benefits of the presence of natural environments for human health and well-being (Bratman, Hamilton, Gretchen, & Daily, 2012; Kaplan & Kaplan, 2011), rapid urbanization remains responsible for the destruction of natural environments for the purpose of city development and expansion (Pawar & Rothkar, 2015). Many large-scale cities in the United States have experienced economic and real estate trends impacting the expedient and exponential growth rate of built environments at the expense of nature, without regard for possible implications to human health and well-being (Pawar & Rothkar, 2015). This is a concern because residents' mental health (Schoevers, Beekman & Dekker, 2010) and physical well-being are affected by environmental factors (Mantler & Logan, 2015), which are not always considered in city planning and zoning.

Extensive global research (European World Health Organization, 2017) is underway to better understand the full beneficial nature of the presence of green community spaces, parks, forests (Li & Kawada, 2011), tree canopies, (Beyer et al., 2014) and plant biodiversity (Fuller, Irvine, Devine-Wright, Warren, & Gaston, 2007) in relation to psychological and physical health (Breyer et al., 2014). However, research has yet to examine what happens when humans are deprived of nature by the loss of natural environments that were once present. This study was conducted through a combined health and environmental psychology lens to understand how residents are locally and individually impacted by the loss of natural environments due to rapid urbanization. The

aim was to explore this phenomenon through the voices and experiences of residents living San Antonio, Texas. This city was chosen because it is considered one of the fastest growing municipalities in the United States (United States Census Bureau, 2015). This study has implications for social change in the areas of health and mental health awareness for residents living in areas deprived of nature, city planning, and the need for land preservation in rapidly growing cities.

This chapter provides a summary of the background data that frames the research problem, purpose, research questions, theoretical framework, definitions, assumptions, limitations, scope, and significance of this study.

Background

The body of research from the fields of evolutionary psychology, cognitive psychology, environmental psychology, and health and human development, indicated the positive benefits of natural environments, and is considered abundant enough by some researchers to suggest the use of natural environments to support both physiological and psychological health (Maller et et al., 2005; Li & Kawanda, 2011). Both domestic (Donovan et al., 2013) and international (Mass et al., 2009) data demonstrated strong links between disease and the amount of green space in proximity to people's environments. A natural longitudinal study that took place over 17 years and spanned 15 North American states showed that, with the loss of 100 million trees due to an insect infestation, mortality rates for cardiovascular illness and certain respiratory illness increased in counties that suffered the loss of trees (Donovan et al., 2013, p. 1). Similarly, data from 195 medical practitioners in the Netherlands demonstrated links between

human disease, and the abundance of nature in one's environment (Maas et al., 2009, p. 1). The strongest relationships involved decreased rates of depression and anxiety in relation to increased amounts of green space near living environments. Although causal links are difficult to demonstrate, these large-scale studies suggest that the presence and abundance of nature may act as a buffer against physical and mental health problems. In the Netherlands, researchers found that the percentage of green space in proximity to a person's postal code shared a statistically significant relationship with perceived general health in all degrees of populated areas, from urban to rural (Maas et al., 2006). More than other groups, those with lower socioeconomic indicators, such as children and the elderly, and those with a high school education, were likely to benefit from green areas where they lived (Mass et al, 2006). In Oregon, findings indicated that as a tree canopy (area covered by the span of tree branches and leaves) increased within 50 meters of a home, the risk for low birth weight decreased (Donovan, Michael, Butry, Sullivan, & Chase, 2010). These examples of quantitative evidence make a strong case for the inclusion of nature among human life to support health and well-being.

Based on the known benefits of the presence of natural environments near where people live and work in a variety of cities, it can be deduced that studying the experiences of those who lose such environments through urbanization may help social scientists and city planners understand the impact of the loss. However, there is little data on human deprivation of nature; most of the environmental research focuses on the salutogenic properties of the presence of natural environments and is quantitative in nature, creating a need for such qualitative knowledge. The implications of the absence of natural

environments for humans has not been thoroughly studied, especially in terms of individual experiences, for example, how loss of nature can impact health and well-being. How residents explain the meanings they associate with this phenomenon could offer insights not previously available to social scientists, urban planners, and members of the community. This study sought to understand how people who have experienced rapid urbanization have been impacted by the loss of natural environments.

Problem Statement

Rapid urbanization is one of the leading causes of the destruction of *natural environments*, in localized areas in the United States (Pawar & Rothkar, 2015). By definition, natural environments are relatively free from manmade objects, and contain a variety of natural vegetation, such as trees, grasses, bushes, plants, and sometimes other elements such as water, rocks, and animal life (Kaplan & Kaplan, 2011). Researchers have reported numerous psychological and physiological health benefits of both being in natural environments and viewing natural environments from windows (Bratman, Hamilton, Gretchen, & Daily, 2012; Kaplan & Kaplan, 2011). The benefits of being in nature include improved concentration and reasonableness (Kaplan & Kaplan, 1989), reduced stress (Stigsdotter, Ekholm, Schipperjin, Toftager, Jorgensen, & Randrup, 2010), improved cortisol levels (Roe et al., 2013), and increased natural killer cell activity, which indicates improved immunological functioning (Iuyoung, Bum-lin, Tsunetsugu, Kawanda, & Miyazaki, 2009; Li, Q., 2007; Li, Q. & Kawanda, 2011; Li Q. et al., 2008). The specific benefits of viewing nature were investigated in a series of studies conducted by Kaplan and Kaplan (Kaplan & Kaplan, 1989; Kaplan, 1993; Kaplan & Kaplan 2001,

2011). The authors developed attention restoration theory, which led to the understanding that well-being, reasonableness, and restoration from mental fatigue can be improved by merely viewing, close by, every day, living outdoor natural environments, such as those visible from windows of residential dwellings and office buildings. Their research indicated that modest natural spaces, such as those found in communities, may help support health and well-being. Treed areas, lushness, and areas that exhibit biodiversity through a variety of plant life, such as those found in natural environments, are thought to provide greater benefits than less rich nature-filled areas (Fuller, Irvine, Devine-Wright, Warren, & Gaston, 2007). Despite the body of evidence that depicts health benefits of spending time in and viewing nature, rapid urbanization remains responsible for the destruction of natural environments in many cities (Pawar & Rothkar, 2015) and it is not clear what happens to humans psychologically when exposure to natural environments is suddenly reduced.

Texas residents share the lived experience of losing visual and physical contact with natural land areas due to city development at a much faster rate than residents in other areas around the nation. The State of Texas appropriates less than 3% of its land for public use (Congressional Research Service, 2012) and 50% of the cities in the United States with the largest population growth from 2013 to 2014 are in Texas, including Houston, San Antonio, Dallas, and Fort Worth (United States Census Bureau, 2015). Presently, Bexar County, which includes San Antonio, is experiencing some of the fastest urban growth rates in the United States (United States Census Bureau, 2015), which presents a unique opportunity for this phenomenon to be studied. The City of San

Antonio includes approximately 1.5 million people and ranks among the seven largest cities in the United States (United States Census Bureau, 2015). According to the San Antonio Economic Foundation (2015), Bexar County has a projected growth rate of near 7% by 2020, and in certain areas, the Alamo Area Council of Governments (2015) predicts a growth rate as large as 15% by 2018 in certain areas. Such growth will likely come at the expense of remaining natural environments in and around the City of San Antonio (City of San Antonio Tree Preservation Ordinance, 2015). This poses a concern about unknown potential psychological implications related to the loss of natural environments for the residents of San Antonio, as this topic has not been well researched. San Antonio and other fast-growing communities may benefit from learning about residents' experiences of the rapid disappearance of natural environments due to urbanization. This study was designed to investigate the impacts of the loss of natural environment for urban dwellers by interviewing residents about their experiences.

Purpose of the Study

The purpose of this interpretive, phenomenological study was to investigate the impact of the loss of natural environments due to urbanization on the health and well-being of the residents of San Antonio, Texas, a rapidly growing city. Previous research established the physiological and psychological benefits of spending time in natural environments and viewing living natural environments through a window or when passing by them, such as healthier cortisol levels (Roe et al., 2013), restoration of attention and concentration (Kaplan & Kaplan, 2011), and reduced stress levels (Stigsdotter, Ekholm, Schipperjin, Toftager, Jorgensen, & Randrup, 2010). What were

not discussed in the literature are the possible implications of deprivation of nature where people live. According to Thompson et al. (2012), little research has been conducted concerning the implications of deprivation of nature for communities and what it means to residents to have their natural environment be reduced. Specifically, it would be of great benefit to researchers and those responsible for urban planning, and the community, to understand residents' experiences related to the rapid loss of natural environments as a result of urbanization. Unearthing this information contributes to the literature on the relationship humans have with their environment and provides data to support preservation of natural spaces, city planning reform, and highlights health awareness issues that could potentially bring about social change in the way we view the importance of nature in everyday life.

Research Questions

1. What are the lived experiences of urban dwellers who lost natural environments due to rapid urbanization?
2. How do those who have been impacted by the loss of nature describe what it means to lose their natural environment?

Theoretical Framework

The phenomenon being investigated was how people experience the loss of natural environments due to rapid urbanization, to better understand possible implications of such loss. There is currently no theory that fully explains impacts to humans when natural environments are lost. The two primary assumptions that make up the theoretical framework for this exploratory study are drawn from both Kaplan and Kaplan's (1989)

attention restoration theory (ART), and the theory of place attachment outlined by Manzo and Devine-Wright (2014). In attention restoration theory (ART), Kaplan and Kaplan (1989) asserted that concentration is increased and mental fatigue can be abated after being in nature, or merely by looking at scenes of nature, because scenes of nature are processed with an effortless type of attention. Other environments and tasks are associated with a greater amount of cognitive effort and processing and may affect reasonable behavior (Kaplan & Kaplan, 2011). According to this line of research, built-up city environments are not restorative to human health; people reported feeling better in terms of well-being and happiness when being in natural environments (MacKerron & Mourato, 2012). Essential components of ART are pivotal to consider when researching the presence or loss of natural environments because large-scale health research, such as the study that took place in the Netherlands have demonstrated "that recovery from stress and attention fatigue, might be the most likely mechanisms behind the relationship with green space and health" (Maas et al., 2009, p. 5).

Secondly, the theory of place attachment involves the emotional bonds that people form with their environments, and are thought to be a contributing factor in developing a sense of identity and ascribing meaning to one's life (Manzo & Devine-Wright, 2014). As stated by Manzo and Devine-Wright (2014)

> in phenomenological research, one approach for gaining explicit accounts of place attachment is narratives of individuals and groups who have come to realize firsthand the importance of place attachment in their lives because they have experienced the loss of or dramatic shifts in place. (p. 14)

The tenets of these two theories are applicable to this study, as the former addresses both psychological and physiological mechanisms tied to natural environments, and the latter focuses on the meanings one makes with one's environment. More detailed explanations of both theories and their applications are described in Chapter 2.

Nature of the Study

The nature of this study was grounded in the qualitative tradition of inquiry using an interpretative phenomenological research approach. Interpretive phenomenology has theoretical underpinnings that stem from both phenomenology (Husserl, 1970) and hermeneutics (Heidegger, 1962), meaning the qualities that make up an experience are tied to the meanings participants give to those experiences, and the researcher's interpretations of those meanings (Dowling, 2007; Matua & Van Der Wal, 2015). Interpretive phenomenology also encompasses an idiographic frame of reference, which entails examining "the perspective of particular people in a particular context" (Smith, Flowers, & Larkin, 2009, p. 29). In keeping with the point of understanding and explaining the complexity of people's relationships with their environments, I used an interpretative phenomenological analysis (IPA) approach of investigation, which allows for a specific understanding of how a criterion-based sample of respondents experienced a lived event, concerning a particular phenomenon, and the ways that they were affected by it. This approach invited participants to provide detailed responses describing their feelings, insights, and experiences regarding the phenomenon of being city dwellers who have experienced the loss of their natural environment.

In previous studies (Makris et al., 2016: Slatyer, Pienaar, Williams, Proctor, & Hewitt, 2015) and dissertations (Rivera, 2011: Foster, 2012: Cox, 2016) the use of IPA has been implemented to investigate particular facets of the impacts related to a phenomenon, such as the impact of a health condition, natural disaster, or changing economy, may have on participant well-being, or relationships. In a similar fashion, in this study I investigated the impact of the loss of the natural environment on well-being, and what this experience means to residents, by studying those experiences through a health and environmental psychology lens. From the interpretive phenomenology approach, the researcher is the tool to interpret the collective meaning of residents' responses for a richer understanding of a particular phenomenon (Matua & Van Der Wal, 2015). As Pringle, Drummond, Mc Lafferty, and Hendry (2011) discussed, this approach emphasizes the role of the researcher as an analyst who interacts with participants to extract and interpret information regarding their experiences. I conducted and recorded in-depth interviews, targeted at addressing the research questions and understanding the meaning of this event through the voices of participants (Chirban, 1996; Rubin & Rubin, 2011; Smith, Flowers, & Larkin, 2009). I planned for the in-depth interviews to take place in a location of participants choice, for approximately 1 ½ - 2 ½ hours, and I asked those who completed the interviews if I may contact them for additional information over the phone or e-mail for follow up and member checking. In addition, I asked participants if they knew of possible potential candidates that met the requirements for the study, to employ the snowball sampling technique (Sadler, Lee, Lim & Fullerton, 2010). Keeping in focus with an interpretative phenomenological perspective, I interpreted the data as it

appeared for emergent themes and patterns concerning the essence of participants' experiences and meanings made (Smith, Flowers, Larkin, 2009) associated with losing a nearby natural environment.

I used purposive sampling to obtain data from those who have the shared common experience of losing natural environments due to urbanization. The participant selection criteria encompassed only adults who resided and spent most of their time in San Antonio and have lived in San Antonio for at least five years, in an effort to reach those who have experienced the recent rapid urban expansion and loss of natural environments. I used real estate trends and retail forecasts from Texas A & M Real Estate Research Center for 2014 and 2015 to determine areas that have lost natural environments due to urbanization by identifying some of the most recently developed and still developing areas in Bexar County from the last several years that were once natural land. I then mapped those areas where loss of natural environments due to urbanization had occurred using a current general map for Bexar County and San Antonio area to identify neighborhoods in those geographical sections of the county. These sections of the map acted as predetermined areas that have experienced loss of natural environments due to urbanization, and I targeted those areas for participant recruitment (See Figure 1).

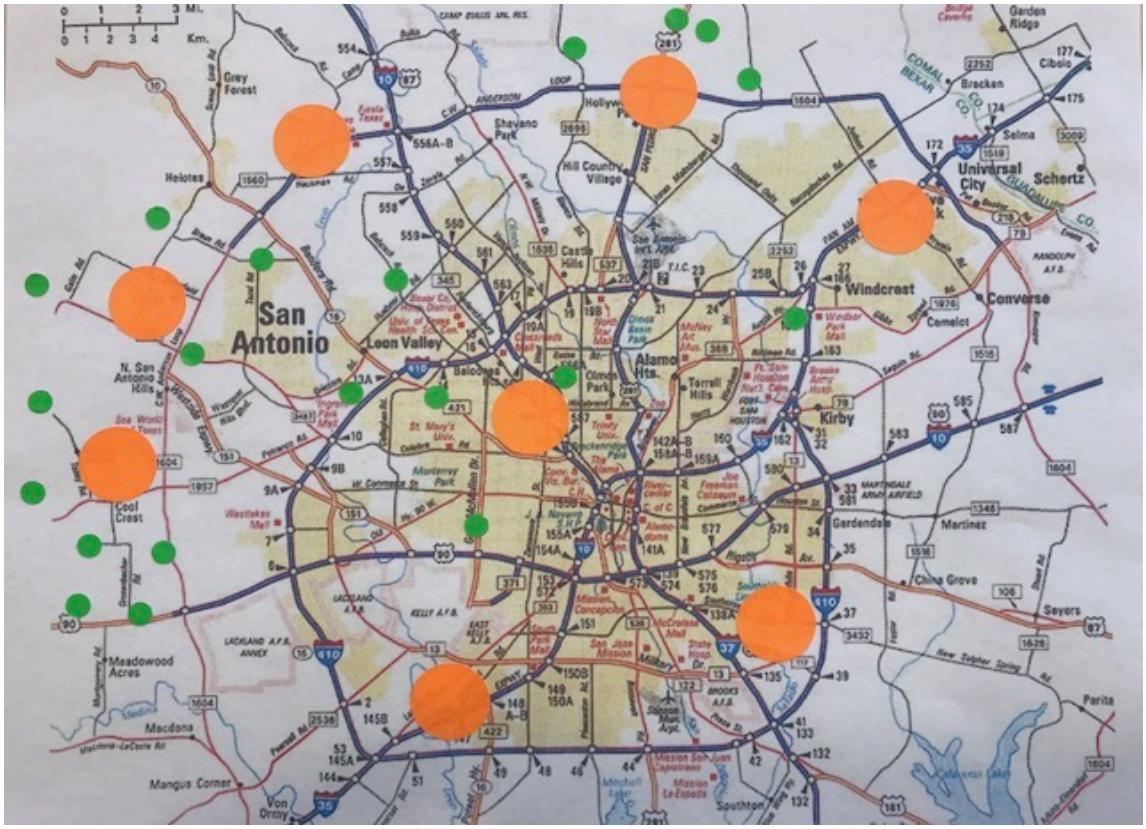

Figure 1. Invitation Distribution and Participant Response. *Note.* Areas in orange represent the general areas invitations were distributed. Green dots represent general areas that participants who participated in the study reside.

Figure 1 shows where invitations to participate were distributed in areas that urbanization had taken place, and depicts the general areas that participants who participated in the study reside. I identified 20 respondents that met the participation requirements, which allowed for enough data to analyze from the in-depth interviews. The saturation point in qualitative data analysis where information being collected does not reveal anything new typically falls between six to 12 participants (Guest, Bunce, & Johnson, 2006). According to this research, and my evaluation of the rich descriptions of participant testimony, I was able to determine that 20 participants provided enough data to reach saturation.

Definitions

Natural Environments

Natural environments are naturally occurring outdoor areas that are relatively free from manmade built structures, and may contain a variety of live naturally growing vegetation, such as trees, grasses, bushes, plants, and sometimes other elements such as water, rocks, and animal life (Kaplan & Kaplan, 2011). Examples of natural environments may include a field, an empty lot, a treed area or forest, land along a roadside, or a large area of land or a park that is mostly comprised of natural elements.

Place Attachment

The theory of place attachment involves the emotional bonds that people form with their environments. These bonds are influenced by individual experiences, and are thought to be a contributing factor in developing a sense of identity and also ascribing meaning to one's life (Manzo & Devine-Wright, 2014).

Urbanization

For the purpose of this study, urbanization is described as a change in the environment when it shifts from being rural to urban, like when cities and towns become larger, growth and development occur, and the population spills over to nearby areas. During the urbanization process, there may be an increase in building structures, and people living and working in centralized areas. Urbanization may also include the ways society goes through such changes. Examples of urbanization can include things like the building of new structures, such as businesses or subdivisions, road expansion, or

construction, and other changes to the local landscape related to growth and development across a city.

Impact

In qualitative research, the word *impact* is generally not intended to demonstrate causality, but instead refers to data generated from participants, who freely expressed testimony in their own words, how they perceive they have been affected by a particular phenomenon (i.e., a health condition, natural disaster, changing economy). This process can result in participants speaking of multiple or complex influences involving a particular phenomenon. Hence, impact references participant's own truths regarding their experiences.

Health and Well-being

The World Health Organization (WHO) describes health as encompassing physical, mental, and social, well-being (WHO, 2014). For the purposes of this study, health and well-being broadly includes any physical, mental, and social, related aspects to the human condition.

Phytoncides

Phytoncides are airborne substances emitted by plants and trees to protect themselves against harmful insects and germs. Different phytoncides are released by different types of woods, and plant vegetation, and have been shown in some forests to increase natural killer cell activity in the human body after two days of exposure, and last up to one month (Li et al., 2008).

Natural Killer Cells

Natural killer (NK) cells are a type of lymphocyte, or white blood cell, that are cytotoxic, meaning they are toxic to living cells, but only target certain proteins such as those found in infected cells, such as cancer cells. Natural killer cells are part of a sophisticated innate and adaptive system of immunity (Vivier et al., 2011).

Biodiversity

Biodiversity refers to the variety of many different species of plants and trees, and sometimes other living organisms and animals within a habitat, and ways in which they interact (National Wildlife Federation, 2015). Biodiversity of plant and animal life promotes ecosystem sustainability for all life forms, as there is often a codependence between life forms. (i.e., Humans breathe in oxygen, but emit carbon dioxide from the lungs, which is toxic to humans, but plants take in carbon dioxide, and omit oxygen, making the air safe for humans to breathe). Ecological biodiversity is considered essential for habitat homeostasis conditions to promote long-term sustainability.

Tree Canopy

Tree canopy cover is generally defined as the portion of area covered by tree crowns (the totality of the leaf and branch span of a tree) and is often measured as viewed from the air using aerial photography or computer imagery. These methods are also used to differentiate between buildings and trees (King & Lock, 2013).

Benefits of Natural Environments

Several researchers conducted studies demonstrating salutogenic properties of experiencing nature. Some benefits of spending time in nature include increased cognitive restoration and reasonableness (Kaplan & Kaplan 1989; 2011) better academic

performance, higher graduation rates, reduced criminal activity (Matsuoka, 2010) decreased rates of depression and anxiety (Maas et al., 2009) and increased immunological functioning (Li, 2008).

Loss of Natural Environments

Loss of natural environments refers to having once had, and experienced the presence of natural environments near where residents live and work, and then experienced the disappearance or degradation of some of the surrounding natural areas due to urbanization, resulting in a reduction in the amount of surrounding natural environments that were once present. (Although closely related, for the purpose of this study, the difference between loss of natural environments and deprivation of nature are clarified. See deprivation of nature definition).

Deprivation of Nature

For the purpose of this study, deprivation of nature refers to not being able to freely come in contact with and experience nature at will on a regular basis. Deprivation of nature may include various situations or barriers that result in (a) restricted, or (b) denial of, access to outdoor natural areas found in the natural world. Difficulty in finding and attaining access to natural environments with suitable land for desired purposes, and ability to use, visit, or experience, the natural world at free will on a regular basis, may lead to feeling deprived of nature.

Ecological Restoration

Ecological restoration refers to the process of humans engaging the practice of restoring degraded or damaged ecosystems and habitats.

Assumptions

Participants who have experienced the loss of natural environments in the last 5 years in the San Antonio region were difficult to identify. Once located, I assumed that willing participants would articulate honest responses to the interview questions and provide enough data to reach saturation to address the research questions posed in this study. The assumption of resident's willingness to participate was essential in gaining an understanding their experiences and impacts related the phenomenon in question.

Scope and Delimitations

First, the specific research problem I addressed was aimed at understanding how residents of San Antonio, Texas have been impacted by the loss of natural environments due to urbanization, with focus on personal health and well-being from a qualitative stance. The focus of researching the experiences of those who reside in San Antonio, Texas was chosen because this city has experienced some of the fastest growth and development rates within the United States in the last decade. Available data concerning human deprivation of nature due to loss of natural environments from urbanization is lacking. Moreover, projections show this trend will continue at an exceptional growth rate in the future, eventually causing the city to nearly double in size; creating a need to understand impacts to residents (John Dugan, San Antonio Express News, p. A1, 2014). Additionally, there is a dearth of qualitative data to assist in understanding how residents may be impacted by this localized problem from resident's perspectives and experiences. In efforts to obtain this type of data from residents, a qualitative framework was applied in researching this problem. Therefore, data from this study relied upon resident's

experiences and verbal testimony regarding this lived event, and excluded the use of predetermined quantitative variables.

Second, transferability of the results of this study are limited to those who reside in populated cities, similar to San Antonio. Other geographic and culturally different areas from this region are not within the scope of this study, which limits the transferability of data from this study to primarily the San Antonio geographic region. However, this information may still be of value to those seeking data to understand the same phenomenon in comparably populated cities with similarly projected growth rates to an extent. Because residents from more than one neighborhood are included in this study, boundaries of the study do extend to the unique experiences of individuals living throughout a large city in areas that have experienced recent growth, but do not extend, or apply, to an entire city population. Instances of transferability of data will need to be analyzed on a case-by-case basis by subsequent researchers.

Lastly, although this study involved the loss of the natural environment, the theoretical foundation did not rely upon theories of loss, as they were found to specifically pertain to the loss of human life, and the grieving process (Bowlby, 2005: Payne, Horn, & Relf, 1999: Kubler-Ross, 2005), not loss of natural environments. Instead, theories that have a record of being applied to natural environments were discussed. However, I do not infer that the general concept of loss was not considered in this study, or that theories of loss should not be explored in subsequent studies, as loss is a relevant concept to this phenomenon; but existing theories of loss and grief in their current form were not the best fit for this specific investigation. As this study was about

loss and change of the physical environment, theories of loss of human life seem less applicable.

Limitations

Results from this study are not intended to provide quantifiable data. The findings from this qualitative phenomenological study have provided a summary of participant descriptions and meanings of experiences, and researcher interpretations of that data. Data from this study is reflective of the time period and city in which it was collected, and therefore may need to be repeated in the future, and in other geographic locations.

Limitations of a study also include addressing possible researcher bias. As a previous resident of San Antonio, Texas, and surrounding areas, I have prior knowledge of the changing landscape of this geographic region since 1998, to the present, and witnessed many of the drastic changes to the environmental landscape and urbanization. However, in my ethical position of a researcher, I acknowledge that my knowledge of the city's history can both be beneficial or pose bias in research; therefore, I have made reasonable efforts to bracket, or set aside, any preexisting notions I may have assumed as both a researcher and a resident during this investigation through the use of note taking.

Significance

The current body of literature has contributed to the idea that natural environments aid in optimal health and disease prevention (Kaplan & Kaplan, 2011; Maas, Verheij, Groenewegan, Vries, & Spreeuwenberg, 2006; Maller, Townsend, Pryor, Brown, & St. Ledger, 2005). Views of nature through windows and being in nature are correlated with improved physiological and psychological benefits, and those benefits

have been shown to increase with the quality of plant biodiversity present (Fuller et al., 2007). Benefits related to the presence of nature and being in nature seem to extend across various cities in the United States (Donovan et al., 2013; Donovan, Michael, Butry, Sullivan, & Chase, 2011), as well as internationally (Maas et al., 2006; Maller et al., 2005). Given this knowledge, it is likely that a city such as San Antonio, which currently contains up to 3,393 people per square mile in Bexar County (San Antonio Economic Development Foundation, 2015), may benefit from a better understanding of how city dwellers experience the loss of natural environments, and possible implications from such experiences.

During the first meeting of the City Council Comprehensive Planning Committee for San Antonio, on August 14th, 2014, the city's planning director, John Dugan, announced that the city's "footprint will likely double in size by 2040, from 500 square miles to more than 1,000 square miles" (San Antonio Express News, p. A1, 2014). Information garnered from this study has the potential to influence how citizens, community leaders, and policy makers perceive the importance of nature to human lives, especially within the context of rapidly expanding cities. By using a qualitative approach to understanding the impact to citizens of the rapidly changing environmental landscape from a health and well-being perspective, data can be used to inform how people in the community and city leaders regard urban development plans to meet expansions needs. The knowledge that has been gained contributes to the advancement of both health research and environmental psychology, as well as offers information to the City of San Antonio that may be useful for advancing social change by way of human health and

well-being, urban planning, and nature conservation efforts (preserving natural spaces within cities, and management of state land for public use). Not previously considered important social change topics I propose are related to the prevention of any negative aspects that are associated with loss of natural environments and deprivation of nature.

To date, very little data exists on the subject of human deprivation of nature in daily life, as the majority of current literature is largely salutogenic, meaning the focus has been primarily on the benefits to human health related to the presence of nature. In addition, most available literature has used a quantitative perspective. The aim of this study was to add a qualitative interpretive dimension to the existing data. Specifically, the experiences and voices of those who have lost natural areas where they live, as a result of rapid urbanization, have not been brought out by researchers. Data from this study has aided in closing this critical gap in understanding the impact of the loss of natural areas and provide a better understanding of the complex relationship people have with their environments.

Summary

There is significant evidence indicating human health and well-being are affected by the presence of natural environments. However, there remains a lack of information and research efforts focusing on the impacts to humans when their environments become depleted of nature and replaced with built environments. The expedient nature of city growth and development in the largest growing cities among the United States poses concerns for possible implications for residents, particularly in terms of health and well-being. Inevitably, more research is needed to fully comprehend such impacts. Chapter 2

provides an extensive look at existing literature, and what is known regarding this phenomenon. Specific variables that have been studied, along with previous methods of investigation and gaps within current scholarly efforts are discussed.

Chapter 2: Literature Review

Introduction

Although current literature depicts health benefits of spending time in and viewing nature, rapid urbanization remains responsible for the destruction of natural environments in many cities (Pawar & Rothkar, 2015) and it is not clear what happens to humans psychologically when exposure to natural environments is suddenly reduced. The purpose of this research was to investigate the impact of the loss of natural environments due to urbanization on health and well-being for residents in a rapidly growing municipality, namely the city of San Antonio, Texas.

There are both physiological and psychological benefits to spending time in natural environments (Bratman, Hamilton, Gretchen, & Daily, 2012; Kaplan & Kaplan, 2011). Environments abundant in plant biodiversity have been shown to increase these benefits (Fuller, Irvine, Devine-Wright, Warren, & Gaston, 2007). Data shows that well-being (Kaplan & Kaplan, 2011), cognitive performance (Matsouka, 2010), and mental health (Beyer, Kaltenbach, Szabo, Bogar, Nieto, & Malecki, 2014), are positively impacted by geographic areas rich in tree canopies (Beyer, Kaltenbach, Szabo, Bogar, Nieto, & Malecki, 2014), and plant biodiversity (Fuller, Irvine, Devine-Wright, Warren, Gatson, 2007). This evidence poses serious concerns that there may be unknown impacts on health and well-being for those living in geographic areas devoid of nature. However, most existing data is salutogenic and quantitative in nature, focusing on the presence of nature, and does not address how residents in nature-deprived areas may report being impacted by the loss of nature where they live and work. To date, residents' experiences

regarding the phenomenon of loss of natural environments has largely been left out of scientific data collection, leaving a qualitative gap in the literature, which this study is designed to address.

The beginning of this chapter provides an introduction to attention restoration theory and place attachment, which serve as the theoretical foundation for this study. The theoretical foundation is followed by a relevant evolutionary and historical overview to contextually understand the modern phenomenon of loss of natural environments. The lens of inquiry for this study involved a human health and well-being investigative perspective; therefore, the major sections of this chapter draw upon and address current literature from the fields of human development, environmental psychology, cognitive psychology, and health and human development research. Contributions from each discipline are addressed in detail throughout the literature review to provide a synopsis of the current state of knowledge regarding the phenomenon, and address the gap in existing literature.

Literature Search Strategy

The literature search began using combinations of these search terms: loss of nature, deprivation nature, and natural environment loss in multiple data bases such as Academic Search Complete and Science Direct, through the Walden University Library database, and Google Scholar, with only one pertinent hit related this phenomenon. The initial search terms were expanded to include variations of initial search terms plus the following: greens spaces, built environments, urbanization, urban dwellers, health, and place, and the use of internet sources such the World Health Organization. Additional

concentrated search efforts were also carried out using related search term combinations, such as trees. biodiversity, mental health, cognitive attention, and qualitative. The addition of these search terms and sources yielded multiple articles concerning human connections with the natural environment, and health related data, which are discussed in the literature review, but uncovered no other data specifically addressing impacts for urban dwellers concerning loss of nature.

Most literature found discussed quantitative correlational data, benefits of the presence of nature, or specific constructs related to nature visits. A librarian at Walden University was consulted, and additional databases were added, with additional search terms. I contacted one author via email correspondence to obtain a current study discussing recent findings associated with phytoncides and natural killer cells activity related to forest exposure in Japan. The search process for this literature review was ongoing and iterative throughout the writing of the study, and produced an extensive search list.

Additional data bases used were: ProQuest Central, PsycINFO, PsycARTICLES, SAGE Premier, MEDLINE, and Thoreau Multi-Database Search. Expanded search terms included variations of the following: restorative, restoration, healthy environment, air quality, physiological, phytoncides, natural killer cells, forest, attention, birth weight, tree canopy, biodiversity, neighborhood, urban planning, landscapes, deprivation, nature interaction, forest bathing, phenomenology, San Antonio, land degradation, human migration, connectedness to nature, sustainability, place, healing nature, place attachment, stress, views of nature, treed areas, lushness, well-being, natural outdoor

environment, ADHD, access to nature, health, and environmental change. In addition, other studies and dissertations were identified using the search term combination "impact" and "phenomenological" to identify and clarify similar usage of an IPA framework to qualitatively investigate impacts of a phenomenon as they pertain to certain facets, such as well-being.

Theoretical Foundation

Attention Restoration Theory

Attention restoration theory (ART) developed by Kaplan and Kaplan (1989) was the primary theoretical basis for this study, and states viewing "soft fascinations" of nature can lead to cognitive restoration, by replenishing attentional resources and alleviating mental fatigue. Viewing natural landscapes, such as treed areas, wind rustling in plants with clouds in the sky, innocuous animals such as rabbits or squirrels engaging in the natural habitat, and naturally flowing water, are what is referred to as "soft fascinations" that use an involuntary, effortless type of attention (Kaplan & Kaplan, 1989, 2011). Viewing these types of soft fascinations have been shown to have restorative cognitive effects that can result in improved concentration after spending time in nature, or viewing nature from a window (Bratman, Hamilton, Gretchen, & Daily, 2012; Kaplan & Kaplan, 2011).

Other types of mental tasks often require a more voluntary, effortful, and cognitively difficult type of attention referred to as "directed attention" and require focus, or involve immediate distractions, which use a more complex level of cognitive processing (Kaplan & Kaplan, 1989, 2001). After long periods of focus and directed

attention, “directed attention fatigue” can occur, resulting in feeling taxed when trying to concentrate and lead to irritability, distractibility, mental fatigue, stress, and less effective efforts when carrying out tasks (Kaplan, 1995, 2001). Kaplan & Kaplan (2011) stressed the importance of recognizing that reasonable behavior can be affected by mental fatigue, which can “trigger unreasonable behavior” (p. 307). They attested that “psychological restoration” is “the recovery from mental fatigue” (p. 312). Since its inception, Kaplan and Kaplan have advanced the application of ART to address that human well-being, concentration, reasonableness, and restoration from mental fatigue can be positively impacted by spending time in nature, or by merely viewing, modest live outdoor natural environments (Kaplan & Kaplan, 1989, 2011; Kaplan, 1993, 1995, 2001).

Attention restoration theory has emerged in other applied research studies among the disciplines of environmental psychology (Lee et al., 2014; Lee, Williams, Sargent, Williams, & Johnson, 2015; Lindern, 2015), human development (Markevych et al., 2014), cognitive psychology (Valtchanov & Ellard, 2015), and health and mental health research (Johnsen & Rydstedt, 2013), which is in part why this theory was considered as having applicability to the present study and will be discussed in greater detail throughout this literature review. More specifically, the focus of this study was to gain an in-depth understanding of how people may be impacted by the loss of natural environments, and currently ART is the only theory that speaks to the impact of the presence of natural environments on humans. The full importance of contact between humans and the natural environment, as it may apply to the modern world and the problem of the disappearance

of natural environments through rapid urbanization, is not fully understood, and ART provides a plausible theoretical basis for understanding such phenomenon.

Place Attachment

Secondary theoretical considerations for this study involved place attachment, as described by Manzo and Devine-Wright (2014). The conceptual origins that make up the current theory of place attachment were derived from several contributors. Similar to attachment theory, developed by John Bowlby (1969), which encompasses the emotional bonds people form with other people, place attachment addresses the emotional and cognitive connections people attach to their environments, and explains how associated meanings that people create in relation to their environment, can contribute to their identity (Manzo & Devine-Wright, 2014). Altman and Low (1982) are often credited for their book on place attachment outlining the many ways in which attachment to place can be relevant to studying a variety of topics involving places, such as with cases specific to children, culture, public events, transportation, or the natural environment. Scannell and Gifford (2010) further contributed to the theory of place attachment by suggesting three essential components to understanding attachment to place are (a) understanding the person, (b) understanding the process in which a person becomes attached, and (c) understanding the place. Lewicka (2011) added that the processes in which people may form meanings associated to places may involve many complex perceptual factors such as aesthetic attraction, importance to survival or safety, intrinsic value, economic factors, cultural relevance, or social ties.

Most recently, as clarified by Manzo and Devine-Wright (2014) the application of place attachment in research allows for a holistic and autonomous understanding of the meaning of place as it applies to each individual's lived understanding of her or his place experience. Place attachment has been used by phenomenological researchers in attempts to qualitatively understand the complexity of a phenomenon regarding how people feel about different environments, and also to understand how changes in people's environment can affect perceptions, feelings, and meanings associated with environments (Manzo & Devine-Wright, 2014). Place attachment is a suitable addition to the framework for this study, as it is in part an investigation involving the impact of a change in the environment. It is not yet known what thoughts, emotions, or behaviors may apply to understanding the complex experience of losing the natural environment where people live and work; therefore, place attachment may provide an applicable lens to investigating this phenomenon.

Historical Overview

From an Evolutionary Psychology Perspective

Early attempts at understanding man's relationship with the natural environment were conceived from several perspectives. One of the earlier conceptual ideologies stemmed from the term *biophilla*, coined by Fromm (1973), meaning love of life, and that which is alive. This concept was later expanded upon by Wilson (1984) to become what is known as the biophilla hypothesis, which states humans have an innate or instinctive biological connection with other living organisms. It was thought that this

connection to life and nature may explain why humans tend to care for other forms of life, such as plants and animals.

During this same era, Ulrich (1984) found that patients who had windows that overlooked a park-like setting recovered faster and used less postoperative pain medication than those who had rooms with a window view facing a brick wall. In response to this line of investigation, Ulrich and colleagues later suggested a more refined theoretical perspective for studying stress recovery, suggesting that influences of nature lead to sustained attention, positive mental states, and better physiological responses after stressful situations (Ulrich et al., 1991, p. 201). Kaplan and Kaplan (1989), however, went on to explicitly propose how cognitive mechanisms affect cognitive fatigue and stress, which can be improved by spending time in or viewing natural environments, according to attention restoration theory.

In a related fashion, Dutton (2003) proposed the Darwinian theory of beauty, suggesting humans have an innate attraction to natural environment and an evolutionary link to landscapes, as being a potential habitat for increasing chances of human survival. Findings from the work by Nahri (2008) seem to add to this notion. Nahri (2008) interpreted the concept of what paradise means to inhabitants of those living in different geographical locations within different cultures. Many similarities among depictions of paradise were found, including a visually pleasing natural environment that is free from human problems, with an abundance of food, and trees (2008). Most descriptors of paradise included the following elements: shelter, a lush and green landscape, water, animals, absence of threats, human presence, familiarity, and the component of visibility,

with a preference for semi open natural landscapes (Narhi, 2008, pp. 349-352). Narhi thought a mixture of open and dense natural landscapes provide places for game and people to forage and hide.

It is suggested there may be conscious and unconscious intuitive processes in effect that involve a natural selection of environments that increase the probability of survival (Dutton, 2003; Nahri, 2008). In other words, people may instinctually know what types of environments are good for their survival, but it is difficult to pinpoint on what conscious level these processes are taking place. It is thought that a certain level of automatic processing may take place regarding certain environmental features, such as water and plant life that are needed for survival; but conscious thought and effort is needed to process how to stay free from danger and provide nutrition and shelter, while maintaining the absence of hardship (Dutton, 2003; Nahri, 2008). Although these concepts explain man's attraction and possible evolutionary survival ties to humans' original natural habitat, they do not account for implications of losing the natural environment in the present day.

It is pivotal to note that the types of natural surroundings described in these works are strikingly similar to landscapes shown to captivate people's attention in an effortless kind of way (Joye, Pals, Steg, & Evans, 2013), as described in attention restoration theory, by Kaplan and Kaplan (1989). Out of the historical theoretical lenses that have evolved over time to date, attention restoration theory is regarded as offering the most complete detail, in terms of explaining possible cognitive and health relationships to human experiences relating to the natural environment. However, this theory has yet to be

thoroughly approached from a qualitative perspective, when humans experience loss of natural environments.

Human Migration to Built Environments

Anthropologically speaking, humans have primarily resided in natural environments, but have shown survival patterns that indicate living near other humans in small and sometimes nomadic communities that can provide an opportunity for safety and pooled resources (World Migration Report, 2015). In the present, the World Health Organization (2015) reported humans have only recently migrated to built-up city environments within the last several decades, making city living a relatively new habitat for many humans. Approximately 100 years ago, only two out of every ten people resided within cities (World Health Organization, 2015). As of 2014, the World Migration Report (2015) signified more than 50% of the world's population was residing in urban environments. Furthermore, it is predicted that the number of city dwellers worldwide will double by the year 2050 (Migration World Report, 2015). With this knowledge, the United Nations Habitat offered the statement that there is "an urgent need to prepare for growth and related requirements" and that "rural land needs to be managed cautiously" (UN habitat, 2015). To further understand the global current state of affairs, the World Health Organization noted the following on environmental change, degradation, and loss of biodiversity.

> Over the past 30 years, 30% of the world's natural environment has been destroyed, populations of freshwater animal and plant species have been halved and natural forests have declined 10%. Part of the problem can be traced to

> unsustainable rates of consumption in rich countries that are creating climate change and ozone depletion as well as using up resources and producing toxic waste products.
>
> On the other hand, it is argued that globalization leads to economic growth, which in turn leads to development and makes societies more ably sustainable…On the other side of the debate, it is argued that economic growth leads only to greater environmental damage as sustainable development fails to take place. In addition, it is argued that health risks caused by environmental damage are seldom borne by those who cause them. (The World Health Organization on Environmental Change, 2015)

Currently, there are plausible arguments that attest to both positive aspects to living in cities, as well as factors that are questionable to human health. The World Health Organization (WHO, 2015) acknowledges how city living can positively impact human health by providing access to readily available resources like clean drinkable water, and access to health care and modern technologies. In addition, modern city living is relatively free from dangerous wildlife, increasing people's safety from natural predators found in natural environments. Moreover, many people migrate to cities for better job opportunities to provide for their families.

However, the WHO (2015) objectively noted the ways in which urban living may negatively impact human health, such as stress, traffic, noise, pollution, crime, and overcrowding. To what extent positive and negative factors of city living affect human health remains controversial and debatable. One severely understudied area is how people

are psychologically impacted in terms of human health and well-being, from experiencing the loss of natural environments within an urban context.

Urbanization

In efforts to understand possible neurobiological effects of urbanization, Lambert, Nelson, Jovanovic and Cerda (2015) examined information from multiple studies. The authors first pointed out it was determined from both experimental rodent research, and applied human research, that exposure to an abundance of artificial light sources and unnatural manmade environmental elements, similar to those found in urban surroundings, may pose problems for the human brain to develop, adapt, and function, optimally (Lambert et al., 2015, pp. 109, 112). Secondly, urban environments contain different types of stimuli and experiences that can be perceived as threatening, which may interact with humans' genetic predisposition for developing mental illness (Lambert et al., 2015, p. 122). Thirdly, it was suggested that when studying urbanization, to consider inclusion of the density of people living in one central location, which at times may result in competition for the same resources (Lambert et al., 2015, p. 122). Lambert et al. (2015) concluded that place, or one's environmental residence, has a "significant impact on neural health and adaptive functions throughout an individual's lifetime" (p. 122). Additionally, it was emphasized that there is a complexity to understanding what and how urban elements may be mitigating factors in disease; and that single experimental approaches are not likely sufficient for studying the many layers of an urban environment.

From a different perspective, in less developed areas, urbanization may have positive effects on mental well-being to a certain degree. For example, in South Africa, Roos, Rogieter, and Temane (2013) found that participants transitioning from an indigenous cultural way of life into a Westernized type of urbanization reported higher self-efficacy, collective efficacy, and overall psychological well-being than those in rural areas (p. 561). This may be due in part to beliefs or perceptions that efforts to urbanize in certain ways will provide individuals with an opportunity for a better life, and access to resources, while residents can still maintain the ability to retain cultural values (p. 562). Despite this information, it remains difficult to pinpoint exactly what elements and degree of urbanization in different geographical and cultural regions may have either positive or negative effects on human functioning. Additionally, these experiences may be autonomous from others, leaving much to be understood, in terms of optimal health within different stages or variations of urban environments.

Environmental Psychology & Health

It has been established that environmental surroundings are a mitigating factor to human health (McMichael, 2013). Not only do carcinogenic exposure and environmental pollutants such as vehicle exhaust, which depletes air quality, impact human health, (Calderon-Garciduenas, L. et al., 2015), but physical conditions of the environment, such as structural and tangible elements and people within surroundings, also factor into human health (Srinviasan, O'Fallon, & Deary, 2003). In terms of the natural environment, trees and forests are known to remove air pollutants equating to the effect of billions of dollars in human health prevention each year (Nowak, Hirabayashi, Bodine,

& Greenfield, 2014). It has been estimated within the Unites States that approximately 850 deaths and 670,000 occurrences of acute respiratory problems may be prevented in a single years' time by trees' and forests' natural ability to purify the air (p. 126). Other known benefits from nature come from human contact with certain bacteria, allergens, and organisms, encountered in natural environments, as the human body learns to develop adaptive immunological responses to these elements (Hanski et al., 2012). It is thought that those who spend more time in urban environments and have reduced contact with nature's biodiversity develop limited immunological responses due to reduced exposure (2012).

In Japan, the practice of "shinrin-yoku" or *forest bathing* is described as walking or meditating within the forest while taking in the forest atmosphere, and is sometimes referred to as forest therapy. Receiving certain immunological benefits of spending time in forests has to do with a key component that makes up the atmosphere of forests called *phytoncides,* which are volatile organic compounds (VOC) in the form of airborne particles given off by plants designed to protect themselves from unwanted germs and insects (Li, 2007). Li and colleagues revealed in a series of investigations that natural killer cell (NK) activity, which is an indicator of immune functioning, (and anti-cancer activity) increased in the human body significantly to around 50% after forest bathers' second day in the forest (Li et al., 2008; Li et al., 2008; Li, 2010). Additionally, NK activity remained elevated around 20% for one month after participants returned to urban living (Li, 2010). Conversely, there was no increase in NK that contributed to human immunity, and help fight cancerous cells, in participants who walked in an urban

environment (Li et al., 2008). It is believed that different forests have different phytoncides, which produce a range of divergent effects on humans, and specific benefits and biological-environmental connections are not fully understood. Unique characteristics of divergent forests have yet to be explored to such extents, especially those within the United States.

It has been determined from field experiments with young male adults in Japan, that walking in forests also had positive effects on participants' parasympathetic nervous system, producing cardiovascular benefits (Li et al., 2014). In the United Kingdom, physiological indicators via cortisol patterns, and psychological stress indicators through self-report measures, indicated a reduction in stress levels for those who had more green space in their neighborhood as opposed to those who had less green space (Roe et al., 2013; Thompson et al., 2012). Other studies have concluded that proximity to green spaces is associated with health measures, such as stress (Stigsdotter et al., 2010) mental health (Beyer et al., 2014), and morbidity, (Mass et al., 2009). These findings contributed to the concept that proximity and access to natural areas have impacts on human health.

Longitudinal data from the United Kingdom that tracked over 1,000 participants over five years was used to examine the mental health of those who moved to greener and less green areas (Alcock, White, Wheeler, Flemming, & Depledge, 2014). Those relocating to less green areas experienced a decline in mental health after the move, but eventually returned to baseline mental health within a few years after moving. However, those who moved from less green to more green areas experienced significantly improved mental health after the move and maintained the elevated mental health improvement in

the years following. Although this information provides insights into possible impacts for residents moving to greener and less green urban areas, it does not account for those who experience the loss of green areas where they are currently living.

Mantler and Logan (2015) purported that the existing body of literature depicting the salutogenic relationship of human contact with nature is becoming so evident and strong that the "human-natural environment relationship" has extreme clinical relevancy in this modern age, because from an evolutionary-biology lens, human well-being is largely dependent upon the environment (p. 5). In a twin study conducted in the United States, with 2,169 pairs of twins, green space was significantly linked to depression (Cohen-Cline, Turkheimer, & Duncan, 2015). However, the specific causal mechanisms between actual neighborhoods and mental health are difficult to pinpoint (Cohen-Cline, Turkhwimwe, & Duncan, 2015, p. 529). Multidisciplinary efforts may be needed between community members and researchers to identify all various elements that impact those living in built environments that may affect health, using input from those living in urban communities.

A few research efforts, such as the study by Tyrvainen et al. (2014) in Finland, have addressed more than one perceived state of mind, and a physiological measure associated with understanding the benefits of spending time outdoors. They reported that according to their findings, people who visited parks or woodland areas experienced greater feelings of restoration and vitality, felt more creative, and experienced better moods, when compared to how they felt when visiting built-up city environments. The authors explained that even when engaging in activities that are designed to be relaxing,

such as sitting in a lawn chair, within the city environment somewhat deprived of nature has a negative impact on people in terms of preventing stress reduction. Participants reported feelings of restoration after 15 minutes in the green environments, and the longer the stay, the greater the amounts of restoration were reported (Tyrvainen et al., 2014, p. 5). Participants named the forest-type environments over the city environment as the most suitable for their needs, but cortisol measurements taken did not show any significant differences between the urban and forest environment. One reason for this may be that every 15 to 30 minutes participants were being asked to either take a physiological measurement, answer a questionnaire, or walk or sit to specific area, and measures were repeated (Tyrvainen et al., 2014, p. 5). The authors noted the influences of nature still need to be further studied to better understand this relationship between people and the psychological and physiological benefits they experience in nature (Tyrvainen et al., 2014). A second study by Zhang, Howell, and Lyer (2014) found that perceptions of natural beauty positively predicted subjective overall well-being, but only when individuals are emotionally attuned to nature's beauty (pg. 55), indicating humans may need to be mentally present, and not distracted, to fully benefit from the restorative power of nature.

When Outdoor Environments are Not Restorative

Gatersleben and Andrews (2013) found that walking in nature is not always restorative. Dense wilderness type of environments, with little access to open spaces or shelter or resources, have the potential to make people feel they are in more of a primitive, stressful, survival type of situation, than a restorative experience. Perceived

safety, and fear related to survival, may be negatively impacted in dense wilderness environment situations. In experimental circumstances where participants walked through natural environments where line of site was limited and there were dense hiding places, blood pressure and attention was negatively impacted (Gatersleben & Andrews, 2013, p. 98). A suggested reasoning for this is that this type of environment can be perceived as stressful or dangerous, and evoke fear, which engages the use of directed attention, and therefore is not restorative (Gatersleben & Andrews, 2013, p. 99). However, this data provides evidence supporting that human thought processes and perceptions regarding environments influence human well-being.

In Switzerland, one study highlighted the importance of person-environment interaction, regarding different settings and the behaviors and thoughts people associated with such settings, including those found to be restorative according to attention restoration theory (Lindern, 2015). For example, some outdoor environments may not provide a sufficient landscape for people to report a sense of being away from stresses of work and life to be restorative. Lindern (2015) proposed key factors for promoting health through restoration should include two important elements: (a) avoiding crowded conditions and (b) constructing environments that are divergent from urban landscape associated with stressors (p. 29). Additionally, for an environment to have restorative effects, it should be free from persons and objects that can be linked to stressful perceptions.

From the Field of Cognitive Psychology and Beyond

In response to attention restoration theory (ART), several researchers have explored the connection between nature and cognitive psychological processes. As established in ART, viewing and experiencing soft fascinations found in nature provide psychological restoration from cognitive fatigue, brought about the by use of directed attention needed to carry out daily mental tasks (Kaplan & Kaplan, 1989; 2001). Fabor Taylor and Kou (2011) applied this research theory with children who suffer from Attention Deficit Hyperactivity Disorder (ADHD), characterized by cognitive difficulties in sustaining attention and controlling impulsivity, which often result in negative school performance, affecting ability to focus, processing speed, and working memory. Results of their study indicated that regularity of spending time spent in natural environments were linked to a reduction in the severity of ADHD symptomology.

Matsouka (2010) investigated the cognitive connection to nature by examining the relationship between views of nature, and academic performance and conduct. Using data from 101 Michigan schools, it was determined that higher test scores, higher graduation rates, and lower criminal activity were associated with those schools that had nature views, which consisted of a higher volume of plants and trees, visible from classrooms and the cafeteria. Similarly, in Massachusetts, Wu et al. (2014) measured greenness surrounding 905 elementary schools via satellite images ranging in distance from 250 meters to 2000 meters, and compared the data to above average math and English test scores from 3rd graders over a six-year span. After controlling for socio-economic factors and degree of urbanity, results indicated a constant positive association between

greenness and academic performance in math and English in the springtime when greenness is at its peak.

To inquire into the possible combination of cognitive and affective benefits of nature experiences, Bratman, Daily, Levy, & Gross (2015) assigned a mixture of community members and student participants in Berkley, California to either a nature walk, or a walk in an urban environment for 50 minutes. Cognitive performance was assessed via operation span task (OSPAN) to assess memory, change detection test to assess visual spatial working memory, backward digit span to measure short-term working memory, and attention network test (ANT) to assess executive attention. Results showed a significant increase in working memory performance, measured by OSPAN tasks requiring participants to use math skills and memory skills simultaneously. However, although main effects were present for the other cognitive tasks, follow-up tests did not yield consistent evidence for environment and time interaction, indicating nature experiences may result in some cognitive benefits, which may vary (Bratman et al., 2015, p. 44).

The anxiety inventory and rumination questionnaire administered to measure participant affect determined that walks in nature resulted in strong improvement in affect, compared to walks in the city environment (Bratman et al., 2015). Additionally, this experiment was conducted across a full year of seasons, showing equal performance benefits for both students and community members, no matter the time of year. The authors offered the following statement concerning the complexity of researching and

understanding cognitive processing in relation to the interplay with the many aspects that influence human functioning, and how they may be impacted by the environment.

> There are many factors that differ between natural and urban environments. It is unclear at present which of these differences account for the observed changes in affect and cognition. It is also unclear how to best take into account the influence that a variety of environmental covariates may have on individuals. Noise and air pollution, population density, and other elements of urban or natural environments may act as mediating factors for the impacts we observe on affect and cognitive function. There is great value in disentangling the specific components of the environment that may be related to particular impacts. (Bratman et al., 2015, p. 48)

Conclusions from this exploratory study show that nature experiences can lead to an improved cognitive and affective state, which in turn can result in better cognitive performance in areas that may require the use of directed attention. The summary of outcomes from the studies mentioned here also indicated that just as the presence of nature influences cognitive functioning, it may also in turn share a complex overlapping relationship with human conduct, performance, affect, and development.

Human Development and the Environment

Medical specialists appear to agree that developmental opportunities are influenced by environmental factors, and there is a critical period in human development when the central nervous system and neural pathways are sensitive to the effects of environmental factors and experiences (Purves & Fitzpatrick, 2001). For example, speech

would not develop if children were not exposed to language at an early age (Purves & Fitzpatrick, 2001). A recent study by He et al. (2015) found that if children are not exposed to outdoor environments at a young age, they are less likely to develop vision abilities that allow them to see far distances. He and colleagues conducted a three-year clinical trial in China, with over 1900 children, prescribing regular outdoor time to those in the intervention group. After three years, vision results from each group revealed less occurrence of nearsightedness by 9.1% in those children who spent more time outdoors (p. 1). Exposure to sunlight as part of an outdoor landscape helps to develop a person's ability to see long distances. This process involves dopamine production from outdoor sunlight, which in turn prevents the eye from elongating, causing nearsightedness. Increased indoor study time and schooling efforts are thought to be the main reason issues responsible for limiting children's exposure to outdoor activities in some cultures, hindering development (2015).

There is some evidence from pregnancy outcomes that depict an association with vegetation and birth weight. In Southern California, healthier birth weights and fewer pre-term pregnancies were associated with increases in residential vegetation (Laurent, Wu, Li, & Milesi, 2013). Similar findings from India show an increase in greenness was associated with a decrease in low birth weight, but not premature births (Agay-Shay et al., 2014). Data from Canada shows the distance of a mother's home to surrounding greenness was correlated with healthier birth weights, and a decrease of preterm births (Hystad et al., 2014). This study controlled for "air pollution, noise exposures, neighborhood walkability, and park proximity" (p. 1095). The authors stated that "this

suggests that the association between greenness and birth outcomes is independent of these specially varying exposures related to the built environment, and that alternative pathways may link residential greenness to birth outcomes" (p. 1100). As a result of these studies, it is inferred that health and development benefits of the natural environments may possibly take place even before birth.

In Germany, it was found that 10-year old children living more than 500 meters away from urban green areas experienced more behavioral problems than those living closer (Markevych et al., 2014). Male children showed a significant increase in levels of ADHD symptomology, such as hyperactivity and inattention, the farther away they resided from an urban green space. This data signifies developmental problems related to attentional capacity may be impacted by the loss of access children have to nearby community green areas. Ergo, it can be inferred that children may need to be provided ample nature exposure to reap cognitive restorative opportunities for proper development.

Mustapa, Maliki, and Hamzah (2015) proposed in their paper that there is compelling evidence from multiple studies that children's social and emotional development is strengthened by outdoor play in nature during free exploration of natural environments (p. 335). However, not all outdoor play areas are created equal, and some may not have sufficient green space to be considered a viable natural restorative environment for enrichment to take place (Bagot, Allen, & Toukhsati, 2015). McCurdy, Winterbotton, Mehta, and Roberts (2010) argued it should not be so difficult to provide opportunities for children to abate a variety of health issues using nature. However, researcher attempts at dissemination of research illustrating the connection between child

development and the natural environment seldom translate into immediate action resulting in urban landscape redesign (2010). Undoubtedly, implementing infrastructure changes can be difficult due to zoning, costs, and the large-scale size of such undertakings. Therefore, the physical and mental health of children remains a concern for future policy makers. These studies showed strong relationships between natural environmental exposure and optimal development, which spur curiosities regarding how humans will adapt to the rapidly changing environment being depleted of such resources.

Nature and Mental Health Research

Although associations regarding physical health and the natural environment may be assessed through measurable health data, (i.e., blood pressure, cortisol levels, birth weight) assessing the relationship between individual mental health and the natural environment may not be as straightforward. In attempts to investigate green environments and public health, tree canopy measurements and Wisconsin health and survey data were assessed to examine the relationship between green space and mental health (Beyer et al., 2014). After controlling for a range of possible confounds, higher levels of green space were correlated with better mental health outcomes, specifically in terms of depression, anxiety, and stress, with depression showing the strongest relationship (Beyer et al., 2014, p. 3471). Areas where unemployment, racial segregation, lower family income, and lack of health insurance are prevalent showed differences in tree canopy measurements, indicating that residents with these demographic characteristics may benefit the most from neighborhood greening (Beyer et al., 2014, pp. 3471-3472). As a result of these findings it was suggested that greening up socioeconomically disadvantaged

neighborhoods is likely a cost-effective methodology to assist in reducing mental health disparities.

A meta-analysis using data from developed countries, revealed that city dwellers have a 21% increased risk for developing anxiety disorders, and 39% risk of developing other mood disorders, such as depression (Schoevers, Beekman & Deckker, 2010). Rates of schizophrenia were found to be double for those who were born and raised in a city environment the majority of their lives. As a result, is suggested that for some, aspects of city living may prove to be stressful to the human brain, or pose a threat for a negative gene-environment interaction. Although data obtained from this study and the Wisconsin study (Beyer et al., 2014) provided information regarding prevalence rates of mental health and correlation data regarding mental health problems in relation to proximity to nature, they did not explicitly answer the question of how each individual may personally be impacted.

Brain scans of German participants who were exposed to stressful experimental situations designed to emulate social stress, showed activation of the amygdala and cingulate cortex, which are areas of the brain associated with emotional regulation and cognitive processing (Lederbogen et al., 2011). There was a stepwise increase in brain activation in the amygdala from those living in rural areas, to those in towns of small size, to those living in larger cities (p. 499). Moreover, the greatest activation in the cingulate cortex occurred among those who were born and raised in a city environment their whole life (Lederbogen et al., 2011). Over activation of these areas of the brain is considered as being a negative contributing factor to mental health and emotional

regulation. It is believed that early exposure to an abundance of stressful situations can lead to developmental vulnerabilities, affecting individual thresholds of resilience to developing mental illness (2011). The combination of data yielded from these studies that assessed mental health and environments, indicated strong differences in mental health for those living in urban built up metropolitan areas, as opposed to those surrounded by more natural types of environment. This notion poses further questions as to how individual residents may be personally impacted by the loss of the presence of nature.

Significance of Place

The Importance of Place in Research

A sense of place is described as not only encompassing the physical environment, but also the objects, people, built structures, and culture, or specific activities, that exist within that place (Mohamed, Saruwono, Said, & Hariri, 2013). In addition, a sense of place provides people with contextual references, in terms of informing acceptable social and behavioral protocol (p. 507). Therefore, place is part of the process that informs how people think and feel. What people find important to determining environmental satisfaction where they live, or the process in which they develop a sense of place, may vary by location, experiences, and perceptions. From these associated factors, people make meanings associated to place. Therefore, it is of value to consider the notion of place in geographically specific human research.

The following study from Australia provides an example of how residents assisted researchers in creating an ecological and community relevant research study, considering the importance of the place, in the area in which the research was taking place. In a

community near the Great Barrier Reef, researchers held focus groups and face-to-face interviews with "relevant stakeholders and residents" to develop 27 relevant questions assessing well-being, through social, environmental, and economic factors, as part of a questionnaire designed to quantitatively examine sense of place and attitudes toward the environment (Larson, Freitas, & Hicks, 2012, p. 229). Two-thirds of surveyed residents living near the Great Barrier Reef selected the natural environment as an important factor in well-being. Water and air quality was also of high importance, followed by beauty of the landscape, swimming, access to natural areas, fishing, and lastly biodiversity (p. 230).

This study by Larson et al. (2013) is of specific cultural and geographic value, because the variables used to measure well-being within this geographic region were chosen with input of residents who reside within the area. Because residents were able to add to and modify researchers' initial ideas for elements that made up the construct of well-being and it's important to place, this study is more accurately geographically and ecologically relevant to those living in this region. Had only researcher-chosen variables been implemented, without the input of residents and community members and significance of place, the perspective of this research and outcome of this study would have been altered. This concept is pertinent to the current study, because in a similar fashion, the aim of this study is to capture residents' experiences and how they may have individually been impacted, in terms of health and well-being, by the rapidly changing landscape in the place where they reside.

Place as it Pertains to Sustainability

It is evident that environmental sciences, economic development, and the concept of sustainability involve the significance of place (Wilbanks, 2015). Globalization and variations in cultural economies can rapidly change the meaning of place. A sense of place can be influenced by community, city, regional, or political climates or contexts. Wilbanks (2015) argued that how sustainability is measured is often defined by those who benefit from constructing its definitions, and poses the following curiosities: by whose standard does one judge sustainability, or quality of life? And how does place factor in? Moreover, he purported that concessions or compromises are often made regarding place, for opportunities, making individual perceptions of urban places difficult to define. Wilbanks (2015) went on to state that factors ranging from air pollution to technology can factor into sustainability and the meaning of place. However, separate from industry and development perspectives, individuals who live in changing places will ultimately be impacted by changes brought on by urbanization and determine the quality of which they feel life is sustainable.

Deprivation of Nature

The literature search produced few findings concerning the specific concept of deprivation of nature, which in this study is defined as not being able to freely come in contact with nature and experience the natural world at will on a regular basis within reason. Only one study was found that discussed effects of deprived communities in relation to green space, and was carried out by Thompson et al., (2012) in the United Kingdom. The authors described deprived community participants as those “likely to face

socio economic adversity" defined by both individual characteristics (income, type of employment, and self-reported coping in relation to income) and neighborhood characteristics (overcrowding, male unemployment rates, low social class, and lack of transportation) (Thompson et al., 2012, p. 24). Percentage of community green space was measured, and stress levels were determined by salivatory cortisol and self-report. Thompson et al. (2012) found a significant relationship between stress (both self-report and cortisol levels) and amount of community green space, signifying greater amounts of greens space is associated with less stress in deprived communities. However, this study did not explore the totality of the impact associated with loss of natural environments, such as psychological states of mind (moods, feelings, outlook) experienced when deprived of nature.

One group of investigators, focusing on health care needs, did examine a prison population, which can be considered by some to naturally experience deprivation of nature to a degree, or at least have limited exposure to the outdoors (Moore, 1981). It was determined that inmates whose cell windows had views of nature had fewer stress symptoms and sick call requests. A major complication with interpreting and generalizing this data is that the inmate participants were not only deprived of voluntary access to the outdoor environment, but they were also deprived of many other human conveniences as well, such as privacy, access to society in general, and other goods and resources. More than one type of deprivation is taking place in this population, making the variable of exposure to views the outdoors difficult to name as an isolated factor; generalizing this information to the public is not possible.

Studies on deprivation of nature are scarce, most likely due to ethical considerations involved in experimental research in depriving people of nature. Cases that do exist are often confounded with situations concerning abuse, or involve animal studies (Lambert et al., 2015; PETA, 2015), which is not the focus of this investigation, and creates a significant gap in the present literature, making a qualitative approach a viable option of investigation. Currently the bulk of investigative efforts have focused on the benefits of the presence of nature, and spans across the disciplines of cognitive psychology, environmental psychology, and health and human development research. It can be inferred that using a phenomenological approach to investigation, which allows for a richer understanding of this lived experience, can be used as qualitative means of studying the phenomenon of experiencing loss of nature.

Summary

There are anthropological-evolutionary ties to human survival and the natural environment. Information from the literature review suggested that the environmental landscapes of humans are changing and the human brain may not be able to adapt quickly enough to such a radical change in environmental stimuli. Numerous studies from the disciplines of health, environmental psychology, human development, and cognitive psychology have illustrated strong links between human well-being and the natural environment, mostly indicating salutogenic properties when experiencing nature. A main benefit of spending time in nature is cognitive restoration from stress, and benefits tend to increase with an abundance of biodiversity.

There are strong indicators that the presence of natural environments where people live and work provide a buffer from physical and mental health problems; but little is known regarding the impact to human health and well-being as a result of losing natural environments as a byproduct of rapid urban growth and development. There are many ways in which city living can be positively and negatively be perceived, but it should be acknowledged that related experiences may be highly individualistic, as well as share similarities across cultures in some ways. Although current data provides a foundation for understanding the positive psychological benefits of nature, how individual people perceive they have been impacted by the loss of the natural environment where they live is largely unknown, and missing from scientific literature.

As the literature indicates, most studies focused on the benefits of the presence of natural environments. Additionally, it is evident the existing peer reviewed articles are overwhelmingly from a quantitative framework, and none address the totality of people's perceptions associated with the loss natural environments, or how people would feel if deprived of nature experiences. Studying deprivation of nature is a relatively newer concept within the United States, and it poses ethically challenging hurdles to studying this topic experimentally. This study was designed to address that void by providing an opportunity for the voices of residents in a large and fast-growing city who have experienced the loss of nature to be heard. The methodological processes and qualitative framework that were used to address this gap is outlined in Chapter 3.

Chapter 3: Research Method

Introduction

The purpose of this interpretative phenomenological study was to investigate the experience of the loss of natural environments due to urbanization for residents in a rapidly growing municipality, namely San Antonio, Texas. In this chapter, I outline the qualitative research design, methods of carrying out the study, participant selection, and rationale for such choices. The instruments used in data collection, as well as methods for analyzing data are explained. Issues of trustworthiness and the role of the researcher are also discussed.

Research Design and Rationale

Research Questions

1. What are the lived experiences of urban dwellers who lost natural environments due to rapid urbanization?
2. How do those who have been impacted by the loss of nature describe what it means to lose their natural environment?

The central phenomenon I studied was the experience of the loss of natural environments due to rapid urbanization. The nature of this study was grounded in the qualitative tradition of inquiry using an interpretative phenomenological research approach. Interpretative phenomenology has theoretical underpinnings that stem from both phenomenology (Husserl, 1970) and hermeneutics (Heidegger, 1962), meaning the qualities that make up an experience are tied to the meanings participants give to those experiences, and the researcher's interpretations of those meanings (Dowling, 2007;

Matua & Van Der Wal, 2015). Interpretative phenomenology also encompasses an idiographic frame of reference, which entails examining "the perspective of particular people in a particular context" (Smith, Flowers, & Larkin, 2009, p. 29). In keeping with the point of understanding and explaining the complexity of people's relationships with their environments, using a phenomenological approach allows for a specific understanding of how a criterion-based sample of respondents experienced a lived event, concerning a particular phenomenon, and the ways that they were affected by it. This approach invited participants to provide detailed responses describing their feelings, insights, and experiences regarding the phenomenon of being city dwellers who have experienced the loss of their natural environment.

Role of the Researcher

I conducted this research as a doctoral candidate, and in part, as one of the necessary components to fulfilling the requirements for obtaining a PhD in Psychology at Walden University. My role as a researcher encompassed being the instrument of data collection and interpreter of that data for this study, which involved conducting in-depth interviews with participants. Although I did not have any professional or personal relationships with participants, it is possible my position as a researcher and my academic status may have evoked a feeling of power imbalance with participants. I managed such perceptions during the informed consent process by informing participants both in writing and verbally that they could withdraw from participation in the study at any time of their own volition, without consequence. In some related qualitative psychology studies where interviews were used to obtain data, participants perceived this type of

interaction as therapeutic in nature (Poggenpoek & Myburgh, 2003, p. 418). In order to avoid this perception, I (a) declared my professional status as an academic researcher, (b) clearly defined aims of the study, (c) provided participants with contact information to the University, my Chair, and personnel at Walden University who are experts in research ethics and oversee processes in which studies take place at Walden, and (d) prompted participants to keep this information regarding any concerns related to the study.

I addressed personal biases prior to and during collecting and analyzing data. For example, as a doctoral student, and academic researcher, I have prior knowledge of environmental psychology related studies, and have developed my own personal environmental preferences from my world travels, which I acknowledged, but set aside during the research process, so as not to taint the data collection and interpretation. As a single researcher obtaining and interpreting qualitative data from participants, interaction with participants and managing biases is key to ensuring trustworthiness. Open-ended questions were used so as not to impose any limitation on participants' responses. In addition, interviewing techniques and questions were practiced with volunteers and discussed with my committee to avoid any limitations in collecting qualitative data (Anney, 2014).

Methodology

Participant Selection and Eligibility Criteria

I implemented purposive sampling to obtain data from those who have the shared common experience of loss of natural environments where they live. The eligibility criteria were:

1. Residents were adults who have lived in San Antonio consecutively for at least the last five years to be eligible for this study. This eligibility criterion was adopted in efforts to reach those who have lived in the area long enough to have experienced some of the recent changes to the environment due to urbanization that has taken place over the last several years.
2. Participants were 23 years of age or older. Participants are not considered adults until the age of 18; and must have lived in San Antonio at least five years, making the youngest eligibility age 23.
3. Participants lived, worked, and spent the majority of their time in the San Antonio area. Rationale for this criterion was to help insure data came from full-time local residents.
4. Participants did not move more than two times within the San Antonio area in the last five years. This criterion was adopted to ensure participants lived in areas long enough to be able to attest to environmental changes.
5. Participants felt comfortable enough using the English language well enough to do an interview.

6. Residents lived in the local area and experienced what it was like prior, during, and after, loss of some of the local natural environments due to urbanization.

I used real estate trends and retail forecasts from Texas A & M Real Estate Research Center (2015; 2017) for the last several years, to verify areas that had undergone loss of natural environments due to urbanization. I identified these areas from real estate forecasts that showed new construction areas, the most recent development, and still developing areas that were once natural land, in San Antonio, over the last five years. I used this data to pinpoint those areas on a general map of San Antonio area to identify neighborhoods in those geographical sections of the city near where the loss of the natural environment recently occurred due to urbanization. These sections of the map acted as predetermined sections to distribute invitational flyers for recruitment (See Appendix A). Neighborhoods and local community centers and businesses in those areas were targeted for participant recruitment through invitational flyers. I distributed invitations by walking through those neighborhoods and randomly placing invitations to participate at front doors. I gained permission from local business owners to post flyers in accordance with each business's policy. I screened participants who responded to invitations distributed in those areas to verify that the eligibility criteria for participation were met. I also implemented the snowball technique, which consisted of asking participants if they could recommend other possible candidates that met the criteria of the study (Sadler et al., 2010).

I invited those who met the inclusion criteria to participate in the study, and thanked those who did not for their time and interest in the study. As Guest, Bunce, and

Johnson (2006) have demonstrated, the point in qualitative data analysis where information being collected does not reveal anything novel may occur with as few as six to 12 participants. However, for this study, I determined there was sufficient evidence of data saturation after interviewing 20 participants by continually reviewing and coding interview transcripts as data were being collected, to analyze if new themes were emerging from the data. I continued to interview participants until I reached a point in data collection and analysis when no new data surfaced, to make sure I was not missing any other novel aspects of the phenomenon. Analysis from the 20 participants showed evidence of reoccurring themes in participant testimony, with the exception that individual experiences were still likely to differ somewhat. At this juncture, I made the determination that saturation had been achieved and stopped data collection.

Instrumentation

The researcher is the data collection instrument in qualitative studies, therefore, I used a semi-structured interview protocol to guide the in-depth interviews and ask questions designed to solicit participant responses to address the research questions (See Appendix B). I began my interviews by explaining the purpose of this study, and the type of conversational interview format that would be helpful in gaining participants' perspectives. The purpose of this introduction was to explain what a phenomenological study is to participants. I informed participants that I was trying to understand what it is like for residents to experience the loss of natural environments due to physical environmental changes brought on by urbanization, and that I was most interested in hearing stories of how each participant made meaning of those changes; as individual

experiences would help me understand how residents were impacted by such events. I also explained to participants that with this type of interview, it was critical for the researcher to understand perceptions, feelings, and thoughts regarding personal experiences; and for participants not feel limited in their responses, and that I would ask participants follow-up questions to better understand their experiences.

Prior to the start of the interviews, I collected basic demographic information and related socioeconomic data, including age, sex, race, education, occupation, and housing status (rent versus own, and house versus apartment) to provide a better context of local residents. Early in the interview, questions revolved around getting to know the participants' background and context of their environment. Once this information was gathered, I asked questions listed in the interview protocol to address the aims of the study. Participants were encouraged to explain their own experiences and perceptions of how they may have been impacted when natural areas were removed from their environment. The use of in-depth interviews, which are conversational in nature (Chirban, 1996), allowed me to ask additional questions necessary to understand participants' responses, and ensure there was sufficient data to address the research questions.

According to Anney (2014), in order to ensure content validity and instrument validation in qualitative research, several measures can be taken prior to using a newly developed interview protocol in research. First, prior to engaging in fieldwork, I reviewed drafts of the interview protocol with qualified others (2014) namely, my committee members, and solicited comments on the questions and language. Second, to promote

efficacy of the interview process and validation of the protocol, I practiced the interview process (2014) with other graduate students, and volunteers. Third, this process was rechecked by repeating previous steps with revised questions and interview techniques (2014).

During the interviews, participants were encouraged to explain their responses in detail, regarding how they may have been impacted by their experiences; therefore, open-ended questions and interaction between the interviewer and participant were necessary throughout the interviews (Chirban, 1996; Rubin & Rubin, 2012). It was not desired to limit responses, but instead use follow-up questions, or probing questions to further understand the phenomenon and lived experience from the participants' perspective.

Procedures for Recruitment, Participation, and Data Collection

I screened participants who responded to invitational flyers distributed in identified neighbors, to ensure they met the criteria for participating in the study (See Appendix C). I provided qualified participants with a copy of the informed consent prior to the interview and gave participants the opportunity to ask any questions during the informed consent process prior to deciding whether to participate. During the informed consent process, I verbally reviewed the items in the informed consent to make sure participants understood what participation in this study entailed and informed participants they could withdraw from the study at any time, even after the interview had begun, without any consequence. All participants were given a copy of the informed consent to keep, and informed they may use the contact information provided should questions arise in the future.

I interviewed each participant once, in a face-to-face fashion, at a location of participant's choice. All participants were offered the neutral option to conduct the interviews in a private meeting room provided by the researcher, but also given the option of suggesting a suitable interview location where they felt the most comfortable, such as a library, or coffee shop, following the single criteria that the location is quiet enough, and free from major distractions, to preserve the quality of the interview and recording of the interviews. Because this research is place or environment specific, it was important to give participants the option of choosing the interview location. When a participant expressed he or she felt most comfortable conducting the interview in the privacy of his or her home, I ensured the interviews were conducted in such a manner that protected the privacy and safety of others present.

I allotted approximately 1 ½ - 2 ½ hours of time to conduct face-to-face in-depth interviews with participants. I used a clock to periodically check in with participants to inquire how they are doing, or if they need a break. If at any time a participant expressed that they needed to leave soon, or that the interview was taking longer than expected, I was prepared to offer the option of finishing the interviews over the phone; however, this was not necessary. The interviews were recorded using a digital voice recorder (Olympus Model 822) and later transcribed by a transcription service professional that I obtained a confidentiality agreement from (See Appendix D). Upon completion of the interviews, I asked participants if they had any questions and encouraged them to keep my contact information given to them prior to the interview and to call if any questions or concerns

arose. I also asked participants who completed the interviews if I could contact them for additional information over the phone for member checking.

Field notes. I took field notes during and after the interviews to provide clarity of the context of the phenomenon, and to record ideas involving data analysis, and descriptive data.

Data Analysis

Methods of data analysis for this research plan included the use of bracketing throughout the data gathering and analysis process to clarify personal research bias (Smith et al., 2009; Smith, 2015). Interview transcripts, maps of the county, and field notes taken from sites were used to fully understand the context of the phenomenon being studied, and provide descriptive data of the environment in which the lived experience of the participants and research took place (Smith et al., 2009). Member checking was implemented to triangulate data by mailing participants copies of the transcripts (Creswell, 2007). Therefore, during the informed consent process, I asked participants if they might be willing to be contacted for follow up, to review the interview transcripts for accuracy, clarification, or for further information (See Appendix E).

The hermeneutic application of interpretative phenomenological analysis (IPA) called for the researcher to be the means of interpreting the meanings participants gave to their experiences (Flood, 2010). Thus, I read and hand coded the transcribed interviews with the initial goal of understanding the meaning making participants gave to their experiences (Smith, 2015). Data were examined to address the specific research questions. I organized the text of participants' narratives into meaningful chunks of

information and interpreted this information to inform emergent themes and patterns as well as divergent data, and address the research questions (Flood, 2010; Pringle et al., 2011). According to Smith and Osborn, (2007, p. 70) emergent themes can be analyzed "chronologically", as well as analytically from a "theoretical perspective," with focus on how connections may form, from "theme to theme", or how some themes may cluster together to emerge as a "superordinate concepts." Instead of using a codebook for data analysis, I developed a working table explaining what codes constituted each theme, to show how the description of codes pertained to larger themes, like explaining codes that pertain to health and wellness (Kodish, & Gittelsohn, 2011). Codes were developed from concepts, categories, taxonomy, theme, or theory, and the table of themes and codes assisted me in providing such explanations and transparency (2011). Using a large table made data analysis manageable, malleable, and provided the ability to see working codes and themes at glance. After the data were reduced to final themes, I constructed a final master table to illustrate the organization of the themes and clusters that led to each larger conceptual theme, to serve as model for understanding (Smith & Osborn, 2007, p. 72; Smith, 2015). I also examined divergent and nuanced data in relation to other participants' testimony. As suggested by Miles, Huberman, and Saldana (2014), I contacted participants for member checking and added additional data obtained during member checking to the analysis. I then compared the coded data to the aforementioned theories outlined in the theoretical framework for this study for overall fit.

Issues of Trustworthiness

Credibility

To promote credibility, in-depth interviews were used to obtain detailed and saturated response from participants. During this procedure, I established a rapport with participants, and took field notes of neighborhoods and the surrounding community area prior to engaging with participants to develop familiarity and provide descriptive data. Rubin and Ruben (2012) posited not to limit participants' testimony to promote authentic responses, therefore, I allowed participants to fully discuss and explain their experiences in their own words from their own perspectives. I implemented member checks to follow up with participants regarding the accuracy of their testimony. A suggested by Miles et al. (2014, p. 299I), I triangulated the data by using more than one source of data to understand the phenomenon being studied, which consisted of using field notes, maps of the county, photos provided by a resident, and participant testimony to fully understand the context of the phenomenon, and related concepts. Additionally, I took reflective notes prior to and during data collection and analysis procedures, to evaluate the process and techniques used during the research, as advised by Ortlipp (2008).

Transferability

Choosing participants from various neighborhoods that have experienced the city development and urbanization is evidence there is reasonable variation to participant selection for this particular study, which promotes transferability (Miles et al., 2014). Residents from more than one neighborhood within the large city of San Antonio are included in this study, so findings of this study do extend to individuals living throughout

the city in areas that have experienced recent growth. Thick descriptions of the environment, phenomenon, and context in which the fieldwork took place were provided, as suggested by Miles et al. (2014), so that the extent this data may have relevancy in similar cities can be determined by readers. The type of fieldwork, including data collection procedures, number of participants, and time period data collection took place were provided for considering transferability comparisons.

Dependability

Data were triangulated from field notes, participants' testimony, and real estate trends, and maps to understand and provide a contextual and descriptive background of where the fieldwork took place. As suggested by Saldana (2013), I explained the coding process used, and how themes were constructed (See Table 2). In addition, methods of planning and data collection were explained for readers who may want to replicate this qualitative inquiry with other participants experiencing the same phenomenon in other cities, so the data from different sources would increase dependability (Miles et al., 2014).

Confirmability

Confirmability in qualitative research is often described as objectivity (Miles et al., 2014). Establishing objectivity in qualitative research involves addressing the investigator's own predisposition and beliefs. I documented and managed these reflective aspects as they arose to make sure that the themes and findings emerged from the data and not my own inclinations.

Ethical Procedures

All efforts were employed throughout this study to ensure no harm came to participants. Permission from Walden University Institutional Review Board was sought and granted prior to beginning this research project. Walden University approval number for this study is 01-13-17-0335480. Permission from participants was obtained prior to collecting data, through the informed consent process. The informed consent process entailed both written and verbal acknowledgement that participants could withdraw from participation at any time without any negative consequence, and all pertinent details outlining the intentions of the research, subject matter, and length of interviews were disclosed. Participants were treated with respect, and with their best interest in mind through the duration of the study.

For this investigation, I planned to use participant phone numbers to set up interviews and ensure they met the study criteria. However, it was not necessary to retain participant phone numbers, as participants called me to schedule the interview dates and times. I gave participants a choice of their preferred location to conduct the interviews. I did collect some descriptive neighborhood information where participants resided; however, specific neighborhood names were not used in the write up and I substituted participants' names with codes to protect their privacy. I will keep all collected information confidential. However, in qualitative research, excerpts of participant testimony are used to illustrate conceptual findings and codes, and this was explained to participants. I informed participants that data collected from this study would be stored in a combination safe in the researcher's personal residence for at least five years, and it is

only intended that the researcher, doctoral committee members, or the Walden University Institutional Review Board have access to said research. During the debriefings after the interviews, I asked participants if they had any questions or concerns, and suggested to participants to keep the contact information they were provided during the informed consent process, in case any questions arose. I also informed participants during the consent process of the intention to disseminate the findings of this study to the research community as well as local community members and city planners through publications, correspondence, or books.

Summary

In this chapter, I explained how trusted methodologies of qualitative inquiry were implemented in the specific application to this interpretive research study. Participant selection, inclusion criteria, length of interviews and analysis procedures were discussed, and justification of use of such measures was provided. A range of tactics were explicitly named and established to promote trustworthiness, such as providing rich descriptions, and member checks. I have clarified that I engaged in reflective monitoring to promote objectivity in procedures used, to promote credibility. Every effort was made to cause no harm to participants throughout the research process, and participants were free exit the study at any time with no repercussions. Effortful attempts at research dissemination may be made regarding the findings of this study, which are discussed in detail in Chapter 4.

Chapter 4: Data Analysis

Introduction

The purpose of this interpretative phenomenological study was to investigate the impact of the loss of natural environments due to urbanization on health and well-being for residents in the rapidly growing city of San Antonio, Texas. Research questions examined were:

1. What are the lived experiences of urban dwellers who lost natural environments due to rapid urbanization?
2. How do those who have been impacted by the loss of nature describe what it means to lose their natural environment?

This chapter contains transparent details of what emerged during the data analysis phase, including the processes of how data were collected and analyzed. Demographic information from participants living in the city of San Antonio who participated in the study is provided. Evidence of trustworthiness is discussed and I provide the study results with supporting data followed by a summary addressing the research questions.

Setting

Data collection took place within the City of San Antonio in accordance with methods previously described in Chapter 3. I distributed invitations to participate at residential doorsteps and local businesses in areas of San Antonio that had undergone recent rapid urbanization within the last five years. These areas were identified using data from real estate forecasts and surveys from the Texas Real Estate Research Center (2015; 2017). These sources indicated large building developments from recent urbanization that

has occurred near the second outer Loop 1604 area, that encircles the City of San Antonio, as well as in many other pockets of the city. Invitation distribution was carried out in four phases, with 250 invitations distributed in each phase, with a total of 1000 invitations distributed. The snowball technique (Sadler et al., 2010) was also implemented, by offering qualified participants the option of extending the invitation to participate to other possible candidates for the study. This combined recruitment method yielded 22 potential candidates for the study. During participant screening, one potential male candidate revealed that he only worked in San Antonio, and lived outside the city limits, not making him an eligible resident. A second possible female candidate chose not to participate after learning monetary compensation was not offered for participating. After screening potential candidates, the final study resulted in 20 qualified participants who all completed the study.

Demographics

Table 1

Participant Demographic Data

Participant	Age	Race	Rent/Own	Education	Occupation
FM001	67	White	Own House	Bachelor	Retired
FM002	59	White	Own House	Master	Retired
FM003	60	White	Own House	High School	Design Consult
FM004	70	White	Own House	High School	Retired
FM005	59	White	Own House	College	Retired
FM006	60	White	Own House	Bachelor	Sales Manager
FM007	75	White	Own House	Bachelor	Retired
FM008	41	White	Own House	Master	Health-Ed
FM009	50	White	Own House	High School	Secretary
FM0010	46	White	Own RV	College	Travel Agent
FM0011	46	Hispanic	Own House	College	Accounting
ML001	60	White	Own House	College	Remodeling
ML002	72	White	Own House	Bachelor	Retired
ML003	57	Hispanic	Rent House	Bachelor	Teacher
ML004	48	White	Own-RV	College	Retired
ML005	75	White	Own House	High School	Retired
ML006	57	Black	Own House	College	Civil Service
ML007	43	White	Own House	College	IT-Contract
ML008	57	Black	Own House	Bachelor	Dog Trainer
ML009	43	White	Rent Apt	High School	Construction

Note. Total 20 Participants, FM=Female, ML = Male.

Characteristics of the 20 participants in the study included nine males and 11 females. Ages of participants ranged from 41 to 75 years of age. Sixteen persons owned a home, one person rented a home, one person rented an apartment, and one couple owned two homes, but were living in an RV full time preparing to travel the country. The majority of participants held full-time jobs (n = 12) and the rest were retired, (n = 8). Ten percent of residents interviewed were Hispanic (n = 2), 10% were Black (n = 2), and 80% were White, (n = 16). Five participants had a high school education, seven completed some college, six had a Bachelor's degree, and two held a Master's degree.

Data Collection

Interview data were collected from 20 residents over the course of 10 weeks within the City of San Antonio, Texas. Data collection occurred between January 28, 2017 and April 4, 2017. Sixteen interviews were held at the residences of participants, at their request. Three interviews were conducted at a neutral outdoor space, such as a picnic table at a local common area near participants' place of employment, and one interview was held at a local coffee shop. I allotted 1 ½ to 2 ½ hours for collecting interview data; however, the meetings with participants did not exceed 1 ½ hours. Each interviewee participated in a single interview that lasted between approximately 30 minutes and one hour. All interview data were recorded with participants' consent using an Olympus Model 822 recording device. All recorded interviews were transcribed by Transcription Services US, a professional transcriptions company. A signed confidentiality agreement was obtained (See Appendix D). The transcribed interviews were printed and used in data analysis.

Data were collected in accordance with the procedures outlined in Chapter 3, using the questions from the interview protocol to guide the interview (See Appendix B for full interview protocol), such as:

1. What did it mean to you to have the natural environments present near your home and community?
2. Please tell me what happened to the natural environment(s) that were once present.
3. What it was like for you to experience this change?

4. What does it mean to you to lose the presence of natural environments near your home and community?

During some of the interviews it was necessary to clarify participants' experiences, perspectives, and meanings they associated to the phenomenon of losing natural environments where they live. In these cases, a few follow up questions were also asked, as projected, such as "Can you tell me more about that?" or "What did you mean when you said X?"

Data Analysis

As noted by Pietkiewicz and Smith (2012) interpretative phenomenological analysis is a "flexible process that can be adapted by individual researchers according to their research objectives" (p. 6). Typically, in IPA the researcher will inductively code important concepts found in the data that will begin to surface as categories and themes, eventually representing larger overarching concepts. For this process, researchers are expected to be transparent in describing the steps used to derive at their findings.

I opted to use a process of interpretative phenomenological data analysis similar to the guide discussed by Piekiewicz and Smith (2012), where some of the closely related steps described by Smith et al. (2009) are combined, resulting in three important stages or guidelines for analyzing phenomena concerning first-person accounts of experiences. This process encompassed (a) reading and coding the data, (b) transforming codes into emergent themes, and (c) connecting themes to overarching concepts. I used this process of analysis because it was fluid and iterative, while I moved within and between the stages of analysis. Additionally, I revisited the data in order to revisit each interview, and

the data as a whole, to make sense of the data by moving back and forth between pieces of data as necessary, and because this process made working with a large amount of narrative data manageable.

Reading and Coding

The first stage of analysis involved my immersion into the data by engaging in multiple readings of interview transcripts and coding the data for important concepts that surfaced (Piekiewicz & Larkin, 2012). During this process, I listened to each interview recording and carefully read each transcript, to become familiar with and close to participants' personal experiences and perspectives. Codes were not predetermined but surfaced with the reading of each transcript (Smith et al., 2009; Smith, 2015). During this process, I coded the data by noting important concepts, circling important words, and underling important passages, and revisiting each transcript approximately five to seven times.

Transforming Codes into Emergent Themes

During this stage of analysis, the researcher can begin to identify emergent themes from previously coded data by grouping similar codes, words, and phrases together that have surfaced across the data that emerge as themes (Piekiewcicz & Smith, 2012). While engaged in this process, I examined the codes across the data as whole and identified strong themes and patterns that were emerging. I grouped similarly coded data into thematic categories. At this point I was able to articulate and color code each theme that was occurring and place supporting codes under each theme. During this process, I found it useful to use color coded adhesive notes to delineate the themes, and attach them

to several large white boards to organize the data. This process made it manageable to work with the large amount of coded data, and to move supporting codes, and themes as appropriate to interpret the data. Because this process is intended to be fluid and iterative, I continued to revisit the data over several weeks and continuously reorganize groupings of codes and rename themes appropriately to best represent the data. I also took breaks from having constant contact with the data so I could reapproach the process of analysis with clarity.

Connecting Themes to Larger Overarching Concepts

In this stage of examining data, the researcher is tasked with identifying conceptual explanations, processes, connections, and relationships, between emerging themes, and "grouping them together according to conceptual similarities and providing each cluster with a descriptive label" (Piekiewcicz & Smith, 2012). During the evaluation of the data I collapsed weaker themes as stronger themes emerged as part of larger overarching concepts to examine higher ordered concepts. Through the development of larger overarching concepts, I was better able to understand and describe conceptual processes, connections, taxonomies, and relationships between themes. During this part of analysis, I developed a working table so that I could see at a glance what codes constituted each theme. The analysis process was iterative, meaning I reexamined the data continuously over a three-month time period to make sure thematic categories and larger conceptual themes were the best fit for the coded data. During this iterative analysis process, I moved back and forth between the transcribed interviews to closely examine the meanings associated with each participant's experience, and the data as a

whole, continuously looking for patterns and nuances. At the end of this process, I was able to construct a master table (See Table 2) to illustrate how the final description of codes and supporting themes formed larger conceptual themes.

During data analysis, I invited participants to review their transcripts as part of the member checking process for accuracy (Creswell, 2007). Only one participant slightly altered his testimony and I incorporated the feedback into the analysis. I also examined and included divergent data I discovered in the analysis by comparing to the testimony of other participants. The results of analysis include rich thick descriptions of participant testimony that support each theme.

Evidence of Trustworthiness

Credibility

To promote credibility, semi-structured interviews were used to obtain detailed and responses from participants. I also took field notes of neighborhoods and the surrounding community area prior to engaging with participants to develop familiarity and provide descriptive data of the area to which participants were referring. As suggested by Rubin and Rubin (2010), every effort should be made to sequester authentic participant's responses. Therefore, I did not limit participant testimony, and allowed residents to explain their experiences in their own words. I implemented member checking (Creswell, 2007; Miles et al., 2014) to follow up with participants regarding the accuracy of their testimony. Triangulation of data (Lietz & Zayas, 2010) for this study included using field notes, maps of the city and county, real estate and development data, photos provided by a participant, and participant interviews, to fully understand the

context of the phenomenon, and related concepts. Additionally, I used the reflective notes I took prior to, and during data collection and analysis, to evaluate the process of collecting and analyzing data as suggested by Ortlipp (2008). In order to promote credibility, I have also disclosed and justified all methods used for this study.

Transferability

As noted in Chapter 3, participants were chosen from various neighborhoods in areas that have undergone urbanization throughout the city of San Antonio. The diversity of this group serves as evidence there is reasonable variation in participant selection for this particular study, which may promote transferability (Miles et al., 2014). Residents from more than one neighborhood within the large city of San Antonio were included in this study, so findings of this study do extend to individuals living throughout city in areas that have experienced recent growth. In addition, thick descriptions of the phenomenon, the context of residents' experiences, and maps of the city in which the fieldwork took place are provided, so that the extent this data may have relevancy in similar cities, which can be determined by readers. The details of data collection procedures in the field, participant recruitment and demographics, the time period data collection took place, and data analysis processes used, were provided for future transferability comparisons.

Dependability

Data were triangulated from field notes, participants' testimony, real estate and development data, photographs provided by residents, and maps, to understand and provide a contextual and descriptive background of where the fieldwork took place. To

promote dependability in qualitative research, it is essential to explain the processes of data analysis (Saldana, 2013). I have thoroughly explained the coding process used, and conceptual makeup of themes to readers. In addition, I provided the methods of planning and data collection for this study in a transparent manner for readers who may want to replicate this qualitative inquiry with other participants experiencing the same phenomenon in other cities. Such replication with other participants in a different city can yield new data from different sources, which may increase dependability (Miles et al., 2014).

Confirmability

Confirmability in qualitative research involves addressing the investigators own predisposition and beliefs (Miles et al., 2014). Throughout data collection and analysis, I documented in a research journal my thoughts and ideas as they arose to reflect on my perspectives. I remained continuously open to analyzing the data without any predetermined codes or themes so the data would emerge as representative of each participant's testimony. Additionally, I investigated the data over time and periodically discussed with my dissertation chair my involvement with the data to reveal potential bias in my interpretation of the data.

Results

The purpose of this interpretative phenomenological investigation was to examine the lived experiences of those who have lost natural environments due to rapid urbanization. It was of specific interest to identify how those who have been impacted by the loss of nature describe what it means to lose their natural environment. There were seven overarching conceptual themes that emerged from participant's transcripts:

- Environment
- Health
- Safety
- Finance
- Community and Culture
- Factors related to Deprivation of Nature
- Recommendations for Improvements

The final themes, supporting themes, and examples of codes are presented in Table 2. Table 2 illustrates how themes were constructed based on similar codes derived from key concepts, words, or phrases found in participant transcripts, and how the overarching concepts formed from supporting themes.

Table 2

Master Table of Conceptual Themes, Supporting Themes, and Examples of Codes

Larger Conceptual Theme	Supporting Themes and Description of Codes
Environment (derived from residents' concerns and experiences in respect to their changing environments)	**Natural Environments & Land Conservation** Concern for flora (native plants and trees) Loss of trees Inadequate replacement of nature after urbanization Less appealing visual aesthetics after nature is removed Concern for condition, quality, and preservation, of land Lack of availability of land Stewards of land. When it's gone, it's gone. **Wildlife** Concern for fauna (native wildlife) Animals displaced due to urbanization Fewer sightings of wildlife Increase in animal deaths on roads Animals forced out of habitat. Animals looking for food sources Abandonment of animals. Concern for specific species (birds, deer, mountain lion, fox, wild hog, rabbit squirrels, coyotes) **Urbanization** Construction of new roads, homes and businesses Traffic Annexation/Eminent domain Overcrowding Poor water drainage/More flood zones Impact to driving conditions and Commute time Wait times Scope and Magnitude of urbanization Contributing factors- (influx in people, profit for developers, poor building restrictions and planning, politics) Participant outlook concerning urbanization Upside of urbanization is described as convenience. No control over urbanization **Resources** Concern for strain on city resources: 911 Emergency services San Antonio Aquifer (water recharge zone) Electric grid Other resources like roads and schools need to be adequate to support influx of people.

(table continues)

Larger Conceptual Theme	Supporting Themes and Description of Codes
Health	**Physical Health**
	Noise
	Congestion
	Sickness
	Air quality/Pollutants/Emission
	Neighborhoods have lost Walk ability
	No places for children to play or adults to exercise
	Smaller lot sizes in some areas create physical limitations.
	Mental Health
	Stressful living in urbanized areas
	Depressing
	Anxiety
	Not peaceful/no peace of mind
	Constant hustle and bustle, busy, busy, busy
	Smaller lot sizes = Feeling boxed in
	Natural environments provide serenity and place for people to unwind.
Safety	**Personal Safety**
	Crime
	More people you don't know.
	Neighborhoods don't feel as safe
	Fast traffic in communities is dangerous
	Worry for kid's safety
	Kids play in the streets because there is nowhere else nearby
	Afraid
	Leary of who is around you
	Scared
	Worried
	Fear of Flooding
	Real fear of flooding for some residents whose homes were rezoned to flood zones due to urbanization.

(*table continues*)

Larger Conceptual Theme	Supporting Themes and Description of Codes
Finance (Financial concerns associated with urbanization and loss of natural environments)	**Cost to Access Nature** High cost of visiting nature parks, and land leases Must pay a fee to use land suitable for desired purposes (i.e. hiking, camping, fishing, exploring nature with family, ATV's, riding horses, hunting fishing) Cost of travel and lodging to spend time in nature **Property Values, Taxes, and Flood Insurance** Some residents' homes were annexed by the city resulting in tax increases Creation of new flood zones due to poor water drainage from urbanization resulted in costly flood policies for some. Urbanization is affecting property values Many areas are not as aesthetically pleasing without all the trees = less valuable Larger properties with more land sell fast for more money. Property value affected by new in flood zones
Community and Culture	**Urbanization is Changing Our Culture** Loss of local and Texas culture Way of life is changing from urbanization and new influences including how people communicate and spend their time Small town America disappearing Subdivision mentality now- city restrictions "Packing people in like sardines" Gated communities Influence of new people from other cultures "Don't California my Texas" **Need for Privacy and Space** People keep to themselves Need for more individual space People are more private **More People + Less Space = Loss of Sense of Community** More people in smaller spaces How people interact is changing Not friendly Loss of sense of cohesiveness Loss of sense of community People don't get to know each other anymore

(*table continues*)

Larger Conceptual Theme	Supporting Themes and Description of Codes
Factors Related to Deprivation of Nature (Process explained by residents having gone through the loss of access to nature)	**Restricted or No Access to Nature** Access to nature is a problem Deprivation (Residents cannot gain access to suitable natural environments at will for desired purposes) Lack of Publicly accessible land/Privately Owned Confined boundaries Proximity to Nature is a problem (Limited or no local natural areas) Residents must travel some distance to visit nature. Planning (and travel) time are required to visit natural areas. Poor quality of accessible land- Insufficient or Not suitable for residents' needs (i.e. peaceful areas, hiking, camping, fishing, exploring with children, ATV's, riding horses, hunting, fishing) Manmade parks are often overcrowded Lack of biodiversity Manmade parks are not the same as natural areas. Greenbelts created by city are in flood zones and only consist of concrete walking trail near urbanized areas that flood after rain events. **Loss of Freedom** Residents report experiencing a loss of freedom when they cannot access nature. Ability to freely explore and experience nature is over Loss of things you can go do Now live in confined boundaries with restrictions Inadequate space for humans to thrive "I feel captive" "Lack of freedom" **Emotional Impacts- Feelings of Sadness** Residents equate feelings of sadness to losing natural environments. Depressing Frustrating Disheartening
Recommendations for Improvement (Insights, suggestions, and perspectives offered by participants for the future)	**Preserve Nature** Do a better job of preserving natural areas Create Public Land trusts Educate people **Planning** Residents suggest preserving natural areas are the shared responsibility of city and the developers Larger lot sizes Put a limit on how small lots can be People feel they need their own individual spaces larger than what developers are producing. Residents would like to see limits on building No balance between convenience and sufficient space for humans. Residents want their perspectives taken into account

Overarching Conceptual Themes

Environment

The conceptual theme of *Environment* is comprised of four supporting themes: (a) natural environment and land, (b) wildlife, (c) urbanization, and (d) resources, derived from residents' concerns and experiences in respect to their changing environments.

Natural environment and land.

The supporting theme of *natural environment and land* is comprised from residents' concerns in three areas:

1. Concern for condition, quality, and preservation, of flora (native plants and trees)
2. The inadequate replacement of nature after urbanization
3. The general sentiment that we are stewards of the earth

Residents discussed their experiences regarding what has happened to the land and the current state of matters. Some residents expressed a sense of responsibility to engage in stewardship of the land. Participant FM002 expressed "We are stewards of this land, and we have one land. When it's gone, we will die. We depend on this land. We have to take care of this land, and we're not doing a good job now." Participant FM002 also stated her concerns for flora: "They raped the land, took down every tree, every bush." Participant FM0010 stated:

> I'm tired of us building all this stuff out, but I've never done anything to prevent it. So, then you kind of get yourself in this whole conundrum of well, if it's so important to you, why aren't you not doing anything, and then it must not be

> important to you. But I just think we could do a better job of planning and do a better job of the impacts that it does have on everybody.

Participant ML004 stated: "The environment can only withstand so much. I would like to really see the studies going forward; How much is too much? Where do we stop? How much can our environment sustain?"

Participant ML006 explained his experiences with what happened to the natural land where he lives:

> The last five years there have been a lot of just clear-cut of acreage for subdivision. These cookie cutter homes are going up everywhere. Yeah just basically that, you see it all around you, one day it's just woods as far as you can see. Then it's all hacked down and made into homes.

Residents expressed they were left with an inadequate replacement of nature after urbanization. Participant ML009 stated:

> They (the developers) come in and bulldoze everything down. They take great big mature trees and they just bulldoze them to the ground to build stick frame homes. They come in and plant little trees. Little trees that we will never see mature in our lifetime, compared to the ones they tore down. They tear down 10 and put one in. I don't think it is any way sustaining, or working with the environment.

Participant FM006 remarked: "You need to have the right greenery if you're going to have all this growth, and this city does not understand this." Participant FM0010 added: "You just think of all that life. Trees are good for us, and like I said, they

come back in and replant them, but they're not the same. These trees are not replaceable in my mind."

Participant FM001 added:

> The disruption of the trees is the biggest thing, because they're so visible. But when you actually walk on a path, it's not there anymore. There aren't any more wildflowers, there's no more seeds to get. So, your whole idea of what it was prior, is not there anymore.

Wildlife. The supporting theme of *wildlife* was constructed from residents' concerns for fauna (native wildlife) and either the lack of sightings of certain species, or the sightings of displaced animals. Participant FM007 remarked: "The animals are being pushed to go further and further out." Participant ML001 mentioned: "We used to see deer in our yard, and we haven't seen a deer in our yard in years." Participant FM001 added: "The deer don't have as many places to obtain food, and the animals, the nesting sites for the big hawks and Mexican eagles changes because the trees are gone." Participant FM002 explained:

> All the animals that are here are getting pushed out, but where to? There's nowhere for them to go. There are natural habitats for as you know, wild hogs, deer, porcupine…including a family of mountain lions, will and have been displaced and/or killed. And those habitats are not being protected.

Participant ML008 discussed his experiences with fluctuations in wildlife in relation to urbanization:

> I guess the biggest thing is you're seeing less and less wildlife, even with some of the birds. When we first moved here we had a number of quail running in the brush. Again, that's something you're seeing less and less of. Your seeing one thing that increased for wildlife because of less and less habitat for them, we're getting more and more coyotes. Where when we first moved in, you would hear them off in the distance and now they're hanging out in our backyard. So, you know, understandably we've basically inhabited their environment, so as a result, we say they are inhabiting our environment now, but we're leaving them less and less to hang out. So, there is a frustration where that is concerned.

Urbanization. The supporting theme of *urbanization* resulted in a list of taxonomies describing what residents experienced by being impacted by urbanization, their perceptions about contributing factors leading to urbanization, and participants' outlooks concerning urbanization that has occurred and what is projected to occur in the future. Experiences residents described included the following taxonomies: building and construction (subdivisions, businesses, roads), traffic, increased commute times, annexation, and overcrowding. The perceived factors residents believed to be contributing to urbanization leading to the loss of natural environments included increase in building (subdivisions, schools, roads, businesses), an influx of both new residents moving to the area and displaced refugees, politics, money, business, and poor urban planning.

Process of Urbanization. All 20 residents provided multiple examples of how urbanization was taking place where they live. Participant FM001 described her experiences with the process of urbanization:

> Most of the time, the first thing that happens is the restrictions come, because the property has been taken over. There will be a sign that comes up, and it'll say what they're going to do. They scrape the earth, cut down all the trees to either make a road, a development or build something…There are some conveniences coming, things like gas stations., But I believe like in the last three years, I counted 13 more subdivisions.

Participant ML002 described:

> Well, just where I'm at…the next subdivision is actually touching a brand-new subdivision that was built with another 100 homes on that side. And then, maybe a mile away from me, or less than a mile away from me, another totally new subdivision on the same side of the street that I am on, is being built. And then on the north side of the street, there are three more subdivisions being built. And then across the street directly opposite me, about a mile away, we had two new subdivisions, plus a whole new apartment complex being built. And in addition to that, there was a whole new retirement community built, and the streets were widened from two lanes to four lanes. We've had two new schools built in the area and the influx of more people. And in addition to that, there were two entirely new shopping centers that were built, one on the south of me, and one on the north of me.

Participant ML009 discussed what happened to the natural environments that were once present near his home:

> Most of them (natural environments) have become rooftops or shopping centers. Housing- I mean the more people keep coming in, the more and more houses go up. With the people, come the schools, come the shops, come the malls, the restaurants, the roads, all the underground utilities, everything that goes along with it. It is all just getting bought up and built on, and they ain't going to make no more of it.

Participant ML005 noted: "Now it's just one business after another, parking lots and everything." Participant FM009 stated: "Building of other companies and business" indicating what has replaced the natural areas. Participant ML008 remarked: "Expansion. That's the bottom line...A lot of infrastructure building is part of the main culprit and then the expansion of new homes." Participant ML007 mentioned: "All of the roadways are being tore up to expand for higher flow of traffic and amount of cars in this area," and Participant FM006 stated: "The city is annexing us."

Outlook. Participants' outlook regarding urbanization that has occurred, and what is projected to continue, were included in the supporting theme for urbanization. Although some participants acknowledged the idea of urbanization bringing a few conveniences, most residents verbalized negative impressions of the urbanization process and discussed what it has been like to experience urbanization. Participant FM007 stated: "I see changes with the environment some people label as progress, and on one side of the ledger, they might be considered as such. But from a personal vantage point, I do not

label them as progress at all." Participant FM007) and went on to add:

> I think growth has really exceeded our ability to absorb gracefully. I don't mean it in a cold sense, I mean in a physical sense, the space, the road mass for the number of cars that are trying to use it are inadequate.

Participant FM006 noted what it had been like for her to experience this change: "Years and years of development, years and years of traffic, and years and years of inconsideration." Participant ML007 described what it is like for him living in an urbanized area: "I don't like it, obviously. It just brings congestion, long wait times, overcrowded restaurants, and stores to try to go shop, long waits at the gas stations, traffic congestion - to get anywhere is ridiculous." Participant FM005 commented on what the impact to the environment meant to her: "To me personally, I hate it. You know, I like to live in a country type of environment, with no fences, and you know, peace of mind, and no 18 wheelers going down the street, like a block away." Participant FM004 added: "Just to get to three stores we spend eight hours driving to the places we had to go (named specific places). You're finding yourself living in the car day after day."

Participant ML006 remarked about the attitude he has developed as result of urbanization:

> I guess I got a highbrow attitude about it. Look at those fools all living on top of each other! Doesn't make any sense. In a way, I'm kind of glad they have that mentality because then they won't come out here. It's like this, why you live where you do? Because you don't want people right on top of you.

Participant ML009 mentioned overcrowding: “It’s getting to be too many people. Everything is getting overpopulated and crowded, and what used to take you five minutes to get to the store, now takes you 20 minutes for the same route.” Participant ML003 added: “Were getting overcrowded. We don’t have any elbow room.”

Participant ML007 stated his concerns regarding politics and San Antonio being a sanctuary city:

> To me, (politicians) are all about lining their pocket books, and so they’re not going to put any zoning restrictions, or put any kind of limits on the developers because it’s all about turning proprieties and making money, and in turn the city makes money, and that type of thing. It’s also a sanctuary city, so with that, there is always the need for more and more homes.

No control. Some residents shared that they felt they had no control over the process or outcome of urbanization and have been left out of city planning and decision-making process. Residents also expressed that as citizens they felt they that their voice did not matter. Participant FM003 stated: “Even though we don’t like it, it’s just the way of life. There’s not much we can do to stop it.” Participant FM008 remarked: “Ultimately, we don’t have a choice. We can fight and say our voices at the city council meeting, ‘We don’t want apartment buildings there’ but they are still gonna build something there.” Participant FM001 added: “It just means to me that the city and the town that I live in come before me.” Participant FM002 discussed her perceptions after attending a city council meeting:

> The City of San Antonio controls development this way, and plans to control it. All of this is being controlled by the planning commission of the city of San Antonio. And they do not feel that they want comments. They do not want public input. They had this meeting as a ruse.

Participant FM007 stated:

> This is not something that an individual can control, or even a group of individuals could control, unless it was through land ownership. You would have to have massive land holdings in strategic places to have to really levy any control. It's not going to happen, and the dollar speaks the loudest, it would seem.

Resources. The supporting theme of *resource*s developed from several residents who voiced their concerns for urbanization placing a strain on city resources, namely the San Antonio aquifer, the electric grid, 911 emergency services, and other resources like roads and schools to support the influx of people.

Participant FM007 stated concerns for local water: "We are going to have more of a problem with our water supply because we're going to have many more people needing the same supply." Participant FM006 noted: "We have one water resource and now our city wants to purify sewer water. They want to salinate waters. I mean is it for human consumption? I don't think so."

Participant FM002 explained her concern for the electrical grid:

> Nor do any of the developers plan for solar panels for any of the families. What (kind of) impact on an aging grid is 80,000 more people, and a million square feet of computers going to be on our grid? We can't support that.

Participant ML007 remarked about his concern for emergency services and response time:

> When those county resources that we're paying for got pulled into the city resources and had to support inner city, their support to those of us outside the city jumped to 30 minutes for those types of service calls (for) emergency response.

Participant FM007 stated her concern for city growth putting a strain on city resources:

> I don't think we have as a city, the resources to come out and take care of all the natural things that we might otherwise if we weren't pulled in so many different directions with our money, or trucks, or manpower, and so forth. I think we could maintain what we do have a bit better. I know we have more people, we also have more demands. You might say that this department, or that department has grown, yes, but so has the needs to draw on the growth. Which is larger, the growth or the drain? I suspect the drain is larger than the growth.

Health

The conceptual theme of *health* is divided into two supporting themes: (a) physical health, and (b) mental health, including a range of physical and mental health concerns that residents expressed from their experiences with their changing environment.

Physical health. The supporting theme of *physical health* resulted in taxonomies for health concerns including noise, air quality, congestion, sickness, and insufficient places for children to play and for adults to exercise. Residents explained some areas of

concerns relating to their physical health. Participant ML002 expressed concern for children's physical health:

> The kids can't do anything, so now so everybody's stuck inside on the computers or sitting down on the sofas and I think it (loss of natural environments) has a tremendous effect on the kids and their health and their inactivity.

Participant FM004 shared her well-being concerns:

> The sickness, I can tell you that him and I are getting more and more allergy attacks because all we're getting are car fumes and we're not in town, we're just in the loops that go around town, but it's so congested. So, the sickness, no peace of mind, the frustration, and the view…I'm pretty unhappy.

Participants FM007 adds: "We are going to have more of a problem with clean air." Participant FM001 stated crowding, noise, and air quality: "It's just very crowded, it seems. The noise level is up. The dust and pollution level is up." Participant FM005 noted his experience with city noise: "I sleep with the fan on at night because the highway is always so busy." Participant ML008 discussed his health worries regarding vehicle emissions:

> If you just drive in San Antonio and you see the amount of cars and trucks, and on and on and on, there has to be something happening with the environment because of it. So, I know they have increased the emissions standards, but you don't see the exhaust testing like you used to years ago. They used to test exhaust, and you don't see that anymore. So, what's happening to the environment with the cars that are not within the emissions standard that are out there?

Participant FM006 stated her concern for adult health and lack of areas to exercise: “There’s nothing for adults to go hiking through. There’s really nothing, and I like to do walks.” She went on to express her concern for the current environment’s ability to properly filter the air:

> You need the oxygen that plants put off to breathe normally, and putting in grass is not a substituting what trees put out. The amount of carbon dioxide that plants inhale is detrimental to us for our clean air, and to think otherwise is ignorance… I’m more congested now, and I truly believe that that is because the environment has been damaged. There are more pollutants here. I don’t have the energy I did, and it’s not because I’m getting older, it’s because the environment is no longer the way it was meant to be. There’s just cement everywhere, and it’s just a demoter as far as I’m concerned.

Mental health. The supporting theme of *Mental Health* included references participants made related to losing natural environments through the process of urbanization as being stressful, frustrating, and depressing. Residents also explained that natural environments were important in preserving mental health. Participants described having once had natural environments as a way to relieve psychological stress, and noted that such environments were important for relaxation, to destress, and gave them a sense of serenity or peace of mind.

Participant FM0011 discussed what it meant to her to have the natural environment present near her home and community: “You were able to have a little relaxation as part of your evening. Destress I guess, that’s our de-stressor.” Participant

ML 007 stated: “It was important, especially for me, being in the military, combat deployments and things like that. I like the serenity, it keeps me calm. Being able to just enjoy the area and be quiet.” Participant ML001 expressed: “That type of environment, that type of space, is needed for people to unwind.”

Participant FM007 talked about walking in nature in her neighborhood for her mental health:

> I really stroll. I do it for my mental and emotional health. I like to see what you’ve done with your yard. Did you paint your front door? Did you get a new plant? I believe it is! I enjoy it, and it’s a refreshing time to collect your thoughts, enjoy just life and living.

Participant ML002 talked about the importance of how he felt after spending time in nature when living in another state where he had access to an abundance nature, prior to moving to an urbanized area in San Antonio:

> Access was right there. The area is large, miles and miles of biking, and hiking, and four wheeling, and just observing nature. Just going out with your binoculars to observe nature, and when you go out and you come back at the end of the day you felt exhilarated, you felt great, like the burden of the world had been lifted off your shoulders.

Participant ML003 stated:

> What it means to me, it’s just serenity, the peace, the quiet, and the state of mind. When you build up all this stress from eight to five, and afterwards, I can go home and I get rid of some of that stress…I can sit back and I can see the wind moving

> the trees around. I can hear all the different birds singing. I can. I need that. I have to have that, it keeps me grounded. And if I don't have that, I'm not healthy.

When residents discussed what it was like to experience the environmental change of losing natural environments, it was often described as depressing, sad, stressful, or frustrating. Participant ML009 stated it was "Frustrating" for him to experience this change. Participant FM009 stated: "It's depressing to me." Participant ML008 explained how he feels when he is in the city "My senses are heightened. I'm constantly on the lookout for everything and anything that can possibly happen." Participant FM0010 mentioned anxiety and not feeling peaceful: "I think it probably gives the community a sense of anxiety at times because they're too crowded, congested, so close together. There's not a sense of peacefulness." She went on to say: "I think that it's just not peaceful and that's why we escaped. So that's why we want to get in this RV and go and just, I was so sick of the daily grind and I associate it with urbanization." Participant ML002 explained what it's like for him now living in an urbanized area:

> I feel a lot more tired a lot of times, a lot more depressed because you're inside of a dark downsized home all the time instead of being able to just walk out your backdoor and go and take a walk for a couple of hours.

Many residents also reported feelings of sadness associated with loss of natural environments, which is further discussed in the theme of *Factors Related to Deprivation of Nature.* However, I mention it here because it is also applicable to mental health. It seems that feelings of sadness are in relation to not only the loss of nature, but also the

loss of freedom associated with not having access to (being deprived of) nature. (See *Factors Related to Deprivation of Nature* for more information).

Safety

The conceptual theme of *safety* is comprised of two supporting themes: (a) personal safety, and (b) safety issues from flooding. Personal safety includes residents' concerns for their own safety, children's safety, or safety in general, in urbanized areas. Others mentioned safety concerns related to the possible threat of flooding due to poor water drainage created by a combination of urbanization and existing terrain.

Personal safety. The supporting theme of *personal safety* was discovered through participants' testimony as they discussed how they felt about the recent impacts to their environment. Residents discussed personal safety concerns, and general safety related concerns. Participant FM009 shared: "It makes me a little worried because I feel that sometimes when you have people that are distressed, that brings crime, and mostly it makes me scared." Participant FM005 discussed the area where she lives now after urbanization and mentioned "It doesn't feel safe, not because of the people, it's just how busy - it's everywhere, and it is seems like it's 24 hours a day". Participant FM006 mentioned "I went bike riding through here. Not anymore, it's not safe." Participant FM004 stated: "You don't feel safe" and "It seems as though everybody is afraid" and went on to say:

> You don't want to go out. You stay in the house most of the time, and when you do go out, you have these certain spots you go to, especially when you're older. Seniors have to be careful because their heath and their strength, which we're not

> as strong and we can't run as fast, and we can't take care of ourselves. We carry a stick for safety, a cane to be more accurate.

Participant FM005 talked about feeling safer in the country than the city:

> I feel safer out in the country. I feel like the city is more dangerous than the natural areas or out in the country. It's like this park over there, you don't want to go there tonight. I never use that park. I never go to that park because it's, I mean you go over there late at night and there are some strange people there. You just don't want to be there.

Participant ML002 commented on his concern for the safety of children:

> The whole idea of kids being able to leave early in the morning and go out and not come back until night without mom and dad having to worry about whether or not they're going to be kidnapped, that's all gone.

Participant ML009 stated: "Most of the times, here in these subdivisions, they are like highways. So, you do not want your children playing out there anyway, and more people, less safe. I would not want my child playing out there".

Participant ML007 stated the ability to ride horses has been compromised due to safety issues: "It's not safe. If you try to ride down (street name) on a horse, you stand a chance to get hit. So that's not safe anymore."

One participant presented divergent data in the area of safety. Participant FM008 described her experiences living in an urbanized area with a contrasting view point to what others reported in terms of having safety concerns. She described the community in

which she lived as a having the "mentality of being near an affluent area" with gated subdivisions with security guards that you must show your ID to enter and stated:

> I live in probably a neighborhood we shouldn't be living in, we got really lucky. Well first of all, I call it a 'white bubble' which I am not saying is lucky, this is something I recognized in the past few years and really became more aware of it. But an upper-class area.

Participant FM008 went on to describe what she thought it was like living in her urbanized area as: "It's safe for sure. I feel safe here. I feel cut off from the reality of the real world…I feel like it's somewhat sheltering where we live."

Safety issues from flooding. The supporting theme of *safety issues from flooding* surfaced from some participants explaining their safety concerns relevant to flooding. A few participants expressed they felt fortunate to have purchased a home that backed up to a green belt, or, that a green belt was a determining factor for choosing their current residence. Many green belts within the city exist because they are flood zone areas that cannot be built upon (San Antonio River Authority, 2017), which has resulted in creating problems for some residents after urbanization. Participant FM008 discussed the greenbelt being a determining factor for living in her home:

> There's a Shipley's Donuts on the corner now, that's new, but we can see it from our back deck, which is lined with a green belt, and that was one of the reasons why I wanted to live in that house.

Participant ML003 stated:

> I always look for a house with a greenbelt behind it, always. Every house I've either purchased, or the one I am renting now, have a greenbelt behind, simply because I feel like I have to have a little bit of nature still. It's important to me, very important.

Participant FM006 noted: "My house bumps up to a greenbelt and it's the reason I bought it. So, it's for the recharge zone (area that rain water runs through to fill up the aquifer that provides water to the city of San Antonio). They'll never be any houses behind me."

Figure 2 shows the current view of flood plains in the San Antonio region, many of which are located in greenbelts across the city (San Antonio River Authority Floodplain Viewer, 2017).

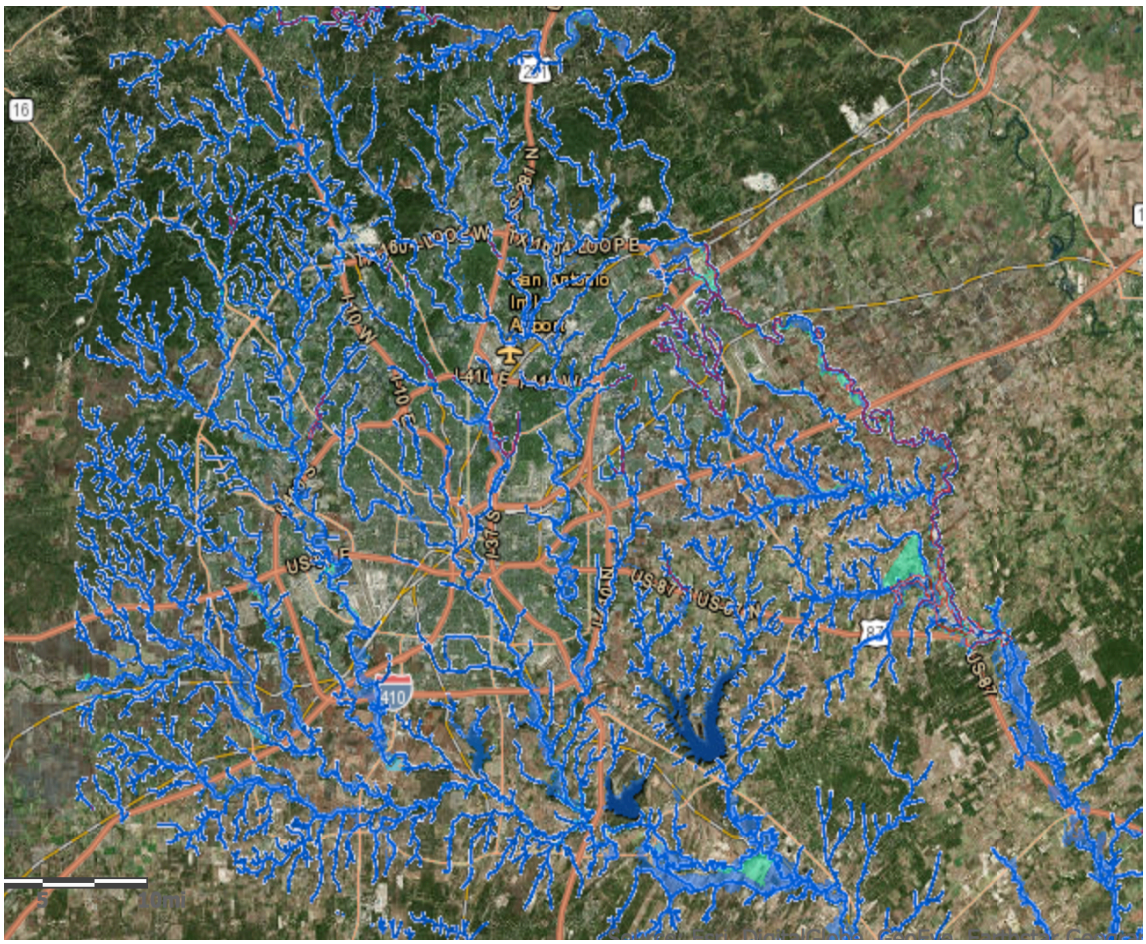

Figure **2.** Floodplains in San Antonio region. *Note:* Blue areas depict flood zone areas.

Some residents expressed concerns for their safety due to living in areas that have been turned into new flood zones, due to poor drainage during the process of urbanization. Participant FM0010 explained: "There's that greenbelt, and they built north of it, and they didn't think how it was going to affect all those homes down that greenbelt. They've changed all those subdivisions to flood zones."

Participant FM005 stated: "Most people here, they don't understand the risk being created. They'll understand it when their house is underwater, but right now, they don't understand." Participant ML005 shared aerial photographs he took of one of several

flood zones located throughout the city of San Antonio near his community; one area is shown in Figure 3.

Figure 3. Photograph of a neighborhood flood zone taken by participant affected by flooding.

As depicted in Figure 3, the large area of urbanization in combination with the flat terrain contributes to a constant flooding issue for some residents during rain events. Participant FM001 explained: “A lot of flood plain development has come in so that has actually changed the course of the water. So that is very different”.

Figure 4. Photograph of proximity of flood areas to homes, taken by resident

This second photograph (Figure 4) provided by Participant ML005 helps to illustrate the real physical threat of flooding and safety concern some residents shared about owning homes in areas that are now deemed to be in flood zones and in close proximity to visible standing water during rain events.

Participant FM0010 explained her fear of flooding: “And then you have the fear of well, what if my house does flood? The city is telling me I am now in a flood zone. So, every time it would rain, there was always that fear.”

Participant ML005 stated:” I worry about the creek flooding again. Sooner or later, the weather will change, and there will be rain.”

Finance

The conceptual theme of *finance* was derived from two supporting themes (a) cost to access nature, and (b) property values, taxes, and flood insurances. Some residents

experienced financial impacts related to loosing accessible natural environments as byproducts of urbanization, such as the cost of accessing nature. Others cited property values, taxes, and flood insurance, as a financial concern related to urbanization. Participant ML007 explained having to pay fees to access nature:

> The cost of it (accessing nature) has gone through the roof because accessible, free accessible lands have all been taken up by the cities or the counties and sold over to developers…To where there's no free accessible lands anymore to go hunt, or fish, or anything like that. So, you have to go to private lands around here and they charge a very high fee in or to do any of that type of stuff on their property.

Participant FM04 stated: "The parks if you can find them, they are usually locked up or fenced in, or you have to pay to get in at different seasons, different times of the year." Participant ML002 mentioned: "What we do is we have to get in a car. We have to go to designated places (named specific places) but its costly." Participant ML009 stated: "So you have either got to purchase a place, lease a place from an individual, or pay a game ranch to go hunting on, or know somebody with land." Participant ML003 added: "Now you have to go to the swimming pool, now you have to go to the lake. They charge you to get in. So, it's a lot more regulations, a lot more controls."

Other financial impacts of urbanization included property value being affected by presence or absence of nature. Participant FM007 mentioned:

> Property values will be affected because when you're driving through an area, you will notice if there are trees or not. I would not want to buy a house in San Antonio, not just for the aesthetics, but for the cooling aspect.

Participant ML007 explained how his property taxes have increased due to land costs premiums increasing from urbanization: "Our taxes have increased $40,000 already. Our house assessment increased $40,000 already within the first two years we bought it." Participant FM0011 discussed her financial experiences with flood insurance premiums:

> Now because of the urbanization, I now have to pay flood insurance. So, this home that I thought would cost a certain amount of money every month, I now pay $300 more a month because of the zoning, and the all of the urbanization has affected the way the water flows in my neighborhood…There's the fear of not being able to afford my home. There was the fear of ever getting that money that I've invested back.

Participant ML005 stated:

> Flood insurances are very expensive. Just for this house, flood insurance is $1500 a year. I wasn't in a flood zone when I originally bought the house, but it is now…after all the flooding and everything around here they put us in a flood zone.

Community and Culture

The conceptual theme of *community and culture* encompasses three supporting themes: (a) urbanization is changing our culture, (b) need for privacy and space, and (c) more people + less space = loss of sense of community.

Urbanization is changing our culture. The supporting theme of *urbanization is changing our culture* is substantiated by residents' testimony that revealed that the way of life is changing from urbanization. Residents expressed concerns that small town America is disappearing and there is a loss of local and Texas culture. In addition, some residents mentioned the addition of influence from those moving to San Antonio from other cultures, and the concept of a "subdivision mentality." Residents also discussed how they felt the way we communicate, spend time with each other, and how connected people are to nature is changing.

Participant FM008 commented on what she perceived as a lack of culture compared to her previous residence in New Orleans: "I feel like San Antonio, or at least where we live, it's like subdivision city. I feel like it's lacking character. I feel like it's subdivision after subdivision. Here is a Target. Here is a McDonalds." Participant FM005 added: "The urbanization has totally taken away from the country style of living that was here." Participant FM003 stated: "It just seemed like we had that close family atmosphere. Everybody knew everybody and we looked out for each other. That's kind of dwindled over the years." Participant FM001 mentioned:

> I did think that change was going to come, I just didn't think it would come so hard. The change is a lot more modern buildings, apartment buildings, huge amounts of people. It's just not a small neighborhood community anymore.

Participant ML007 expressed concerns for losing local and Texas culture:

> I'm seeing a lot more exterior influence coming into the area. When people come here, they want to turn our area into where they came from. No one thinks about

> how it impacts the other part of the San Antonio culture…people had their farm property, they had their ranches...and would practice with their horses and stuff. The weekends would be rodeo grounds. People would come out here, and that's how you experienced San Antonio culture. You don't find them anymore… There are shirts now that say '*Don't California my Texas.*'

Several residents discussed how urbanization was changing the way we communicate. Participant ML001 sated:

> You have a whole lot more people that don't communicate with one another. You may be able to communicate with the three or four around you, or five or six, but the more homes you crowd in there, the less you actually have time to spend with each of those, so you don't get to know them as well…People are losing touch with one another and becoming more anonymous.

Participant FM004 explained what the impact to her community has resulted in:

> It's a hurry up business for everybody. Hurry up and buy, hurry up and get out of the way, hurry up and tell the doctor what's wrong with you, so he can hurry up and get you out of the room…and you have no personal relationships.

Some residents discussed how urbanization has contributed to changing the way people spend their time and how activities are carried out. Participant FM001 explained:

> They (kids) are more confined to the interior of the residential areas, or their parents take them to organized sports now. So, the places they used to go in the open fields and collect rocks and play football, they have to do in their backyards now, or go to organized sports.

Participant FM006 mentioned she felt the cultural changes have forced people to recreate indoors:

> I would rather play outdoors than I would in the gym, and what our society is forcing us to do is to take away all of our public places and go to a gym? And breathe the sweat from another person with equipment that aren't changed every month, with filtration that's not changed every month. What are we doing to our culture? And we're doing that. There is no balance. There is no balance because there are too many people to offer this, and it's all going to come back to probably my grandchildren's era and it's going to impact them.

Participant ML006 expressed that people who live in the city are becoming disconnected from nature because they have developed a "subdivision mentality" and have

> A complete disconnect. You especially see it on social media. I know you see it. You see somebody, they caught a bug and they put a picture of it on social media and it's like the most amazing thing on earth to them. I'm thinking I see those things every time I step out my door. Why is it so amazing to you? It's a bug…I don't think a lot of people understand the environment to an extent. I think they should get out and experience, but on the other hand. I'm kind of selfish, so as long as long as city goers have that subdivision mentality, I'm thinking let them stay in the subdivision. Let them pile on top of each other in these cookie cutter houses. Let me have my little piece of Texas to myself.

Need for privacy and space. The supporting theme for *need for privacy and space* was derived from residents discussing how the close proximity to others in urbanized areas creates a need for privacy and space. Participant FM007 stated: "Most of my neighbors, I've made an effort to try and get to know them, but they're very private." Participant FM004 mentioned: "Everybody is staying in and when they come out, you go to wave and they put their head down, and they're working and they're busy. Everybody is private." Participant ML008 explained:

> I don't necessarily like being that close to people. I'm sorry, I prefer space between me and my neighbor. I like having space, so for us, I'm lucky to have the space I have. No, I could not live inside the 1604 Loop or the 410 Loop. I couldn't live inside there because I do not like that hustle and bustle, and just being crowded. I don't like that.

Participant ML006 explained: "San Antonio's kind of closing in on us, and as it does, we want more space. We may want to move somewhere else." Participant ML006 went on to say:

> I just like people to an extent, but don't like to see them all the time. I rather just look out the window; I see a bird and trees. I don't understand how people can pay half a million dollars for a house, which is right next door to somebody else's house. I can look out my bathroom and see you in your kitchen. It's kind of odd to me.

Participant ML003 explained that it is important to be able to have the option to have the space to be alone from others, and to be able to pick and choose when to spend time in nature alone or with others:

> Most times when I go places, I am the only one there. I prefer that. It doesn't mean that I haven't (spent time with others) and I have done that. Because it does me good to see families together, the traditional family, or even the non-traditional family that are out there enjoying each other's company. I personally, when I am stressed, I don't want to be around anyone. I've been around everyone all week long. I need to be by myself to detox. But there are times when I would like to go and sit and watch other people having a picnic, or they're having a birthday party with a piñata out there or they're having a barbeque or just whatever. And I think that's healthy.

Participant ML001 told a story of his experience moving to San Antonio, resulting in his own need for privacy. He described San Antonio as "very crowded and very urban" and explained:

> About six o'clock on Sunday morning we were both awakened by the next-door neighbor who was about 20 feet away, cranking up his Harley inside his garage, and revving it up, and getting ready to ride somewhere. We looked at each other and said, 'This is not our house.' We literally sold that house before we ever moved in.

A few residents discussed the importance of personal lot sizes and space where they live, and residents who were able to find larger lot sizes in the city reported feeling

fortunate to have done so. Participant ML 006 stated: “I live on five and a half acres. If some subdivision got a hold of this, instead of one house, he could put seven to 10 houses per acre. There could be 50 houses here. This one space is all mine.” Participant ML008 shared:

> Well, nobody is making any more land, and for me I guess the biggest thing I can say for me, I think I’m lucky at buying. You know the small piece of property that I have at the time, I did because I just don’t think you’ll be able to find very many places anymore where there is one plus acres of land for you to raise your family on. I just think that you’re going to continuously see the smaller and smaller lots and homes that are just going to go straight up in the air, and zero lot lines and things of that nature.

More people + less space = loss of sense of community. The supporting theme of *more people + less space = loss of sense of community* emerged from participant testimony explaining how more people living in an urbanized area may result in lack of personal space, which may lead to people to isolating themselves from others, and losing a sense of community. Participant FM007 explained:

> I think we have lost some of the cohesiveness on community feeling of being a family with this urbanization. We become more isolated. There are more others, but we’re more isolated, more of us, rather than a smaller number where you have a sense of connectedness.

Participant ML003 remarked about how he felt his community was affected:

> There's less interaction with people. When there's a common area for people to go and enjoy, they seem to get along a lot better. They communicate a lot better. There's a community, well they call it a community park, well that's exactly what it is. I mean in Mexico, they have the plaza. Everybody from town goes to the plaza and that's where they have their meetings and their meet and greets and they talk to each other and then they leave. Here we don't have that. In my area, we don't have that. It means we don't have what we used to have. We don't have the interaction with different neighbors. There is no reason for us to come out of our homes other than to get in our cars and drive somewhere. There's no area that is common, a common area for us to sit and visit, people to take their kids to ride their bikes, or swing, or just have a little picnic out there, and that's where we lose interaction with each other, because there's not a place for that. We're always so busy. We're fast, fast, fast.

Participant FM004 remarked about the change in her community:

> Basically, we had lots of different areas in the neighborhood we lived in. We would say hello and goodbye, talk a little bit. Now, they pass right by you. Don't even look at you, and if you say hello, they look at you like you're crazy.

Participant FM0010 discussed her experience with her community being crowded and less friendly or happy:

> So, coming to the big city, it's just dirtier, people are not as friendly, and so I associate those things with urbanization and growth. Like you get people once

again, crowded people, people are not as happy, they're not laid back. There's more of the hustle and bustle.

Participant ML0011 expressed: "We are losing touch with each other". Participant FM011 relayed: "I'd say there's not much sense of community…I'd say you lose your sense of city. You're no longer in touch with the city because it's overpopulated."

Factors Related to Deprivation of Nature

The conceptual theme *factors related to deprivation of nature* is comprised of three supporting themes that describe possible factors that may be related to derivation of nature: (a) restricted or loss of access to nature, (b) loss of freedom, and (c) emotional impacts: feelings of sadness. As previously noted, the definition of deprivation of nature refers to not being able to freely come in contact with and experience nature at will on a regular basis within reason. Deprivation of nature may include various situations or barriers that result in (a) restricted, or (b) denial of access to outdoor natural areas found in the natural world. Difficulty in finding and attaining access to natural environments with suitable land for desired purposes, and ability to use, visit, or experience the natural world at free will on a regular basis, may lead to feeling deprived of nature. With this definition in mind, participants described experiences that shared similarities to the concept of deprivation of nature. Namely, residents described the following three components related to experiencing deprivation of nature:

1. Restricted or No Access to Nature
2. Loss of Freedom

3. Emotional Impacts- Feelings of Sadness

Restricted or no access to nature. The supporting theme of *restricted or no access to nature* surfaced as residents discussed what it was like for them when they wanted to access nature now, post urbanization. Residents revealed that access to nature was a problem and most residents stated they had to travel some distance to be able get to natural areas. In addition, participants expressed that there was a lack of publicly accessible land, and what was near their residence was either not suitable or permissible for desired activities, such as peaceful areas to relax, hiking, fishing, camping, or natural areas for kids to play. Participant FM001 stated she had to drive: "about 30 miles" to reach natural areas. Participant FM002 reported he drove "50 minutes" to get to nature. Participant ML 005 said he drove "50 or 60 miles" to go to "Fredericksburg, Blanco, or over in Center Point." Participant ML007 explained he would have to travel to "Medina Lake," "Live Oak," or "go north of Austin" to" Travis County" or "Bell County." Participant ML002 stated: "I physically have to get in a car and go to a state or national park." Participant ML008 explained:

> Lancaster is two hours away. Castroville is 15 to 20 minutes away. Poteet is 30 to 35 minutes way. Over in Elmendorf, I have some friends that live out there. We go over that way. So, and that's probably a good 45 to 50 minutes away.

Participant FM008 stated: "Enchanted Rock was maybe an hour and half away. Most of the other places I would say are within a 20-minute drive." Participant FM004 said they go up to "Utah" and "Louisiana." Participant FM007 noted she lives about

"four miles" from a city park, but it is "a little bit more difficult to get to because of the timing, traffic, and road condition, and detours, and it's all because of our growth."

When I asked residents how they felt about the publicly accessible land near where they live, several residents replied that access to nature was a problem. For example, Participant ML007 stated: "There is none…there's no publicly accessible land." Participant FM005 concurred: "There are none." Participant ML005 added: "There's not much. There's not any to speak of. It just pretty much doesn't exist here anymore." Participant FM004 mentioned: "It seems like all of Texas is fenced off." Participant ML002 stated: "Very, very, limited here. We have no designated park at all." Participant ML008 elaborated:

> There're limited. I mean very limited. Once upon a time, and I say once upon a time, not long ago you used to be able to go and take your dog out to a walking trail. There are less and less walking trials. So now you just walk your dog in your neighborhood most days. So, everything is limited anymore. It's so limited, you have to go far away.

Additionally, residents expressed that what land is available is not sufficient or suitable for desired purposes, and available outdoor areas had confined boundaries with restricted use. Participant FM007 explains: "There are some outlets available, but they are planned and designed outlets that someone, or the city or group has designed and implemented for. In other words, within confined boundaries." Participant FM006 explained: "There's nothing for adults to go hiking through, there's really nothing." Participant ML001 pointed out: "It's interesting that we've bought in a community that's

got a greenbelt, yet they don't want kids playing in the greenbelt." Participant ML007 stated: "Now there's really no safe place around here to ride horses around here anymore because of all the traffic." Participant ML009 noted: "I enjoy hunting and fishing, but in order to do that, there is no public lands around here for us to do that on any longer" and went on to mention:

> Say you wanted to go hunting and find some public land around the San Antonio area, the closest place that I can think of right of the top of my head, is Del Rio, Texas. That's two and a half hours away.

Participant ML002 described what it is like for him living in a newer neighborhood where the trend is smaller lot sizes and access to an authentic natural environment is difficult:

> When you walk outside, you have neighbors in front of you and neighbors behind you. The spacing between the houses is actually 10 feet. Five feet in front of you and five feet for your neighbor, and that's it. I mean so you have to, if you want to interact with the environment, I have to get in the car almost to interact with nature and go drive someplace to get there. There is one nature trail, but it's in direct sunlight and there is no real natural habitat trees growing there. It's like a wasteland that nobody wanted and there's no natural trees. If you go there in the middle of the day, you have sunshine and grass. It's not the same. It's not what I call a natural environment even though they call it that.

In addition, one resident mentioned that the city of San Antonio has created walking trails in some of the flood zones across the city in attempt to provide outdoor

places for residents to use. However, because these areas are in flood zones, they are prone to flooding "during and after rain events" (SA2020.org, Greenways Brochure, 2017, pg.2). Moreover, these areas have a very small range of usage, limited to walking and biking, and some areas of the trial system are located behind businesses and under busy highways (SA2020.org, 2017) and are not an escape from the city environment. Participant ML004 explained he does not feel this attempt at providing a natural area is congruent with a natural area: "I think the greenbelt is the thing that sticks out to me, just because of the nomenclature. Calling it a greenbelt when it seems like man was coming in and doing the exact opposite" and went on to explain:

> They are putting a greenbelt in. And that's when I started asking: what's the greenbelt? And they go, oh, it's like a sidewalk that goes all around San Antonio so you can walk your dog or ride your bikes or whatever, and it's supposed to be one continuous thing. But it just seems like an opposite. 'Greenbelt' was the exact opposite of what they were calling it. Call it man made sidewalk or something.

Loss of freedom. The supporting theme of *loss of freedom* came from what many residents described as a process of once having had freedoms associated with living in areas with accessible natural areas, and then feelings associated with being deprived of nature once access and the presence of nature was altered. Several participants spoke of previously feeling free when they had access or the presence of nature. For example, Participant FM004 stated: "there was always this aura of feeling free" when surrounded by natural environments. Participant ML009 conveyed:

> It meant freedom. Tranquility. To be able to go out your door and go do the things you want to do. Here in South Texas, all the lands are almost owned by individuals. You cannot hardly go do anything anymore.

Participant ML003 explained:

> Freedom. The freedom to explore, the freedom to be active, the freedom to feel safe in those environments. You didn't have to travel, you didn't have to plan to go biking, you didn't have to plan to go swimming, you didn't have to, you just did it.

Participant FM001 mentioned:

> It was very exciting and fulfilling to be in a neighborhood that had a lot more natural elements. It just seemed for the amount of property and land, there weren't many people overrunning it. It was a lot less restrictive. It was a lot safer, a lot less congested. So, it was something I really wanted. I was really striving to have an area to live like that. You had more freedom to choose and do the things that were safe within outside local environment. I liked that, being outside.

Participants then spoke of how they felt their personal freedom was affected as a result of losing access to natural environments due to urbanization. Participant ML002 remarked about what it was like living in an urbanized area: "I feel captive I guess is the best word. It's the lack of freedom." Participant FM004 added: "Since I've been back in San Antonio, I feel trapped, everywhere I go. Its busy, busy, busy, and there's no place to go." Participant FM007 stated: "The freedom to just go on your own and enjoy doing those simple pleasure things, it's all gone." Participant ML003 expressed:

> I just feel like, I think we're so confined now that everything is growing, everything is. That freedom has been taken away, and we don't have that sense of adventure, we don't have that sense of growth, we don't have that sense of experiencing all the things that are out there.

Emotional impacts: feelings of sadness. The supporting theme *emotional impacts: feelings of sadness* was constructed as a result of discussing what the recent impacts to the natural environment meant to participants; residents made references to emotional impacts, specifically feelings of sadness, frustration, and disheartenment. For example, Participant ML002 expressed:

> To me it's like a sadness, like a loss sort of, because when I grew up (named specific place) I had entire freedom. I would go in the woods all day long…so to me, it's a loss of freedom, a loss of the nature that just isn't there.

Participant ML009 commented on what was it like to experience this change "Sad, frustrating, disheartening, all of it." Participant ML003 stated: "Disheartening." FM0011 explained: "It's sad because you see all the subdivisions that are coming in and all the trees that are getting knocked down. They're down to nothing. That's really sad." Participant FM001 relayed: "Most of the time, it's a very unsatisfactory kind of feeling. It's very, it's sad. I'm sad to see the things go, the trees and the natural environments go" and continued:

> It's very sad, progress is good, but I can't recreate nature, you know? That's what I'm after, is to be with nature, to be in it, smell the trees and look for ladybugs, and collect leaves and paint them, things like that. So, it leads me to

find another way or other ways to get rid of the sadness and try to recreate it somewhere else.

FM007 remarked: “It makes me sad. It’s a loss. I consider it a sad thing.” Participant FM004 described having previously “had a lot of freedom” at a prior residence and stated what it’s like now living in an urbanized area: “It makes us old. It makes us unhappy. It makes us argue when you’re locked up in the house. It’s sad. It really, it’s” and further expressed “I want to get out of here. I want to go to another state. I’m crying. I want to go somewhere where I can get out into the country and out of the city.”

Participant FM0010 discussed what it meant to lose the presence of natural environments: “Its saddening, emotional. I’d say its saddening because we know that eventually we probably won’t have all this, other than what we can control on our own property. It’s slowly going away.” Participant FM006 remarked: “It’s very depressing to me this city has taken away and not put back.”

Recommendations for Improvement

The conceptual theme of *recommendations for improvement* surfaced as some residents offered suggestions and opinions regarding recommendations for future improvement, including fostering a sense of responsibility with developers and the city to provide land for public use, creating a public land trust, taking into account local residents’ opinions, and educating people on the importance of natural areas and their protection.

Participant FM002 suggested the idea of involving developers in the responsibility of providing public land: “None of these developments have planned for public land access. None of them. And I feel the developers, if they’re going to make all this money, they have a responsibility to provide recreational land areas for public usage.” Participant FM002 made the specific suggestion to: “Create a public land trust” and explained:

> I think that in Texas, people don’t believe in public land, but we have to change our thought process now, or it will all be gone. All of the land will be gone. And a portion of taxes, and I know people here don’t want more taxes, but a very tiny portion, and large donors, could make this happen.

Participant FM0010 added: “I just think people need to be a little more responsible about growth.” Participant FM005 offered that the city also has a responsibility in planning efforts: “I think the city of San Antonio needs to rethink their building permits, because now we have businesses on businesses and apartments on apartments.” Participant ML002 suggested:

> Petition the city to see if there is some kind of way they could maybe allocate land there, so we could have some type of natural park, but in an area that has water and trees and not just flat ground. I mean something that will actively be conducive to the growth of the natural habitat and the natural animals in the area and it has to be large enough to support some wildlife, at least deer and coyote, and stuff like that. The area can’t just be a small area that’s overcrowded all the time, where you can’t just basically go out there and have some free space.

Many residents just wanted their voices to be heard and their comments to be taken into account for future planning efforts. For example, Participant ML009 stated: "Quit cutting down the damn trees." Participant FM004 remarked: "Spread out. Texas is big. Why do we have to have everybody on top of each other?" And went on to say: "They should have more activities and more space in the park areas so we can grow and meet." Participant ML005 remarked: "What they need is a big ditch so they can drain this water out of here and protect us from floods."

Participant FM006 suggested larger park areas to accommodate the population: "This city is large enough to be over one million people that live here, there should be wide open parks that are miles and miles long, that have skating, that have, you know, things that I grew up with, from bike riding, to roller skating, to playing volleyball, basketball."

Participant ML008 disused the idea of an educational component to preserving nature:

> I guess education would probably be the best thing. When I was growing up, one of the things that we did, and I remember this from elementary school all the way through high school, is they were really big on planting trees, and you know if we want to preserve nature, or to help revitalize nature, educate people on the importance of planting trees. That could help. Is it a quick fix? No. Long Term? I think so. I've always thought so.

Summary

In this chapter, I provided details about data collection, analysis, and interpretation, and the procedures I employed using interpretive phenomenological analysis. I shared how I interpreted the data from this study to address the research questions posed in the study and discovered more about the lived experiences of urban dwellers who lost natural environments due to rapid urbanization. More specifically, I investigated how those who have been impacted by the loss of nature describe what it means to lose their natural environment. Complex factors related to the loss of nature through rapid urbanization emerged from the data, revealing seven overarching conceptual themes: (a) environment (b) health (c) safety (d) finance (e) community and culture (e) factors related to deprivation of nature, and (f) recommendations for improvements. I presented and explained the master table of themes, and taxonomies that made up these specific supporting themes that addressed the research questions for this study, and supported each theme by providing rich descriptions from participant testimony. In Chapter 5, I compared these findings to existing peer-reviewed literature across related disciplines as well as to the theoretical framework posed in this study: attention restoration theory (ART) and place attachment.

Chapter 5: Interpretation of the Findings

Introduction

I designed this study to address a significant gap in current scientific literature, to learn more about the lived experiences of people who lost natural environments where they live due to rapid urbanization. The reality for many urban dwellers now encompasses living in areas becoming deprived of nature, and areas where accessing nature is becoming difficult. This complex situation is a newer and often unaddressed problem in rapidly growing municipalities. Through the use of interpretive phenomenological analysis, I explored how residents of one of the fastest growing cities in the United States (United States Census Bureau, 2015) have experienced living in areas becoming void of nature due to urbanization, and discovered possible factors related to deprivation of nature. Data from this study contributed to the advancement of understanding this phenomenon. Key findings indicated new knowledge and insights in the areas of health, mental health, social responsibility, urban planning, land conservation, and environmental psychology.

Interpretation of the Findings

The findings from this interpretative phenomenological investigation emerged from in-depth interviews with residents who shared their lived experiences of residing in areas where rapid urbanization has resulted in the loss of natural environments. I identified seven overarching conceptual themes that emerged from the data: (a) environment (b) health (c) safety (d) finance (e) community and culture (e) factors related

to deprivation of nature, and (f) recommendations for improvements. I then compared these findings to existing data and theory to further the interpretation of the results.

Environment

Participants described four main concerns that derived from their experiences in respect to their changing environments: (a) concern for the condition, quality, and preservation, of the natural environment (b) concern for wildlife, animal displacement, diminishing species native to the area, and less natural habitat for animals, (c) the process and byproducts of urbanization, such as traffic, overcrowding, construction, poor planning, and not having control over the process or outcomes, and (d) a concern for the strain that city growth places on city resources, and the adequacy of such resources to support the influx of residents, such as schools, electric grid, roads, water, and emergency services.

In relation to residents' concerns for the natural environments and land conservation, as previously noted in Chapter 2, only approximately 3% of land in Texas is currently set aside for public use (Congressional Research Service, 2012) and San Antonio remains one of the fastest growing cities within the United States (United States Census Bureau, 2015), making the remaining natural areas and land surrounding San Antonio a valuable commodity for both its residents and developers. Taking into account the additional concerns residents described for wildlife, byproducts of urbanization, and adequate resources, in combination with current growth projections that the city is estimated to expand an additional 500 square miles by the year 2040 (San Antonio Express News, p. A1, 2014), the protection of natural environments and land

conservation efforts are a recommendation of this study, along with future planning efforts that take into consideration the concerns of the citizens that reside within the areas that the city is projected to expand to.

In relation to the environment, residents also expressed a concern for the well-being of wildlife native to the area as a result of urbanization affecting their natural habitat. This finding seems to be supported by research concerning animals, habitat requirements, and environmental factors related to urbanization. Rodewald and Gehrt (2014) explained that the adaptability of different animal species to urbanization may vary greatly. Some animals have very specific habit requirements, behavioral patterns, and food sources, whereas others may be more resilient and versatile. Ryan and Partan (2014) further explained that different species may have varying stress reactions to urban stimuli, such as avoidance. In addition, animals looking for environmental elements needed to thrive, such as plants and trees, shelter, water and food sources (including prey or plant food) traverse a geographic range suitable for survival. If these natural elements needed for survival are not present, or urban stimuli is unpleasant, this may cause migration to more suitable environments, leading to animal deaths in urbanized areas.

The Federal Highway Administration (2015) published the Wildlife-Vehicle Collision Reduction Study: Report to Congress, with findings that indicate major threats to animal death include road mortalities, habitat loss, reduction in habitat quality, competition for food sources, and introduction of nonnative plant species, much of which are byproducts of urbanization. The Natural Wildlife Federation estimated that within the next 25 years, 35 of the largest and fastest growing municipalities will develop an

additional 22,000 acres of natural land (The San Antonio Economic Foundation, 2015; Alamo Area Council of Governments, 2015). This information, in combination with the findings that residents expressed a concern for animal displacement and preserving animal habitats, is a concern for the city of San Antonio. This information may be useful in wildlife management and preservation efforts across the city to promote land conservation that preserves natural biodiversity and sustainability of its inhabitants.

Residents' concerns for the byproducts of urbanization in their environment, such as traffic, overcrowding, construction, poor planning, and not having control over the process or outcomes of urbanization were described as negative factors involved in the urbanization process. Residents also expressed a concern that city resources such as water, electricity, and roads are being placed under a strain to support the growing population. While comparing these findings to city development information, I found that during the timeframe this study was being conducted, in August of 2016, the San Antonio City Council developed an outline for a 25-year plan for future development to accommodate a projected growth of "1.1 million residents with 500,000 new jobs, and 500,000 new dwelling units by 2040." (City of San Antonio, Department of Planning & Community Development, 2017). On the informational webpage for the SA Tomorrow Compressive Plan, it was noted: "If not properly prepared for this growth, the impacts could have significant consequences. For example, traffic congestion and commute times could increase, which would in turn affect air quality and overall quality of life". Additionally, it was stated that the city is asking for input, suggestions, and feedback of its residents:

> There is a need for conversations about the changes happening in the City and what is anticipated and desired in the future. Your input will be used to ensure that the SA Tomorrow Compressive Plan remains responsive to residents in different communities.

Although the plan includes a section titled "Natural Resources and Environmental Sustainability," policy, goals, and means of measuring specific outcomes, for developing and enforcing specific issues such as land ordinance to preserve the integrity of natural settings are in the developmental stages, and details of how this might be carried out is yet to be determined (p. 8). Access to the comprehensive plan showing suggested goals for land use development, transportation, sustainability, economic, cultural, and environmental issues, has now been made available to residents via the website SACOMPPLAN.COM (2017). In light of this development, and such large growth projection rates for the City of San Antonino and surrounding areas, I offer that there may be a social responsibility for (a) community leaders, corporations, business, and policy makers involved in development projects to make continual efforts to hear and represent concerns of residents, as well those who are projected to be annexed, and (b) for community members to make an effort in participating in planning efforts so their concerns may be heard. In addition, it would be of value to determine how meeting related goals will be specifically measured.

Health

Residents discussed two main areas of concerns regarding the process of losing nature to urbanization for human heath: (a) physical health concerns for the effects of

noise, poor air quality, symptoms of chest and nasal congestion, general sickness, and insufficient places for children to play and for adults to exercise, and (b) mental health concerns regarding the process of experiencing the loss nature through urbanization was described as stressful, frustrating, and depressing. In addition, residents described having natural environments as a way to decrease psychological stress, being important for relaxation, to destress, and provide a sense of serenity or peace of mind.

Findings related to residents' concerns for physical health (noise, poor air quality, chest and nasal congestion, general sickness, and insufficient places for children to play and for adults to exercise) are closely associated with outcomes from studies that indicate human health can be influenced by the presence of nature. In a review of how physical activities in nature can benefit human health, Gladwell, Brown, Wood, and Barton (2013) concluded that physical activities in natural environments mimic humans' evolutionary natural habitat, and involves numerous factors that promote both physical and mental health. Hanski and colleagues (2012) added that human contact with certain types of bacteria, allergens, and organisms, found in natural environments, promote the body's natural ability to develop adaptive immunological responses to these elements. Consequently, those who spend more time in urbanized environments may have reduced contact with biodiversity found in nature, which may limit the development of beneficial immunological responses (2012). Nowak, Hirabayashi, Bodine, and Greenfield (2014) estimated that thousands of regional respiratory problems may be prevented each year by the presence of trees and forests, and their natural ability to purify the air. Calderon-Garciduenas, L. et al. (2015) further explained that pollutants such as vehicle exhaust

often found in highly urbanized areas deplete air quality, which in turn can negatively impact human health. Shepard, Dirks, Welch, BcBride, and Landon (2016) found that in addition to known mental and physical health risk factors for both noise and air pollution associated with road traffic, the feeling of annoyance from road noise can also affect quality of life related to health. Findings from these researchers seem to be similar to the physical health concerns residents posited as a result of their experiences. Therefore, I suggest that residents' health be a considerable factor in future residential and community planning.

Residents also discussed that natural environments were important to preserving mental health, and described the process of urbanization as being stressful, frustrating, and depressing. Moreover, participants described having once had natural environments as a way to alleviate psychological stress, and explained that such environments were important for relaxation, to destress, and gave them a sense of serenity or peace of mind. These findings are in alignment with data from studies concerning mental health and proximity to nature and spending time in nature. For example, Roe and colleagues (2013) and Thompson et al. (2012) purported that psychological stress is reduced for those who have more green space in their community as opposed to those who have less. Stigsdotter et al. (2010) posited that proximity to green spaces is a key factor associated with self-management of alleviating stress in urban living. Beyer and colleagues (2014) found that exposure to neighborhoods with higher levels of green space is associated with reduced symptomology for depression, anxiety, and stress. Mass et al. (2009) concluded that anxiety and depression were significantly lower for those who live within a one-kilometer

radius or closer to natural areas. The results of this study in combination with these research findings contribute to the thinking that proximity and access to natural areas have impacts on human health and well-being.

I offer two suggestions in relation to promoting mental health and well-being. The first is to educate community leaders and policy makers regarding studies such as this one, and others, such as those mentioned here indicating positive health outcomes in relation to nature, to promote the inclusion of nature in everyday life. The second is to promote health and well-being through interventions that encourage protection of, access to, and engagement with natural environments.

Safety

Some residents expressed a perception of not feeling safe living in urbanized areas, or not physically being safe due to city-related environmental hazards, such as traffic or flooding. Data from existing literature supported there are health, school performance, and other problematic impacts from both physical and perceived threats to safety in urbanized areas. For example, Martin-Storey and Crosnoe (2014) found that perceived neighborhood safety is negatively associated with school performance in 15-year olds. Additionally, a large-scale study in Australia that spanned over 300 postal codes, conducted by Edwards and Bromfield (2010), found that parental safety perceptions concerning neighborhood characteristics were significantly related to hyperactivity, emotional, and peer problems in young children. Furthermore, Sun, Centzer, Kao, Ahalt, and Williams (2011) showed that older adults who perceived their neighborhoods as unsafe were more likely to experience functional decline (in level of

independence and medical conditions) over a 10-year period compared to those who perceived their neighborhoods as safe. Individual perceptions of how safe residents perceive their neighborhoods to be may impact well-being, and those who feel safer in their neighborhoods may be happier. This information may be useful in promoting safety in individual neighborhoods.

In terms of physical safety, Wang, Quddus, and Ison (2013) explained that a multitude of factors, such as road design, traffic flow, and traffic density, can be contributing factors in traffic accidents and congestion. Chen and Shen (2016) found that bicycle crashes involving automobiles in built environments are often more severe in areas where there is evidence of employment density and mixed-use land developments. The daily influx of people crossing paths using a variety of modes of transportation in highly concentrated areas traveling to a multitude of destinations may be a consideration for urban planning. This data adds to the notion that the careful engineering of road designs and city infrastructure are essential for creating and promoting safety conscious environments for those living in areas projected to grow rapidly.

Some residents mentioned safety concerns regarding the possible threat of flooding due to poor water drainage, created by a combination of urbanization and existing terrain. As explained in Chapter 4, many greenbelts throughout the city were developed from flood zone areas that cannot be built upon (San Antonio River Authority, 2017), which has resulted in creating flooding problems for some residents after urbanization. In addition, as one resident pointed out, the walking trails in flood areas have limited usage and may not be synonymous with safe natural environments, as they

are still located in or near urban, city-like areas prone to flooding. As a result of the current situation, it may be beneficial to include planning for preserving more useful natural environments as part of future city planning efforts to accommodate city residents to match growth projections in a way that promotes residents' safety.

The summary of safety related research involving urbanized areas shows some evidence that safety factors, both physical and perceived, do exist for those living in a variety of urban areas, although they may uniquely vary by location. However, both physical and perceived safety concerns associated with city-type environments have the potentiality to impact human health, and should be considered in future environmental psychology research, to promote safety and well-being among urban habitats.

Finance

The conceptual theme of *finance* was comprised of two supporting themes: (a) the cost to access nature, and (b) property values, taxes, and flood insurances, associated with urbanization and loss of natural environments. Residents discussed financial costs they incurred when trying to access to nature included having to pay fees to access nature, fees to travel to nature, and stay in nature. For example, residents expressed that there is a cost associated with visiting parks, private lands, or if they wish to go places to do certain activities, such as paying a fee to fish, swim, or hunt, because various usage is not allowable at all places and there are costly charges for different types of access and usage.

There are fees associated with accessing nature parks and state parks in the San Antonio area (Texas Parks & Wildlife, 2017). However, according to Texas Parks and

Wildlife (2017), a problem associated with San Antonio is that state parks near urbanized areas often fill to maximum capacity and close to new visitors "as early as 10:00 am" in the morning (Texas Parks & Wildlife, para. 1). Such is often the case with Garner State Park (2017), a popular state park nearest to the city of San Antonio. The department of Texas Parks and & Wildlife (2017) notes this happens with great regularity during peak times of the year. Due to so many visitors trying to access parks during peak times, privately owned and operated parks can charge a higher admission for access, due to the demand, adding to the financial burden related to accessing nature. Therefore, making access to nature affordable may be a priority for policy makers to ensure all residents who seek access to nature, may be provided affordable opportunities. This may include increasing the amount of publically accessible land in Texas, especially near heavily populated areas.

Other residents cited property values, taxes, and flood insurance, as financial concerns related to urbanization. Residents noted that some property values may decrease due to negative factors associated with urbanization, and others may increase depending on other factors such as land with mature trees, popular building aesthetics, or housing demands. According to Bexar County Appraisal District (2017), tax rates indicated that market values have risen to almost 9% for single family homes in the last year, and 80% of residential taxpayers have received such increase notices. This has occurred in part because properties have sold for higher than properties were originally valued, due to demands for housing, thus raising the value of homes in the surrounding area (2017). For some residents, who own properties located close to flood zones, there were additional

costs for flood insurance premiums they must pay in addition to the higher tax rates, which may complicate financial matters for some residents. These types of financial realities may make it difficult for those who have fixed incomes and continue to experience such increases, because property tax increases have been growing at a faster rate than median household incomes (United States Census Bureau, 2017). This may be a consideration for policy makers in the future, as some residents may not be able to afford rate increases.

Community and Culture

The conceptual theme of *Community and Culture* encompasses three supporting themes: (a) that rapid urbanization is changing our culture due to new influences, (b) there is an increased need for privacy and space within urbanized settings, and (c) more people living in less space contributes to a loss of sense of community.

Existing research seems to support the finding that rapid urbanization may be changing local culture due to new influences. Neal and Neal (2014) found that there can be a difficulty and maybe even an incompatibility in promoting a sense of community within areas that have experienced a major change in diversity. Neal and Neal (2014) suggested that one reason for this may be that diversity among residents may make forming close interpersonal relationships harder, because relationships with "similar nearby others" is what contributes to creating a sense of community (p. 1). If people do not have social opportunities to develop relationships this may negatively impact residents' ability to adapt to cultural changes in urban areas.

In an analysis of over 40 large cities in the United States, including San Antonio, Farber and Li (2017) found that the potential for weekday social interaction within large cities is impaired by the decentralized layouts of cities and long commute times. This seems to tie in with what residents described as the way people communicate and spend time with each other is changing. In addition, Mustapa, Maliki, and Hamzah (2015) proposed that there is compelling evidence from multiple studies that children's social development is strengthened by free exploration of natural environments (p. 335). Community natural environments where children live could promote this type of interaction. Therefore, city design layouts inclusive of local spaces that may provide opportunities for voluntary positive social interaction within communities for children and adults may be a consideration in future city development.

In relation to the findings that residents expressed an emerging need for personal privacy and space, from having gone through the process of urbanization, literature supports the notion that it is possible residents may feel their privacy boundaries are being tested or altered. In a recent review of empirical research on privacy by Acquisti, Brandimarte, and Loewenstein (2015) the authors explained that privacy may be a function of past experiences, and when something in the environment encroaches on privacy, people are likely to be concerned. People may feel discomfort when there is a change in privacy boundaries, especially if there is a lack of control (p. 511). Culture and norms also play a role in how people feel regarding their privacy. Due to the increased use of technology, information sharing, and media (2015), in addition to environmental changes, many cultural and personal privacy boundaries have been pushed. A common

occurrence in the process of urbanization is often an influx of more people living in a centralized area, which may contribute to the need for personal space and privacy for residents. The fact that residents expressed a current need for personal privacy and space may be a consideration for those responsible for future urban design and planning, because crowded spaces seem to lead people to isolate themselves from others, thus resulting in experiencing a loss a sense of community. The data from this study, in combination with existing research on privacy, could be helpful to urban planners and city officials for designing urban neighborhoods. More specifically, this information could be used in such a way that protects sufficient space to promote individual privacy, yet still provides access to spaces where voluntary social interaction can occur without overcrowding, which may positively influence how people engage with others in the community around them.

Residents reported that urbanization has led to more people living in less space, which in turn leads to a loss of sense of community. This finding is corroborated by French and colleagues (2013), who found a negative association between neighborhood density and sense of community. This may be related to why people may withdraw from crowded or overstimulating urban conditions, due to the need for more privacy and space. Furthermore, Gomez, Baur, Hill, and Georgiev, (2013) found that the greater the distance people reside from urban parks, the more likely their sense of community will diminish compared to those who reside closer. One way to remedy this may lie within the way developers create and plan for adequate residential and outdoor public or community spaces.

O'Conner (2013) reported that engagement in community activities, especially those that involve civic action, has a tendency to bring people together for a common cause, which can promote a sense of community. In a review of current literature conducted by Pfeiffer & Cloutier (2016), they concluded that neighborhoods within built environments that provide open accessible natural areas and allow for social interaction and safety may promote happiness. This information may be used to create and promote engaging activities of interest within communities and local parks, such as community meetings, local farmers' markets, local artists exhibits, craft fairs, or local performances, to provide community opportunities for resident participation that promote cohesion, so residents may feel part of and embrace the changing culture, as opposed to isolating.

Factors Related to Deprivation of Nature

The definition of deprivation of nature posited in this study, refers to not being able to freely come in contact with and experience nature at will on a regular basis within reason, including various situations or barriers that result in restricted or denial of access to outdoor natural areas. Difficulty in finding and attaining access to natural environments with suitable land for desired purposes, and ability to use, visit, or experience the natural world at will on a regular basis, may lead to feeling deprived of nature. Participants described three components related to experiencing deprivation of nature:

1. Restricted or No Access to Nature
2. Loss of Freedom
3. Emotional Impacts: Feelings of Sadness

No access to nature. Residents stated access nature was a problem and described a lack of publicly accessible land. In addition, residents explained that what land was available was either not suitable or permissible for desired activities, such as peaceful areas to relax, hiking, fishing, or for kids to play. The theme of *Restricted or No Access to Nature* was compared to existing data regarding access to nature. Research from the literature indicated that access to nature, and living in close proximity to nature, show patterns of physical, psychological, and social benefits. In one study in Toronto, Canada (Kardan et al., 2015), using satellite imagery and self-report health questionnaires, researchers were able to determine that:

> Having 10 more trees on a city block, on average, improves health perception in ways comparable to an increase in annual personal income of $10,000 and moving to a neighborhood with $10,000 higher median income, or being 7 years younger. Having 11 more trees in a city block, on average, decreases cardio-metabolic conditions in ways comparable to an increase in annual personal income of $20,000 and moving to a neighborhood with $20,000 higher income or being 1.4 years younger.

As noted in Chapter 2, Tyrvainen et al. (2014) found that even engaging in activities in urban environments that are designed to be relaxing, such as sitting in a lawn chair, have a negative impact on people in terms of preventing stress reduction. However, when engaged in similar activities in green environments, participants reported feelings of restoration after 15 minutes, and the longer the stay, the greater the amounts of restoration were reported (Tyrvainen et al., 2014, p. 5). Some researchers are beginning

to pose the idea that those living in areas lacking in natural landscapes show patterns of breakdown in physical, psychological, and social functioning (University of Illinois at Urbana-Campaign, 2009). Because the natural landscape is the origin of the human habitat, it is thought that essential components for optimal health are found within that environment. How and what mechanisms affect health is beginning to be better understood through worldwide research efforts (European World Health Organization, 2017). The fact that participants named access to nature as a problem for the residents of the city of San Antonio poses questions regarding possible health impacts for residents, and possible solutions to connect residents to nature.

Loss of freedom. Participants described experiencing a *loss of freedom* associated with being deprived of nature once access and the presence of nature was altered. Furthermore, participants spoke of previously feeling free when they had access or the presence of nature. For example, Participant FM004 stated: "there was always this aura of feeling free" when surrounded by natural environments. Participant ML009 conveyed that access to nature "meant freedom." The finding that participants expressed experiencing a loss of freedom when deprived of nature seems to be a newer construct of study. There was a dearth of information in the literature surrounding this concept. A sentinel work by Westin (1967) suggested that freedom and privacy may be universal human needs. However, there is a lack of information in scientific works addressing the concept of loss of freedom that is associated with deprivation of nature. Therefore, I suggest further exploration of this finding.

Emotional impacts: Feelings of sadness. The supporting theme *emotional impacts: feelings of sadness* emerged as a result of discussing what the recent impacts to the natural environment meant to participants. Residents made references to emotional impacts, specifically feelings of sadness, frustration, and disheartenment. Sadness is considered a symptom of depression, and there are numerous studies that link depression to natural environments, showing lower rates of depression for those who live near green space (Beyer et al., 2009; Cohen, Cline, Turkheimer & Duncan, 2015; Maas et al., 2009; Schoevers, Beekman, & Decker, 2010). Therefore, the opposite can be inferred; people living in nature-deprived areas may experience higher occurrences of depression symptoms. In addition, as previously mentioned, Pfeiffer and Cloutier (2016) noted that neighborhoods within city environments that provide open accessible natural areas and allow for social interaction and safety may promote happiness. The finding of this study that residents reported emotional impacts related to sadness in relation to loss of natural environments is a mental health concern. Some places, such as Australia, are beginning to adopt the idea of preserving nature as an adjunct to physical and mental health (Maller, 2005). This new practice can be adopted by cities like San Antonio and woven into the culture to promote well-being and possibly protect against negative mental health symptomology.

Recommendations for Improvement

The conceptual theme of *recommendations for improvement* surfaced as some residents offered suggestions and opinions regarding recommendations for future improvement, including fostering a sense of responsibility with developers and the city to

provide land for public use, creating a public land trust, taking into account local residents' opinions, and educating people on the importance of natural areas and their protection. Current norms and policy in relation to urbanization may be difficult to change. However, incorporating the practice of *ecological restoration*, which encompasses restoring degraded or damaged ecosystems and habitats to reestablish "healthy relationships between nature and culture" (Society for Ecological Restoration, 2017, para. 1) may create positive lasting social change by communities embracing inclusion and preservation of nature.

Attention Restoration Theory

Somewhat consistent with the main theoretical consideration for this study, attention restoration theory (Kaplan & Kaplan, 1989; Kaplan, 1995; Kaplan, 2001; Kaplan & Kaplan, 2011), participants described how spending time in nature made them feel restored when they had access to an environment where nature was abundant. According to ART, interaction with the natural environment has the potential to improve mental fatigue and capacity for attention. However, this does not account for what participants described as experiencing a loss of freedom and emotional impacts related to sadness in relation to deprivation of nature. Kaplan (1995) primarily focused on explaining how overstimulation from environmental factors may lead to the phenomenon of attention fatigue.

Place Attachment

The second theoretical basis of exploration was place attachment. Place attachment is described as emotional and cognitive bonds a person forms with his or her

environment (Manzo & Devine-Wright, 2014). Place attachment is considered to be highly individual and affected by personal experiences and cognitions. Residents expressed a positive regard for places where they experienced a connection to nature. Results from this study indicated that some participants reminisced about a time when they lived in areas that were abundant with accessible nature with fondness, and discussed the drastic difference to where they live now. Similarly, in nationally sponsored research project in Sweden, that included data from 2,000 participants, indicated people may be more attached to natural areas that resemble childhood natural areas and feel more restored after recreating in similar environments (Adevi & Grahn, 2011).

Residents also described a concern for the changes in their environments that have led to the loss of natural environments where they lived. Some residents talked about wanting to move further away from the city because of all the changes that have been brought about to the natural environment due to urbanization. According to Manzo & Devine-Wright (2014), changes to the environment may change the way people think, feel, and perceive about where they live so much that it is no longer congruent with their previous beliefs. Findings of this study indicated that some byproducts of urbanization described by residents, such as reduced access to nature, environmental degradation, increases in population density, or forced lifestyle changes (commute times, wait times, smaller or crowded housing options, less open spaces) brought about by rapidly changing environments, may make for complex combinations of environmental factors that may contribute to a shift in thinking regarding the perceptions and attachment a person has for a place. It seems as though changes to natural environment may have the potential to

affect how a person feels and thinks about their environment and the level of attachment they hold for certain places.

However, neither place attachment or attention restoration theory accounted for what participants described as experiencing a loss of freedom and emotional impacts related to sadness when feeling deprived of nature. This finding does not seem to be explained well enough by current theory. It is possible there is a larger process in play in relation to what happens when people are deprived of nature, especially within urbanized areas. More comprehensive theoretical explorations are needed to fully understand related impacts. Future researchers may seek to build on this data to further develop theoretical explanations that encompass mechanisms involved when people report experiencing deprivation of nature.

Limitations of the Study

One consideration in qualitative research is that research findings are not intended to generate quantifiable data that is generalizable to the public. Instead, consistent with interpretive phenomenological analysis (IPA), findings from this study provided a summary of participant descriptions and meanings of their experiences, and researcher interpretations of that data (Smith & Osborn, 2007). Additionally, because the purpose of IPA is to closely examine experiences of persons who have lived through a specific phenomenon, the goal was to employ purposive sampling instead of random sampling, to be able generate relevant data specific to persons within the specific context being studied. The extent to which these findings are transferable will be determined by the reader. Thus, I have provided transparent methods and extensive contextual descriptions

of the conditions in which the study took place, so that readers may determine contextual applicability. As previously noted, data from this study is reflective of the time period and city in which it was collected, and therefore may need to be repeated in the future, and in other geographic locations.

Another limitation of a qualitative research involves addressing possible researcher bias. As a previous resident of San Antonio, Texas, and surrounding areas, I have accumulated prior knowledge of the changing landscape of this geographic region; therefore, it was crucial not let this information interfere with my interpretation of the data. In my role as an IPA researcher, it was necessary that I acknowledged my prior learning and experience of the city's history could be both be beneficial or pose bias in this research. Subsequently, I made reasonable efforts to set aside preexisting notions and assumptions as both a researcher and a former resident during this investigation through the use of note taking.

A third limitation specific to this study, is that participants who volunteered for this study ranged in age from 41 to 75 years of age. This age demographic was not intentional, but the natural result of how the purposeful sampling unfolded. Following the study design, I randomly distributed invitations in neighborhoods undergoing urbanization, with instructions for any resident interested in participating in the study to reach out to me, by calling the number on the invitation. Out of those who responded, 40% of participants (n = 8) were retired. This may be due to retired persons having more available time to volunteer to participate. However, it is of value and importance for future studies to include a younger demographic so their experiences and voices may be

heard. Other studies may be designed to ensure the inclusion of a wider age range of residents.

Recommendations

Although previous research indicated positive psychological and physiological benefits to the presence of nature, impacts related to the removal of natural environments in urbanized areas due to urbanization has not been well studied. As indicated in the literature review, there is gap in peer-reviewed literature to understand what it is like for people living in areas becoming deprived of nature. This study contributed to addressing this gap, and as a result has also produced additional unexplored questions regarding possible impacts from deprivation of nature. I would like to highlight key recommendations for the future.

1. To continue research efforts in multiple additional cities to further explore the concept of deprivation of nature in naturally occurring populations where there is a lack of natural environments, to compare study findings and to learn more about the impacts related to the loss of a natural environments for inhabitants.
2. To specifically examine how much space, natural environments, and biodiversity may be needed for human health, to make recommendations by person, or by size of city.
3. To further explore feelings associated with sadness and loss of freedom in relation to absence of natural environments or loss of access to nature, to gain a better understanding of possible mental health impacts.

4. For public policy makers, urban planners, and developers to take into consideration the input of residents of the community in which their work and actions impact natural environments in communities.
5. To secure and protect public lands suitable for a variety of desired purposes (hiking, animal habitat, camping, fishing, and recreation activities involving nature) large enough to support local populations without overcrowding.
6. To continue to study on local levels (in a variety of geographic locations) the specific ways urbanization is impacting culture, communities, the need for individual privacy and space, and the concept of individual personal freedom to explore nature at will.
7. Create public health and mental health awareness regarding the importance of the presence of natural environments in everyday life.
8. To exercise caution in development and preservation of natural areas within cities and communities.

Implications

Positive Social Change

The findings of this study emerged from data gathered from residents living in communities where loss of natural environments is a reality. Findings generated from this study have led to potential impacts for positive social change in a several areas.

Individual level. Through the findings of this study, I have discovered how the loss of nature has impacted residents of a rapidly growing city at an individual level. Critical factors identified for positive social change are residents' concerns for their

physical and mental health in relation to losing natural environments where they live. In addition, residents' testimony highlighted social well-being factors to consider in rapidly urbanizing areas. Secondary considerations are for safety and finance issues related to the byproducts of urbanization. When nature is removed from communities, it is important to consider the input of individuals environmental changes will impact the most. Human health and well-being aspects should be considered in current and future urban planning and development, land preservation, and public health policy.

Community and urban planning. Residents described negative experiences related to the byproducts of urbanization, resulting in built environments that inhibit residents access to nature, which may leave people feeling deprived of nature. In addition, residents expressed they felt they had no control over the urbanization process, and had a negative outlook for future city growth and development. Input from those living in communities that will be impacted by urbanization or loss of natural environments, and other major environmental changes, should be considered in decision-making processes. Key social change opportunities may lie within creative development and ecological restoration solutions that can be forged through partnerships inclusive of researchers, community members, and developers, employing evidence based design solutions that incorporate beneficial aspects for both the community and developers.

Policy and land preservation. Residents expressed a great concern for the well-being of the natural land and wildlife, and the quality of the environment post urbanization. In addition to creating better policy involving planning and development, public health, and policies guiding land preservation, the actual process of creating policy

and land preservation initiatives should include decision making based on evidence from research. There is often a permanency to creating built structures, so there is a social responsibility to consider long-term outcomes, especially in relation to human health and well-being, and long-term sustainability. It may be possible to create pleasant and healthy environments where urbanization and biodiversity coexist on a compatible level. I propose this may be achievable by adopting a creative shift in thinking towards sustainability, health, and long-term planning for compatibility between the built environment, humans, and the natural environment.

A basis for research. In part, the impetus for conducting this study was to investigate the phenomenon of losing natural environments in our rapidly changing urbanized society, as experienced from individuals' points of view who are living in those areas. I recommend that future research endeavors continue to include input from individuals, but also be inclusive of family, organizational, and societal or policy level input, as the field of environmental research will be paramount in days to come as cities and human populations are projected to surpass the largest numbers seen in human history (World Health Organization, 2015).

Theoretical

As explained in Chapter 4, more specific theoretical exploration is needed to explain what happens to humans when deprived of nature. Attention restoration theory and place attachment both seem to explain partial aspects of what may be happening when nature is removed from human environments. Attention restoration theory provides explanations for recovery from cognitive stress when people spend time in nature. Place

attachment helps to explain why people may form attachments to natural environments and how changes to a person's environment may change the level of attachment. However, the feelings of loss of freedom and emotional impacts that residents expressed when denied access to nature are not fully explained by these theories. In addition, the negative associations residents made to the byproducts of urbanization should be taken into consideration. I recommend that future research build upon these findings to better understand possible theoretical explanations related to this phenomenon.

Conclusions

Curiosities that led me to conduct this research involved the novel ideology of studying the concept of deprivation of nature. There is a modern relevancy and urgency that exists to warrant such investigations. Data from this study provided valuable insights for those who live in communities where loss of natural environments is a reality. The findings contribute to highlighting the need to find the best ways supported by research to plan for healthy neighborhoods and urban design that promote residents' well-being.

Scientific evidence has indicated that the presence of natural environments in everyday human life is essential. A compilation of findings from worldwide research showed evidence to support multiple pathways linking natural environments to improved health and well-being (European World Health Organization, 2017). This study has added the knowledge that there may be negative factors at work when nature is removed from human habitats. It became of ancillary value to discover more about the concept of deprivation of nature as it surfaced in the data, as there is currently a dearth of information on the topic. This study seems to be one of the first to address this concept. I

have identified three possible key factors that may relate to the concept or process of deprivation of nature including: (a) a lack of access to nature, (b) can result in experiencing a loss of freedom, (c) that it is associated with emotional impacts similar to sadness. Specifically, people who have experienced the loss of nature, access to nature, or feel deprived of nature, may experience a loss of freedom and feelings of sadness. These findings have produced additional unexplored questions regarding impacts from deprivation of nature, and it is recommended that research in this area of study be continued.

Findings also indicated people reported craving natural environments that are suitable for desired purposes, and free from elements associated with urbanized areas, such as overcrowding and noise. Furthermore, there are physical and mental health concerns that are associated with a lack of natural areas in communities that need to be addressed by policy makers. The magnitude of and rapid nature in which urbanization sometimes occurs may lead to a myriad of social concerns, such as changes to social well-being, the way people communicate, and personal needs for space and safety. These findings are a serious concern for the city of San Antonio, because the city's planning director projected the city to double in size by the year 2050 (San Antonio Express News, p. A1, 2014). These findings also spur a concern for other developing cities as projections from the World Health Organization (WHO) indicate that the number of people living in urbanized areas worldwide will also double by the year 2050 (Migration World Report, 2015). When nature is removed from human habitats, it is important to consider the input of those within communities who environmental changes will impact the most. Human

health and well-being aspects should be considered in urban planning and development, land preservation, and public health policy, based on evidence from research, and should be at the forefront of future decision making.

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Appendix A: Recruitment Flyer Text

Natural Environment & Urbanization Study

VOLUNTEERS NEEDED FOR RESEARCH STUDY

Walden University

This study aim is to explore how the loss of natural environments due to urbanization impacts residents of San Antonio. I am interested in hearing how the natural environment near where you live has changed as a result of growth and development across the city and what this means to you.

As a participant, your insights will contribute to the findings of this study that could provide valuable information to scientists, community leaders, and residents of San Antonio.

Disclaimer: This research is not affiliated with any advocacy or public interest group, local governmental organization involved in urban planning, environmental management, or any other organization, and I am not a member of any such group.

Criteria:
Adults age 23 or older. Lived in San Antonio for the last 5 years - prior, during, and after some of the recent changes to the environment due to urbanization. Comfortable using the English Language to do an interview.

Involvement:
A single interview with me at my office or a quiet location of your choice (coffee shop or library -less than 1 ½ -2 ½ hrs of your time). Answer questions regarding your experiences living in San Antonio. Possible follow up phone interview (less than 1 hr).

Males & Females Needed

Erica Montanye (210) 215-4403

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Erica Montanye (210) 215-4403

Appendix B: Interview Protocol

Code/Pseudonym Assigned to Participant: _____ Date: _____
Participant Name: _____ Time of Interview: _____
Age: ____ Sex: ____Race: _____Education: _____Housing Status: _____
Name of Interviewer: _____ Interview Location: _____

Researcher Introduction, and Reviewing of Informed Consent, & Confidentiality
Hi (use participants name). Thank you for agreeing to be a participant in this study. As we discussed on the phone when you were invited to participate in my study, I am Erica Montanye, a doctoral student at Walden University in the school of Psychology and the primary researcher for this project. I want to begin by thanking you for returning the signed consent form, and would like to review that with you now before we start the interview.
Participation in this research involves this interview, which is estimated not to take more than 1 ½ -2 ½ hours of your time. A follow up phone call for clarification after we leave here today may be necessary and that call should not exceed 1 hour. I will also be sending you a copy of your transcript to review so we are sure I recorded everything properly during the interview. I will include a self-addressed stamped envelope for you to use to send that transcript back to me. During this interview, I may be taking some notes and checking the recorder periodically so everything you say is captured. Do you have any questions for me thus far?
Next, I would like to review some terms that we will be discussing. For the purposes of this study, and today's interview; When I say natural environment(s) I am referring to outdoor naturally occurring environments that are relatively free from structures people built, that contain a variety of live naturally growing vegetation, such as trees grasses, bushes, plants, and sometimes other elements such as water, rocks, or animal life. Examples of natural environments may include, a field, empty lot, a treed area or forest, land along a road side, or a large area of land or a park that is mostly comprised of natural elements.
When I say urbanization, it describes a change in the environment when it shifts from being rural, to more urban, like when cities and towns grow and become larger than they were previously, growth and development occur, and the population spills over to nearby areas. During the urbanization processes, there may be an increase in building structures, changes to the environment, and people living and working in centralized areas. Examples of urbanization can include things like the building of new structures, such as businesses or subdivisions, road expansion, or construction, and other changes to your local landscape related to growth and development across the city.

The term, loss of natural environments, refers to having once had, and experienced the presence of natural environments where people live and work, and then experienced the

disappearance or destruction of some of the surrounding natural areas due to urbanization, resulting in a reduction in the amount of surrounding natural environments that were once present.
What questions do you have regarding these definitions?
Today, I am trying to understand what it is like for residents to experience the loss of natural environments due to urbanization, and I am most interested in hearing your stories of how these changes impacted you; because individual experiences help me understand what is happening and learn more about how people are impacted by such events. I want to understand your perceptions, feelings, and thoughts, regarding your personal experiences. This interview is like a conversation and I want you to take as much time as you need, so your responses are not limited. During our conversation, I may ask you questions to better understand your experiences. Do you have any questions before we begin?

Participant Introduction, Background Data & Interview Questions
(Participant's name) I would like to start by getting to know a little bit more about you and this information can help me understand your experiences and your environment.

1. What do you do for a living? (it may be helpful to know if a person's occupation(s) is indoors or outdoors)

2. Do you have any children? (having children may influence a person's views or play an important part of their experiences)

3. Where did you live prior to living here?

4. How long have you lived in your current residence?

5. What are your future plans? For example, do you have plans to remain in the area?

6. What influences these plans to stay or move?

7. Tell me a little bit about the current neighborhood and community where you live now?

8. And what was it (the environment) like when you first moved here? (Please describe some of the natural area(s) that used to be located near your home or community, prior to urbanization?)

9. How did you used to interact with that environment?

10. What did it mean to you to have the natural environments present near your home and community?

11. Please tell me what happened to the natural environment(s) that were once present.

12. What it was like for you to experience this change?

13. What does it mean to you to lose the presence of natural environments near your home and community?

14. Please discuss how you see the community being affected by the loss of the local natural environments where you live?

15. What does this impact to the environment in your community mean to you?

16. How do you describe where you are living now?

17. Tell me what it is like for you now living in an urbanized area?

18. If you want to spend time in nature what do you do now?

19. What else can you tell me about your experiences or feelings that might be helpful? For example, is there anything else I did not ask about that might be helpful?

Closing

(Participant's name), This concludes the questions for this interview. I would like to thank you for your participating in this study. I would also like to remind you to keep the informed consent paperwork and contact information I provided to you, and feel free to contact me, or Walden University should you have any questions. In a while, I will be sending you the copy of today's interview transcript for you to review for accuracy with a self addressed stamped envelope for you to send them back to me. I may contact you by phone for a follow up conversation after the interviews are complete for clarification if necessary. Do you have any questions for me?

Thank you again for your participation. It is greatly appreciated.

Appendix C: Screening Process

To ensure that those who respond to me from the flyers qualify to participate in the research study and meet inclusion criteria, the following screening process and questions will be used.

Thank you for your interest in this study. In order to make sure you meet the criteria for being in the study, could you please answer a few questions for me?

1. *How long have you lived in San Antonio?*
    - 5 consecutive years or more from the date of screening-***continue***
    - Less than the last 5 years, or not consecutive- ***not eligible***

2. *What is your age?*
    - 23 or older (for participants to qualify as adults who have lived in San Antonio for at least 5 years) - ***continue***
    - If under age of 23 - ***not eligible***

3. *How many times have you moved within the last 5 years?*
    - 2 or less - ***continue***
    - More than 2 - ***not eligible***

    If moved*: And have those moves been within San Antonio?*
    - If yes - ***continue***
    - If No - ***not eligible***

4. *Do you feel comfortable using the English language well enough to do an interview?*
    - If yes-***continue***
    - If no-***not eligible***

5. *Do you live, work, and spend most of your time, within the City of San Antonio?*
    - If yes-***continue***
    - If no- ***not eligible***

Thank you for answering my questions so far. There are only three more questions, but I first need to explain this study involves gathering information from residents of San Antonio regarding their experiences with the loss of natural environments as a result of rapid urbanization. Please listen while I provide brief explanations of what meant by natural environments, urbanization, and the loss of natural environments.

Natural environments are naturally occurring outdoor areas that are relatively free from man-made structures and may contain a variety of live plants and trees, and sometimes other elements such as water, rocks, or animal life. Examples of natural environments

may include a field, empty lot, land along a roadside, or a large area of land or park, that is mostly comprised of natural elements.

Urbanization describes a change in the environment when it shifts from being rural to urban, like when cities and towns become larger and city growth and development occur. During this process, there may be an increase in building structures and people living and working in local areas. Examples of urbanization can include things like the building of new structures, such as businesses or subdivisions, road expansion, or construction, and other changes to your local landscape related to growth and development across the city.

The loss of natural environments refers to having once had, and experienced the presence of natural environments near where people live and work, and then experienced the disappearance or destruction of some of the surrounding natural areas due to urbanization, resulting in a reduction in the amount of surrounding natural environments that were once present.

I want to clarify that I am interested in hearing about your specific experiences concerning changes to the environment near where you live as a result of growth and development over the last few years.

With this in mind, can you tell me:

6. *Have you lived in the area **prior** to some of the recent urbanization and changes to the natural environment in San Antonio within the last few years?*
    - If yes- ***continue***
    - If no- ***not eligible***

7. *Have you lived in the area **during** some of the recent changes to the environment and urbanization?*
    - If yes- ***continue***
    - If no- ***not eligible***

8. *Have you lived in the area **after** the loss of some of the surrounding natural environments due to urbanization?*
    - If yes-***continue***
    - If no- ***not eligible***

If Not Eligible

Those who do not meet the inclusion criteria, determined by the first ***not eligible*** response, will be read the following response:

Script:

Thank you for answering my questions and for your interest the study. At this time, I am currently looking for individuals who meet a specific criteria for this particular study. At this time, according to the information you provided, I will not be able to interview you. I would like to thank you again for your time, and consideration.

If Eligible

Those who meet the inclusion criteria and qualify to be in the study, will hear the following invitation to participate:

Script:

I would like to thank you for your interest in the study and willingness to participate. Do you have any questions for me so far?

I would like to invite you to participate in a one-on-one interview and perhaps a follow up conversation to clarify information obtained from the interviews, both conducted with me, Erica Montanye, a PhD student at Walden University. The interview should not take more than about 1 ½ - 2 ½ hours of your time, and we can arrange for the interviews to be held at neutral private office space provided by me, or a quiet location of your choice, such as a library or coffee shop. A follow up telephone conversation may be necessary after the interviews for clarification that call should not take more than an hour of your time.

I would like to go ahead and schedule the main interview time and place with you now if that is okay. Would you like to participate? Yes___ or No____

If yes: *What day and time work best for you?* Date _____Time_____

*Place*_____

_____

Phone number for reminder call, and to schedule follow up interview if necessary

---

Because you are important to this study, it is very important that you notify me promptly if you are not able to participate. My contact number is (210) 215-4403. Prior to our meeting, I would like to send you more information regarding the study that includes information on keeping you and anonymous and your information confidential. May I mail it to you so you have time to look it over?

We will go over the information I am sending you regarding the study, and your consent to participate, prior to beginning the interview, so please bring your signed consent form with you to the interview. Please feel free to contact me anytime with questions. I look forward to our meeting and seeing you at (location*) on* (date and time specified).

Appendix D: Confidentiality Agreement

Name of Signer: _____

During the course of my activity in transcribing data for this research study: "Urban dwellers experiences regarding loss of natural environments due to urbanization", I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement I acknowledge and agree that:

1. I will not disclose or discuss any confidential information with others, including friends or family.

2. I will not in any way divulge, copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.

3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.

4. I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information

5. I agree that my obligations under this agreement will continue after termination of the job that I will perform.

6. I understand that violation of this agreement will have legal implications

7. I will only access or use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

Signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

Signature: _____Date: _____

Appendix E: Instructions for Reviewing Interview Transcripts

Thank you for participating in the recent interview for my study concerning the natural environment and urbanization. As we discussed at the interview, enclosed is the transcript of your interview. Here are the instructions for you to follow:

(1) Please look over the transcripts carefully and check for accuracy.

(2) If you should find any discrepancies in the transcripts or areas that need clarification, or you have additional comments or feedback, please feel free to write them clearly in the margins of the transcripts, or use additional paper if necessary, but make sure it is clear to what part of the transcript you are referring.

(3) When finished, please sign this form to indicate that you have read over your transcripts.

(4) Mail this signed form and the transcripts, along with any comments, back to me, using the stamped self addressed envelope enclosed.

If there are no corrections or comments to be made, just sign this form, and mail it back to me along with your transcripts.

Signature: _____Date: _____

▢ If you would like a summary of the findings of my research, please check here and I will email that to you at the conclusion of the study.

Thanks again for your participation in this study. It is greatly appreciated. Should you have any questions regarding these instructions, or any other further questions regarding this study, please feel free to contact me, at any time.

Very Sincerely,

Erica Montanye
Walden University
Doctoral Candidate