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APPENDIX III

ABSTRACT

The burgeoning intricacies of the urban landscapes often tend to mask the nuanced experiences of their inhabitants. While a preoccupation with globalization and the historical development of urban centers is visible, the socio-spatial relation and effect of the city on its inhabitants remains hidden. Particularly overlooked are the sensory experiences of people living within cities, which Borer (2013) describes as being drowned out by the cacophonies of urban infrastructure. While early theorists like Simmel (1903) analyzed the psychological toll of sensory overload in the city, a gap persists in the understanding of potentially neurodivergent experiences within this sensory landscape, in particular for the education system and those who work in such environments.

This study delves into this overlooked dimension by investigating the sensory aspects of inhabitants' relationship with the metropolitan urban landscape. It seeks to answer several key questions, such as the frequency and prevalence of potentially neurodivergent traits in the general population measured through self-reported sensory processing sensitivity, burnout, and perceived environment in teachers. This study adopted a sequential multi-stage clustering strategy to collect a target sample of male and female public school teachers in Lahore city. The two-stage mixed methodological study involved using a Perceived Environmental Quality scale, a Highly Sensitive Person Questionnaire, Maslach's Burnout Inventory for Teachers for the quantitative state and qualitative measures involving in-depth interviews with volunteers who score sensitive on the sensory profile questionnaires. The results indicate teachers with higher sensory processing sensitivities report higher burnout as compared to teachers who do not have sensory processing sensitivities.

Chapter I: Introduction

1.1 Statement of the Problem

The condensation of urban existences into metatheories and analyses about global cultures, globalizations, and postcolonial identities is analogous to the seventeen-something million people crammed into the average South Asian metropolitan center; the conversation about the bodily and sensory identities of those living within these rapid, ever-changing sprawls is drowned out, perhaps by the noise of the very infrastructures that mandate a closer examination (Borer, 2013). Capturing the socio-spatial influence of the city on its residents as perceived by the senses remains a worthy empirical endeavor; similar to mapping brain functions, locating sensory geographies in the cities - rooted in the past and essential for future development - reshapes the disconnection between urban infrastructure, human sensory experience, health, and future urban policy (Borer, 2013).

While Simmel postulated the effects of external stimuli in urban environments, it was to theorize the inevitable espousal of the blase outlook. Such an outlook, emanating from the persistent bombardment of various stimuli or the intellect, triggers apathy, and a recalibration of energy sources helps retain individual freedom in the metropolis (Simmel, 1903). However, to what extent is this rational process “to preserve...unique inwardness” applicable to neurodiverse populations, or in particular those working in fast-paced, stressful environments that might collude with the city’s environments to produce distressing results?

1.2 Objectives of the Study

This research intends to investigate the sensory aspects of inhabitants’ relationship with the city, primarily the metropolitan urban landscape, by assessing self-perceived traits that are usually or commonly attributed to neurodivergent individuals such as sensory sensitivities, and

evaluating the extensiveness and the rate of occurrence of such traits in the overall population. It identifies these sensory sensitivities across several domains and examines them in relation to sociodemographic factors such as age, gender, class, and regional belonging, and studies them in the context of urban characteristics, such as mobility, locality, residence, etc. Furthermore, this research attempts to identify any correlations between sensory processing sensitivity and burnout among teachers, and if those experiencing higher sensitivity are at greater risk of burnout, and looks further into ways through which sensory activities and environments may be revamped or refined to resultantly improve the well-being and lifestyle of individuals with an elevated level of potentially neurodivergent traits.

1.3 Significance of the Study

In the ever-changing curtain and humdrum of urban cities and landscapes, Simmel's notions of the blase outlook and metropolitan life are extremely closely linked with the intricate complexities of sensory outputs. This not only helps reshape how individuals perceive and experience modern city life but also helps us discover how, with its never-ending influx of stimuli and its fast-moving pace and design, it can invoke a blase attitude among inhabitants, and specifically, as this study aims to explore, these feelings of detachment and indifference resulting from an overwhelming variety of sensations may create several sensory difficulties among neurodivergent inhabitants, altering their quality of life. Amidst this sensory cacophony of the metropolis, individuals who display traits attributed to ADHD and other neurodivergent conditions often experience and navigate a separate realm of reality where sensory perceptions may be heightened or diminished altogether (Balducci, 2009). The urban landscape, with its vibrancy and diversity, can, therefore, simultaneously invoke both sensory overload and sensory deprivation among neurodivergent inhabitants.

City planning, urban design, and policy frameworks can hold a promising potential to reduce the burden of sensory overload and offer solutions that are based on affordability, comfort, accessibility, and equity for all. It is observed that green spaces within the metropolitan landscape are widely recognized as a vital social and psychological determinant of health, particularly the protection of mental health, by acting as a buffer against life stressors and relieving a lot of the symptoms neurodivergent individuals and individuals with sensory sensitivities face with long term exposure to the stimuli of contemporary metropolis (Rucklidge, 2019). Pathways that are shown to link urban green spaces with mental well-being include but are not limited to, the ability of natural stimuli to encourage ‘involuntary attention’, which allows the brain to disconnect from the humdrum and recover from the chronic cognitive fatigue of city life, with an increased results shown among neurodivergent individuals (Rucklidge, 2019).

Studies have shown growing evidence of linkages between prenatal exposure to air pollution in cities and the development of different mental health symptoms and behaviors, evidenced by cases below current WHO air quality guidelines. Research shows that green spaces and better urban design and policy have a positive impact on “attention restoration, memory, competence, creation of supportive community and social groups, self-discipline, stress moderation, and improving behaviors and symptoms of ADHD” (McCormick, 2017).

There exists a close relationship between the physical arrangement of living spaces and the standard of living. The town’s physical structure, as compared to the modern city's infrastructure, allows for easy availability of spaces for gathering, accessibility, and mobility to local shops and friends’ houses, and fosters positive social structure of life, such as local community and agential opportunities such as volunteering (Mouratidis, 2021). Therefore, as global urbanization rapidly rises, urban planning plays a critical role in providing the tools necessary for a better quality of

living. Although the linkages between the surroundings and perceived well-being are not fully explored or understood by scholars and intellectuals, it is important to study the range of policy pathways available to develop these linkages. These policy pathways may include but are not limited to, traveling, leisurely activities, working opportunities, social relationships, residential welfare, emotional response, and both physical and mental health (Mouratidis, 2021). The strategies put forward for improving prosperity through positive urban planning may include improving public transportation and restricting cars, thereby limiting air and noise pollution and enhancing active travel; providing all-inclusive public and communal spaces based on equity and equality; maintaining, service, and conservation of urban scape, vegetation, and greenery; implementing strategies to reduce noise pollution; designing aesthetically pleasing and charming buildings and housing structures, based on the individual social and psychological requirements and preferences of residents, and to reduce socio-spatial disparities in addition to providing housing and transport accessibility for the more vulnerable groups of society, such as neurodivergent individuals (Mouratidis, 2021).

Measuring the quality of life is the nucleus of urban planning and design; for instance, theories such as those surrounding sustainability and urbanism, smarter growth, and new urbanism frequently and necessarily center it (Khalil, 2012). While previous discussions and frameworks have focused on the abundance yet unpredictability of this concept, giving special attention to individual elements, in order to achieve a subjective and better life quality, special emphasis must be paid to exploring the direct identification of the efforts that can be made towards relevant sectors, and empiricism that systematically measure the comprehensive and complex elements of quality of life within the urban metropolis.

This study examined a population particularly sensitive to environmental stimuli, not just as urban citizens but as academic professionals. Classrooms are bustling arenas of activity, and therefore stimulus, that demand constant support and attention to students. Such environments may be viewed as overstimulating, in particular to those also prone to sensory sensitivity. However, these environments do not necessarily offer any relief to the highly sensitive, in terms of creating better environments, coping, and regulatory strategies (Borman & Dowling, 2008; Roeser et al., 2013). Evidence displays that individuals who experience high levels of Sensory Processing Sensitivity (SPS) are highly in tune with their environments, display higher levels of empathy, and are consistently amending and adding to their stores of information (Aron & Aron, 1997). While these traits seem advantageous, they may also be contributing to stress in a stimulating environment such as that of a school (Evers, Rasche, & Schabracq, 2008). Thus, studying SPS, in a highly stimulating environment such as the city and the school, and teacher burnout could allow for a better understanding of creating relief zones within the city, and the education system. This study could have larger implications that seek to offer answers to the following questions; why do cities and their institutions bombard people with stimuli? How do highly sensitive people working in stressful environments cope and recover from burnout in urban settings where the stimulation does not cease?

1.4 Operational Definitions of Key Terms

1.4.1 Sensory Elements

Defining the sensory elements or perceptions is not as quantifiable as previously proposed. For instance, some scholars prefer to study the five senses, whereas others further group them into as far as twelve (Grahn & Stigsdotter, 2010). In the past, the focal aspect of architecture was based

primarily on vision or sight. For an urban population that spends much of its time inside, focusing primarily on visual or aesthetic qualities of architecture and ignoring other senses such as touch, smell, hearing, and taste created issues such as seasonal affective disorder or SAD with urban infrastructure ill-equipped to deal with growing urban issues such as noise pollution (Spence, 2020). This study prefers to take a multisensory approach that recognizes the compound impact of sound, vision, touch, and odor in addition to treating emotions as equally significant as cognition (Malnar & Vodvarka, 2004). Research on multisensory perception offers significant and valuable insight related to the senses and object perception. A multisensory approach is intended to develop better urban infrastructure and design based on emotional, social, and cognitive development (Spence, 2020).

1.4.2 Sensory Processing Sensitivity

Similarly, defining neurodiversity has taken much work and is still a subject of contention among researchers and neurodiverse people alike. However, one indicator of potential neurodivergence is sensory processing sensitivity or SPS. Aron et al., (2010) theorize it as “sensitivity to both internal and external stimuli, including social and emotional cues” (Gearhart, 2018; Aron & Aron, 1997). SPS refers to the neurological processing of environmental stimuli, not organ capacity. The Highly Sensitive Person Scale (HSPS) measures sensory processing sensitivity across three domains; those that measure an individual’s mental response to internal and external stimuli, the frequency or intensity of measure aesthetic pleasure and awareness, and the intensity of external stimulus causing “unpleasant sensory arousal” (Gearhart, 2018; Aron & Aron, 1997).

1.4.3 Burnout

This study builds upon Maslach's definition of burnout, which is a psychological state characterized by three domains; exhaustion, cynicism, and detachment related to the job and feelings of inefficacy and low sense of achievement. These domains included depleted energy, fatigue, irritability, reduced idealism, low productivity, morale, and low coping mechanisms (Maslach & Leiter, 2001).

1.5 Research Questions

1. What is the prevalence of Sensory-Processing Sensitivity among public school (primary, secondary, high) teachers in Lahore?
2. To what extent are teachers who are identified as having a high likelihood of sensory processing sensitivity at a higher risk of burnout compared to teachers with no sensory sensitivity?
3. Is there a correlation between domains of sensory processing sensitivity and burnout in teachers with sensory processing sensitivities in Lahore?
4. Is there any association between the socio-demographic characteristics (age, gender, marital status, occupation and regional belonging) and burnout in teachers with sensory processing sensitivities in Lahore?
5. Is there an association between urban characteristics (residential, mobility, local affiliation) and burn out in teachers with sensory processing sensitivities in Lahore?

1.6 Hypotheses

H1: There will be a significant mean difference in the risk of burnout in teachers with sensory processing sensitivities and teachers without sensory processing sensitivities. (Done)

H2: There will be a positive correlation between domains of SPS and burnout in teachers with sensory processing sensitivities in Lahore.

H3: There will be significant difference in sensitivity processing between males and females.

H4: There will be a significant mean difference in burnout with respect to noise, air quality, and urban aesthetics.

H5: There will be a significant correlation between sensory processing sensitivity with respect to noise, air quality, and urban aesthetics.

Chapter 2: Review of Related Literature

2.1: The City as a Human Space

Cities are considered to be providers for people (Zijderveld, 2009). They not only serve their functions to provide employment, duties, and other practical pursuits but, most importantly, provide modes of emotionality. The sentiment expressed towards cities may range from admiration to aversion, but despite the rhetoric of shared rationale and integrated modes of administration and design, each city has a soul, personality, and culture of its own, as if it were a living, breathing thing. This is to say, cities evoke emotional and psychological responses from their inhabitants (Zijderveld, 2009). The city culture often has a human essence, in that it comprises all aspects of human experience, from the lowest to the highest levels. Urban or city culture contains both economic and civil culture, which contributes to a city's vitality and vibrancy. When it comes to contemporary urban complexities and paradoxes, we observe a weakening of economic and civic culture, which leads urban administrators and organizations to think of means to solidify conditions and avoid the surfacing of an urban anomie. As suburbanization has surfaced, the "edge city", and cyberspace, some scholars and intellectuals are of the view that the value of cities as integrated spaces of living and working, may be a thing of the past. Zijderveld (2009) argues that humans have always been and will continue to be social animals, who strive for social connections and community, especially in economic, political, and socio-cultural spheres. Since time immemorial, cities (or some form thereof) have always provided a space and modes of environment that encourages and fosters these needs of people. Academic conversations have shed light on multiple facets of urban inclinations, the structuring and implications of city life, the evolution of metropolitan culture, intricate connections between urban spaces and state interventions, as well as the cultural aspects of urban revitalization. Within this context, experts

often position the city's economic and civic culture as pivotal to both modern urban governance and urban democratic processes. In that aspect, emerging forms of technology are viewed as being allies to urban renewal. Most postmodern treatises on the end of the city are unsystematic. In contrast, some scholars put the qualitative dimensions of the city into focus, catching its pulse and rhythms in a systematic context that prior literature has often overlooked. As such, these studies prove to be of great significance to urban administrators, policymakers, and designers alike.

Urbanization is observed to be growing around the globe. In the year 2008, it was observed by researchers that around half of the world's population resided within cities. According to official statistics, each week, the population of cities increases by 3 million people; by 2050, the urbanization level is predicted to rise up to 70 percent (UN-Habitat, 2008/9). With this continuing rise in urbanization, factors such as the climate crisis, energy use, and others associated with urban life, such as health and mental health, will also be affected as they work in conjunction with each other. This would and has created a plethora of new challenges worldwide and raised new questions on what the future of urbanity and city life actually holds for us. Looking at the Athenian Charter (1933/2003), urban development and prosperity are encouraged (Corbusier, 1973), whereas the Leipzig Charter analyzes contemporary trends in Europe, like demography, to come up with frameworks for sustainable urban development.

The studies and predictions in urban sustainability and metropolitan development, however, require sound scientific empiricism and methodologies to achieve their goals. The conventions on science with effective titles, which mostly start with an “s”, such as “smart city,” “sustainable city”, “slow city”, (“citta slow” initiative, in Italy and internationally), “shrinking city” or the “SENSEable City” view the development of cities and predict the future of urbanity and urban development. Notably, the study of urban life cannot be attributed or restricted to a

particular field or dimension; they must bring together experts, scholars, intellectuals, and researchers from different fields that consider the historic delineation and development of urbanity and its past experiences that do not revolve around a linear and unilateral mode of study, as this would prove to be inadequate and inefficient in solving the problems of an ever-changing and evolving life of the city. City life is complex and paradoxically intertwined and consists of various factors and drivers, and as such, a study on the metropolis should reflect in the same manner (Schneider et al., 2014).

There exist no qualms about the fact that with the internet revolution and technological spurge, the peace and serenity of daily life has been disturbed. The city has become a medium of a message (Kittler, 1995), that conveys positive sentiments and visual appeal for the beauty of the city. Notably, urban development began to rely on the way it is presented and marketed; the city had to appear to be attractive and liveable, as it is now a place that harbors individuals, companies, and tourism. Therefore, both the physical as well as the medial aspects of the city illustrate its aesthetics through advertisements, architecture, and pictures.

According to the German philosopher Wolfgang Welsch the buzzing lifestyle of cities is hyper-aesthetic as it sways away from authenticity and art (Welsch, 1996). Hyper-aestheticism caters to mostly the outward look of urban sprawl; the centers are decorated only to check the boxes of creativity and external beauty for the purpose of publicity. It seems that art is not a necessity, and publicity has taken a bigger relevance to incentivizing aestheticization. Aestheticization in a way is publicity for the city; the city centers, in particular, seek to show an attractive and pleasing form of themselves. It is the “renaissance of the city centers” (Dangschat, 2011), where the supposedly displeasing edges are to just disappear. This process is described as a “Disneyfication of Cities” (Roost, 2000) in accordance with Bryman’s “The Disneyization of

Society” (Bryman, 2004). The agenda setting and goals put forward by Walt Disney Company, along with its world-famous theme parks, take center stage in the cities for the purpose of entertainment (Roost, 2000).

In his seminal 1967 lecture "Of Other Spaces," later published in 1990, Michel Foucault introduced the notion of "heterotopias," advocating for more diversified spatial configurations. This concept catalyzed discussions and inquiries into urban issues within the humanities (Foucault, 1990; Christians, 2010). Foucault stated that “heterotopias construct space through their diversity;” according to this, we understand that certain spaces execute certain tasks, and their meanings and contexts change with their relationship to adjoining spaces in history (Foucault, 1990). Therefore, the whole place changes at the same time. This further reiterates the belief that change is a big part of spaces and performs a crucial role in keeping the history and identity of the place relevant. Then the idea of aestheticization is described as a threat to diversity and is often questioned. New space cannot develop, and the concept of urbanity starts to lose its essence (Foucault, 1990).

As discussed above, the general public serves as the motivation for setting up the space in a pleasing manner, which seeks to promote a certain kind of presentation that caters to the values and ideals of the company. According to the Urban Sociologist, Hartmut Häußermann, the people in question here are treated as nothing but mere consumers fueling into the demand and enhancing the ideals of capitalism (Häußermann, 2006). As a result, Urbanity is often used as a justification for Urban arbitration and development, whereby it becomes a lifestyle phenomenon that is desired by all but created by none.

“The New Charter of Athens” was developed by European spatial planners and architects in 2003 in response to the heightening challenges that targeted the economy, environment, and urban growth. The citizens of such cities that are connected form an association and unity. They play an

integral role in the political and socioeconomic concerns of their respective cities. Moreover, the interconnectivity gives impetus to culture spillover, which further enriches the individuality of citizens and relates it to the identity of their cities (ECTP, 2003). Another key factor is mobility. “In the connected city and its regional hinterland, new technologies will be applied creatively to provide a variety of systems of transportation of persons and materials, and of information flows” (ECTP, 2003). A recent phenomenon is the decentralization of energy supplies and their development which leads to interdependence and integration of mega cities. ECTP states that “local and regional economies will be increasingly connected to the economies of other cities and regions, both nationally and internationally” (ECTP, 2003). As a result, communication and interconnectivity also get boosted. To conclude, it is important to note that society and the environment share an important nexus for the prosperity of urban development.

2.2: Neurodivergence and the City

Defining neurodiversity is perhaps just as complex as quantifying all aspects of the city. Walker (2014) offers three distinct meanings for the term. Neurodiversity, according to Walker, may be viewed as a “factual reality,” whereby it indicates the existence of diverse minds, in a similar fashion to “biodiversity,” which refers to biological diversity as a factual reality and nothing more. In a strictly factual sense, therefore, further variation can exist among neurodivergent individuals, given that individuals have unique brains and, consequently, unique experiences, hence the difficulty in quantifying such differences (Dwyer, 2022).

The other definitions of neurodiversity are much more complex. Walker (2014) has put forward a “neurodiversity paradigm” that helps identify a theoretical perspective, also referred to as a “neurodiversity framework” by other scholars and intellectuals (Kapp, 2020). As per Walker, there's a distinction between the "neurodiversity approach" and the "neurodiversity movement."

The latter is a socio-political and activist initiative aimed at advocating for the rights and welfare of individuals who are “neurologically atypical,” often referred to as "neurodivergent." (Walker, 2014). A prominent difference between these definitions is in their relation to the social model of disability (Dwyer, 2022).

Dwyer (2022) explores neurodiversity and its approaches to better understand the arenas of disability and examines the reason for ambiguity regarding the conceptualization and purpose of the two terms and how this confusion inevitably leads to debate and conflict regarding neurodiversity approaches within academia, medicine, and real life. A controversial stance on neurodiversity claims that approaches surrounding neurodiversity tend to place sole focus on the individual characteristics of disability, while Dwyer (2022) attempts to conjoin literature regarding the individual, as well as social contributions and acknowledgments to neurodiversity and disability. The author further addresses other controversies and challenges surrounding neurodiversity and its approaches, their scope, and implications in terms of diagnostic categorization. Recent literature has consistently aimed to provide recommendations in the field of developmental research, placing special focus on neurodiversity-aligned research. These recommendations urge scholars and academics to study neurodiversity from a holistic perspective, combining individual as well as contextual/environmental factors that define and affect neurodiversity. This would include considering both the strengths and weaknesses of research, recognizing and addressing personal biases, and placing neurodiverse individuals at the core of research and its interventions by listening to and learning from them and their daily lived experiences in the environment we have cultivated around them.

One major focal point in the research of developmental sciences is atypical development, which largely encapsulates what is referred to as “neurodevelopmental disorders” including

autism, ADHD, intellectual disabilities etc, along with the hurdles of psychological health development. A prominent limitation up until now has been the misconception of the pathological nature of disabilities and putting them in the same ambit as that of medical frameworks. Therefore, according to this assumption, the logical response to develop solutions would cater towards transforming disabled individuals into able-bodied individuals with atypical development. Although the medical model, with its assumptions and solutions, has historically been helpful in making contributions to how disability and its solutions are perceived, its reception has not been very warm by the communities concerned (Constantino, 2018).

These approaches may be frustrating for disabled individuals, as they emphasize “curing” and “normalizing” them for society, without taking into account their willingness to become “normal”. While the medical model prioritizes the concept of normalization as the focal point of its research and therapeutic interventions, recent studies indicate that issues arise when neurotypical individuals attempt to "mask" or disguise their symptoms to conform to societal expectations. Such camouflaging efforts are often linked to negative outcomes like fatigue, burnout, and various mental health challenges, including anxiety and depression (Crook et al, 2021). Existing literature in this context raises some concerns about the goals laid out by the medical model. (Mandy, 2019; Williams, 2021), In this respect, it is urged that research and development frameworks that focus more on environmental factors and building landscapes in a way that caters to neurodiverse individuals should be at the focus of urban planning and policy. Gomes (2023) explores the relationship between sensory stimuli and human behavior within urban spaces. The author helps us understand how spatial conditions are mediated and supported by sensory experiences and how they impact individual and social activities, while applying this phenomenon to a wider, global cityscape. She challenges the “visualism” of urban planning and

design approaches and states that urbanism should be explored through a multi-sensory analysis that places greater focus on non-visual senses in understanding and studying the environment. This phenomenon is best applied in domains with a distinctive variety of urban spaces and land use, and compact living. She introduces “sensewalks” and “sensetalks” as innovative user-centered methods of data collection, and develops “sensescapescapes” to understand the dimensions of future exploration of urbanity and urban spaces within the contexts of environmental psychology, sensory analysis, and spatial planning.

A particularly ignored neurodiverse population within the urban landscape is the aging population. As it is increasing worldwide, so are the host of geriatric conditions such as cognitive disability and chronic disease associated with it. Neuro Diverse populations such as these have a unique set of challenges around mobility and navigation within the environments. Aging individuals in particular are observed to have minimal interaction within the urban landscape, further exacerbating the risks of illnesses and co-morbidities associated with minimal mobility and social and physical interaction. Empirical evidence suggests that this is directly linked to reduced access to healthcare services and resources, and communal activities which curtail the risk of despair. Although the response to the challenges of this aging neurodiverse population is imperative, there exists little evidence for interventions in relation to experience in public spaces from the perspective of neurodiversity.

Landorf, et al. (2012) put forward a comprehensive framework that looks into the linkages between the cognitive and sensory abilities of elder citizens in addition to their control over the urban environment as well as navigating it. One of the SDG’s focuses on analyzing the influence of local communities on well-being. In order to create people-centered urban planning and design frameworks, it is imperative to take into account individual and community needs and understand

what type of interventions are required, when and where. Within this framework, Cassarino et al. (2020) examined the connections between how residents view their neighborhood's traits and their levels of cognitive vulnerability, taking into account age and specific urban features of the residential environment. The findings showed a correlation between higher levels of self-reported satisfaction with one's neighborhood and reduced cognitive vulnerability, especially among adults and the elderly in both rural and urban areas (Cassarino et al, 2020).

The link between neighborhood characteristics and perceived well-being is complex, but it helps highlight the potential benefits and need for neighborhood pleasantness for cognitive ability and sensory sensitivities, especially among older populations.

2.3 Teachers, Burnout, and the Environment

A lacuna exists within scholarly inquiry concerning the mental health implications for potentially neurodivergent educators laboring in urban settings. Contemporary research often neglects to scrutinize the experiences of teachers suffering from sensory burnout—a condition exacerbated by the cacophonous and overstimulating infrastructures of metropolitan areas (Lindsay, 2017). This omission raises questions about the unmet needs of this population and the ensuing ramifications for educational quality. Lindsay (2017) offers compelling evidence that Sensory-Processing Sensitivity (SPS) significantly correlates with an elevated likelihood of occupational disengagement among educators. Given the teaching profession's incessant demands for interpersonal interactions—ranging from individualized student needs to familial and community involvement—the urban milieu's sensory onslaught becomes a considerable stressor. Such factors have contributed to an attrition rate where one out of every twelve educators vacates the profession, and 25% categorize their occupational experience as extremely stressful (Lindsay, 2017).

Human ecology models emphasize the inextricable linkage between environmental quality and an individual's holistic well-being, both physical and mental. Poor air quality and escalating environmental degradation not only engender climate anxiety but also precipitate sensory overstimulation in individuals with heightened Sensory-Processing Sensitivity. This, in turn, exacerbates pre-existing stressors (Van Kamp et al., 2003). Urban developmental paradigms, often espoused by planners and sociologists, prioritize economic viability over ecologically sustainable and human-centered approaches. Regulatory hurdles and other systemic barriers often inhibit the realization of comprehensive, ecologically sound visions in urban development (Van Kamp et al., 2003). This economic prioritization invariably seeps into the educational sector, manifesting in the form of privatization efforts that recalibrate the learning environment to the detriment of both educators and students.

While considerable work has been dedicated to understanding the factors that may contribute to sensory overstimulation and the ensuing neurocognitive burden, there remains a lack of empirical data delineating the specific ramifications of Sensory-Processing Sensitivity on educators' classroom experiences. Furthermore, there is a scarcity of research explaining how urban educational settings, either through resource availability or the absence thereof, modulate these experiences.

2.4 Urban Public Policy

For decades, GDP (Gross Domestic Product) has remained the measure for growth and progress. However, there is an increased debate among intellectuals and scholars on whether the standard of living should be the main consideration for well-being. Although quality of life has been studied thoroughly in the past, creating tools of its measurement within the context of the city has been an area unexplored. Considering each aspect and tool for measurement applicable for all

regions and societies can lead to unprecedented complexities. In this context, Khalil (2012) looks into the factors that measure the quality of life and welfare in two Egyptian cities, explores the aspects that comprise good quality of life, and states that there are several perspectives to the concept, laying special emphasis on the subjective perspectives. She explores how strategic urban planning positively affects quality of life. Her findings show that perspectives regarding quality of life are diverse and varied, especially in the Egyptian context. However, the tools exist among stakeholders to improve the subjective perspectives of quality of life by implementing strategic urban planning designs.

One of the main issues pertaining to the improvement of quality of life is urban planning. Rapid population growth is seen as the leading cause of rising global urban populations and processes of urbanization, which makes the issue of quality of life more relevant to our study. Population growth leads to policy innovations and rapid changes in the characteristics of cities to accommodate the ever growing rise in inhabitants, which makes the argument for environmental linkages with quality of life more pertinent than ever. Fueled by the Covid-19 pandemic, global attention has intensified on the impact of built urban spaces on quality of life. This scrutiny has underscored the pivotal role cities have not only in steering urban development but also in influencing both the physical and mental health of their residents (Mouratidis, 2021).

Since knowledge and speculation upon the linkages between built environment and quality of life is steadily increasing, several scholars and intellectuals have attempted to synthesize the two aspects via urban planning. Some researchers propose a methodology for quantifying and studying the link between built environments and well-being (Marans & Stimson, 2011) while others identify three key routes through which the built environment can positively impact health and well-being: encouraging physical activity, fostering social and community cohesion, and

facilitating equitable access to nutritious food options (Kent & Thompson, 2014). In a similar context, Pfeiffer and Cloutier (2016) study the key driving points of happiness in communities and neighborhoods and synthesize that urban design that centers around open, natural, green spaces tends to foster social interaction and safety, leading to a better quality of life, which suggest that geographical contexts help shape subjective wellbeing of inhabitants (Wang & Wang, 2016; Pfeiffer & Cloutier, 2016). In 2018, Mouratidis outlined a framework to explore the influence of neighborhood-level built environments on subjective well-being through four specific channels: social interactions, recreational activities, health, and emotional experiences (Mouratidis, 2018). Similarly, Shekhar et al. (2019) pinpoint key factors like community involvement, accessibility, personal identification, and safety as crucial for evaluating the relationship between built environments and subjective well-being (Shekhar et al, 2019). Further, Tonne et al. (2021) present strategies for fostering sustainable urban development, advocating for integrated planning and evidence-based policy formulation while emphasizing the importance of monitoring policy execution.

It is evidenced through literature that urbanity is closely linked to mental well-being and sensory sensitivities, with increasing risk factors for conditions like schizophrenia (Gruebner et al, 2017) and anxiety (Lederbogen et al, 2011). Some of the reasons highlighted by literature include material depravity and disparity in city life (Gruebner et a., 2017). It is also evidenced that residents inhabiting city centers and surrounding areas report higher anxiety (Mouratidis, 2020). The possible reasons for this stem from disengagement from nature, intense pace and rhythms of life, noise, and overcrowding, with increased cognitive fatigue in inhabitants who dwell in areas of extreme noise exposure, such as dense, vibrant localities, which exacerbates mental wellbeing and increases risks of mental health issues. Litman (2020) suggests noise reduction strategies that may

prove beneficial in improving mental health outcomes such as restricting the use of loud vehicles, reducing traffic speed and restricting noisy activities among other things.

That being said, urbanity can also foster positive mental health outcomes, increasing mobility and social interaction, especially among women, older adults, and neurodivergent individuals who are at an increased risk of anxiety and depression caused by urban density (Melis et al., 2015). Litman (2020) posits that residing in urban environments carries both benefits and risks for mental health. The research indicates a potential elevation in risks for mood disorders, psychosis, and certain types of addiction. However, it also suggests that urban living could mitigate risks of dementia, specific substance abuse, and suicides while generally enhancing happiness for economically disadvantaged or socially marginalized individuals. The increase in reported rates of mental illness in urban areas may, in part, be attributed to more thorough reporting. These urban settings also offer better access to mental health services and more opportunities for social and economic advancement, thereby contributing to overall mental well-being (Litman, 2020). However, an overview of research indicates that a massive research gap remains in the study of causal linkages between mental health and the surrounding environment (Núñez-González et al, 2020).

A main observation is that better health and longer life are more accessible in urban lifestyle (Dye, 2008). However, these outcomes may be seen more among the more privileged urban residents who enjoy a better lifestyle (Dye, 2008). In the US, compact urban development and designs are associated with higher rates of life expectancy than urban sprawl (Hamidi et al., 2018). In a similar context, it is seen in Oslo, Norway that inner city inhabitants report higher health rates than those residing in suburbanites, despite having controls for individual socioeconomic characteristics in place (Ihlebak et al., 2020; Mouratidis, 2019).

The socio-economic and cultural factors all mix up to give reasoning to this phenomenon in urban areas. Among them are a general encouragement and accessibility of walking and compact spaces suitable for cycling (Stevenson et al., 2016). Moreover, the availability of healthcare facilities coupled with effective transportation gives urban localities a competitive edge over those in dismal conditions in rural areas (Mouratidis, 2018). However, even the presence of these top quality of facilities do not cover the ambit of those in marginalized and vulnerable communities. Hence emphasis should be on designing an effective and inclusive framework that covers all the strata of the society, leaving no economic class behind (Khomenko et al., 2020).

Researchers have also contributed to urban planning knowledge by providing evidence-based propositions that could potentially help guide policy practitioners and policymakers on urban planning and design issues. These suggestions include procedures and approaches that incorporate practical ways to enhance well-being by focusing on the most relevant aspect, which is the built environment. Skewed towards economically developed countries, as developing countries lack the crucial infrastructure, these strategies still provide guidance to some degree on urban planning and development. Previous information and suggestions have been incorporated in these approaches as well (Mouratidis, 2021).

In order to achieve urban utopia, a city must find its balance in every aspect. For this, the participation of citizens in reform and policy is pertinent. A city must be connective in nature, with its citizens who actively participate and influence the urban turn, and fosters the free flow and development of urbanity. When locals of a place come together and participate, a sense of identity is ignited, further highlighting the history of cities in terms of being a connective entity. Therefore, in order to achieve the connectivity of cities, drivers like society, economy, and culture must be, in conjunction with frameworks that cater more towards the physical comforts of the city, (for eg.,

air quality, noise pollution, etc). One such framework is the “Citizen Satisfaction Index” which integrates 21 items and which is said to be responsible for the satisfaction level of citizens. Among them is the availability of greenery, atmospheric and environmental pollution, employment perspectives, and cost of living and residence (Zeneker et al, 2013).

In light of the discussions that have been outlined, several potential methodologies for amplifying subjective well-being emerge. These encompass enhancing public transit safety and conditions while minimizing private automotive utilization; facilitating straightforward access to essential services; equitable distribution of facilities; deploying technology to foster greater societal inclusivity and life quality across a diverse populace; unifying the form and function of urban infrastructure; prioritizing the development of inclusive communal spaces; preserving and sustaining urban flora and transportation networks; implementing noise abatement measures; constructing aesthetically pleasing edifices that meet the needs of varying demographic groups; considering marginalized populations in policy formulation and support provision; grounding urban policies and legislation in empirical evidence; bolstering the flow of insights and data between urban planning and public health sectors; adopting metrics for evaluating outcomes in urban planning; and applying strategies for citizen empowerment and participation, with special attention to incorporating vulnerable sectors in all stages of planning, implementation, and oversight.

Furthermore, as urban planners and designers aim for more health-promoting environments, the conceptualization and realization of urban 'sensescaples' could serve as a valuable tool. This would assist in reimagining urban layouts in ways that engage multiple senses, thereby elevating the prominence of non-visual sensory experiences within the urban milieu.

Chapter 3: Theoretical Framework

3.1 Simmel's Theory of the Blasé Attitude

Georg Simmel's ideas about metropolitan life remain of utmost importance when making a study of modern individuals, and their perceived, shared, and complex self-identities, especially in relation to the cityscape. In his seminal work, *Metropolis and Mental Life*, Simmel identifies the troubles faced by the modern individual as a tiresome tug of war between the preservation of the self or identity and the warfare waged on this self through deep social and historical forces such as that of the city's existence and purpose (Simmel, 1903). Some of this battle appears to be the development of hyper-specialization in society, competition for survival amid the interdependence between individuals, and the resistance to becoming watered down and tired. He proposes that an examination of the deeper meaning of modern life and the "cultural body" demand of us a solution to the complex problems created by the metropolis for the individual. This question, is inherently, one that asks for a deeper look into the relationship between external environments - that of the metropolis - and internal environments contained within the individual (Simmel, 1903).

He refers to the spectrum of stimuli created by the metropolis; these rapidly flickering images, unexpected and sudden in nature, crowding the individual, all within a single, quick glance, burden the mind more so than the slower, longer-lasting images and impressions which are of a more routine nature. The psyche of a city is fast-paced, involving rapid intersections between social, economic, and professional life. The rural life, in contrast, offers a more lax "sensory, mental imagery", subject to even, habitualness. This means that where rural life offers and demands deep, emotionally arousing connection, steadily developing and based on the mind's unconsciousness, the city, in contrast, offers a disruptive environment subject to constant upheaval.

Such an environment leads to the metropolitan developing a defensive mechanism that forces this city dweller into the use of rationale and intellect, both serving to protect the rich inner life against the pervasive forces of the city. Now, a rational being forced to reckon with a city of unknown peddlers and vendors adopts an “economic egoism,” devoid of personal and emotional exchanges, dependent solely on economic exchange in what Simmel labels the “money economy.” This money economy, thus, is the foundation of the city. (Simmel, 1903)

This foundation is contingent on several factors or traits, a deviance from which excludes the calculating individual from city norms; punctuality, calculation, and preciseness are the features of this money economy that create a life preferable to traits such as impulsiveness and irrationality, which are internal mechanisms, rather than the general and more acceptable, external schematizations (Simmel, 1903). According to Simmel, the punctual nature of city relations and functions, the bombardment of stimuli, and most importantly, the objective value of money, which serves as the ultimate value deciding factor, contribute to the creation of the blasé attitude. This attitude is an omnipresent feature of the city simply because cities are the central locales where monetary exchanges occur. The blasé attitude is simply a response to the nervous, reactionary death of the individual, a rejection of reaction to incoming stimuli that further causes the personality to wither with prolonged participation in the money economy (Simmel, 1903).

This money economy, as stated above, dictates the individual's relationships in a city of strangers. A form of protection, it enables justified mistrust against strangers and the formation of closer social, economic, and political circles, based not upon individual freedoms but collective unity, especially against outgroup entities. The metropolitan life, according to Simmel, in its restrictive smaller groups, offers large-scale anonymity and freedom. Thus, the city, in all its imagery, is a deeply personal space, impacting the very soul of its residents (Simmel, 1903).

3.2 Wirth and Urbanism as a Way of Life

Inspired by the works of Simmel, Louis Wirth became a prominent thinker in the Chicago school of thought and contributed to understanding the spatial specifications of the urban hippodrome. He came to think of such social patterns as a consequence of the power struggle and competition among citizens and viewed the city not as just an arena of social containment like Robert Park but as an environment with an active impact on citizen behavior. The foundation of his research attempted to reach a conclusive idea about the city's nature and what particularities of this nature created unique changes in human behavior, which he would refer to as an "urban way of life" (Gottdiener& Hutchison, 2010).

He came to identify several factors in his essay, *Urbanism as a Way of Life*. Firstly, urbanism resulted from a massive, dense population of a heterogeneous nature packed into the city, thus offering quantifiable factors with which to measure variables in the city. Given the massive stress of associating with strangers through competition rather than kinship, mutual exploitation can be expected within the city, which also hyper-compartmentalizes individual roles. Despite its freedoms, the city creates a sense of depersonalization in its residents, who suffer from alienation and increasingly rely on mass media and social movements wherein they offer chunks of their individuality to fit into a community greater than themselves. (Gottdiener& Hutchison, 2010) One notable contribution Wirth made to urban research was the idea that city evolution is contingent upon immigrants, which is to say, create difference and heterogenize a population. (Gottdiener& Hutchison, 2010)

Chapter 4: Research Methodology

4.1 Nature of the Study

This study adopted a sequential mixed method correlational design, using standardized questionnaires, in addition to further qualitative measures meant to offer an in-depth explanation of the frequencies observed in the quantitative part of the study. This study also used a repeated measures design wherein participants who filled out the quantitative questionnaire volunteered for the qualitative interviews and focus groups.

The study was divided into two stages, the quantitative stage and the qualitative stage. The quantitative stage employed two instruments, namely the Highly Sensitive Person Scale (HSPS), and the Maslach Burnout Inventory for Teachers, in addition to items measuring Urban Environmental Quality. All three scales have been adapted and translated in Urdu for the Pakistani population.

The second stage of the study consisted of qualitative in-depth interviews consisting of those who display high sensory sensitivity and burnout. The mixed methodological instruments may be found in the Appendices.

4.2 Ensuring Ethics

The study ensured all participants were offered a briefing of study aims and objectives before becoming a part of the quantitative and qualitative parts of the study. Informed consent was obtained from all participants, who were informed of their ethical rights, such as the right to anonymity, confidentiality, and the right to withdraw themselves from the study. The anonymity and confidentiality of all participants was ensured; at no point in the study was information that could cause an obvious identification of the participant revealed or asked. In the qualitative section,

all participant names were changed to protect their identity. All recording devices were used with the full consent of the interviewees in the qualitative phase. Private online rooms with invite-only access was used to conduct interviews with the freedom to exit at any time of their own accord.

4.3 Sampling Design

This study used a sequential multi-stage clustering strategy to collect target sample of male and female public school teacher in Lahore city.

4.3.1 Selection Criterion

Stage 1: Quantitative Research

All participants met the following criteria:

1. Be Pakistani nationals
2. Currently reside in Lahore
3. Currently employed as a teacher in a public school in Lahore city

Stage 2: Qualitative Research

All participants were volunteers from the initial quantitative stage who indicated willingness for a follow-up.

4.3.2 Sampling Technique

For stage 1, the quantitative phase: the study used Multi-stage cluster sampling. In the first stage one out of five tehsils were selected. I chose Lahore city as it has the highest population density. (Punjab Bureau of Statistics, 2023)

For stage 2 the qualitative phase, a purposive sampling technique was employed. For volunteers, only those who showed scores displaying sensitivity in HSPS, were selected to provide insights.

4.3.3 Target Sample

When assessing the educational framework of the Lahore Division, a composite examination of the teaching staff across varying educational tiers provides valuable insights. The dominant sector is primary schools, with a substantial workforce of 3,082 teachers, where female educators noticeably lead, constituting 1,881 out of the total. Middle schools maintain a teaching staff of 3,073, with an almost balanced gender distribution. High schools, however, field a larger cohort of 8,087 teachers, again with a considerable number of female educators. The highest secondary level has a more contained teaching strength of 1,458, with females taking the lead. Aggregating these numbers across educational levels, the division houses a significant total of 16,700 educators. Employing Taro's formula to determine a representative sample size for investigational purposes from this collective teaching populace, the recommended number approximates 400 teachers. This methodical approach accentuates the imperative of discerning the comprehensive teaching demographic in the Lahore Division, which is of paramount significance for wide-ranging educational research. The following tables display data for the distribution of schools, students, and teachers, followed by the average number of students and teachers per school.

Level	Schools (Male)	Schools (Female)	Students (Male)	Students (Female)	Teachers (Male)	Teachers (Female)
Higher Secondary	9	19	13,415	37,503	386	1,072
High	153	180	156,939	196,443	3,369	5,718

School						
Middle School	87	143	59,001	63,656	899	2,174
Primary School	337	290	71,956	63,045	1,201	1,881
Total	586	632	301,311	360,647	5,855	10,485

Figure 1.1: Distribution of Schools, Students, and Teachers in Lahore District (Punjab Bureau of Statistics, 2023)

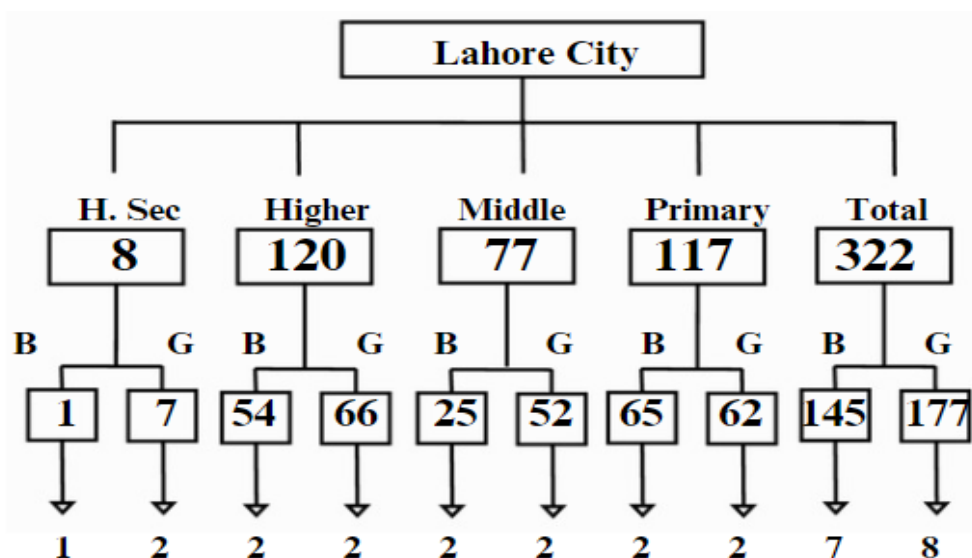
Level	Avg. Students/School (Male)	Avg. Students/School (Female)	Avg. Teachers/School (Male)	Avg. Teachers/School (Female)
Higher Secondary	1,490	1,974	43	56
High School	1,025	1,091	22	32
Middle School	678	445	10	15
Primary School	214	218	4	6

Figure 1.2: Average number of Students and Teachers Per School (Punjab Bureau of Statistics, 2023)

As stated above, the Sample size for the study was determined by the formulae (Taro, 1967): $n = N/1+N(e)^2$.

Where, n = the desired sample size, N = the total (population which in this case is the total teaching staff across all tiers in Lahore Division), and e = Level of precision (margin of error, commonly set at 0.05 for a 95% confidence level). Given the combined teaching staff data for the Lahore Division, $N = 16,700$. (This is the sum of teachers from primary, middle, and intermediate levels in the Lahore Division) From the 5 Tehsils of Lahore, data will be collected from schools within

the Lahore City Tehsil, which contains the highest population density. The following table represents the sampling cluster within Lahore City:



4.4 Study Questionnaire

The study involved quantitative instruments and semi-structured interviews. The two quantitative instruments used in addition to demographic questions may be found in the appendix and are detailed below.

The Highly Sensitive Person Scale

This is a self-report instrument developed by Aron and Aron in 1997 to assess sensory processing sensitivity in individuals, including physical, social, and emotional stimuli that should take no more than 5 minutes to fill. (Gearhart, 2018; Aron & Aron, 1997). The HSPS quantifies variances in temperamental sensitivity across physical, social, and emotional stimuli and measures the operationalized trait referred to as sensory-processing sensitivity (SPS), which denotes how intensely an individual processes environmental sensory input. (Gearhart, 2018) Later studies

have pinpointed a tripartite structure for the HSPS, encompassing components like Ease of Excitation (EOE) that relates to mental susceptibility to external and internal pressures; Aesthetic Sensitivity (AES), which gauges an individual's capability for aesthetic discernment and appreciation; and Low Sensory Threshold (LST), assessing negative sensory reactions to environmental stimuli (Gearhart, 2018; Smolewska et al, 2006).

Response and Scoring

Respondents answer using a 7-point Likert scale where 1 refers to not at all and 7 refers to extremely. A composite score is generated by summing up scores for all the items that will be divided by 27. The score is generated for aesthetic sensitivity (AES), Ease of Excitations (EOE), and Low-sensor threshold (LST). The following items are used to score each subfactor as indicated in Gearhart's profiling of the scale. (Gearhart, 2018)

Aesthetic Sensitivity (AES): 2, 5, 8, 10, 12, 15, 22 (sum and divide by 7).

Ease of Excitations (EOE): 3, 4, 13, 14, 16, 17, 20, 21, 23, 24, 26, 27 (sum and divide by 12).

Low-sensory Threshold: 6, 7, 9, 18, 19, 25 (sum and divide by 6).

Adapted Maslach Burnout Inventory for Teachers with a Sensory Sensitivity Focus (Adapted-MBI-SS)

The Adapted-MBI-SS is a specialized self-report inventory designed to assess levels of occupational burnout among school teachers, with an added focus on the role of sensory sensitivity and environmental factors. The instrument is an adaptation of the original Maslach Burnout Inventory developed by Maslach, Jackson, and Leiter in 1996. The adapted version incorporates measures for Emotional Exhaustion (EE), Depersonalization (DP), and Personal Accomplishment (PA) along with Sensory Environmental Stressors (SES) and City-Related Stressors (CRS). (Maslach, Jackson, & Leiter, 1996) The Adapted-MBI-SS retains the traditional tripartite structure

of the original MBI, encompassing Emotional Exhaustion, Depersonalization, and Personal Accomplishment, and introduces two additional components:

1. **Emotional Exhaustion (EE):** Measures feelings of being emotionally overextended and drained by one's work.
2. **Depersonalization (DP):** Assesses an impersonal response toward students and colleagues.
3. **Personal Accomplishment (PA):** Gauges feelings of competence and successful achievement in one's work with people.
4. **Sensory Environmental Stressors (SES):** Assesses the impact of sensory elements such as light and sound in both classroom and workplace settings.
5. **City-Related Stressors (CRS):** Measures stress arising from commuting, neighborhood conditions, and other urban factors.

Response and Scoring

The inventory utilizes a 7-point Likert scale, with scores ranging from 1 ("Never") to 7 ("Always"). A composite score is generated for each of the five categories by summing the scores of all items in that category and then dividing by the number of items in the category.

1. **Emotional Exhaustion (EE):** Items 1, 3, 6, 8 (sum and divide by 4).
2. **Depersonalization (DP):** Items 2, 4, 7, 9 (sum and divide by 4).
3. **Personal Accomplishment (PA):** Items 5, 10, 11, 12 (sum and divide by 4).
4. **Sensory Environmental Stressors (SES):** Items 13, 14, 15, 16 (sum and divide by 4).
5. **City-Related Stressors (CRS):** Items 17, 18, 19, 20 (sum and divide by 4).

4.5 Data Collection

The researcher initially approached the heads of identified schools and sought permission to administer survey questionnaires and interviews. The quantitative questionnaire was digitally sent to participants through the school principals as the primary contact once permission had been given. The data was collected from both boys' and girls' schools. The interviews were conducted at the convenience of the participants, using online meetings. All meetings were recorded and transcribed, with meticulous notes kept by the researchers.

4.6 Data Analysis

The statistical operations of descriptive statistics and multivariate regression will be applied to analyze the data. The quantitative section of the study was analyzed using SPSS. The qualitative interviews were analysed using Braun and Clarke's (2013) recursive analytical approach to thematic analyses which is as follows:

1. Familiarisation
2. Coding
3. Theme identification
4. Defining themes
5. Writing up

The coding may be found in **Appendix III**.

Chapter 6: Findings

6.1 Quantitative Findings

This section encapsulates the findings from the self-report quantitative survey administered to 250 teachers within Lahore City (District). A sample of 153 participants based in Lahore was finalized for the analysis. 33.8% (50) of the sample was aged between 25 to 34 years, whereas 59.5% (88) of the sample was aged above 35 years. The sample consisted mainly of Punjabi ethnicity, representing 93.9% (124) of the proportion, while other ethnicities included Siraiki, Pashtoon, Baloch, and Baltistan.

Table 6.1: Descriptive Statistic

Variables	Levels	N	%
Age	18-24	10	6.8%
	25-34	50	33.8%
	35-44	36	24.3%
	45-54	16	10.8%
	55-64	36	24.3%
Gender	Male	77	52.4%
	Female	67	45.6%
	Others	3	2.0%
Ethnicity	Siraiki	2	1.5%
	Punjabi	124	93.9%
	Pashtoon	1	0.8%
	Baloch	1	0.8%
	Baltistani	1	0.8%
	Others	3	2.3%

When it comes to transportation preferences, personal cars are the most favored mode (32.7%), closely followed by personal bikes (38.6%). Public transport and carpooling are less popular choices, at 28.8% and 4.6% respectively. Most respondents (37.3%) live within a 1-5 km distance from their workplace or school, influencing their transport decisions.

The availability of parking spaces also affects transportation choices, with a majority reporting access to residential (63.2%) and work (83.8%) parking spaces. This availability likely influences the prevalence of personal vehicles as the preferred mode of transportation.

Table 6.2: Descriptive Statistics

Variables	Levels	N	%
Preferred Transport	Public Transport	44	28.8%
	Personal Car	50	32.7%
	Walking	4	2.6%
	Personal Bike	59	38.6%
	Car Pooling	7	4.6%
Distance between resident and workplace/school	< 1 Km	24	15.7%
	1-5 Km	57	37.3%
	6-10 Km	31	20.3%
	> 10 Km	41	26.8%
Nearest public transit stop	0.5-1 Km	92	60.5%
	1-2 Km	36	23.7%
	More than 2 Km	24	15.8%
# Cars own/lease	None	76	49.7%

	One	57	37.3%
	Two	12	7.8%
	Three or more	8	5.2%
Parking space (Residential)	Yes	96	63.2%
	No	56	36.8%
Parking Space (Work)	Yes	124	83.8%
	No	24	16.2%

In terms of teaching demographics, respondents span various educational levels, with the highest being master's degree holders (70.6%). Teaching experience is diverse, with significant portions having between 0-5 years (17.0%) to over 21 years (29.4%) of experience. Subject categories also vary, with science (35.3%) being the most prevalent, followed by language (12.4%) and social science (11.1%). The school environment is predominantly co-educational (24.2%), with a slightly higher percentage of boys-only schools (41.6%) compared to girls-only schools (34.2%).

The neighborhood setting of schools also varies, with the majority located within city limits (73.3%), while others are situated in districts (9.3%) or villages (17.3%).

Table 6.3: Descriptive Statistics

Variables	Levels	N	%
Level of teaching	Kindergarten	2	1.3%
	Primary	23	15.0%
	Secondary	20	13.1%
	Highschool	49	32.0%
	Others	59	38.6%
Level teaching experience	0-5 Years	26	17.0%
	6-10 Years	28	18.3%
	11-15 Years	29	19.0%
	16-20 Years	25	16.3%
	Over 21 Years	45	29.4%
Subject Category	Science	54	35.3%
	Arts	9	5.9%
	Literature	13	8.5%
	Language	19	12.4%
	Humanities	12	7.8%
	Social Science	17	11.1%
	Others	21	13.7%
	Multidisciplinary	8	5.2%
School Category (Co/Single)	Boys	62	41.6%
	Girls	51	34.2%
	Co-education	36	24.2%
Extracurricular Responsibilities	None	3	2.1%

	Advisor to the Club	11	7.8%
	Sports Coach	10	7.1%
	Others	117	83.0%
School neighborhood	City	110	73.3%
	District	14	9.3%
	Village	26	17.3%

6.1.1 Hypothesis Testing

H1: *There will be a significant mean difference in the risk of burnout in teachers with sensory processing sensitivities and teachers without sensory processing sensitivities.*

With equal variances assumed, an independent samples t-test was conducted to compare the mean scores of Sensitive ($M = 14.865$, $SD = 5.466$) and Not Sensitive ($M = 10.694$, $SD = 6.24$) for Burnout. The independent samples t-test revealed a significant difference between Sensitive and Non Sensitive ($t(148) = 4.06$, $p < .05$).

The obtained p-value was less than .05, indicating a statistically significant difference between the two groups. The effect size (Cohen's d) was calculated as .697, indicating a medium effect. These results indicate teachers with higher sensory processing sensitivities report higher burnout as compared to teachers who do not have sensory processing sensitivities.

Group	M	SD	T	df	p	Cohen's D
Sensitive	14.865	5.467	4.06	148	<0.05	0.697
Not Sensitive	10.694	6.240				

Note: df = Degrees of freedom

H2: *There will be a positive correlation between domains of SPS and burnout in teachers with sensory processing sensitivities in Lahore.*

A Pearson correlation analysis was conducted to examine the relationship between Burnout and the domains of Sensory processing sensitivities which are **Aesthetic Sensitivity (AES)**, **Ease of Excitations (EOE)** and **Low Sensory Threshold (LOW)**. The Pearson correlation coefficient between Burnout and AES was found to be $r = 0.238$, indicating a weak positive relationship, the correlation between Burnout and LOW and EOE was 0.402 and 0.405 respectively showing a medium level of positive correlation. The correlation was statistically significant ($p < .05$) for all three relations, based on a sample size of $N = 150$.

Variables	1	2	3	4
Burnout	1	.238**	.402**	.405**
Aesthetic Sensitivity		1	.680**	.734**
Low Sensitivity Threshold			1	.719**
Ease of Excitations				1

** . Correlation is significant at the 0.01 level (2-tailed).

Based on the significant correlation results, we have evidence that Burnout and Sensory processing sensitivities are positively related; i.e., sensitive people are more likely to suffer from burnout.

H3: *There will be significant difference in sensitivity processing between males and females.*

Group	M	SD	t	Df	p	Cohen's D
Males	4.163	1.175	2.139	142	<0.05	0.357
Females	4.557	1.013				

Equal variances were assumed, and an independent samples t-test was conducted to compare the mean scores of Males (M = 4.163, SD = 1.175) and Females (M = 4.557, SD = 1.013) for the Sensory Processing Sensitivity Scale. The independent samples t-test revealed a significant difference between Males and Females ($t(142) = 2.139, p < .05$). The obtained p-value was less than .05, indicating a statistically significant difference between the two groups. The effect size (Cohen's d) was calculated as .357, indicating a small to medium effect size. These results suggest that female teachers are likely to be more sensitive as compared to male teachers.

H4: *There will be a positive relationship between burnout and three components of environmental quality i.e., noise, air quality, and urban aesthetics.*

The fourth hypothesis was tested through correlation analysis. Using Pearson's correlation, burnout was correlated with the subscales of perceived environmental scale which assessed the perceived environmental air quality index (AQI), perceived environmental noise and perceived environmental aesthetics. While we observed insignificant correlation of burnout with AQI and environmental aesthetics, a weak but significant positive correlation was observed between burnout and environmental noise ($r = 0.230, p < 0.05, N = 149$) indicating a likely relationship between increased burnout and environmental noise.

Variables	1	2	3	4
Burnout	1	0.000	.230**	0.092
AQI		1	-0.114	.848**
Environmental Noise			1	0.025
Environmental Aesthetics				1

** . Correlation is significant at the 0.01 level (2-tailed).

H5: *There will be a significant correlation between sensory processing sensitivity with respect to noise, air quality, and urban aesthetics.*

To test this hypothesis, overall sensitivity of the respondents was correlated with the subscales of perceived environmental quality. Weak positive relationships were observed between SPS and Noise ($r = 0.290$), and SPS and aesthetics ($r = 0.239$). This correlation is based on a sample size of 152.

Variables	1	2	3	4
Sensory Processing Sensitivity	1	0.038	.290**	.239**
AQI		1	-0.114	.848**
Environmental Noise			1	0.025
Environmental Aesthetics				1

** . Correlation is significant at the 0.01 level (2-tailed).

6.2 Qualitative Findings

87 out of the final 153 survey participants fit into the “sensitive” person criteria. All participants were asked to volunteer contact information and consent was obtained for further participation in the research. From the 87 participants, 56 volunteered either email or phone contact. A total of 9 participants allowed us to record in-depth interviews, for which the findings are detailed below. Two main themes were identified.

6.2.1 The Identification and Effect of Urban Elements

Participants largely shared views on and pointed to a primary emerging source of urban stress; traffic was the focal point of the recipients’ responses with most teachers and their students impacted by its prevalence in the city in various forms. The majority of the respondents either reported traveling in traffic and its mental and physical toll, or the role of traffic outside school areas in disrupting school functions as well as teacher focus. The constant presence of traffic resulted in the following consequences as reported by teachers:

1. Mental Stress
2. Self-reported loss of or deteriorated hearing ability
3. Physical conditions
4. Decreasing attention spans

Most participants were aware of the relationship between noise and air pollution and its effect on their mental and physical health. Almost all report experiencing stress during work and beyond.

Traffic impacts us, and so does noise pollution and smog in the winter. The kids are impacted by it too. Our eyes and ears hurt. (Gulzar, Male)

Almost all participants allude to vehicle horns in the traffic exacerbating the day to day stress they experience.

Traffic issues impact me. Even in my house, in the neighborhood, the vendors and vehicles disturb me. (Mala, Female)

Participants alluded to differences in the traffic that exists in the area surrounding the school, as well as travel fatigue from processing traffic on the way to and especially from home. It is harder to process traffic after a long day of delivering lectures; most teachers teach 4-5 lessons every day and mention fluctuating workload depending on the time of the year. Participants mentioned either physical or mental strain from constantly existing in traffic.

While traffic itself was a defining factor of their everyday lives, it also resulted in other factors that impacted participants, mainly noise, air pollution, and ensuing physical and mental conditions. Physical conditions included the following:

1. Headaches
2. Itchy eyes
3. Los of hearing
4. Physical arousal resulting in aggression

Most participants complained of noise infiltrating their lives and having an adverse impact on their ability to live and function in the city. Almost all teachers reported a deterioration in their ability to teach due to noise outside the school. Participants work in areas where schools are based either entirely on the main road or on a main road bordering at least one part of the school. When asked for clarification on what “main,” might mean to them, they offered explanations like busy roads or large roads with great traffic flow. Several participants believed their ability to hear, or

their auditory processing had physically decreased due to constant exposure of high levels of noise emanating from traffic, particularly horns, construction sites, and in one case, mobile phones.

Those who delivered classes with more exposure to noise believed it not only disrupted their ability to teach - and the flow state teachers operate in - but also the student attention rate. Students were considered to bear the brunt of traffic, noise, and pollution exposure by getting sick, losing their attention spans/interest in the lesson, and being unable to grow as much as a student should at their level of learning. Another teacher reports,

More noise means attention duration decreases. After some time, you can't focus on the noise. You become insensitive to the noise. You focus elsewhere. Your focus decreases. (Shah, Male)

While teachers were concerned about student learning and development due to noise - and sometimes excessive extracurricular - they believed student-teacher interaction had been impacted by exposure to city elements. Many reported experiencing physical arousal, due to noise exposure, mental strain, and disruptions from both traffic and students in and out of class. This resulted in aggressive and violent behaviors toward students, creating some levels of guilt in the teachers, who reported feelings of helplessness about such behaviors. They recalled scolding more students, and a reduced ability to manage tasks and deliver entire lesson plans.

When classes are overcrowded and schools on the main road mean more vendors and more horns, people don't retain their attention. Construction sites create noise. Noise is haunting us. This is a problem. Children make noise too. Students are vulnerable. City life seems cruel to us. In rural areas, children are less susceptible to sensory issues. (Saif, Male)

Several participants reported an inability to escape from city conditions, particularly the noise, and linked it to an increase in stress and fatigue. They believed that it impacted their functionality as well; while some reported experiencing headaches, others believed the career itself to be pain-inducing.

You're always stressed, there's no relaxation. Even in the house, you feel like you're in a classroom. And because you're always busy and stressed, it impacts your teaching. Not only is hearing impacted, but you become absentminded. You have to ask people to repeat themselves, so either you're not in your senses, or your hearing ability is impacted. (Sara, female)"

6.2.2 Alleviation of Stress and Sensory Overload

Respondents were asked to describe any resources that could help alleviate their stress, burnout, and sensory sensitivities. They responded along the lines of personal measures, workplace measures in practice, and urban features, and offered perspective on what they felt was lacking. All participants agreed on the importance and need for green spaces, particularly parks in the city. Most believe parks help reduce mental fatigue and offer a refreshing experience and their construction must be mandatory. Participants expressed their desire for peaceful places to exist in, both on and off school premises.

They believed campuses should be constructed in peaceful areas and away from the city's traffic, noise, and pollution, to create a conducive environment for both faculty and students. However, some participants shared views about regulating green areas as opposed to simply creating them.

It's mandatory for government and institutions to create parks for recreational purposes, and not build a road near them. Parks in commercial areas have no

impact. So they need to be on the side, not in the middle of commercial areas.”

(Muhib, Male)

Another respondent agreed; that relief can't be found in parks simply due to their proximity to the same urban elements causing stress. Others sought to make two kinds of comparisons between:

1. Private and public schools
2. Rural and urban areas

Most respondents had worked in both private and public/government schools. Some reported that government schools are built over larger pieces of land, whereas private schools are congested. They believed students are trapped in schools and cannot grow as well as the teachers would like. According to the participants, some government schools had more greenery than private schools. Some institutions try to keep classroom buildings away from the school boundary located on the main road. Teachers preferred schools to be built in more green and peaceful zones, away from traffic, noise, and pollution. While some government schools offered more green spaces, others complained about a lack of green spaces both inside the school and in the city. Most teachers reported needing open spaces to help relax; arranging picnics, or escaping to greener residential areas near the school building during break offered relief. Most believe environmental stressors impact their teaching ability.

On the distinction between rural and urban areas, while most agreed rural spaces are greening and more relaxing, one participant commented on the nature of how rural spaces are used, alluding to a lack of community in city centers and the nature of the city itself:

Urban areas don't have greenery. In rural areas, farms and fields reduce stress. No communities can be found or formed in urban areas. In rural areas, we sit together and in gatherings, and we share our problems which reduces stress. You get pure

organic things and ingredients in villages, which helps with physical and mental health. People are machines in the city. Everyone is concerned with their own work. People are focused always on work. Machines and all create more work. More work and more stress. (Shah, Male)

Another respondent commented on the nature of the city and community relationships:

Life is pretty self-centered so we find our own ways to create our own lives to cope with stress and living in the city. Parks, gyms, and sitting together with friends help. Drinking a cup of tea or coffee, especially if you like these beverages with your friends helps a lot with burnout. A recent plan to meet my friends fell through on the weekend and I was quite disturbed because I was expecting to meet my friend and feel relaxed. Meeting friends helps you freshen up and tackle the workload with more energy. (Muhib, Male)

Most participants agree that there aren't many active communities in the city, and the relief they are offered is through events organized by the schools. However, others complain of being burdened with extracurricular activities, which add to their workload. Almost all teachers agreed that staffrooms and common rooms for teachers provided stress relief, but after taking around 4-5 lessons, and teaching between 8:00 AM to 1:40 PM they needed a longer break. Teachers received only 20-30 minutes of break between classes and were burdened with showing up to work on Saturdays. Most teachers did not expect nor receive relief from their workplaces or from the city. The common complaint was to build quiet areas for teachers to exist in. Either school lawns or gardens. Some teachers reported using science and technology labs because quiet, peaceful places on campus were severely lacking. Others reported the need for quiet public libraries, such as those

in Lawrence Garden of Lahore City, one of the city's greener spots. They reported these centers know how to research how to create more peaceful spaces with less noise.

Travel distances, particularly for female teachers who carpooled or used public transport instead of private transport forced them to reckon with disruptive sensory elements in the city, particularly traffic, car horns, smog, and smoke. Teachers traveling on bicycles and motorbikes during severe weather conditions also suffered the brunt of longer, arduous distances. However, some participants did believe that city distances aren't too hard to cover. The real problem was the stress of reaching places on time in the morning, something that leaked into the rest of their day, and something they felt the physical burden of. Teachers reported lesser sensory loads when they didn't have to think about traveling on local transport in unbearable conditions.

For the most part, coping techniques were personal rather than city-based or school-based.

Chapter 7: Discussion

The results indicate a statistically significant difference in burnout levels between teachers with sensory processing sensitivities and those without. Specifically, teachers with higher sensory processing sensitivities reported significantly higher levels of burnout compared to teachers without sensory processing sensitivities. The effect size of 0.697 suggests that the difference between the two groups is not only statistically significant but also practically meaningful, falling within the range of a medium effect size according to Cohen's criteria. This suggests that teachers who experience sensory processing sensitivities may be more vulnerable to burnout in their profession compared to those who do not have these sensitivities. This finding could have implications for supporting teachers' mental health and well-being, particularly for those who may require additional accommodations or resources due to sensory processing challenges.

The results also suggest that there is a significant positive correlation between burnout levels and each of the three domains of sensory processing sensitivities (AES, LOW, and EOE) in teachers with sensory processing sensitivities in Lahore. The weak positive correlation indicates that as aesthetic sensitivity increases, burnout levels also tend to increase, albeit to a lesser extent compared to the other domains. The medium positive correlations between burnout and LOW as well as EOE suggest that as ease of excitations and low sensory threshold increase, burnout levels tend to increase more substantially. These findings imply that there is a tendency for teachers with higher levels of sensory processing sensitivities, particularly in terms of ease of excitations and low sensory threshold, to experience higher levels of burnout. This correlation underscores the importance of considering sensory processing sensitivities when addressing burnout issues among teachers; based on the significant correlation results, we have evidence that Burnout and Sensory

processing sensitivities are positively related which means that sensitive people are more likely to suffer from burnout.

According to our findings, there is a statistically significant difference in the sensitivity processing between males and females, which implies gender different in how teachers perceive and process sensory information, with female teachers expected to be more sensitive. The significant positive correlation between burnout and environmental noise suggests that there is a relationship between increased burnout levels and exposure to higher levels of environmental noise. This finding aligns with existing research suggesting that environmental factors such as noise pollution can contribute to stress and burnout.

While the lack of significant correlation between burnout and AQI or environmental aesthetics implies that, in this sample, perceived air quality and environmental aesthetics did not have a notable impact on burnout levels, the interview findings yield that environmental quality and air pollution work as urban stressors and increase exhaustion among participants. The significant positive correlations between SPS and both environmental noise and environmental aesthetics indicate that individuals with higher sensory processing sensitivity may be more affected by environmental factors such as noise and aesthetics.

The results from the study support prior findings about teachers categorizing their occupations to be extremely stressful with evidence that SPS correlates with occupational disengagement, with urban elements becoming significant stressors (Lindsay, 2017). Moreover, poor environmental quality and environments impact sensory overstimulation, as observed in our participants, particularly for those already experiencing heightened sensitivity (Van Kamp et al., 2003). Additionally, Sensory processing sensitivity is often correlated with some form of neurodivergence, bringing into the light the need to both envision a different model of

neurodiversity and its manifestations in South Asia. Models that focus upon curing neurodevelopmental issues lead to masking, thus causing fatigue, anxiety and depression, as well as burnout (Crook et al, 2021). Thus, as evidenced by this research, medical models for any kind of treatment must take into account environmental and urban factors, thus informing policy makers for the need to allocate a human element to urban planning and design.

The study evidences the differences between rural and urban life, with the former offering a relaxed sensory experience, compared to the disruptive nature of the city. Even processing constant noise and other stimuli in the city led participants to form a blase attitude, otherwise worded as absent mindedness or a lack of attention according to the participants (Simmel, 1903). The research further substantiates the ideas that although urban stimuli is correlated with burnout and SPS, coping mechanisms include not only green spaces, but community ties and social needs, the presence of which allowed respondents to share their grievances and feel a reduction in physical and mental strain (Gottdiener& Hutchison, 2010).

These findings substantiate the implication of requiring a deeper examination of sensory stimulus within the city and its impact on the inner and outer lives of urban citizens. This includes a reconnection between culture, society and urban planning to recognize the physical aspects of a city that include the auditory, tactile, and visual features of a metropolis, improved by the presence of green spaces and air quality (Zeneker et al, 2013).

However, the study was not without its limitations. Although the instruments used, such as the HSPS and Maslach's Inventory, have been adapted for Pakistan and translated to local languages, they still might not be universally applicable to culturally diverse populations, particularly those in South Asian regions like that of Lahore, Pakistan, and may not be applicable to the unique urban infrastructure of South Asian cities either. Given that the study is dependent

on self-report measures, the risk of self-report bias increases; participants may unconsciously or purposefully exaggerate or underreport their sensory sensitivities or feelings of burnout, particularly during the qualitative phase of the study. Moreover, as a cross-sectional study, this research offers only a brief glimpse at sensory sensitivities and burnout levels and cannot observe changes over an extended period, offering data limited to a particular period in time. Lastly, the time constraints involved with this study might create potholes along the road to a nuanced understanding of urban factors and sensory sensitivities.

7.1 Recommendations

This research explored several crucial and underexplored dimensions of the urban landscape, in particular, the sensory processing sensitivities, burnout, and subsequent experiences of teachers involved in the public education sector. This foundational dataset could become a cornerstone for subsequent research and potentially inform policy considerations tailored to educators' unique needs in the city and urban planning and design itself. This research could have significant implications for future work on understanding the existence of neurodivergence over a wider spectrum of conditions not unique to but definitely exacerbated by the metropolis such as sensory processing sensitivities, and the survival of highly sensitive people within an overstimulating sensory landscape.

These recommendations stem directly from those who participated in the research – keeping with the nuances of the qualitative method – citing the need for zoning laws in Pakistan; such laws would separate school districts from commercial areas and limit traffic exposure near schools. On a smaller scale, schools and other workplaces would benefit from higher worker performance if quiet areas are made available for workers to unwind and work in. On a larger

scale, city wide restrictions on auditory, and tactile pollutants such as vehicle horns, industrial fume emissions, and a reduced number of vehicles in support of well-funded public transport would improve urban quality of life, especially for those with sensory processing sensitivity. Creating and maintaining green spaces, such as public urban parks, and mitigating the challenges of vehicular disruption and entry to city spaces remains a necessity urban policymakers have to reckon with.

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APPENDIX I

Basic Demographics

Question No.	Category	Question	Response and Scoring
1	Basic Demographics	What is your age group?	18-24 (1) 25-34 (2) 35-44 (3) 45-54 (4) 55-64 (5) 65 and above (6)
2	Basic Demographics	Which gender do you identify with?	Male (1) Female (2), Non-binary (3) Prefer not to say (4)
3	Basic Demographics	Please state your ethnicity (for example, Punjabi, Sindhi, Pashtun, Baloch)	
4	Basic Demographics	What is your current marital status?	Single (1) Married (2) Divorced (3) Widowed (4) Prefer not to disclose (5)
5	Basic Demographics	How many children do you have?	None (1) 1 (2) 2 (3) 3 (4) 4 or more (5)
6	Basic Demographics	What is the highest level of education you have completed?	Less than High School (1) High School Graduate (2) Some College (3) Bachelor's Degree (4) Master's Degree (5) Doctoral Degree (6) Other (7)

7	Basic Demographics	What is your current occupation status?	Employed (1) Self-Employed (2) Unemployed (3) Retired (4) Student (5)
8	Basic Demographics	Please indicate your household's monthly income bracket	Less than Rs. 25,000 Rs. 25,000- Rs. 50,000 Rs. 50,000- Rs. 100,000 Rs. 100,000- Rs. 150,000 Above Rs. 150,000 Prefer Not to Disclose
9	Residential Status	In which area of the city do you currently reside?	Allama Iqbal Town GunjBaksh Town Nishtar Town Ravi Town Shalimar Town Aziz Bhatti/Wagha Town Jubilee Town Gulberg Town Others (please specify)
10	Residential Status	What type of residence do you live in?	Apartment (1) Condominium (2) Single-Family Home (3) Shared House (4) Other (5)
11	Residential Status	How long have you lived in your current residence?	Less than 6 months (1) 6 months to 1 year (2) 1-3 years (3) 4-6 years (4) More than 6 years (5)
12	Residential Status	What is your home ownership status?	Own (1) Rent (2) Living with Family

			(3)
13	Residential Status	How many adults currently live in your household?	1 (1) 2 (2) 3 (3) 4 or more (4)
14	Residential Status	How many children currently live in your household?	None (1) 1 (2) 2 (3) 3 or more (4)
15	Residential Status	How many elderly individuals currently live in your household?	None (1) 1 (2) 2 (3) 3 or more (4)
16	Residential Status	How many pets do you have in your household?	None (1) 1 (2) 2 (3) 3 or more (4)
17	Residential Status	Which of the following amenities are available in your household?	Air Conditioning (1) Heating (2) Internet (3) Home Office (4) Gym (5)
18	Residential Status	Please indicate if you have househelp	1. Full-time 2. Part-time 3. No house help
18	Mobility	What is your primary mode of transportation?	Public Transit (1) Private Car (2) Walking (3) Biking (4) Ride-Sharing (5)
19	Mobility	What is the distance between your residence and your workplace or school?	Less than 1 Km (1) 1-5 Km (2) 6-10 Km (3) More than 10 Km (4)
20	Mobility	How far is the nearest public transit stop from your residence?	Less than 0.5 Km (1) 0.5-1 Km (2) 1-2 Km (3) More than 2 Km (4)

21	Mobility	How many cars do you own or lease?	None (1) 1 (2) 2 (3) 3 or more (4)
22	Mobility	Is parking space readily available where you live?	Available (1) Not Available (2)
23	Mobility	Is parking space readily available where you work?	Available (1) Not Available (2)
24	Local Affiliation	Are you a member of any local community groups?	Yes (1) No (2)
25	Local Affiliation	If you are a member, which types of community groups are you a part of?	Neighborhood Watch (1) Religious Groups (2) Sports Clubs (3) Charity Organizations (4) Others (5)
26	Local Affiliation	How often do you use community spaces such as parks, libraries, and community centers?	Never Daily (1) Weekly (2) Monthly (3)
27	Medical History	Have you received an official diagnosis for any of the following or other mental conditions/illnesses?	Autism ADHD Schizophrenia Dyslexia Personality Disorders Anxiety Disorders Other (Please specify)
28	Medical History	Please indicate if you believe you might be suffering from a mental disorder:	

29	Medical History	Please indicate if any family members have been diagnosed with a mental condition/illness:	
30	Medical History	Please indicate the frequency of how often you fall ill	<ol style="list-style-type: none"> 1. Very frequently 2. Frequently 3. Occasionally 4. Rarely 5. Never
31	Career	Please indicate your current level of teaching	<ol style="list-style-type: none"> 1. Kindergarten 2. Primary 3. Secondary 4. High School 5. Other (Please specify)
32	Career	Please indicate the level of your teaching experience in years	<ol style="list-style-type: none"> 1. 0-5 years 2. 6-10 3. 11-15 4. 16-20 5. 21+
33	Career	Please indicate the subject category you teach	<ol style="list-style-type: none"> 1. Science 2. Arts 3. Literature 4. Language 5. Humanities 6. Social Science 7. Other (Please specify)
34	Career	Please indicate which kind of school you teach at	<ol style="list-style-type: none"> 1. Public 2. Private
35	Career	Please state if you have any extracurricular responsibilities	<ol style="list-style-type: none"> 1. Club Advisor 2. Sports Coach 3. Other (Please specify) 4.

36	Career	Please indicate which category best describes your school neighborhood	1. Urban 2. Suburban 3. Rural
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Measure of Sensitivity (Adapted for Pakistan)

Please indicate the degree to which you agree that each question describes you in general. **Respond by using the following scale ranging from 1 (not at all) to 7 (extremely).** Do not think too much about any one item, and work quickly by giving your first impression. This section will take you approximately five minutes or less to complete.

Item No.	Survey Question	Response Scale (Please indicate a number)
1	Are you easily overwhelmed by strong sensory input? For example, loud noises, bright lights, smog/air pollution	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
2	Can you pick up on small changes in your environment that others may not notice?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
3	Do other people's moods affect you?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
4	Do you tend to be more sensitive to pain?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
5	Do you find yourself needing to withdraw during busy days or needing time to yourself, away from people and certain places?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
6	Are you particularly sensitive to the effects of caffeine? For instance, tea, coffee, energy drinks, etc.	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
7	Are you easily overwhelmed by factors like bright lights,	1 (Not at all) - 7 (Extremely)

	strong smells?	1 2 3 4 5 6 7
8	Are your thoughts and feelings deep and varied, often making you lost in your own world?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
9	Are you made uncomfortable by loud noises?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
10	Are you often deeply touched by art or music?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
11	Do you often feel stressed or overwhelmed?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
12	Do you try to do things carefully and correctly?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
13	Do you get scared or jump easily?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
14	Do you get anxious when you have too much to do quickly?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
15	When people are uncomfortable, do you tend to know what needs to be done?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
16	Are you annoyed when people try to get you to do too many things at once?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
17	Do you try hard to avoid making mistakes or forgetting things?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
18	Do you make a point to avoid violent movies and TV shows?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
19	Do you feel uneasy when things are busy around you?	1 (Not at all) - 7 (Extremely)

		1 2 3 4 5 6 7
20	Do you get very moody or distracted when you're hungry?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
21	Do you get upset easily when things in your life change?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
22	Do you notice and enjoy delicate or fine scents, tastes, sounds, works of art?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
23	Do you find it unpleasant to have a lot going on at once?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
24	Do you plan your life to avoid things that stress you out?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
25	Do loud noises or busy places bother you a lot?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
26	Do you get too nervous to do well in competitions?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7
27	When you were a child, did your parents or teachers seem to see you as sensitive or shy?	1 (Not at all) - 7 (Extremely) 1 2 3 4 5 6 7

Section

III:

Perceived Environmental Quality

Please read the question, assess your feelings for the last two weeks, and circle the number on the scale for each question that gives the best answer for you.

Item	Category	Question	Scoring
1	Noise	I regularly hear noise from construction	1. Never hear 2. Hear it but don't find it annoying 3. Hear and find it

			somewhat annoying 4. Hear and find it very annoying
2	Noise	I regularly hear noise from traffic	1. Never hear 2. Hear it but don't find it annoying 3. Hear and find it somewhat annoying 4. Hear and find it very annoying
3	Noise	I regularly hear noise from businesses or industries around me	1. Never hear 2. Hear it but don't find it annoying 3. Hear and find it somewhat annoying 4. Hear and find it very annoying
4	Noise	I regularly hear noise from the neighbors	1. Never hear 2. Hear it but don't find it annoying 3. Hear and find it somewhat annoying 4. Hear and find it very annoying
5	Noise	I regularly hear noise from the neighbors' children	1. Never hear 2. Hear it but don't find it annoying 3. Hear and find it somewhat annoying 4. Hear and find it very annoying
6	Noise	I regularly hear noise from appliances in my own home	1. Never hear 2. Hear it but don't find it annoying 3. Hear and find it somewhat annoying 4. Hear and find it

			very annoying
7	Noise	I regularly hear equipment or machinery noise from the neighbors	1. Never hear 2. Hear it but don't find it annoying 3. Hear and find it somewhat annoying 4. Hear and find it very annoying
8	Noise	The neighbors disturb my privacy	1. Frequently 2. Sometimes 4. Never
9	Air Quality	I am bothered by smoggy days	1. Bother me a lot 2. A little 3. Not at all
10	Air Quality	I am bothered by exhaust fumes	1. Bother me a lot 2. A little 3. Not at all
11	Air Quality	I am bothered by dust or dirt in the air	1. Bother me a lot 2. A little 3. Not at all
12	Air Quality	I am bothered by smoke or fumes from industries or businesses around me	1. Bother me a lot 2. A little 3. Not at all
13	Aesthetics	I find my neighborhood visually appealing	1 (Extremely) - 7 (Not at all) 1 2 3 4 5 6 7
14	Aesthetics	My neighborhood is clean and well maintained	1 (Extremely) - 7 (Not at all) 1 2 3 4 5 6 7

Maslach Burnout Inventory for Teachers (Adapted)

Item	Question	Scoring
1	I feel emotionally drained by my work.	0 = Never, 1 = A few times a year, 2 = Monthly, 3 = A few times a month, 4 = Weekly, 5 = A few times a week, 6 = Every day
2	I feel used up at the end of a workday.	0 = Never, 1 = A few times a year, 2 = Monthly, 3 = A few times a month, 4 = Weekly, 5 = A few times a week, 6 = Every day
3	I feel fatigued when I get up in the morning and have to face another day on the job.	0 = Never, 1 = A few times a year, 2 = Monthly, 3 = A few times a month, 4 = Weekly, 5 = A few times a week, 6 = Every day
4	I can effectively solve the problems that arise in my work.	0 = Never, 1 = A few times a year, 2 = Monthly, 3 = A few times a month, 4 = Weekly, 5 = A few times a week, 6 = Every day
5	I feel burned out from my work.	0 = Never, 1 = A few times a year, 2 = Monthly, 3 = A few times a month, 4 = Weekly, 5 = A few times a week, 6 = Every day

Please indicate if you would be willing to further participate in this research and if we may reach out to you in any of the following ways:

1. Phone number: _____
2. Email address: _____
3. I am not willing to participate any further in this research

APPENDIX II

IN-DEPTH INTERVIEW GUIDE

Qualitative Questions

1. Can you identify specific elements about city life (e.g., noise, crowd density, pace) that make you feel particularly drained or overwhelmed in your teaching role?
2. Are there features of the urban environment that actually alleviate your stress or help you decompress after a challenging day of teaching? If yes, can you describe them?
3. Can you describe any instances where you felt the city's characteristics exacerbated your sensory sensitivities, leading to heightened stress or burnout at work? Can you tell me about domestic characteristics that might contribute to this?
4. Have you noticed any city-based resources or community elements that specifically help in buffering the stress or sensory overload you experience as a teacher?
5. Similarly, does your workplace offer any means or accommodations that help alleviate any mental or physical stressors? For instance, a quiet staffroom, sick days off, etc.
6. Do you feel that the school's location within the city (e.g., proximity to green spaces, low noise levels, ease of commute) has an impact on your susceptibility to burnout? If yes, how?

Could you describe a regular workweek and workload? How do your experiences as a teacher contribute to burnout, if at all?

APPENDIX III

	Main Theme	Sub-themes	Codes
1.	Identification and effects of urban elements	Traffic	School traffic travel traffic
		City Noise	Indoor/Outdoors Noise Perceived differences in rural and urban locations
		Hearing Ability	Perception of hearing
		Mental Stress	Mental strain feelings of dread related to work, aggression
		Physical effects	Physical fatigue changed hearing changes in speaking Health challenges
2.	Alleviation of stress and sensory overload	City measures	Lack/presence of parks Use of parks Quiet Zones Perceived zoning challenges
		Measures in school	Indoor school spaces School location Class location Workload allocation
		Personal measures	Coping techniques Community

APPENDIX IV**Submission Form for a Research Proposal for Institutional Review Board/****ORIC, FCCU**

- 1. Name of student submitting the proposal:** MenahilShahid
- 2. Title of Dissertation/Thesis:** Senses Scattered Across the City: An Exploration of Sensory Sensitivities and Burnout in Teachers
- 3. Name of Supervisor:** Ms. Shermeen Bano
- 4. Date of submission:** 3rd Oct 2023
- 5. Academic Discipline:** Sociology
- 6. Has the project been reviewed for ethics and methodological soundness in the discipline?**
(If no, please review by department before submitting to the IRB.)
- 7. Will the research involve any physically invasive procedures or vulnerable populations?**
No
- 8. Name of Department Head:** Dr. Sara Jafree
- 9. Signature of Department Head:** _____
- 10. Are any physically invasive procedures to be used?**
No
- 11. Are any vulnerable populations under study?**
No
- 12. Is there any potential conflicts of interest in the proposal? How has this been addressed?**
No conflicts.

APPENDIX V

Consent Form

Title of the Research Study: Senses Scattered Across the City: An Exploration of Sensory Sensitivities and Burnout in Teachers

Principle Investigator, Affiliation and Contact Information: Menahil Shahid, Forman Christian College and University, Lahore. menahil.shahid4@gmail.com

Additional Investigators and Affiliations: Ms. Shermeen Bano, Supervisor, shermeenbano@fccollege.edu.pk, and Dr. Sara Rizvi Jafree, Head of Department, the Department of Sociology, Forman Christian College and University.

Institutional Contact: Institutional Review Board

Introduction and Purpose of the Study

The research investigates the prevalence and impact of Sensory-Processing Sensitivity on teachers, especially within the urban context of Lahore. The aim is to understand the intersections of sensory sensitivity, urban stimuli, and its resultant effects on educator burnout.

Description of the Research

After granting your consent to participate, you will be required to answer a series of questions. Please note all questions are mandatory for completion.

Subject Participation

The study anticipates the involvement of 400 participants. All participants are over 18 and must be currently teaching in primary, middle, or higher secondary schools in Lahore. The survey is designed to be completed within 15-20 minutes.

Potential Risks and Discomforts

No identifiable risks or discomforts are associated with this study.

Potential Benefits

Through participation, you may gain a deeper understanding of sensory sensitivities, urban challenges, and their compounded effects on educators in Lahore.

Confidentiality

The survey is structured to ensure your anonymity. Your responses are exclusively for the purpose of this research and potential subsequent publications. They will remain confidential and may be shared with the supervising faculty and the internal review board to meet degree-related obligations.

Authorization**SENSES SCATTERED ACROSS THE CITY: AN EXPLORATION OF SENSORY SENSITIVITIES AND BURNOUT IN TEACHERS**

By marking the appropriate box, you grant permission for the use and disclosure of your responses for the purposes of this research and any subsequent publications.

Compensation

There will be no compensation provided for participation.

Voluntary Participation and Authorisation

Participation is entirely voluntary. You have the right to withdraw from the study at any stage without any penalties.

Cost/Reimbursements

No costs are associated with participation in this study.

I voluntarily agree to participate in this research project:

- Yes
- No

I understand that by marking the appropriate box, I confirm that my age is above 18 years.

- Yes

I acknowledge that a copy of this signed Consent Form will be provided to me.

Email address:

Date: